

BLUEPRINT FOR A SECURE ENERGY FUTURE



March 30, 2011

Table of Contents

I. Introduction

II. Executive Summary

III. Develop and Secure America's Energy Supplies

- Expand Safe and Responsible Domestic Oil and Gas Development and Production
- Lead the World Towards Safer, Cleaner, and More Secure Energy Supplies

IV. Provide Consumers with Choices to Reduce Costs and Save Energy

- Reduce Consumer Costs at the Pump with More Efficient Cars and Trucks
- Cut Energy Bills with More Efficient Homes and Buildings

V. Innovate Our Way to a Clean Energy Future

- Harness America's Clean Energy Potential
- Win the future through Clean Energy Research and Development
- Lead by Example: The Federal Government and Clean Energy

Introduction: *Blueprint for a Secure Energy Future*

“We cannot keep going from shock to trance on the issue of energy security, rushing to propose action when gas prices rise, then hitting the snooze button when they fall again. The United States of America cannot afford to bet our long-term prosperity and security on a resource that will eventually run out. Not anymore. Not when the cost to our economy, our country, and our planet is so high. Not when your generation needs us to get this right. It is time to do what we can to secure our energy future.”

President Obama, March 30, 2011

Rising prices at the pump affect everybody – workers and farmers; truck drivers and restaurant owners. Businesses see it impact their bottom line. Families feel the pinch when they fill up their tank. For Americans already struggling to get by, it makes life that much harder. Demand for oil in countries like China and India is only growing, and the price of oil will continue to rise with it. That’s why we need to make ourselves more secure and control our energy future by harnessing all of the resources that we have available and embracing a diverse energy portfolio.

Every president since Richard Nixon has called for America’s independence from oil, but Washington gridlock has prevented action again and again. If we want to create a more secure energy future, and protect consumers at the pump, that has to change. When President Obama took office, America imported 11 million barrels of oil a day. Today, he pledged that by a little more than a decade from now, we will have cut that by one-third, and put forward a plan to secure America’s energy future by producing more oil at home and reducing our dependence on oil by leveraging cleaner, alternative fuels and greater efficiency.

We’ve already made progress toward this goal – last year, America produced more oil than we had in the last seven years. We’re taking steps to encourage more offshore oil exploration and production – as long as it’s safe and responsible. And, because we know we can’t just drill our way out of our energy challenge, we’re reducing our dependence on oil by increasing our production of natural gas and biofuels, and increasing our fuel efficiency. Last year, we announced ground-breaking fuel efficiency standards for cars and trucks that will save consumers thousands of dollars and conserve 1.8 billion barrels of oil.

And beyond our efforts to reduce our dependence on oil, we must focus on expanding cleaner sources of electricity, including renewables like wind and solar, as well as clean coal, natural gas, and nuclear power – keeping America on the cutting edge of clean energy technology so that we can build a 21st century clean energy economy and win the future.

To help us reach these goals, the *Blueprint for a Secure Energy Future* outlines a three-part strategy:

- **Develop and Secure America's Energy Supplies:** We need to deploy American assets, innovation, and technology so that we can safely and responsibly develop more energy here at home and be a leader in the global energy economy.
- **Provide Consumers With Choices to Reduce Costs and Save Energy:** Volatile gasoline prices reinforce the need for innovation that will make it easier and more affordable for consumers to buy more advanced and fuel-efficient vehicles, use alternative means of transportation, weatherize their homes and workplaces, and in doing so, save money and protect the environment. These measures help families' pocketbooks, reduce our dependence on finite energy sources and help create jobs here in the United States.
- **Innovate our Way to a Clean Energy Future:** Leading the world in clean energy is critical to strengthening the American economy and winning the future. We can get there by creating markets for innovative clean technologies that are ready to deploy, and by funding cutting-edge research to produce the next generation of technologies. And as new, better, and more efficient technologies hit the market, the Federal government needs to put words into action and lead by example.

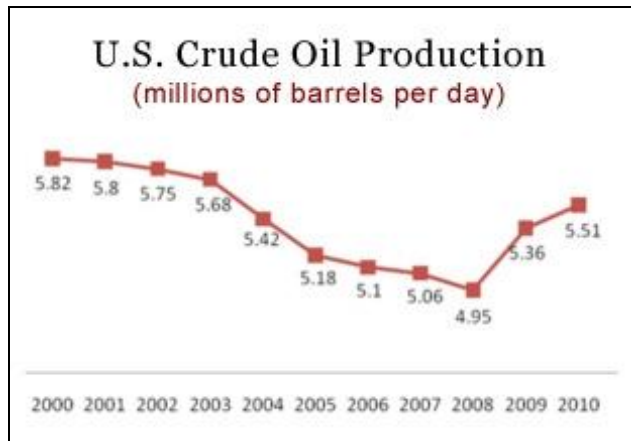
What follows is a roadmap that aims to distill some of the challenges at hand, and to outline strategies for surmounting those challenges that build on the strong record of what the Obama Administration has already accomplished and set in motion.

Executive Summary: *Blueprint for a Secure Energy Future*

Develop and Secure America's Energy Resources

Expand Safe and Responsible Domestic Oil and Gas Development and Production

Even as we develop next generation energy technologies, we will continue to rely on oil and gas.



Source: EIA

encouraging the exploration of new frontiers of production and of new ways to safely make use of domestic assets like our vast reserves of natural gas.

Last year, U.S. crude production reached its highest level since 2003. But we must ensure that production is safe, responsible, and efficient. In the wake of *Deepwater Horizon*, the Administration has reformed safety and environmental standards for oil and gas exploration, making structural reforms within the Department of the Interior to improve oversight. At the same time, we are encouraging exploration, development, and production—rewarding industry for effectively and responsibly utilizing resources that belong to the American people. Additionally, we are

Lead the World Towards Safer and More Secure Energy Supplies

We know that markets are global. The recent crude oil price increases, which translate into higher prices at the pump, have many causes, including the global economic recovery and unrest in the Middle East. But a major cause of the recent price rise is the concern that global oil demand will outpace supply over the next few years. The dependence of the global vehicle fleet on oil makes this problem especially acute. That's why we are working to reduce oil demand and increase reliable supplies of oil around the world in the years ahead, as we also work to diversify the fuel mix in our vehicle fleets. We have already taken, and will take more, steps at home both to reduce oil demand through efficiency, technology, and conservation and to increase domestic production in a manner that is safe and protects our environment. We are also acting in the international arena to moderate global oil demand and secure additional supplies of liquid fuels.

Provide Consumers with Choices to Reduce Costs and Save Energy

Reduce Consumer Costs at the Pump with More Efficient Cars and Trucks

Transportation is the second costliest expense for most American households, and it's responsible for more than 70 percent of our petroleum consumption. So, one of the best ways to make our economy less dependent on oil – and save consumers money – is simply to make our transportation more efficient. Since taking office, President Obama has taken bold steps to transform these challenges into opportunities across the transportation sector. These efforts

include the historic investments in advanced vehicle and fuel technologies, public transit, and high speed rail under the Recovery Act, as well as the ambitious new fuel economy standards put into place for cars and trucks – which will raise average fuel economy to 35.5 miles per gallon by 2016, and save 1.8 billion barrels of oil over the lifetime of the vehicles covered. These actions are already helping to lower transportation costs by reducing our dependence on oil, provide more transportation choices to the American people, and revitalize the U.S. manufacturing sector.

But we need a sustained effort, which is why the President set an ambitious goal that by 2015 we would have 1 million electric vehicles on the road, becoming the world’s leader in advance vehicle technologies. To help reach this goal, the President is proposing bold steps to improve the efficiency of all modes of transportation, from air to highways to rail to water, and to develop alternative fuels. He is continuing to push forward on fuel economy standards for cars and trucks. He has proposed to speed the adoption of electric vehicles with new more effective tax credits for consumers and support for communities that create an environment for widespread adoption of these advanced vehicles in the near term. And he is taking steps to encourage increased use of biofuels.

