

Hurricane Katrina and US Energy Security

Edward Chow and Jonathan Elkind

Hurricane Katrina – and then her milder sister Hurricane Rita – brought destruction and misery to hundreds of thousands of people living in New Orleans and elsewhere along the Gulf Coast of the United States in late summer 2005. The hurricanes also administered what should be a wake-up call for the entire country: a stark demonstration that American energy security is vulnerable because the United States is over-reliant on availability of cheap petroleum supplies. Benchmark crude oil prices, which had already tripled since the start of the build-up to the Iraq war in 2002, surged to \$70 per barrel, and average pump prices for gasoline rose to an all-time high above \$3 per gallon.¹

Are these perfect storms created only by unfortuitous weather or are these conditions the result of decades of energy policy neglect? One will be able to judge from the manner in which American policymakers, business leaders, consumers and voters respond to the wake-up call of Katrina and Rita. Will leaders deliberate and pursue a new energy policy that gives equal attention to demand-side efficiency? Or will the United States revert to familiar patterns of increasing energy consumption, as it did after the oil crises of the 1970s?

Energy impacts of Katrina and Rita

The terrible human toll of the two hurricanes, and especially of Katrina, which punctured New Orleans's protective levees, has been played out on the world's television screens and newspapers. Even for a region that routinely confronts hurricanes – and especially for a country whose leadership has expended billions of dollars on emergency preparedness since 2001 – that toll was a shock. Half a million people were evacuated from the New Orleans area after Katrina struck on 29 August 2005; nearly 1,000 people died during or after her assault. By sheer luck, the human devasta-

Jonathan Elkind is an energy-environment consultant and heads EastLink Consulting, LLC. He served previously on the staff of the US National Security Council. **Edward Chow** is an international energy consultant working on projects in Eurasia, China and the United States. He spent a 20-year career in Chevron Corporation's worldwide operations.

Survival vol. 47 no. 4 Winter 2005–06 pp. 145–160

DOI: 10.1080/00396330500433449

tion of Hurricane Rita, which struck on 24 September, was considerably less than Katrina, but even the comparatively mild Rita added to the misery of the many evacuees who had fled their homes in southeastern Louisiana for shelters in neighbouring Texas.

Whatever the human toll of the hurricanes, no less of a shock came from the storms' impact on the US energy economy. More than 100 oil and gas production platforms were destroyed by Katrina and Rita. The country's only deep-water oil import facility, the Louisiana Off-shore Oil Port ('the LOOP'), ceased operation for several days after Katrina hit, and again after Rita. Refineries producing over three million barrels of refined product per day (nearly 20% of the country's daily refinery throughput) went off-line and remained unavailable well into October. Feeder pipelines that move crude oil to land, and trunk lines that carry crude and refined products to the Midwest and Atlantic Seaboard regions, were halted after the storms.

Thirty thousand off-shore oil workers had to be evacuated from their rigs. They were then unable to return to work quickly because helicopters usually used to transport them offshore were pressed into disaster relief.² Worse yet, throughout the Gulf Coast electricity and phone infrastructure – even mobile phone networks – were destroyed, further complicating the restoration of the oil and gas systems.

Around the United States, retail gasoline prices jumped 30% in one week's time, to constant-dollar levels not experienced since 1981.³ Motorists in several parts of the country engaged in fist fights as tensions from localised shortages and long lines boiled over. Federal officials urged Americans not to engage in panic buying. On the eve of the traditional end-of-summer Labor Day weekend and then again in late September, President Bush asked Americans to reduce driving. For a president whose administration has been so closely associated with the oil industry – and whose vice president famously belittled energy conservation as 'a mark of personal virtue, but not a sufficient basis for a sound, comprehensive energy policy' – the moment was poignant.

Energy security

The energy impacts of Katrina and Rita made a clear point: the United States is placing at risk its own economic health and national security because it relies too heavily on petroleum. In short, the United States is failing to attend to its own energy security. Moreover, in a global energy marketplace, America's heavy reliance on oil and gas impacts not only domestic interests, but also US foreign policy and the interests of all consuming and producing nations.

