

# ENERGY SECURITY IN THE 21<sup>ST</sup> CENTURY

## A NEW NATIONAL STRATEGY

JULY 2006

# ENERGY SECURITY IN THE 21<sup>ST</sup> CENTURY

## A NEW NATIONAL STRATEGY

REPORT OF THE NATIONAL SECURITY  
TASK FORCE ON ENERGY

### Task Force Members

Madeleine K. Albright  
Samuel R. Berger  
Rand Beers  
Carol Browner  
William Danvers  
Tom Daschle  
John Deutch  
Thomas J. Downey  
Michèle A. Flournoy  
Leon Fuerth  
Suzanne George

Denis McDonough  
James C. O'Brien  
Peter Ogden  
John Podesta  
Susan E. Rice  
Wendy R. Sherman  
Gayle Smith  
Tara Sonenshine  
Jim Steinberg  
Timothy E. Wirth

The people listed above have endorsed this report as individuals, not as representatives of their respective organizations. Their endorsement does not necessarily indicate agreement with each specific recommendation.

President Bush has declared that America is addicted to oil and dangerously dependent on unstable or hostile states for its energy supply. But while there is a consensus across the political spectrum that the current energy strategy is failing, Democrats and Republicans fundamentally disagree about what should be done to address the threats posed by America's dependence on foreign oil and the potentially catastrophic environmental damage caused by carbon emissions from the use of fossil fuels.

The Bush administration has demonstrated a willingness to acknowledge the existence of such energy security challenges, but it has failed to implement a plan to meet them.

In this report, leading energy and national security experts present a new, comprehensive energy security strategy that will put the United States on a path toward energy independence while enhancing our national, economic, and environmental security.

This strategy breaks with the Bush administration's approach by offering concrete steps to:

- Reduce dependence on foreign oil and natural gas.
- Confront the threat posed by climate change.
- Increase the viability of nuclear energy by eliminating key proliferation threats posed by nuclear energy technologies.
- Protect and modernize the global energy infrastructure and distribution channels.
- Build a cooperative energy security environment with traditional allies and potential partners.

## The Threats

The Bush administration's energy policy has made the United States more vulnerable. It has failed to reduce dependence on foreign oil, failed to address the proliferation threats posed by nuclear energy technologies, failed to protect and modernize the global energy infrastructure, failed to combat climate change, and failed to foster a cooperative energy security relationship between and among allies and potential partners.

**America's oil addiction has worsened.** Since 2001, America's dependency on foreign oil has steadily increased even as the cost of oil has more than doubled. The Bush administration's approach to this challenge has been to concede that there is a crisis while opposing new policies or strategies that would change the status quo. In his 2006 State of the Union address, President Bush declared that America is addicted to oil, but in the days and weeks that followed his administration failed to adopt a new energy policy or support adequate funding for new initiatives that would significantly reduce the country's oil dependency.

In the absence of meaningful action on this issue, the United States will only continue to spend hundreds of thousands of dollars each minute on foreign oil, while at the same time compromising its foreign policy objectives by funding unstable or hostile regimes in oil rich regions that threaten its national security.

**The threats posed by climate change continue to grow.** Climate change poses a significant and increasingly imminent security threat to the United States and the world, but the Bush administration continues to block domestic and international efforts to meet this challenge.

Scientists project that the earth's average temperature will increase 2 to 10°F (1.4 to 5.8°C) over the next 100 years if the appropriate steps to reduce greenhouse gas emissions are not taken, and there are scenarios in which the temperature change could be more severe and occur more quickly. According to a report issued by the U.S. State Department, an increase in the earth's temperature would cause sea levels to rise (threatening coastal areas where 53 percent of Americans live), increase the frequency and severity of storms, bring about the widespread destruction of ecosystems, and lead to more heat waves and droughts.

Nor is climate change simply a problem for the future: It is already impacting the intensity of wildfires, droughts, and extreme weather. Hurricanes, for instance, feed off the energy in warming waters, and scientists have linked a rise in hurricane intensity to global warming.

The world's poorest people — those least responsible for climate change — are particularly vulnerable to its effects, in part because they live in areas more prone to natural disasters, drought, and disease. Some 14 countries in Africa are already subject to water stress and that number will almost double within the next 25 years. Crop yields in sub-Saharan Africa are projected to fall by 20 percent under global warming, while climate change induced famine could displace more than 250 million people worldwide by 2050. Over time, the consequences of global warming could spark mass migrations and exacerbate geopolitical instabilities, as well as defeat efforts to reduce poverty and combat the spread of disease around the world.