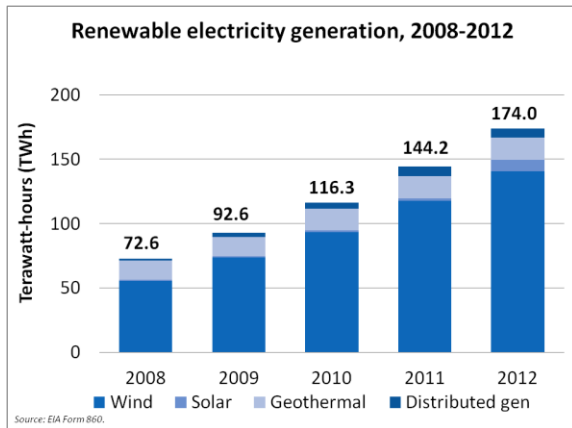
Cut Energy Bills with More Efficient Homes and Buildings

Our homes, businesses and factories account for more than 70 percent of the energy we consume, and we need to invest in energy efficiency in the residential, commercial, and industrial sectors to improve U.S. competitiveness, lower electricity bills, and protect our environment. This is why the President has laid out a bold vision for sparking a new home-grown industry in making our homes, buildings, and factories more energy efficient. The President’s plan lays a foundation for the private sector to dramatically scale up investments and reap the enormous benefits that come with greater energy efficiency. Because there is no “one size fits all” solution, the Administration is supporting a variety of programs that are tailored to the unique challenges of each sector and will leverage public dollars to encourage private sector investment and job creation. Building on efficiency investments in the Recovery Act , which have already led to the weatherization of about 350,000 projects that are helping lower income Americans reduce energy bills, the Administration’s ongoing efficiency agenda crosses sectors. It includes an ongoing commitment to passing HOMESTAR legislation to will help homeowners finance retrofits, a “Better Buildings Initiative” to make commercial facilities 20 percent more efficient by 2020, and a range of steps to promote industrial efficiency.

Innovate Our Way to a Clean Energy Future

Harness America’s Clean Energy Potential

A global race is underway to develop and manufacture clean energy technologies, and China and other countries are playing to win. To rise to this challenge, we need to tap into the greatest resource we have: American ingenuity. We have the most dynamic economy in the world, and there is no reason we can’t lead the world. But clean energy innovation, and the jobs that come with it, don’t just happen. That’s why, in his State of the Union address, President Obama proposed an ambitious but achievable standard for America: By 2035, we will generate 80 percent of our electricity from a diverse set of clean energy sources – including renewable energy sources like wind,



solar, biomass, and hydropower; nuclear power; efficient natural gas; and clean coal. A Clean Energy Standard (CES) will provide the signal investors need to move billions of dollars of capital off of the sidelines and into the clean energy economy, creating jobs across the country and reducing air pollution and greenhouse gas emissions.

We're already making great strides in this direction. Agencies across the Federal government, including the Departments of Energy, Agriculture, and the Interior, are working to promote clean energy deployment by

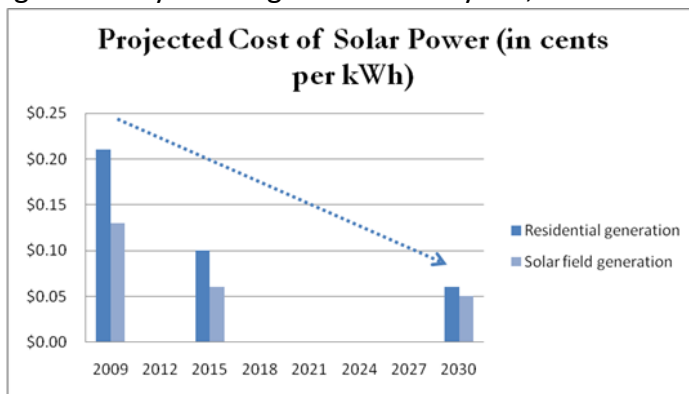
offering grants under the Recovery Act to renewable energy manufacturers and developers; funding cutting-edge R&D; modernizing our rural energy infrastructure; siting the world's largest solar power plants on public lands; and opening a new frontier for offshore wind development. Thanks to these concerted efforts, we are on track to double renewable energy generation by 2012.

Looking ahead, meeting the President's target will position the United States as a global leader in developing and manufacturing cutting-edge clean energy technologies. It will ensure continued growth in the renewable energy sector, building on the progress made in recent years. And it will spur innovation and investment in our nation's energy infrastructure, creating American jobs.

Creating a market for new technologies will be central to charting a path to a clean energy future – but there is more we need to do. For that reason, the Administration is also advancing policies that will help to modernize the electric power grid while ensuring a safe and reliable power plant fleet.

Win the Future Through Clean Energy Research and Development

Maintaining our leadership in research and development is critical to winning the future and deploying innovative technologies that will create quality jobs and move towards clean energy economy that reduces our reliance on oil. But as we aspire to achieve new breakthroughs – a battery that will take a car 300 miles on a single charge or a way to turn sunlight into fuel like gasoline, we are already beginning to see how our investments in the future are changing the game today. Through the Recovery Act, the Administration has invested in a host of clean energy



Source: DOE

Massachusetts startup that received a \$4 million ARPA-E grant to develop solar panel components

for 80 percent less than the current cost, and which has since secured \$33.4 million in private investment. These kinds of innovations can help us to achieve a “Sunshot” – making new solar technologies cost-competitive and achieving dreams of a clean energy future.

Lead by Example: Clean Energy and the Federal Government

As new technologies emerge, the Federal government has a responsibility to lead by example. Our government owns and manages approximately 500,000 buildings and operates more than 600,000 fleet vehicles. The electricity used for its buildings, the fuel used in its cars and trucks, and the energy required in military operations make it the largest energy consumer in the US economy. That’s why President Obama signed an Executive Order that made it the responsibility of every Federal agency to help move the nation towards a clean energy economy by leading by example, practicing what we preach, and improving the government’s energy efficiency while expanding our use of clean energy. And that’s why the *Blueprint* announces new steps, to improve the Federal fleet’s performance so that it is composed entirely of alternative fuel vehicles, is fuel-efficient.

DEVELOP AND SECURE AMERICA'S ENERGY SUPPLIES

Expand Safe and Responsible Domestic Oil and Natural Gas Development and Production

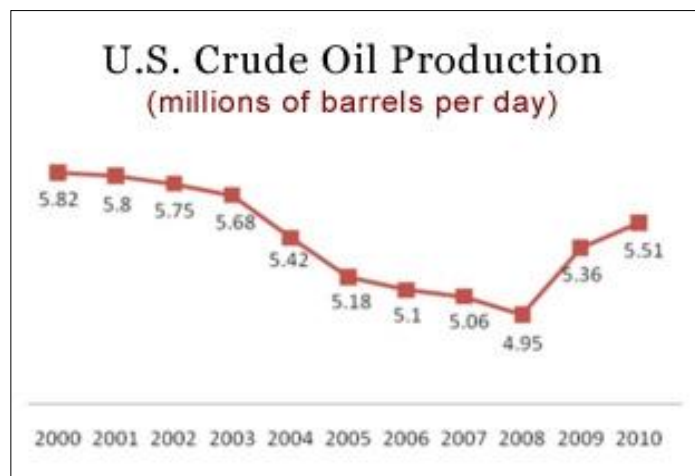
"All these actions can increase domestic oil production in the short and medium term. But let's be clear – it is not a long-term solution."

President Obama, March 11, 2010

The Challenge

America's oil and natural gas supplies are critical components of our Nation's energy portfolio. Their development enhances our energy security and fuels our Nation's economy. Recognizing that America's oil supplies are limited, we must develop our domestic resources safely, responsibly, and efficiently, while taking steps that will ultimately lessen our reliance on oil and help us move towards a clean energy economy.

Over the last two years, domestic oil and natural gas production has increased. In 2010, American oil production reached its highest level since 2003, and total U.S. natural gas production reached its highest level in more than 30 years. Much of this increase has been the result of growing natural gas and oil production from shale formations as a result of recent technological advances. These resources, when developed with appropriate safeguards to protect public health, will play a critical role in domestic energy production in the coming decades.



Source: EIA

America's public lands and Federal waters provide resources that are critical to the nation's energy security. To encourage robust exploration and development of the nation's resources, the Administration has offered millions of acres of public land and Federal waters for oil and gas leasing over the last two years. Oil production from the Outer Continental Shelf increased more than a third – from 446 million barrels in 2008 to more than 600 million barrels of estimated production in 2010. Responsible oil production from onshore public lands also increased over the past year – from 109 million barrels in 2009 to 114 million barrels in 2010. These increases are occurring at the same time that oil imports are decreasing; for the first time in a decade, imports accounted for less than half of what we consumed.

Of course the *Deepwater Horizon* oil spill served as a reminder that we must develop our domestic energy resources both safely and responsibly. Eleven men died and Americans watched as nearly five million barrels of oil spilled into the Gulf of Mexico. Subsequent reviews exposed significant weaknesses in the regulatory process and an industry unduly complacent about the safety of offshore oil and gas development. The tragedy underscored the need for exploration and production to proceed with the utmost consideration for achieving the world's highest standards for safe and responsible production.