For much of the twentieth century, Americans equated energy security with the free flow of crude oil to American refineries and ports. That narrow construct no longer suffices. Instead, energy security for the United States (and

for other countries as well) is about much more than oil, and it has at least three overlapping elements: supply issues, price issues and systems issues.

Supply issues

The *energy supply* element relates to the relative security and source diversification of energy products reaching the country: Does the country draw a significant proportion of its energy resources from a concentrated region, whether domestic or foreign? Is that region subject to interruption, whether by a natural disaster, a straightforward accident or an act of terrorism or conflict?

Throughout the latter part of the twentieth century, many in the United States wrung their hands as a steadily increasing share of the country's oil demand was met by foreign producers. In 1949, all American crude oil demand was met by domestic sources. In 2005, foreign producers will account for 58% of US demand. By 2025, imports are projected to reach 68%.⁴ Not only is the United States importing increasing amounts of crude oil; US imports of refined products are also on the rise. To call simply for a reversal in this trend, however, perpetuates twin myths. The first myth is that imported energy supplies are hazardous per se to American interests. The second myth is that the United States could reverse the trend even if it wanted to.

To be sure, the smooth functioning of global oil markets depends on the ability of tankers to pass unscathed through key physical chokepoints such as the Straits of Malacca and Hormuz. Nonetheless, Katrina proves that even domestic supply can be vulnerable. The domestic US oil and gas industry has come to be precariously dependent on production in the hurricane-prone Gulf of Mexico, in part because lawmakers have enacted off-shore drilling bans for the Gulf coast of Florida, and most of the Atlantic and Pacific coasts. Making matters worse, it has been extremely difficult to gain approvals for new oil refineries and for terminals for the importation of liquefied natural gas.⁵

When Katrina and Rita struck the Gulf Coast, the impact on US oil and gas production was profound, though by mid-October the speed of the industry's recovery was still unclear. More than one-third of US oil production comes from the Gulf Coast and the off-shore waters between Alabama and Texas. Roughly 90% of the region's oil production was 'shut-in' (halted) before Katrina arrived in late August; in addition, 88% of the gas production was shut-in. Rita compounded the impacts. Nearly three weeks after Rita hit, over 75% of oil production was still shut-in, as was over 60% of gas production. Nearly 20% of US refinery capacity was still off line as well.

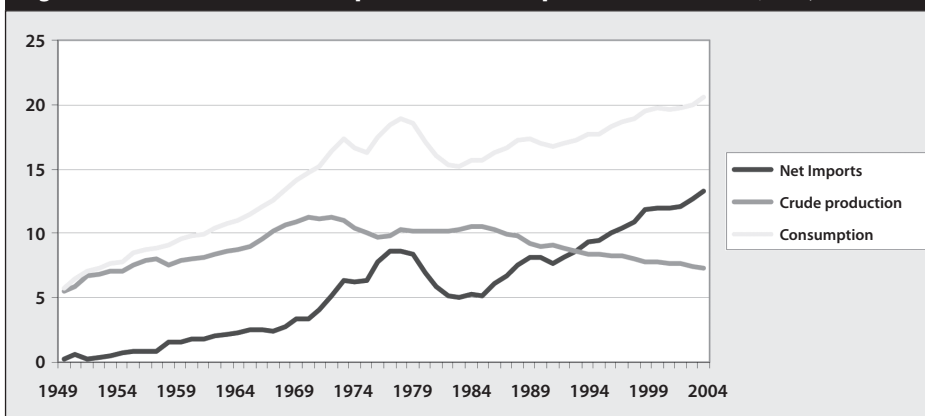
*More than
one-third
of US oil
production
comes from
the Gulf Coast*

Over 50% of the country's refinery capacity is located along the Gulf Coast. And roughly 60% of the nation's oil imports enter the country in this same region, through the LOOP and other oil ports. Katrina and Rita halted shipping. Daniel Yergin, an industry analyst, noted: 'We focused all this time on protecting our energy security in "the Gulf", but now we discover that we needed to be worrying about the Gulf of Mexico, not just the Persian Gulf.'⁶