Nevertheless, the Bush administration has steadfastly refused to acknowledge the urgency and magnitude of this threat. The United States cannot postpone tackling this threat any longer: Scientists are warning that the world could be fast approaching a “tipping point” where the damage caused by global warming will be severe and irreversible.

**The Bush administration has failed to eliminate key proliferation threats posed by nuclear energy technologies.** For nuclear power to play an increasingly important role as an energy source for countries attempting to curb carbon emissions, the United States must reduce the threat of proliferation that accompanies nuclear energy programs. The current crisis with Iran illustrates this threat: The same technology and facilities that Iran uses to enrich uranium to low levels for fuel can be used to enrich uranium to high levels for bombs. Likewise, the technology and facilities that are used to reprocess spent fuel rods for disposal can be used to separate material for use in nuclear weapons.

The Bush administration has proved unable to confront this proliferation challenge. Over the past six years, it has:

- Failed to halt the advancement of Iran’s and North Korea’s nuclear weapons programs.
- Arranged a nuclear deal that will lift restrictions on India’s nuclear program without requiring that India fully comply with the terms of the Nuclear Nonproliferation Treaty, limit its production of fissile material, or submit to international safeguards on some of its nuclear facilities.
- Failed to follow up on President Bush’s February 11, 2004 proposal to halt all sales by the Nuclear Suppliers Group of “enrichment and reprocessing equipment and technologies to any state that does not already possess full-scale, functioning enrichment and reprocessing plants.”

**The global energy infrastructure and distribution channels have not been adequately protected or modernized.** The global energy infrastructure and the distribution channels used by the United States and the entire international community remain dangerously vulnerable; yet, no comprehensive strategy for protecting and modernizing them has been implemented.

The colossal scale of this infrastructure in the United States alone – over 160,000 miles of crude oil pipelines, 4,000 off-shore platforms, 10,400 power plants, and 160,000 miles of transmission lines – makes providing security a daunting challenge. However, there is a tremendous risk associated with not investing in infrastructure resiliency and redundancy, as demonstrated by the blackouts in August 2003.

Terrorist attacks, in particular, pose a grave threat. In a videotape released last December, deputy al Qaeda leader Ayman al-Zawahiri singled out energy infrastructure as a key strategic target for his followers. Just two months later, suicide bombers in Saudi Arabia attacked the Abqaiq oil processing facility, where two-thirds of the country’s output – 6.8 million barrels per day – is refined.

In addition, given the lack of alternative export routes for most of the Middle East’s oil, attacks carried out against oil tankers on the Strait of Hormuz could disrupt the transit of up to 17 million barrels of oil per day. Iran, which has troops stationed on an island located near the straits’ entrance, is well positioned to carry out such attacks.

Local groups in Nigeria, meanwhile, have executed a series of successful attacks on the country’s pipeline network as well as on the personnel of international energy companies, causing a decline in production and revealing the vulnerability of the existing energy infrastructure, not just in the Middle East but all over the world.

**The United States must do more to build a cooperative energy security environment with and among traditional allies and potential partners.** Whether the issue is access to oil, nuclear nonproliferation, infrastructure protection, or climate change, a unilateral approach to energy security is doomed to fail.

In the absence of such cooperation, energy competition alienates potential partners and exacerbates political tensions between rivals, creating a more volatile global energy market and making cooperation on other issues of mutual concern more difficult. For instance, China and Japan's ongoing dispute over drilling rights in the East China Sea should not be allowed to fester indefinitely, as it only complicates efforts to work together in the Six-Party Talks and other forums.

The United States needs to do more to resolve energy disputes, coordinate its energy policies with those of its allies, and seize opportunities for strategic cooperation with rapidly developing countries (such as China and India) that will account for much of the world's new energy demand for years to come.

## The Way Forward

**R**educe dependence on foreign oil and natural gas. In the years to come, countries in the Middle East and other unstable regions are poised to control an increasing share of the world's oil and natural gas markets. The United States must meet this challenge by diversifying its energy mix away from oil, maximizing domestic production of fossil fuels while complying with rigorous environmental standards, curtailing energy demand, and hedging against the threat of supply disruption by diversifying sources of supply for itself and its allies.