Progress to Date

- **Raising the Bar for Safety:** In response to the *Deepwater Horizon* oil spill in the Gulf of Mexico, the Obama Administration has launched the most aggressive and comprehensive reforms to offshore oil and gas regulation and oversight in U.S. history. The reforms, which strengthen requirements for everything from well design and workplace safety to corporate accountability, are helping to ensure that the U.S. can safely and responsibly expand development of its offshore energy resources. These unprecedented reforms set standards and certification protocols for well design, testing, and control equipment and establish rigorous performance standards to reduce workplace error and require operators to maintain comprehensive safety and environmental management programs.

Already, the Administration has launched commonsense requirements to improve safety, including directing deepwater operators to demonstrate that they have the capability to contain a sub-sea discharge like the *Deepwater Horizon* oil spill. Since these important new standards were put into place, the Department of the Interior has continued to issue shallow water permits – and the pace of deepwater permitting has escalated now that operators have begun successfully demonstrating containment capability.

- **Ensuring Efficiency and Integrity of Oversight:** The Administration is reforming and strengthening offshore energy oversight by re-organizing the former Minerals Management Service into three separate agencies to eliminate conflicts, restore integrity by separating the functions of managing development of the Nation's offshore resources: enforcing safety and environmental standards, and collecting revenues. Upon completion of the re-organization, the three separate agencies will include:
 - **Office of Natural Resources Revenue (ONRR)**, which has already been established and is responsible for collecting royalties, rents, and other revenue;
 - **Bureau of Ocean Energy Management (BOEM)**, which will be responsible for managing development of the nation's offshore resources, including oil, gas and renewable resources and;
 - **Bureau of Safety and Environmental Enforcement (BSEE)**, which will independently and rigorously enforce safety and environmental regulations. To foster a culture of safety and rigor, DOI is recruiting new expertise – including inspectors, engineers, and scientists – and establishing heightened ethical standards for all personnel.

- **Improving Offshore Drilling Safety, Well Containment, and Spill Response:** The Administration established the Ocean Energy Safety Advisory Committee, which will bring government, industry, academia and other stakeholders together to drive advancements in safety equipment and technology.
- **Identifying the Best Public Land Sites for Development:** Domestic oil and gas development, both onshore and offshore, should take place in the right places to minimize harm to the environment as well as to public health and safety. Onshore, the Administration has implemented important reforms that require adequate planning and analysis to identify potential areas where development is most appropriate. These reforms have taken place while millions of acres of public land are offered for exploration and production. In 2010, 29 onshore oil and gas lease sales were held, covering 3.2 million acres, including one sale within the National Petroleum Reserve-Alaska encompassing approximately 1.8 million acres. In 2011, over 30 sales on public lands are expected. Offshore, in 2010, 37 million acres in the Gulf of Mexico were offered for lease. In addition, the Administration is developing a 5-year (2012-2017) comprehensive plan for offshore oil and gas exploration and production, which will ensure that areas with active leases, including the Gulf of Mexico and Alaska, are considered for further leasing and development. The strategy also calls for conducting studies to assess the potential oil and gas resources available in the Mid - and South Atlantic.
- **Maximizing Operational Efficiency and Reducing Air Emissions:** The Natural Gas STAR Program, a flexible, voluntary partnership between EPA and oil and natural gas operating companies, encourages companies—both in the United States and internationally—to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce methane emissions. This very successful voluntary program has 130 domestic partner companies and 8 international partner companies. EPA and partner companies have identified over 80 technologies and practices that can cost-effectively reduce methane emissions from the oil and natural gas sector. Natural Gas STAR partners reported domestic emissions reductions of 86 Bcf, worth over \$421 million, in 2009.

Moving Forward

- **Continuing to Ensure the “Gold Standard” for Safe and Responsible Oil and Gas Development:** The Administration will continue to review the existing regulatory structures governing both onshore and offshore oil and gas development and identify potential efficiencies in those processes and any crucial gaps that pose safety or environmental risks.
- **Providing Incentives to Spur Efficient Oil and Gas Development:** The President recently directed the Department of Interior to determine the acreage of public lands (onshore and offshore) that have been leased to oil and gas companies and remain undeveloped. More than 70 percent of the tens of millions of offshore acres under lease are inactive—including almost 24 million inactive leased acres in the Gulf of Mexico, where an estimated 11.6 billion barrels of oil and 59.2 trillion cubic feet of natural gas of technically recoverable resources are going unused. Onshore, about 57 percent of leased acres – almost 22 million acres in total – are neither being explored nor developed.

The American taxpayer – owners of our Nation’s public lands – have a right to expect that companies given access to public lands for oil and gas development will develop the resources efficiently or step aside to allow other companies to do so. The Administration is evaluating potential changes to elements of the leasing process that will encourage timely development. These potential changes include:

- **Using Shorter Lease Terms to Encourage Rapid Development:** Adopting shorter lease terms, particularly onshore, would provide industry with a built-in incentive to develop leases more rapidly. Adopting this approach would also trigger the earlier release of non-producing leases, making them available to other companies who may be more willing or able to invest in their development. Offshore, the Administration has already implemented adjustments to lease terms for shallower waters. The terms of onshore leases, which currently are issued for standard 10-year terms, are constrained by a nearly century-old statute.
 - **Rewarding Rapid Development with Lease Extensions.** The Administration is taking a new approach to lease-extensions that rewards diligence by tying extensions more directly to lessee investment in exploration in development. For offshore leases, DOI has already begun to implement this new approach—for example, by requiring the spudding of a well before a lease extension is granted. DOI plans to build on recent reforms for both offshore and onshore leasing, so that when companies approach lease deadlines or apply for extensions, their record of demonstrating diligent exploration and development will help determine whether they should be able to continue using their leases, or whether those leases would be better utilized by others.
 - **Rewarding Rapid Development through Rental Payments and Graduated Royalties:** Although the price of oil and gas provides the primary financial incentive for current leaseholders to move forward in diligently investing in their leases, different fee and royalty structures may promote more expedited development. For example, Texas has used a graduated royalty rate system to provide developers with a discounted royalty rate if production occurs in the earlier years of a lease. The FY 2012 Budget proposes initial steps to encourage more rapid development.
- **Developing Region-Specific Strategies to Facilitate Responsible Development:** The Administration will continue to evaluate the feasibility of oil and gas development in frontier areas and develop appropriate strategies to facilitate responsible development in those areas identified as having great potential for domestic oil and gas production. Also, the Administration will integrate feasibility evaluations into the longer term Coast and Marine Spatial Planning process being undertaken as part of the National Ocean Policy.
- **Alaska – Onshore and Offshore Development:** Facilitating responsible development in Alaska poses unique challenges, given that many areas of Alaska are frontier areas where less is known about the scope of economically recoverable oil and gas resources, the potential environmental and public health impacts of production, and exploration and development can be more difficult given the often-harsh conditions of the area. As a result, planning and exploration activities can take longer than in other areas of the U.S., making

the above incentives and other changes potentially inappropriate for Alaska. The Administration remains committed, however, to facilitating development in this region, which will require coordination across the Federal government. Accordingly, the Administration is creating a high-level, cross-agency team to access opportunities to coordinate and facilitate a more efficient offshore permitting process in Alaska, while ensuring that safety, health, and environmental standards are fully met.

Mid- and South Atlantic – Offshore Development: Ensuring that development takes place in the right ways and the right places is critical to the success of both renewable and conventional energy strategies. DOI is currently conducting environmental analysis on potential seismic testing in the Mid and South Atlantic planning areas, which would help determine the scope of potential recoverable resources in this region.

- **Encouraging Responsible Development Practices for Natural Gas:** Recent technology and operational improvements in extracting natural gas resources, particularly shale gas, have increased gas drilling activities nationally and led to significantly higher natural gas production estimates for decades to come. In order to take full advantage of this important domestic energy resource, we must proactively address concerns that have been raised regarding potential negative impacts associated with hydraulic fracturing (“fracking”) practices. That is why the Administration is taking steps to address these concerns and ensure that natural gas production proceeds in a safe and responsible manner. Initiatives supported by the Administration include:
- **Disclosure of Fracking Chemicals:** The Administration is calling on industry to be more transparent about the use of fracking chemicals.
 - **Leading by Example:** In April, DOI will hold a series of regional public meetings to discuss the potential for expanding shale gas production on Federal lands. These events will provide a forum to develop a framework for responsible production on public lands.
 - **Research:** The Federal government will conduct research to examine the impacts of fracking on water resources. At Congress’ direction, EPA will continue with its study of fracturing impacts on drinking water and surface water, and DOE will likewise sponsor research on these issues.