Could the United States actually reverse this trend if it decided to do so? As Figure 1 shows, the growth in petroleum imports has been underway for half a century. Consumption continues to increase, after a drop in the years immediately after the twin price shocks of the 1970s. Even after price spikes, increases in domestic US production were short lived, as many US oil and gas deposits are already substantially depleted. Millions of dollars have been spent lobbying for parts of the Arctic National Wildlife Refuge to be opened to oil and gas production. Here, the politics vastly outstrip the economic realities; production from the wildlife refuge would take a decade to bring on line, and even then would only reduce the declines in Alaskan North Slope production, reducing US import reliance by about 2% in 2025. In short, where the wildlife refuge is concerned, the stakes are much higher for Washington lobbyists and for oil state politicians than for US energy security.⁷

The United States does have enormous reserves of coal, which are sufficient to meet demands for more than 100 years even at increased consumption rates. In this sense, one might hope that coal could be used to substitute for imported oil and could reduce US import dependence. However, coal cannot address transportation needs with current technology, and in any event a marked increase in coal usage would lead to a further increase in greenhouse gas emissions, barring technological breakthroughs in areas such as carbon capture and storage.

Figure 1 US crude oil, consumption and net imports (millions of barrels per day)



Source: US Energy Information Administration

Price issues

A second major component of energy security is energy price. Here, basic affordability is a self-evident consideration. But price volatility may be as much of a threat to energy security as absolute price levels.

Like the United States, Western Europe and Japan have been forced to cope with crude oil price hikes over recent years. However, in both Western Europe and Japan, governments have made a conscious choice to keep energy prices high through the application of significant taxes, which has implications for both short-term and long-term consumer impacts. Individual consumers and industrial users alike have made long-term investment decisions that reflect the high after-tax price of fuels. They saw the price signal and responded to it by investing in higher efficiency. As a result, when global crude oil prices started to shoot upward in late 2002 and early 2003, European and Japanese consumers faced smaller percentage changes in price than did their American peers. European and Japanese gasoline buyers were unhappy about the price increases, but they were nonetheless better protected. Unlike in the United States, the price increases did not stretch the budgets of individual European and Japanese families, transportation companies and other oil and gas consumers to the breaking point.⁸

This comparison underscores one of the politically sensitive, but undeniable, realities of energy policy: price affects consumer behaviour. This is one of the fundamentals of market economics. If oil, gas and other energy sources are expected to remain inexpensive in the United States, rational American consumers will incorporate that expectation into their choices about energy-using devices. Consumers will hesitate before paying for high-efficiency lamps and air conditioners and dishwashers, all of which require higher capital outlays than more common, low-efficiency ones.

Few points are more universally accepted in US energy policy than the idea that higher energy prices are always to be avoided. Political leaders started posturing on energy policy when gasoline prices reached, and then passed, touch-points such as \$2 per gallon or \$3 per gallon. Sensible arguments about internalising energy 'externalities' – traditionally unpriced impacts such as urban air pollutants, greenhouse gas emissions or security vulnerability born of high energy intensity – typically get lost in the face of voters' desire for cheap energy products.

Infrastructure issues

A final element of energy security relates to energy infrastructure – both the physical systems and the institutional framework that enable energy systems to work. The significance of energy infrastructure became clear to many Americans during the electricity crises in California in 2000 and 2001.

California had undergone partial deregulation of its electric power market in the mid-1990s, and generation, transmission and distribution systems failed to keep pace with demand. The state experienced widespread rolling blackouts, especially in major metropolitan areas. The state's largest utility company filed for bankruptcy, and the state taxpayers ended up footing supercharged bills for imported power. Noisy recriminations followed the California crisis, but with time many analysts concluded that a particular form of deregulatory action had left the state's utility companies with neither the requirement nor the incentive to invest sufficiently in new plant and equipment, especially in transmission and distribution systems. In short, the institutional infrastructure was amended; the law of unintended consequences played out in a negative fashion; the physical infrastructure failed to keep pace with demand; instability and then crisis resulted.⁹