- Set a goal of producing at least 25 percent of the liquid fuel consumed in the United States from renewable sources by 2025. To achieve this goal, both the federal government and industry must boost their investments in biofuels, particularly in the research and development of cellulosic ethanol. An aggressive strategy to replace oil and gas with renewable fuels cannot rely solely on corn based ethanol. Cellulosic ethanol, meanwhile, has the potential to become the most cost-effective liquid fuel source for the United States. In the future, it could require little — if any — government support, especially in a carbon constrained economy where the market will put a premium on cleaner burning low carbon fuels.

- Establish a counter-cyclical tax on liquid fuels for cars, trucks, and airplanes that is triggered only when the price of oil falls low and with all revenue dedicated for alternative energy R&D and the Low Income Home Energy Assistance Program (LIHEAP). Establishing a reasonable liquid fuel price base would encourage the production and purchase of fuel efficient vehicles; it would spur investment in new energy technologies by insulating investors from the financial impact of any sudden, if temporary, drop in the price of oil (which OPEC could instigate by deliberately flooding the market); and it would generate revenue for alternative energy R&D and LIHEAP.
- Create additional incentives and mandates to increase energy efficiency and reduce overall demand for transportation fuel and natural gas. This will require raising the Corporate Average Fuel Economy (CAFE) standards, as well as offering incentives for the U.S. automotive industry to increase average fuel efficiency in each vehicle category. The United States can also use natural gas more productively by boosting standards and incentives for industrial energy efficiency and cogeneration capacity (i.e., the ability to produce heat and power simultaneously).
- Promote the development of a global liquefied natural gas (LNG) market. This will make natural gas into a more fungible commodity, thereby reducing the likelihood of targeted embargoes and helping to bring the world's vast untapped natural gas resources to market. This issue is particularly pressing for the United States' European allies, many of whom are becoming increasingly dependent on natural gas from Russia and Algeria. The U.S. Department of Energy's Energy Information Administration forecasts that Western Europe will be importing more than 40 percent of its natural gas by 2015 and more than 50 percent by 2025.
- Invest in more diverse and resilient domestic natural gas infrastructure. The demand for clean burning natural gas has increased in the past five years, but limited pipeline capacity and liquefied natural gas (LNG) infrastructure are constraining growth. The federal government must review impediments to the placement of new natural gas pipelines and develop a plan to improve natural gas delivery that enhances security and retains appropriate public and environmental reviews. The government should also ensure that new LNG terminals are constructed in accordance with similar review standards and away from population centers.
- While moving existing technologies to market as quickly as possible, continue long-term research into the deployment of plug-in hybrid vehicles, the commercialization of lightweight materials and advanced internal combustion engines, and the viability of synthetic fuels (such as the production of liquefied coal using carbon capture and sequestration technology) and hydrogen fuel cells.
- Promote the production of oil and natural gas outside of the Middle East and outside of OPEC. In the short term, the United States should seek to weaken the Middle East's and OPEC's influence over oil and natural gas supply by promoting responsible investment in alternative regions and alternative transit routes. Though the prospects are limited, it remains strategically important — both for the United States and its allies — to promote the diversification of global supply. The Caspian Sea region, for instance, holds significant potential: the Kashagan oil field alone is among the biggest discoveries in decades, with reserves that could be considerably larger than those of the North Sea. China has recently completed the first stage of a pipeline to Kazakhstan in order to access its reserves, though much more international investment is needed. There is also the potential for additional exploration and production off of the west coast of Africa.

**Confront the threat posed by climate change.** The Bush administration has been an obstacle to international efforts to reduce greenhouse gas emissions. The United States must immediately re-engage in international climate change negotiations and provide the leadership needed to reach a global, binding climate agreement. The United States must also take the following steps to reduce its own greenhouse gas emissions (which currently account for 25 percent of the world's total) as well as those of other countries.