Setting the Bar for Safety and Responsibility: To provide recommendations from a range of independent experts, the Secretary of Energy, in consultation with the EPA Administrator and Secretary of Interior, should task the Secretary of Energy Advisory Board (SEAB) with establishing a subcommittee to examine fracking issues. The subcommittee will be supported by DOE, EPA and DOI, and its membership will extend beyond SEAB members to include leaders from industry, the environmental community, and states. The subcommittee will work to identify, within 90 days, any immediate steps that can be taken to improve the safety and environmental performance of fracking and to develop, within six months, consensus recommended advice to the agencies on practices for shale extraction to ensure the protection of public health and the environment.

- **Offering Technical Assistance to State Regulators:** States exercise oversight of oil and gas drilling using delegated authority under Federal environmental laws and additional authorities under state law. Some have made more progress than others on enhancing protections to deal with the challenges of fracking. DOE and EPA are establishing a mechanism to provide technical assistance to states to assess the adequacy of existing state regulations. EPA will continue to perform a strong backstop role under Federal environmental laws and will take actions, as necessary, to protect public health and the environment.

DEVELOP AND SECURE AMERICA'S ENERGY SUPPLIES

Lead the World Towards Safer, Cleaner, and More Secure Energy Supplies

The Challenge

The United States is a major producer and consumer of energy. Yet many energy markets are international in scope. Oil markets are global. Natural gas often moves across oceans and international borders on its way to customers. Clean energy technologies are developed, manufactured and shipped around the world.

The role of oil is especially important, in part because cars and trucks everywhere depend on it almost entirely. Recent crude oil price increases, which translate into higher fuel prices at the pump, have many causes, including the global economic recovery and unrest in the Middle East. But a major cause of the recent price rise is the concern that global oil demand will outpace supply over the next few years. That's why we are working to reduce oil demand and increase oil supplies around the world, as we also work to diversify the fuel mix in vehicle fleets and transition to clean energy economies.

Progress to Date

- **Reducing Wasteful Use of Fossil Fuels:** At the G-20 Summit in Pittsburgh and the APEC Leaders Meeting in Yokohama, President Obama and the leaders of the world's largest economies committed to phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption. And although there is still much to do to implement this commitment, some of the most significant subsidizers have begun to take steps that could help moderate the growth in world oil consumption. For example, following this commitment a number of major economies, including China, India, and Mexico, instituted new pricing policies that will reduce the rate at which their oil consumption increases.
- **Expanding Natural Gas Production Worldwide:** Although oil is used mostly for transportation in the U.S., this is not always the case in other countries. In developing economies especially, a lack of indigenous fuel or infrastructure often means that oil is used to generate electricity and fuel industrial processes. Following the development in the U.S. of new techniques for recovering shale gas, the State Department initiated the Global Shale Gas Initiative which assesses a country's potential for shale gas production and assists governments in establishing the commercial arrangements and safety and environmental regulations that permit the beneficial development of this resource. The Energy Department is leading an Unconventional Gas Census for the Asia Pacific at the request of APEC energy ministers. These programs benefit both developing countries and the U.S. by moderating oil demand growth in these rapidly growing economies and facilitating fuel-switching to cleaner natural gas.

- **Reducing Methane Emissions:** The Environmental Protection Agency (EPA) and thirty-seven other countries, the European Commission, the Asian Development Bank and the Inter-American Development Bank launched the Global Methane Initiative to support methane emissions reduction projects and technologies while expanding growth, promoting energy security, and improving the environment and public health. With collaboration among developed countries, developing countries, and countries with economies in transition— together with strong participation from the private sector—the initiative focuses on advancing cost-effective, near-term methane recovery and use projects. The Initiative focuses on five major methane sources for action: agriculture, coal mines, landfills, oil and natural gas systems, and wastewater.
- **Working with Global Partners to Increase Oil Production and Secure Additional Reliable Supplies:** Over the course of the last year, the U.S. and Mexico have been working together to develop a transboundary agreement that would facilitate the safe and responsible development of offshore oil resources near our common border. During his March 2011 visit to Brazil, Presidents Obama and Rouseff agreed to work as strategic energy partners to the benefit of both countries, including in the safe development of the vast oil and gas resources in pre-salt prospects in Brazil’s Outer Continental Shelf.
- **Working to Make International Bioenergy Sustainable:** The United States has worked with international partners to promote the benefits of sustainable modern bioenergy. In the Western Hemisphere, the United States collaborates with Brazil to help a number of countries develop bioenergy programs that promote economic development and energy security. In the Asia Pacific Economic Cooperation (APEC) organization, the United States has led work to identify sustainable biofuel development practices, resource potential, and employment potential. In addition, as an active member of the Global Bioenergy Partnership, the United States worked with multiple nations and UN international organizations to develop indicators that will enable developing countries can use to ensure that are developing bioenergy in a sustainable manner.
- **Promoting the Transition to Electric Vehicles:** In North America, Europe and Asia, more than a dozen major manufacturers are bringing new electric vehicles to market. Few technologies hold greater promise for reducing the world’s dependence on oil. The United States has worked to accelerate deployment of electric vehicles worldwide under the multilateral Electric Vehicles Initiative and in bilateral programs with China, the European Union and other countries. Joint work on standard-setting and other activities can help accelerate the transition of global vehicle fleets to electrification.
- **Encouraging the Transition to Clean Energy Technologies:** Energy Secretary Steven Chu convened the first-ever Clean Energy Ministerial, bringing together governments that account for over 80 percent of the global market for clean energy technologies. When fully-implemented, initiatives launched through the Clean Energy Ministerial process will eliminate the need to build more than 500 mid-size power plants in the next 20 years; bring improved energy services to more than 10 million people without access to electricity by 2015; promote rapid deployment of renewable energy, carbon capture and storage and electric vehicles; and encourage young women to pursue careers in clean energy.

Moving Forward

- **Encouraging Fuel-Switching from Oil to Natural Gas:** We will continue to work with countries under the Global Shale Gas Initiative and the APEC Unconventional Gas Census to encourage the safe production of natural gas and fuel-switching from oil to gas, as appropriate, in the production of electricity. We also plan to work under the auspices of the G-20 to prompt policies that increase transparency and efficiency of international natural gas markets. Increasing the liquidity of global gas markets can play an important role in ensuring reliable supplies of oil by moderating global demand for oil.
- **Building Strategic Relationships with Oil Producers:** First, we will follow through on the initiatives we have already begun with Mexico where we expect to complete the transboundary agreement before the end of the year and with Brazil, where the opportunities for the use of U.S. drilling and containment technology are abundant, especially in the deepwater pre-salt play. We will also continue our contributions to the G-20's Global Marine Environment Protection initiative which is designed to facilitate the sharing of best practices with respect to safety and environmental protection during offshore drilling and production. Finally, we will continue our work assisting other countries develop their resources in a efficient, safe, and transparent manner while protecting the environment.
- **Reducing Oil use with Bioenergy:** The Global Bioenergy Partnership will soon be launching a capacity building initiative in West Africa to encourage the transition away from the traditional use of biomass through effective forest management, to improve agricultural production, and to help countries capture the benefits that sustainable modern bioenergy can provide for energy access and food security.
- **Building a New International Framework for Nuclear Energy:** We continue to work with our colleagues around the world to build a new international framework in which all countries aspiring to nuclear energy have adequate infrastructure, safety, security and nonproliferation basis for doing so. We are committed to developing commercial concepts for nuclear fuel leasing so that all countries can benefit from nuclear energy without spreading dangerous technology and material.
- **Promoting Energy Efficiency Abroad:** As part of the President's National Export Initiative, a dozen agencies collaborated to launch the Renewable Energy and Energy Efficiency Export Initiative, which will help address the major export barriers facing American companies in these industries. Drawing only on existing budgets and authorities, the REEE Export Initiative will provide new and additional innovative financing mechanisms for American exporters, increase the amount of trade promotion activities for clean energy companies, and focus effort to address trade barriers in the sector. The Overseas Private Investment Corporation (OPIC) has also recently committed \$300 million to mobilize nearly \$1 billion of financing in the next 2 years for renewable energy and energy efficiency projects.
- **Accelerating the Transition to Clean Energy Technologies:** At the second Clean Energy Ministerial in Abu Dhabi (April 6-7, 2011) and third Clean Energy Ministerial in the United

Kingdom (during 2012), governments from around the world will review progress on the ambitious initiatives already launched and consider new steps to accelerate the transition to clean energy. The United States will work closely with partners from around the world in the Clean Energy Ministerial process, promoting dramatic improvements in energy efficiency and the deployment of clean energy technologies around the world.