The challenge of global climate change also illustrates the centrality of energy infrastructure as an important component of energy security. Notwithstanding remaining uncertainties, the judgement of the international scientific community is that emissions of greenhouse gases are leading to a net warming of the atmosphere, and the vast majority of those emissions are associated with the burning of hydrocarbons for energy production. The costs of an effective global response to climate change are uncertain, as self-styled 'greenhouse sceptics' often emphasise, but so, too, are the costs of failing to respond effectively, and in a timely manner. Moreover, there are even questions about whether warming caused by continued greenhouse gas emissions will disrupt the operations of today's petroleum industry. For example, if we continue to use carbon-emitting energy systems, and if sea levels rise as they are projected to do, will global consumers be able to bear the costs of relocating or protecting vast coastal energy infrastructure and other port facilities to accommodate new sea levels? If storms grow more intense due to climate change, will it still be practicable to engineer off-shore oil and gas production platforms without more costly safeguards? If liquefied natural gas is poised to play a crucial bridging role, given the lower carbon-intensity of natural gas and increasing import requirements of major gas-consuming countries, will it be possible to find safe coastal sites for the massive liquefaction and re-gasification facilities that will be required?

Thus, energy security depends not only on price and supply characteristics, but also on infrastructure characteristics, including both 'software' – institutional dimensions – and 'hardware', the physical nature and impacts of the technologies employed. True though this may be, a question that still remains is why people outside the United States should care about whether American policymakers succeed or fail to provide for US energy security. The answer goes to both the implications of energy *in*security for US foreign policy and to the nature of our global energy economy.

The United States is a behemoth when it comes to global energy consumption. One-quarter of all primary energy is consumed in the United States, by 4% of the world's population. In a global energy marketplace, this means that incremental quantities of fuel used in the United States are not available for consumers in other countries. Throughout 2004 and early 2005, many American energy analysts noted that Chinese energy demand had exceeded projections by between one and two million barrels of crude oil per day. It therefore became conventional wisdom to attribute to China's economic explosion the high oil prices of that time. Eventually, some analysts started to notice and comment on the fact that US energy demand had also exceeded projections in the same period by roughly the same volumes.

This recent history underscores the fact that we live in a global energy marketplace. The diversion after Katrina and Rita to the United States from Europe of incremental cargos of gasoline contributed to higher pump prices for European consumers. The clamour for light, sweet crude oil – which is increasingly desired as the European Union and the United States move to stricter sulphur-emission standards, and increasingly scarce as incremental supply is only available from less-desirable, heavier, high-sulphur crude oils – increases the price premium that buyers elsewhere will have to pay for choice grades that may be required as a part of refineries' 'crude slates' or mixes of different feedstocks.

The International Energy Agency has emphasised repeatedly the massive need for upstream investments sufficient to meet projected demands of the coming two decades.¹⁰ If the United States skews investment incentives toward expensive remaining domestic reserves, due to a mistaken belief that equates domestic petroleum production with energy security, its policy will lead to capital misallocation and shortages of upstream investment monies available for more economic reserves elsewhere.

Today's insufficient attention to true American energy security also comes at a time of rising 'resource nationalism' in several key oil- and gas-producing countries, which poses additional challenges. More than half of the world's oil reserves are located in five countries where meaningful equity investment is not possible: Saudi Arabia, Iran, Iraq, Kuwait and Mexico.¹¹ In Russia, another key producing country, the last two years have brought a resurgence of state-owned energy titans, chiefly Gazprom, Rosneft and the crude oil transportation company Transneft, that are setting the agenda for which resources are developed, when and how. That each of these countries

*Analysts
started to
notice that
US energy
demand
had also
exceeded
projections*

should determine its own tempo of oil and gas development is, of course, that country's right. The foreign-policy question that looms, however, is how far the US government will go to gain access to oil and gas from these countries. If the United States fails to start the process of reducing its dependence on oil and gas, it leaves itself increasingly at risk of needing to make fundamental foreign-policy compromises in order to receive the energy resources it needs, concessions that may be harmful to its long-term international interests.