- Develop a national greenhouse gas emissions cap-and-trade system based on those developed by the Northeastern states and the European Union. By limiting greenhouse gas emissions and creating an emission credit market, the system would reduce global warming pollution and encourage investment in technologies that reduce emissions.
- Require that all new coal plants built in the United States be subject to the terms of any future national cap-and-trade system. This provision, which must apply to both pulverized coal plants and integrated gasification combined cycle (IGCC) plants, would prevent companies from rushing to construct new plants in an effort to remain exempt from forthcoming carbon cap-and-trade regulations. It would also encourage companies to begin preparing immediately for the transition to a carbon constrained economy.
- Until the national carbon cap-and-trade system is in place, establish a national Renewable Portfolio Standard (RPS) mandating that 10 to 25 percent of domestic electricity be produced from renewable sources and responsibly generated nuclear power by 2025. The RPS would complement the proposed requirement that 25 percent of liquid fuel be produced from renewable sources by 2025. To reach this RPS target, the United States must support the development and implementation of new technologies to complement industry efforts to improve efficiency and reduce overall demand. The federal government

should also adopt the best of the state efficiency efforts, including some of those that have enabled California to keep its per capita electricity consumption level flat over the past three decades while the rest of the nation's demand grew 60 percent.

- Complete carbon dioxide capture and sequestration demonstration projects to establish the costs and benefits of this coal technology.
- Provide loan guarantees and other incentives to countries with rapidly growing economies (such as China and India) for the construction of new coal-fired plants with carbon capture and storage capability. Financial support could enable these countries to buy new integrated gasification combined cycle (IGCC) plants.
- Assist developing countries in their efforts to build efficient and environmentally sustainable domestic energy infrastructures. Many developing countries are only beginning to establish this infrastructure, and with the guidance and technological assistance of the United States, the World Bank, and others, they can avoid the trap of oil dependence and make better use of renewable fuels and clean forms of energy.
- Continue research into the development of safe, cost-effective nuclear power that addresses the problems currently posed by: the threat of proliferation; the management of nuclear wastes; the perceived safety, environmental, and health risk; and the high relative costs of production.

**Eliminate key proliferation threats posed by nuclear energy technologies.** The existing nonproliferation regime and its safeguards must be updated and expanded for nuclear energy to become a viable alternative to coal-fired power generation around the globe.

In order to address the threat of proliferation, the United States must lead efforts to:

- Close the fuel cycle loophole of the Nuclear Nonproliferation Treaty (NPT), which allows NPT signatories to acquire facilities that can be used to produce weapons-usable fissile materials under the guise of a peaceful nuclear research or energy program. To this end, the United States should help to build an international system in which select countries with full fuel cycle capacity commit to providing, removing, and storing nuclear fuel for any country that forswears all national enrichment and reprocessing programs and submits to international safeguards.
- Increase and strengthen inspections of suspected illegal nuclear facilities and promote the development of a multinational spent fuel storage system by expanding the responsibilities and authority of the International Atomic Energy Agency.
- Reduce nuclear terrorism by expanding and accelerating Cooperative Threat Reduction Programs. For more than a decade, these programs have helped to secure or destroy hundreds of tons of vulnerable weapons-grade materials across the former Soviet Union. These programs have also improved the security over Russia's nuclear weapons and provided alternative employment and training to thousands of former weapons scientists. In recent years, however, progress on securing vulnerable materials has been inadequate.
- Accelerate efforts to "clean out" weapons-usable highly enriched uranium from nuclear research reactors worldwide.

- Ensure that nuclear cooperation efforts do not undermine the international nonproliferation regime. For instance, Congress should not approve the Bush administration's proposed nuclear deal with India unless India agrees to meaningful, verifiable constraints on its production of fissile materials and additional safeguards. The Fissile Material Cutoff Treaty (FMCT) currently being advanced by the Bush administration will only meet this objective if it is bolstered with verification measures.
- Reject any proposal to change the United States' longstanding policy of not reprocessing spent fuel from commercial nuclear reactors. Also, oppose all initiatives to separate plutonium from other nations' used fuel and develop reactors dependent on reprocessed plutonium. Reprocessing has numerous environmental, health, and proliferation risks, and no benefit in terms of nuclear waste disposal. The United States must instead pursue an interim storage policy at reactor and federal sites that provides the country with time to arrive at a safe and environmentally sound geologic disposal option.

**Protect and modernize the global energy infrastructure and distribution channels.** In an increasingly global energy market, a disruption at a single strategic point in the distribution system can have dramatic economic consequences around the world. The United States should work to defend the unrestricted flow of oil and gas supplies, strengthen and diversify the distribution networks for oil, gas, and electricity (e.g., the network of pipelines, transmission lines, and terminals), and maintain a strong emergency response system to cope with — and deter — disruptions and embargoes. To achieve these goals, the United States must:

- Strengthen national regulations for security at nuclear power reactors and other nuclear facilities where theft or sabotage poses a catastrophic threat. These reactors or facilities should be able to detect and repel a team of suicide attackers. Particular attention needs to be paid to the vulnerability of cooling pools for spent fuel rods.