- **Encouraging Alternative Fuels and Mass Transit in Developing Countries:** In addition to phasing out inefficient fossil subsidies, the United States is also working with partners including Japan, the United Kingdom, France, and Germany, to catalyze both the use of natural gas and hybrid-diesel buses and expansion of mass transit in developing countries. As part of the Clean Technology Fund, we are supporting transport programs in Egypt, Mexico, Philippines, Thailand, Vietnam, and Columbia, that will reduce demand for oil and help to catalyze similar efforts in other developing countries.

PROVIDE CONSUMERS WITH CHOICES TO REDUCE COSTS AND SAVE ENERGY

Reduce Consumer Costs at the Pump With More Efficient Cars and Trucks

“With more research and incentives, we can break our dependence on oil with biofuels, and become the first country to have a million electric vehicles on the road by 2015.”

President Obama, State of the Union 2011



The Challenge

Transportation is the second highest expense in most American household budgets. For American families making less than \$50,000 annually, it is often the largest expense – larger than housing. For that reason alone, improving our transportation systems and making them more efficient and more affordable is critical to growing our economy and improving the lives of all Americans.

Despite progress in developing biofuels and more efficient automotive technology, our transportation sector is still largely run on oil. Today, oil used for transportation accounts for over 70% of the total oil consumption in the United States and is a significant contributor to greenhouse gas emissions.

As long as America is reliant on oil to move both our people and our products, spikes in price of gasoline impact us all. Businesses see the consequences for their bottom line and rising prices are an extra burden for American families already facing a tough time. Typically, a \$10 increase in the price of a barrel of oil translates into a 24 cent increase in the price of a gallon of gasoline.

Of course, volatile gasoline prices are not a new phenomenon. Today, a variety of factors, including increases in global demand, recent turmoil in the Middle East and North Africa, and expectations of tighter future supplies, are causing prices to climb once again – even as oil production here in the United States has increased in recent years.

Since taking office, President Obama has taken bold steps to transform these challenges into opportunities across the transportation sector. These efforts, including historic investments in

advanced vehicle and fuel technologies, public transit, and high-speed rail, as well as ambitious new fuel economy standards put into place for cars and trucks, are already helping to reduce our dependence on oil, provide more transportation choices to the American people, and revitalize the U.S. manufacturing sector.

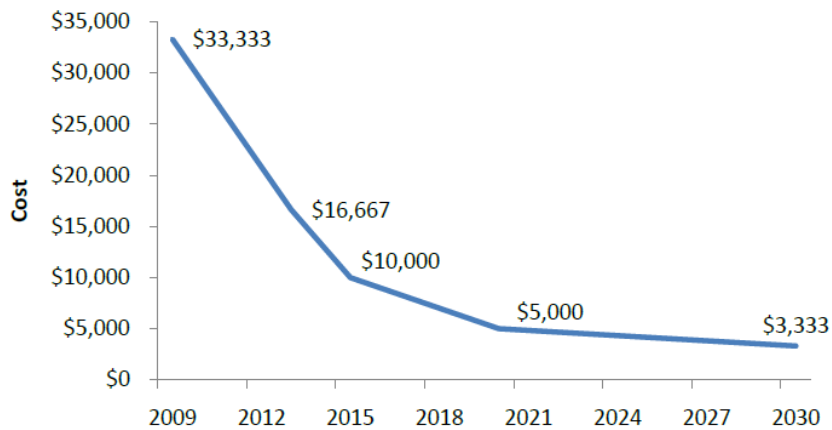
These steps have put us on the right path, but the President understands that tackling this problem, which has been building over decades, will require a sustained effort. He has set an ambitious agenda of reducing oil imports by one third by 2025. To help reach this goal, the President is proposing bold steps to improve the efficiency of all modes of transportation, from air to highways to rail to water, and to develop alternative fuels. The President is promoting an infrastructure bank to support transportation projects of regional and national significance that will reduce our reliance on oil and improve services to all Americans. He is continuing to push forward on fuel economy standards for cars and trucks. He has set an ambitious goal of putting 1 million advanced technology vehicles on the road by 2015, and being the first country to do so. And he is taking steps to encourage increased use of biofuels, including both ethanol and advanced biofuels.

Progress to Date

- **Setting Historic Fuel Economy Standards:** In 2009, the Administration established aggressive fuel economy standards for cars and trucks built in 2011 and announced groundbreaking national fuel efficiency standards and greenhouse gas standards for cars and light-duty trucks built in 2012-2016. Together, these national standards will raise average fuel economy to 35.5 miles per gallon by 2016, while maintaining consumer choice. The Model Years 2012-2016 standards alone are estimated to save 1.8 billion barrels of oil over the lifetime of the vehicles covered and save the average vehicle owner \$3,000 over the life of the vehicle.

- **Investing in Advanced Vehicle Technologies and Infrastructure:** The Recovery Act included \$2.4 billion for battery and electric drive component manufacturing, and for electric drive demonstration and infrastructure – investments that are already transforming the advanced vehicle batteries industry in the United States. In 2009, the U.S. had only two factories manufacturing advanced vehicle batteries that power advanced technology vehicles and produced less than two percent of the world’s advanced batteries. But over the next few years, the United States will be able to produce enough batteries and components to support 500,000 plug-in and hybrid vehicles and will have the capacity to produce 40 percent of the world’s advanced batteries (2015). In part because of these strategic Recovery Act investments, battery costs are expected to drop by half (2009-2013).

Forecasted Cost of a Typical Electric-Vehicle Battery



Note: Assumes 3 miles per kilowatt hour and 100-mile range. Source: U.S. DOE Vehicle Technologies Program.

- **Reducing Barriers to Increased Biofuels Use:** Prior to October 2010, the amount of ethanol that could be blended in gasoline for use in standard vehicle motors without modification was limited to 10% by volume. After extensive vehicle testing by DOE, EPA raised the allowable ethanol volume to 15% for use in Model Year 2001 and newer vehicles. To enable widespread use of E-15, the Administration has set a goal to help fueling station owners install 10,000 blender pumps over the next 5 years. In addition, both through the Recovery Act and the 2008 Farm Bill, DOE and USDA have provided grants, loans and loan guarantees to spur American ingenuity on the next generation of biofuels.
- **Upgrading the Federal Fleet:** GSA purchased 5,603 hybrid vehicles in 2010, doubling the number of hybrids in the Federal fleet. GSA is preparing an initial purchase of 100 plug-in hybrid electric vehicles that are anticipated to be delivered in 2011. Both actions were taken to help meet the clean fleet goals of President Obama's Executive Order 13514 on Federal Leadership in Environmental, Energy, and Economic Performance. GSA's investments in cleaner vehicle technologies will help to spur growth in the emerging domestic plug-in hybrid electric vehicle market.
- **Investing in Cleaner Public Transit Bus Fleets:** The Administration has provided funding through the Recovery Act to accelerate the recapitalization of the nation's bus fleet with a focus on the development and deployment of alternative fuel technologies and alternative fuel buses. Recovery Act grant recipients purchased 1,286 buses or paratransit vans powered by clean technologies, including biodiesel, battery powered, electric propulsion, hybrid electric, hydrogen fuel cell, compressed natural gas and methanol.
- **Providing Transportation Alternatives:** Through the historic TIGER (Transportation Investments Generating Economic Recovery) program, initiated in the Recovery Act, the Administration provided funding for projects of regional and national significance that will also help reduce oil use. Some of the highest priority freight projects, which had been impossible to fund through traditional transportation programs, were given the boost they needed, including the Crescent Corridor running through the Southeast, Tower 55 in Texas and CREATE in Chicago. All of these projects are making the country more economically competitive and less

reliant on foreign oil by allowing businesses to move their goods to market more efficiently. Further, the TIGER program funded several transit projects that Americans will be able to use to save money on transportation, including bus rapid transit in Las Vegas and Orlando as well as streetcars in New Orleans, Tucson and Atlanta.

- **Modernizing the Aviation Sector:** Through the President’s leadership, the Administration has begun to modernize the U.S. air traffic system by adopting state-of-the-art traffic control technologies and systems. Known as “NextGen,” this program will result in the more efficient movement of planes in the air and on the ground, the improvement of air services for passengers, and significant fuel savings. Additionally, the Administration is investing in the research and deployment of alternative fuels that can be safely used in the aviation sector.