Energy policy debates in the United States

When George W. Bush entered the White House in January 2001, he declared that one of his first priorities would be the enactment of a new energy bill, and his administration identified energy security challenges as one of the chief obstacles to the country's economic growth.¹² Bush was not alone in highlighting energy as a looming problem: Vice President Al Gore also had energy on his mind when he ran for the presidency in 2000, as did Senator John Kerry when he campaigned in 2004. Gore spoke repeatedly about threats posed by 'Big Oil', and Kerry argued for 'energy independence'. Nonetheless, even after this protracted public attention, only in summer 2005 did the Congress pass the Energy Policy Act of 2005. And the lowest-common-denominator nature of that bill only highlights the fact that American policy processes have failed to establish a framework that encourages people to think seriously about future energy security and about a transition to lower energy intensity through long-term private and public investments. American political leaders have avoided the many difficult, and potentially unpopular, discussions that need to occur – such as how to protect coasts and tourist industries while allowing the construction of needed energy infrastructure. Political leaders appear either to lack the requisite understanding of the energy challenges, or to lack the will to refrain from cheap shots and quick fixes.

The Energy Policy Act of 2005, which President Bush signed on 8 August 2005, contains numerous sensible provisions that can be expected to make small incremental contributions to the health of the energy economy. Its coverage includes electricity, oil and gas, energy efficiency, and other energy technologies and sources. But it cannot be said that the law provides a clear blueprint for American energy security.¹³

Notably, the law does not include provisions addressing several of the most important energy issues. The law does not include any serious new initiative in response to global climate change. Nor does it call for increases in automobile fuel economy. Nor does it include renewable portfolio standards mandating the use of renewable power generation for a portion of electricity production, something that the environmental community supported. On the other hand, the law also fails to open ANWR to drilling, although Republicans in the Congress are

now working to include that controversial provision in a must-pass spending bill to be debated this autumn. Also missing is liability protection for producers of the gasoline additive MTBE.¹⁴ The Energy Policy Act of 2005 does not forge any new political consensus on where the United States needs to go in relation to energy policy. By stark contrast, a \$286-billion highway bill was passed a week after the energy bill by overwhelming bipartisan consensus. It contains a stunning array of pork-barrel projects that will further increase the nation's dependence on the automobile for transportation.

If the Energy Policy Act of 2005 lacks a clear vision of American energy security – even after four years of political debate and high oil prices – then two natural questions emerge: What would a better energy bill have looked like? And what kind of process could produce such a bill?

Possible answers to both of these questions can be found in the work of the National Commission on Energy Policy. The energy commission is a non-governmental, foundation-supported initiative that aims to foster bipartisan consensus in relation to future American energy policy. It has

Figure 2 National Commission on Energy Policy – Main Recommendations

- **Enhancing Oil Security**
 - Diversity of world oil production and strategic petroleum reserves
 - Vehicle efficiency standards
 - Incentives for new high-efficiency vehicles
- **Reducing Risks from Climate Change**
 - Mandatory tradeable permits programme for greenhouse gas emissions
 - Linkage between US actions and key developing country commitments
- **Increasing Energy Efficiency**
 - Efficiency standards for equipment, appliances and buildings
 - Utility support for efficiency improvements
 - Industrial energy efficiency
- **Ensuring Affordable, Reliable Energy Supplies**
 - Expanding and diversifying natural gas production
 - Advanced coal technologies, including carbon capture and storage
 - Nuclear energy issues
 - Renewable energy
- **Strengthening Essential Energy Systems**
 - Barriers to siting energy infrastructure
 - Protecting against system failure and terrorist threats
 - Diversifying generation resources
 - Electricity grid systems
 - Consumer and environmental protection for the power sector
- **Developing Energy Technologies for the Future**
 - Energy R&D funding, including private sector funding
 - Cooperative international R&D
 - Incentives for early deployment of new energy technologies

brought together 16 Republicans and Democrats – industry leaders and environmentalists, labour union representatives and academics, consumer advocates and policy veterans.¹⁵

Policy pronouncements from unelected leaders can be distant from the political give-and-take that prevails in the real world, but the commission's recommendations were not otherworldly. The commission members created a consensus package of policies and measures that they very specifically aimed to be revenue neutral.¹⁶ The choice to propose a *package* was conscious; it reflects the fact that the United States specifically needs real-world political debates on energy – open debates that will balance competing priorities but will establish a sensible course for the future.¹⁷

This is a message that, to date, the standard policy processes in Washington have been unable or unwilling to recognise and address. Instead, those processes produced an Energy Policy Act that is window dressing. With only modest caricature, one could suggest that the Republican side of the aisle is saying that US energy future can be assured if only the pesky environmentalists will stop impeding human progress, and (hope against hope) if great technological leaps occur before the next election. From the Democrats, meanwhile, one hears that nothing is broken that a few price controls and a heroic amount of windmills cannot solve. Neither of these notions should give Americans – or any other participants in our global energy economy – any sense of comfort.