- Implement the top priority recommendations of the National Strategy to Secure Cyberspace, including efforts to secure computer networks at nuclear power plants and power companies.
- Develop a “smart grid” electrical system. While markets reward efficiency, improved security requires sufficient redundancy to minimize the impact of energy disruptions, whether caused by natural, manmade or terrorist events. A “smarter” electrical grid would help to prevent a reoccurrence of the cascading system failure that affected the northeastern United States and Canada in August 2003. It would also encourage the development of new markets for distributed generation of domestic renewable energy.
- Develop geographically diverse strategic gasoline and jet fuel reserves within the United States, as well as maintain the existing strategic petroleum reserve. Geographical diversity could be achieved by setting minimum inventory requirements for domestic oil refineries. In addition, the procedures for releasing oil and gas from these stockpiles must be made more transparent so as to reduce market speculation and price volatility.
- Promote new transit routes and pipelines that can reduce pressure on vulnerable choke points (e.g., the Strait of Hormuz and Strait of Malacca) or bypass Russia and the Middle East (as does the Baku-Tbilisi-Ceyhan pipeline).
- Promote international security standards for oil refineries and LNG plants, as well as for oil and natural gas transshipment points.

**Maximize energy security by coordinating policies with traditional allies and potential partners.** In order to develop opportunities for strategic cooperation on energy security issues, the United States must promote the development of a global rules-based energy market. The politicization of energy resources — whether it be through a supply embargo or unnecessary restrictions on foreign investment — only generates higher energy prices and creates competition where there could be cooperation.

- Establish a formalized partnership between the International Energy Agency (IEA) and both China and India. Founded in the wake of the 1973-1974 oil crisis, the IEA has become an important forum for international cooperation on energy security issues. It facilitates information sharing on energy markets and technologies, and its oil stockpile requirement ensures that oil importing member countries build and maintain strategic reserves. It is also a useful forum for coordinating emergency responses (e.g., the drawdown of strategic oil reserves or the rerouting of shipments). Given India’s and China’s importance as energy consumers, it is essential that the IEA establish a formalized partnership with them. Doing so would enhance the IEA’s planning and information sharing programs, and it would expedite the development of strategic petroleum reserves in China and India.
- Utilize appropriate mechanisms to develop new rules and regulations for international energy transactions and acquisitions. The China National Offshore Oil Company’s (CNOOC) failed bid for Unocal, for instance, was not the last time that America’s energy companies or assets will attract the interest of foreign investors, and it is important to establish clear guidelines for when such transactions will be allowed. The Department of Energy has since determined that CNOOC’s acquisition of Unocal would not have posed an energy security threat, and the United States must be careful in the future not to increase China’s mistrust of the global energy market — a mistrust that drives China’s aggressive pursuit of long-term government-to-government energy deals.

- Provide military training and technological assistance to the Malaysian and Singaporean forces that are responsible for securing the Strait of Malacca, as well as promote cooperative regional security measures in the Bosphorus and at other key transit points worldwide.
- Work to develop and enforce new legislation and investment guidelines that bolster international anti-corruption efforts such as the UN Convention against Corruption and the OECD Anti-bribery Convention. Corruption plagues oil and gas rich countries around the world, and it poses an ongoing threat to regional stability. The United States should lead efforts to compel OECD banks to disclose all deposits made by foreign leaders that are derived from the sale of oil and natural gas. Such measures would also be useful in tracking terrorist financial networks.

## TASK FORCE MEMBERS

Madeleine K. Albright  
Samuel R. Berger  
Rand Beers  
Carol Browner  
William Danvers  
Tom Daschle  
John Deutch  
Thomas J. Downey  
Michèle A. Flournoy  
Leon Fuerth  
Suzanne George  
Denis McDonough  
James C. O'Brien  
Peter Ogden  
John Podesta  
Susan E. Rice  
Wendy R. Sherman  
Gayle Smith  
Tara Sonenshine  
Jim Steinberg  
Timothy E. Wirth

## A NEW NATIONAL STRATEGY

# ENERGY SECURITY IN THE 21<sup>ST</sup> CENTURY

NATIONAL SECURITY TASK FORCE ON ENERGY