Moving Forward

- **Continuing Progress on Fuel Economy:** In July, the Administration plans to finalize the first-ever national fuel economy and greenhouse gas emission standards for commercial trucks, vans and buses built in 2014 to 2018. These standards are expected to save hundreds of millions of barrels of oil over the life of the vehicles covered and promote the development and deployment of alternative fuels, including natural gas. The Administration is also developing the next generation of fuel economy and greenhouse gas emission standards for model year 2017-2025 passenger vehicles and expects to announce the proposal in September 2011.
- **Making Electric Vehicles more Affordable and Accessible for American Consumers:** The Administration’s FY 2012 Budget proposes a transformation of the existing \$7,500 tax credit into a rebate, which will give consumers the ability to receive this benefit at the point of sale, similar to the popular and successful “Cash for Clunkers” program in 2009. Pending passage of legislation by Congress, the current individual credit will be reformed into a tax rebate claimable by dealers or financiers with clear transparency requirements to ensure the benefit of the credit is passed on to consumers.
- **Advancing Innovative Vehicle and Battery Technologies Through Increased Research and Development:** Continuing investments in R&D will be critical to the deployment of new technology and meeting the transportation needs of Americans. Recovery Act and prior year investments are already making progress on advanced technology vehicles through research initiatives like an ARPA-E grant with the goal of developing a battery that will go 300 miles on a single charge or cost-competitive biofuels that are direct substitutes for gasoline. The FY 2012 Budget request will significantly broaden R&D investments in advanced biofuels and batteries and electric drive technologies – including an over 30% increase in support for vehicle technology R&D and a new Energy Innovation Hub devoted to improving battery energy storage for vehicles.
- **Rewarding Communities for Leadership in Reducing Regulatory Barriers and Developing Comprehensive Electric Vehicle-Friendly Infrastructure:** The Department of Energy is beginning a competitive program to help communities across the country become early

adopters of electric vehicles through regulatory streamlining, infrastructure investments, vehicle fleet conversions, deployment of EV incentives (e.g., parking, HOV access), partnerships with major employers/retailers, and workforce training. The FY 2012 Budget will expand this initiative so that up to 30 communities across the country would receive grants of up to \$10 million each on the basis of their ability to demonstrate concrete reforms and use the funds to help promote electric vehicle deployment.

- **Commercializing New Technologies:** Corn ethanol is already making a significant contribution to reducing our oil dependence, but going a lot further will depend on taking promising cellulosic and advanced biofuels technologies to scale. To help advance the commercialization process, the Administration has set a goal of breaking ground on at least four commercial-scale cellulosic or advanced bio-refineries over the next two years. In addition, the President has challenged his Secretaries of Agriculture, Energy and the Navy to investigate how they can work together to speed the development of “drop-in” biofuels substitutes for diesel and jet fuel. Competitively-priced drop-in biofuels could help meet the fuel needs of the Navy, as well as the commercial aviation and shipping sectors.
- **Increasing the Availability of Transportation Alternatives:** Part of making the transportation sector cleaner and more efficient also involves creating more and better transportation choices for Americans— whether they live in urban, suburban or rural areas. The current proposal for investment in high-speed rail, mass transit, and livable communities in the FY 2012 Budget provides improved and more affordable transportation options.
- **Promoting the use of Marine Highways:** Under the President’s leadership, the Administration is promoting America’s Marine Highways Initiative. This initiative will support an increase in U.S. exports, and reduce congestion on U.S. highways, and facilitate the more energy-efficient, cost-effective movement of freight.
- **Creating More Livable Communities:** Part of making the transportation sector cleaner and more efficient involves creating more and better choices for people about how to travel – whether they live in urban, suburban or rural areas. The President’s FY 2012 Budget creates the Livable Communities Program, which supports place-based planning, policies, and investments to help communities increase transportation choices and access to transportation services. The program aims to reduce congestion, enhance transportation networks, and make it easier for people to move safely and efficiently regardless of mode of travel, ultimately improving the quality of life in our communities.

“What we need is a smart infrastructure system equal to the needs the 21st century. A system that encourages sustainable communities with easier access to jobs, to our schools, to our homes. A system that decreases travel time and increases mobility. A system that cuts congestion and ups productivity. A system that reduces harmful emissions over time and creates job right now.”

-- President Obama, October 2010

- **Supporting New and Existing Transit Infrastructure:** The FY 2012 Budget also marks a ground breaking commitment to expand transit options for Americans and return transit systems to a state of good repair. The Administration supports these commitments with the aim of making public transit systems accessible to more people, and to ensure that these systems are more reliable, efficient, and safe for the millions of travelers who use them every day. These investments will ultimately provide Americans with affordable transportation options that help reduce dependence on gasoline.

- **Investing in High-Speed Rail:** The President has made it a priority to provide 80 percent of Americans convenient access to an inter-city rail system, featuring high-speed service, in the next 25 years. The 2012 Budget supports these efforts to develop and expand America's high-speed and intercity passenger rail system while preserving and enhancing the country's world-class freight rail network. Improving transportation options and multi-modal connectivity is critical to ensuring that the country is able to accommodate the anticipated 100 million increase in population by 2050. The investments in high-speed rail will also create jobs, reinvigorate our manufacturing sector, and spur economic development.

- **Investing in Economic Competitiveness:** The President's FY 2012 Budget proposal creates the National Infrastructure Bank (I-Bank), which will support infrastructure projects that are of regional or national economic significance. The I-Bank will encourage private, State, and local investors to leverage Federal resources in these economically critical projects. The I-Bank can make investments across modes of transportation – for example, on projects involving roads, railway lines, and port infrastructure – to alleviate bottlenecks and ensure that cargo moves in an efficient and sustainable way.

PROVIDE CONSUMERS WITH CHOICES TO REDUCE COSTS AND SAVE ENERGY

Cut Energy Bills with More Efficient Homes and Buildings

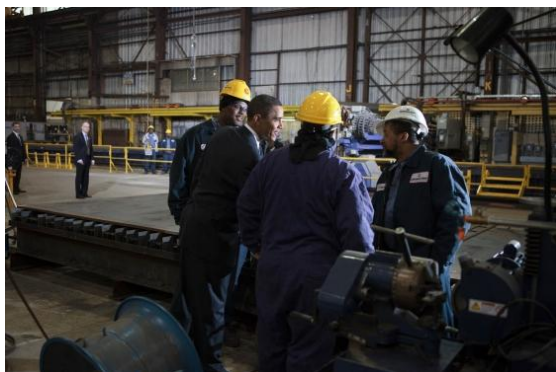
“Making our buildings more energy-efficient is one of the fastest, easiest and cheapest ways to save money, combat pollution and create jobs right here in the United States of America. And that's what we're going to do.”

President Obama, Penn State University, February 3, 2011

The Challenge

With gasoline prices climbing, it is understandable that when most people think about energy they think first about the vehicles they drive. But our homes, businesses and factories consume over 70 percent of the energy we consume.

While the auto industry has made important progress in designing vehicles that go farther on every



gallon of gas, we have yet to see the same efficiency gains in our buildings. The average commercial building has only become 7% more efficient over the same time period (as measured by energy consumption per square foot).

Energy efficiency isn't just about saving money or reducing pollution; it's about creating good jobs and making America more competitive in a 21st century global economy. For example, in the industrial sector, with manufacturers facing increasing competitive pressures, there is an opportunity to unlock billions in private sector investment to improve energy productivity and bring down manufacturers' energy costs by helping manufacturers address the hurdles associated with identifying and implementing energy efficiency projects.

Investments in energy efficiency in the residential, commercial, and industrial sectors can improve U.S. competitiveness, lower the average family's electricity bill, free up capital for businesses to invest more productively, reduce emissions, and create near-term jobs, all at a relatively low cost.

This is why the President has laid out a bold vision for sparking a new home-grown industry in making our homes, buildings, and factories more energy efficient. The President's plan lays a foundation for the private sector to dramatically scale up investments and reap the enormous benefits that come with greater energy efficiency. Because there are no "one size fits all" solutions, the Administration is supporting a variety of programs that are tailored to the unique challenges of each sector and will leverage public dollars to encourage private sector investment and job creation.