Implications for US policy

The wake-up call administered by Katrina and Rita should remind the United States that it has failed to assure its energy security. Fixing this problem, however, will require that the United States overcome several difficulties. The greatest difficulty is that better energy security requires commitment to far-sighted decision-making that may exceed the capacity of the current policy process in the United States. US energy security cannot be improved by wishing for a return to energy self-sufficiency. Equally, energy security cannot be assured by placing excessive faith in a hoped-for hydrogen economy, which requires both technological breakthroughs and the establishment of massive new capital stock. What, then, is the answer?

Energy cooperation

The United States has a strong stake in preserving and enhancing mutually beneficial energy relationships with the rest of the world, producer and consumer nations alike. Robust trade and investment flows, technology cooperation and cooperative policy efforts are the threads that built an international energy economy that must now adjust and adapt to the changing demands of an energy-hungry but increasingly greenhouse-sensitive world.¹⁸

Within this context, it is essential for Americans, and especially American policymakers, to realise that the United States benefits – as do other countries – from a global energy system that is based on transparency, well-understood rules, and global access. If a Chinese firm wishes to acquire a major American energy company, as the China National Offshore Oil Corporation (CNOOC) did in the case of Unocal earlier this year, this too can fit comfortably with long-term American interests, as long as the acquisition is handled in a manner that reinforces transparency, market access and even-handed treatment of foreign investors in China and the United States alike. American policy should focus on encouraging big emerging energy consumers like China and India to have confidence and participate in a commercially based global energy market. The United States' interests are poorly served when eleventh-hour obstacles are erected because some in American politics have lost confidence in an international system that America strongly influences.

Equally, policymakers must recognise that the United States' own interests in relation to energy cooperation, as so many other forms of international cooperation, are enhanced by the use of diplomacy and soft power. There may come times when the United States or any country must act decisively – even unilaterally – in defence of its own vital interests. But if the United States is seen as constantly throwing its weight around, flaunting its status as the world's remaining superpower, it will only inspire other countries to conclude that they will not benefit from working cooperatively with the United States. Consequently, some countries will be more inclined to work outside of international norms.

This point applies particularly in the case of the response to global climate change. Having opted out of the Kyoto Protocol on reduction of emissions of greenhouse gases, the United States now carries the moral obligation of working actively to propose a better instrument that meets the challenges of timeliness, inclusiveness and market sensitivity. To date, the Bush administration has spared no effort to explain why Kyoto is less than ideal, and has instructed its diplomats to obstruct the Kyoto process, but has not engaged responsibly on the business of forging a superior international response.

Avoiding shocks

As the largest oil importer in the world, the United States has a strong interest in safeguarding global energy market conditions and protecting against shocks and instability. This interest translates into the need to give consumers a clear price signal through sustained, higher energy prices and other policies that create incentives to improve energy efficiency. Recent American actions in relation to domestic energy consumption and foreign

policy, however, have had just the opposite effects. The United States has shied away from requiring higher automobile fuel economy, a measure that would communicate to the world community that America was finally getting serious about getting its energy house in order. Instead, since the time of the energy crises in the 1970s, the bulk of technological innovation in automobiles has been applied to enhanced performance, not to greater efficiency. Fleet mileage has actually declined in the United States in recent years. Americans have bought more cars, and larger cars, than ever before. With each successive year, they drive them more and more.¹⁹ Consequently, US energy consumption in the transportation sector has shot upward, and it serves as *the* symbol of America's lack of care about its energy future.

In relation to foreign policy, the current administration's actions in the Middle East have done nothing to calm volatility in world oil markets. To many observers outside the United States and some inside the country, the war in Iraq appears to be a large-scale social experiment, the outcome of which is anything but assured. The uncertainty introduced by this war in the region where more than two-thirds of known oil reserves are located has only added to volatility in global energy markets. In addition, it is striking that, after 25 years of reaping the bitter fruit of support for the last Shah of Iran, the United States now increasingly finds itself painted into the same corner with the House of Saud. Will the current absolute Saudi monarchy outlive the petroleum age without major reform? If not, when it does fall, how exposed will the United States be to the ensuing energy market

*Even small
supply
disruptions
send prices
skyrocketing*

calamity? To what extent will the United States have begun the decades-long process of reducing energy intensity and reducing the world's and America's own reliance on oil and gas from the Persian Gulf?

Traders routinely speak to the press about the extent to which the market is injecting an 'uncertainty premium' into the prices that it demands from futures market participants. With so little spare capacity for crude oil production and refinery output, even small supply disruptions send prices skyrocketing. Recognising this, the United States must actively encourage greater conservation at home. In

addition, the United States should pursue a foreign policy that emphasises – wherever possible – enfranchisement, opportunity and internally driven political change.

Investment for change

Another critical policy need stemming from America's energy security situation is for market-driven change that will facilitate private sector investment.

Governments cannot be expected to meet the investment requirement that the International Energy Agency has been predicting. This means intelligent policy frameworks are required that encourage private investment today – in both efficiency and new oil and gas production – and encourage risk-taking and innovation for tomorrow.

To vilify ‘Big Oil’ or, worse yet, to call for energy price controls in the post-Katrina/Rita period is exactly the wrong step. In a market economy, higher prices cannot automatically be equated with price gouging, as some have charged. Often, higher prices are the essential signals for consumers to conserve and use scarce resources more efficiently. In fact, according to the head of the Energy Information Administration, gasoline demand decreased by 3% in the period from early September 2005, just after Katrina hit, until early October, after Rita hit.²⁰ The price signal did its job.

The United States needs enlightened corporate titans, far-sighted policymakers and individual entrepreneurs alike to pave the path to its energy future. To resort to ruinous policy tools that have failed before is exactly the opposite of what is needed. In cases where companies manipulate the markets, then they must be brought to account through vigorous anti-trust or price-fixing actions. But the last thing the United States needs is to turn back the clock to price controls and other US energy policies from the 1970s that would bring disastrous market distortions.

* * *

American political leaders, and the American public, need to be forthright about the tradeoffs implicit in energy policy, investment and consumption choices. Americans cannot expect greater energy security unless the country changes course. The United States will experience more disruptions like those brought by Katrina and Rita if there continues to be no serious policy discourse and political consensus-building for a new and sustainable energy path in the future.

Notes

¹ For information on the price of benchmark crude oils, see data available at <http://www.eia.gov>. As is discussed below, high US gasoline prices are significantly lower than prevailing prices in most other OECD countries.

² Russell Gold, Bhushan Bahree and Thaddeus Herrick, ‘Storm Leaves Gulf Coast Devastated’, *Wall Street Journal*, 31 August 2005, and ‘Post-Katrina US

Gulf Shut-Ins at 870,374 Barrels/Day, or 58.02%: Minerals Management Service’, *Platt’s Global Alert*, 6 September 2005. See also David Ivanovich, ‘Southern Exposure Reveals a Weakness’, *Houston Chronicle*, 4 September 2005.

³ Despite the surge in gasoline prices, US retail prices pale by comparison to those in many other industrialised countries. In the United Kingdom