Progress to Date

Residential

- **Reducing Energy Costs for Low-Income Americans:** The Weatherization Assistance Program, which for the first time ever also included multi-family public housing, has completed more than 350,000 weatherization projects in the homes of low income Americans to reduce their energy burden.
- **Innovative Community-Based Programs:** The “BetterBuildings” program is pioneering innovative models for rolling out energy efficiency to hundreds of thousands of homes and businesses in a variety of communities. The Department of Energy intends to utilize this program to create models that, when undertaken nationally, catalyze a nationwide energy upgrade that experts estimate could save \$100 million annually in utility bills for households and businesses and make the enormous savings of energy efficiency available to everyone.
- **Greater Energy Efficiency in Rural America:** The Rural Energy for America Program helped, just in FY 2010, nearly 4,000 rural small businesses, farmers and ranchers save energy and improve their bottom line by installing renewable energy systems and energy efficiency solutions that will save a projected 4.3 billion in kWh– enough energy to power 390,000 American homes for a year.
- **Local Government Energy Efficiency Programs:** Through the State Energy Program and Energy Efficiency and Conservation Block Grant program state and local units of government are promoting and deploying energy efficiency and renewable energy projects at the local level across the residential, commercial, industrial, and public sectors. These programs are fostering public-private partnerships and are forming the basis for a sustainable and scalable private sector led marketplace to deliver energy efficiency improvements.
- **Rebates to Lower the Cost of Energy Efficient Appliances:** Seventy percent of the energy used in our homes is for appliances. Through the Recovery Act the Department of Energy provided funding to 56 states and territories for energy efficiency appliance rebate programs. These programs are helping American families to save significantly on their utility bills with rebates to purchase new energy efficient appliances when they replace used appliances. Concurrently, the DOE is adopting an aggressive schedule for setting new appliance efficiency standards to increase the efficiency of major energy consuming products over the next 5 years, and partnering with EPA to strengthen the popular ENERGY STAR program, which provides energy efficiency certification to consumer appliances.
- **A Framework for Continued Growth:** The “Recovery through Retrofit” initiative led by the Vice President’s Middle Class Taskforce identified market-based solutions to help the energy efficiency industry overcome long-standing barriers. These policies will improve access to information about home energy use and to affordable financing, and will also help create a skilled and certified retrofit workforce.
- **Guiding Consumer to Savings Through ENERGY STAR:** ENERGY STAR guides American families to cost-effective energy savings in their homes and appliances. Americans purchased about

200 million ENERGY STAR qualified products in 2010 across more than 60 product categories, totaling nearly 3.5 billion products since 2000. Nearly 1.2 million new homes have been constructed to meet ENERGY STAR guidelines. In addition, Home Performance with ENERGY STAR (HPwES), EPA's flagship whole-house retrofit program, continued to expand in 2010 with over 35,000 homes improved through locally sponsored programs across the country. Such growth brings the total number of homes improved through HPwES to more than 110,000.

Commercial

- **Grants for Innovative Energy Efficient Building Systems:** The Pennsylvania State University-led Greater Philadelphia Innovation Cluster is the winner of the Federal Energy-Regional Innovation Cluster (E-RIC) competition. The E-RIC competition is a ground-breaking \$129.7 million multi-agency grant program that delivers coordinated, targeted grants to spark the growth of innovative, energy-efficient building systems and technologies. This effort involves extensive collaboration across agencies, including the Departments of Commerce and Labor and the Small Business Administration.
- **Improving Efficiency of Federal Buildings:** The President signed an Executive Order directing Federal agencies to achieve zero net energy by 2030 and employ high-performance and sustainable design principles for all new construction and alterations. At least 15 percent of existing buildings need to meet these guiding principles by FY 2015. Funding from the American Recovery and Reinvestment Act (ARRA) is helping to improve the energy performance of existing government buildings and to build a new generation of energy efficient buildings.
- **Training the Next Generation of Commercial Building Technology Workers:** The Administration is working to implement a number of reforms, including improving transparency around energy efficiency performance, launching a Building Construction Technology Extension Partnership modeled on the successful Manufacturing Extension Partnership, and providing more workforce training in areas such as energy auditing and building operations.
- **ENERGY STAR for Commercial Buildings and Products:** In 2009 alone, commercial building owners taking part in the ENERGY STAR program and adopting the ENERGY STAR Guidelines for Energy Management, saved 82.7 billion kWh, avoided 18.9 MMTCE in GHG emissions, and saved organizations \$5.6 billion in energy costs.

Industrial

- **Recovery-Act-Funding Efficiency Projects.** The Department of Energy awarded Recovery Act grants to 90 industrial energy efficiency projects, which unlocked over \$800 million in private sector investment. For example, the ArcelorMittal Indiana Harbor facility was awarded \$31.6 million to cover half the cost of a blast-furnace-gas capture project. The project will capture gas generated in the steel-making process, which is that is currently flared into the atmosphere. The hot gas will be used to generate electricity for use at the facility equivalent to the electricity needs of 30,000 homes. This project will improve the competitiveness of the facility, support the retention of nearly 5,900 direct jobs on-site.

- **Accelerating Development and Deployment of Energy Efficient Technology Solutions:** Efforts span across a wide range of manufacturing industries to advance energy efficient products and processes, from the pulp and paper industries to the high tech industries. Research and development focused on distributed energy solutions, such as high efficiency combined heat and power and waste heat recovery, has been leveraged through deployment programs focused on industrial energy efficiency. DOE's ITP program supports eight Clean Energy Application Centers which focus on providing education and technical assistance to industry, policy makers and other key stakeholders for deployment of combined heat and power.
- **Industry Challenged to Save Energy:** Nearly 200 industrial sites have responded to the ENERGY STAR Challenge for Industry. Launched in May 2010, 27 industrial sites have already stepped up to the challenge by achieving a verified 10% reduction in energy intensity in 5 years or less. Together, these sites will save over 1.7 trillion Btus and 98,000 metric tons of GHG emissions annually.

Moving Forward

Residential

- **HOMESTAR Program of Rebates Delivered Directly to Consumers:** The Administration has continued to advocate for the consumer-friendly HOMESTAR program. Like the Cash for Clunkers program, consumers would be eligible for direct HOMESTAR rebates at the point of sale for a variety of energy-saving investments in their homes. A broad array of vendors, from small independent building material dealers, large national home improvement chains, energy efficiency installation professionals and utility energy efficiency programs (including rural utilities) would market the rebates, provide them directly to consumers and then be reimbursed by the Federal government.
- **\$1,000 - \$1,500 Silver Star Rebates:** As part of the HOMESTAR program, consumers looking to have simple upgrades performed in their homes would be eligible for 50% rebates up to \$1,000 - \$1,500 for doing any of a straightforward set of upgrades, including: insulation, duct sealing, water heaters, HVAC units, windows, roofing and doors. Under Silver Star, consumers can chose a combination of upgrades for rebates up to a maximum of \$3,000 per home. Rebates would be limited to the most energy efficient categories of upgrades—focusing on products made primarily in the United States and installed by certified contractors.
- **\$3,000 Gold Star Rebates:** Consumers interested in more comprehensive energy efficiency projects would be eligible for a \$3,000 rebate for a whole home energy audit and subsequent energy improvement project tailored to achieve a 20% energy savings in their homes. Under HOMESTAR, consumers could receive additional rebate amounts for energy savings in excess of 20%. Gold Star would build on existing whole home energy efficiency programs, like EPA's successful Home Performance with Energy Star program.

- **Oversight to Ensure Quality Installations:** HOMESTAR would require that contractors be certified to perform efficiency installations. Independent quality assurance providers would conduct field audits after work is completed to ensure proper installation so consumers receive energy savings from their upgrades. States would oversee the implementation of quality assurance to ensure that the program was moving the industry toward more robust standards and comprehensive energy efficiency practices.
- **Support for Financing:** This HOMESTAR program would include support to State and local governments to provide financing options for consumers seeking to make efficiency investments in their homes. This will help ensure that consumers can afford to make these investments.
- **Raising the Bar for Energy Efficient New Home Construction:** In 2011, EPA will begin phasing in new and more rigorous guidelines for homes to earn the ENERGY STAR. Once fully implemented in 2012, homes built to the new ENERGY STAR for Homes Version 3 guidelines will be at least 15% more energy efficient than those built to the 2009 International Energy Conservation Code (IECC).
- **Delivering Greater Efficiency through ENERGY STAR Products:** Delivering on consumer interest in greater efficiency, EPA will raise the bar on its efficiency requirements for ENERGY STAR products more frequently than ever before with plans to complete revisions to more than 20 ENERGY STAR product specifications in 2011. To answer the interests of early adopters, the ENERGY STAR program is piloting a Most Efficient product designation with eligibility criteria that deliver even deeper consumer savings.