- during September 2005, for example, retail prices hovered around £1 per litre, roughly the equivalent of \$7 per gallon.
- 4 Ron Gold, John Lichtblau and Larry Goldstein, 'Energy Policy Act of 2005 Leaves US with Open Issues', *Oil and Gas Journal*, vol. 103, no. 32, 22 August 2005, p. 20.
 - 5 In mid-October 2005, as this essay went to press, the US Congress was debating measures that would significantly reduce the off-shore oil ban and streamline approvals for new energy infrastructure such as new LNG terminals and refineries. See, for example, Richard Simon and Kenneth R. Weiss, 'Plan for Coastal Drilling Emerges', *Los Angeles Times*, 3 October 2005 and Tom Fowler, 'Seeing a Need to Refine a Plan', *Houston Chronicle*, 6 October 2005.
 - 6 Remark by Daniel Yergin at a book launch programme at the Woodrow Wilson International Center for Scholars, 14 September 2005.
 - 7 US Energy Information Administration, *Annual Energy Outlook 2004, with Projections to 2025*, available at <http://www.eia.doe.gov/oiaf/aeo/gas.html>.
 - 8 Tax levels are obviously not the only energy difference between the United States and Japan or Western Europe. The continental land mass and climate of the United States dictate very different energy usage patterns: There are greater distances for goods to be transported across, greater swings of summer heat and winter cold to be survived. Nonetheless, Western Europe and Japan have made conscious policy choices that have reduced their vulnerability to oil price shocks.
 - 9 For a review of the California energy crisis, including a chronology, background and analysis, see <http://www.pbs.org/wgbh/pages/frontline/shows/blackout/>.
 - 10 The International Energy Agency's *World Energy Outlook* series has repeatedly emphasised the need for investments. See, for example, <http://www.iea.org/Textbase/npsum/WEO2004SUM.pdf>.
 - 11 The authors acknowledge with appreciation the commentary of Bud Coote on this topic.
 - 12 Vice President Cheney chaired an energy policy group at the beginning of the first Bush term. Its findings were widely understood to be the definitive statement of the administration's views on energy issues. The policy group was controversial because it selectively involved energy companies in the formulation of national energy policy. This triggered political controversy and lawsuits under America's 'sunshine act' laws. For an indication of the administration's focus on energy security, see <http://www.whitehouse.gov/energy/Chapter1.pdf>.
 - 13 The text of the Energy Policy Act of 2005 is at http://energy.senate.gov/public/index.cfm?FuseAction=IssueItems.View&IssueItem_ID=21. Several good analyses of the act are now available, including Shirley Neff, 'Review of the Energy Policy Act of 2005', <http://www.cemtp.org/PDFs/EnergyBillHighlights.pdf>; Perkins Coie LLP, 'Summary of the Energy Policy Act of 2005', <http://www.perkinscoie.com/content/ren/updates/energy/080105.htm>; Martin Klepper, Clifford Naeve and William S. Scherman, 'Analysis of the Energy Policy Act of 2005', available at <http://www.skadden.com/Index.cfm?contentID=51&itemID=1065> and Gold *et al.*, 'Energy Policy Act of 2005'.
 - 14 Producers of methyl tertiary butyl ether (MTBE) were threatened with massive lawsuits after leakage of the gasoline additive into the water table in several states.
 - 15 For information on the genesis and makeup of the National Commission on Energy Policy, see the commission's website at <http://www.energycommission.org/about/>.
 - 16 Whether or not the recommendations would in implementation be revenue neutral is unclear, but the philosophical implication is the essential matter:

the commission consciously chose to use the fiscal signal to help re-shape energy usage. For a summary of the fiscal outlines of the commissions recommendations, see Table 1 of the commission's final report, *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges* (Washington DC: National Commission of Energy Policy, December 2004), p. xiv.

¹⁷ *Ibid.*, pp. iv and v.

¹⁸ The cardinal importance of international energy cooperation is one of the many compelling points that is presented in a new book on energy security, edited and partially authored by David L. Goldwyn and

Jan H. Kalicki. See especially Kalicki and Goldwyn's own articles that serve as the book-ends for the book, 'Introduction: The Need to Integrate Energy and Foreign Policy' and 'Conclusion: Energy, Security, and Foreign Policy', in *Energy and Security: Toward a New Foreign Policy Strategy* (Washington DC: Wilson Center Press and Johns Hopkins University Press, 2005).

¹⁹ For historical data on vehicle-miles traveled, see <http://www.eia.doe.gov/emeu/aer/txt/ptbo208.html>.

²⁰ Guy Caruso, Administration of EIA, as reported in *Platt's Global Alert*, 6 October 2005.