Commercial

- **New Tax Incentives for Building Energy Efficiency:** As part of the Better Buildings Initiative, the President is calling on Congress to redesign the current tax deduction for commercial building upgrades, transforming the current deduction to a credit that is more generous and that will encourage building owners and real estate investment trusts (REITs) to improve the energy efficiency of their properties. These changes will provide about \$1 billion of incentives in FY 2012, a roughly ten-fold increase over the current take-up rate.
- **More Financing Opportunities for Commercial Retrofits:** Access to financing is a significant barrier to increasing energy efficiency investment in some market segments. To address these gaps, the Small Business Administration is working to encourage existing lenders to take advantage of recently increased loan size limits to promote new energy efficiency improvement loans for small businesses. Additionally, the Administration is working to identify existing programs within the Federal Housing Agency (FHA) and Department of Treasury that could support the financing of energy efficiency projects in the multifamily, healthcare, and small business sectors. The President's FY 2012 Budget also proposes a new pilot program which will guarantee loans to support energy efficient improvements in both the private and public commercial real estate sectors.

- **“Race to Green” for State and Municipal Governments that Streamline Regulations and Attract Private Investment for Energy Efficiency Projects:** Much of the authority to alter codes, regulations, and performance standards relating to commercial energy efficiency lies in the jurisdiction of states and localities. The Better Buildings Initiative includes \$100 million in the President’s FY 2012 Budget for new competitive grants to state and local governments to implement innovative approaches to building codes, regulations, and performance standards; to make efficient building the norm in communities across the country; and to attract private sector investment.
- **The Better Buildings Challenge:** The President is challenging CEOs and University Presidents to make their organizations leaders in saving energy. Partners will commit to a series of actions to make their facilities more efficient. They will in turn become eligible for benefits including public recognition, technical assistance, and best-practices sharing through a network of peers. The President has asked former President Clinton, a long-time proponent of energy efficiency measures, to help lead this effort, working with the Council on Jobs and Competitiveness, as well as private sector leaders, to step-up commitments to commercial building retrofits.
- **Improving Building Energy Data:** Expanded use of building energy data in a standardized format could spur innovation and create a market pull for energy efficiency investments by empowering building managers with the timely information they need to run their buildings better. Typically, however, building owners, tenants, and investors do not have access to the data needed for accurate estimation of the costs and benefits for particular energy efficiency investments. The growing deployments of advanced metering, including Recovery Act-funded Smart Grid deployments and commercial building automation systems, however, represent an opportunity for owners and managers to access high-quality energy consumption data for their buildings. The Administration is working through public-private collaborations -- including the Better Buildings Initiative and the Smart Grid Interoperability Panel -- to make building energy data more available and accessible. This, in turn, could spur the development of innovative software applications that incentivize energy efficiency investments and actions across the full range of residential and commercial buildings.

Industrial

- **Launching Breakthrough Competitive R&D for Innovative Manufacturing Technologies:** The President’s FY 2012 Budget provides expanded funding for the Department of Energy’s Industrial Technologies Program to develop advanced manufacturing techniques that can lead to dramatic increases in industrial energy productivity. In combination with expanded R&D efforts on materials and processes, the program will expand workforce training and provide technical assistance to facilitate adoption of new technologies in the marketplace.
- **Promoting a Culture of Energy Efficiency throughout U.S. Industry:** Through credible standards, recognition awards, and on-site assistance, we are providing industry with the information and support required to upgrade existing facilities with energy efficient technologies including efficient combined heat and power systems. DOE’s ISO 50001 Energy Management Standard creates a certification standard for manufacturing facilities. EPA’s national recognized brand Energy Star Industry supports efforts to instill corporate energy

management practices and recognizes best-in-class performance. Commerce's Manufacturing Extension Partnership has been upgraded, in partnership with DOE, to help manufacturers invest in on-site energy productivity and reduce energy costs.

- **Providing Technical and Financial Assistance to Small and Medium Manufacturers:** The new *E3* program (Economy, Energy, and Environment) was formed in September 2010 to bring together the resources and expertise in existing government programs from five agencies: EPA, DOC, DOE, SBA, and DOL. Together, these agencies are working with manufacturing companies, states, and local governments to strategically apply Federal expertise, tools, and funding to develop and implement comprehensive sustainable manufacturing practices. *E3* projects have already been launched in communities in 9 states, and 14 other states are working with the *E3* program to establish local efforts. This model will continue to expand, bringing to bear existing Federal resources in a targeted manner, while planning for needs unique to a specific locale.

INNOVATE OUR WAY TO A CLEAN ENERGY FUTURE

Harness America's Clean Energy Potential

The Challenge

A global race is underway to develop and manufacture clean energy technologies, and China and other countries are playing to win. Less than thirty years ago, the United States boasted more than 80 percent of the world's wind capacity, and 90 percent of its solar capacity. We invented the photovoltaic solar panel, built the first megawatt-sized solar power station, and installed the first megawatt-sized wind turbine. Yet today, China has moved past us in wind capacity, while Germany leads the world in solar.



To rise to this challenge, we need to tap into the greatest resource we have: American ingenuity. Our entrepreneurs and innovators are world-class, and we invest twenty times more than China or any other country does in venture capital and private equity to fund startups and young companies. We have the most dynamic economy in the world, and there is no reason we can't lead the world.

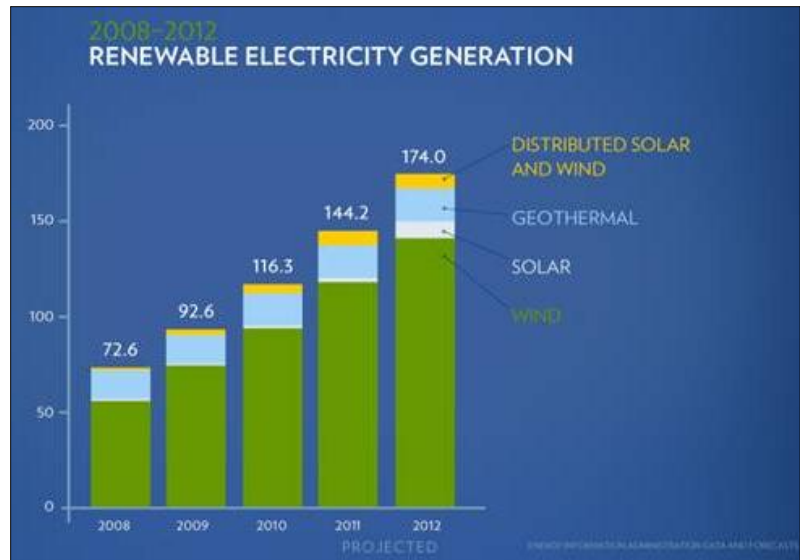
But clean energy innovation, and the jobs that come with it, don't just happen. That's why, in his State of the Union address, President Obama proposed an ambitious but achievable standard for America: By 2035, we will generate 80 percent of our electricity from a diverse set of clean energy sources – including renewable energy sources like wind, solar, biomass, and hydropower; nuclear power; efficient natural gas; and clean coal. A Clean Energy Standard (CES) will provide the signal investors need to move billions of dollars of capital off of the sidelines and into the clean energy economy, creating jobs across the country and reducing air pollution and greenhouse gas emissions.

Meeting the President's target will position the United States as a global leader in developing and manufacturing cutting-edge clean energy technologies. It will ensure continued growth in the renewable energy sector, building on the progress made in recent years. And it will spur innovation and investment in our nation's energy infrastructure, creating American jobs.

In charting a path to a clean energy future, we need to do more than create markets for innovation. That's why, in addition to the Clean Energy Standard, the Administration is advancing policies that will help to modernize the electric power grid while ensuring a safe and reliable power plant fleet.

Progress to Date

- **Creating Jobs and Clean Energy Through the Recovery Act:** The nation has recently made enormous progress in advancing renewable energy, with 16,000 megawatts of new electric generating capacity from wind, solar, and geothermal energy coming online since 2008 – increasing installed capacity by nearly 60 percent in just two years. Much of the growth was due to the Recovery Act, which made a historic investment in clean energy of over \$90 billion – creating 224,500 American jobs and tens of thousands of domestic renewable energy projects. This funding, in concert with a range efforts described below, has helped ensure that electricity generation from non-hydro renewable sources is on track to double from 2008 to the end of this year.



- **Expanding Production through the successful “1603” Grant Program:** The Section 1603 renewable energy grant program under the Recovery Act has been an essential tool in deploying renewable energy resources in the U.S. over the past two years, successfully increasing U.S. manufacturing and supporting tens of thousands of new jobs for Americans. Renewable energy companies and developers and local small businesses have been collecting these incentives as tax credits long before the Recovery Act – but the Recovery Act converted these tax credits into grant payments, making it easier for recipients to quickly expand clean energy generation and hiring. The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 extended 1603 for an additional year beyond the Recovery Act.
- **Staying on the Cutting Edge Through Clean Energy R&D:** Through the Advanced Research Projects Agency – Energy (ARPA-E) program, funded for the first time by the Recovery Act, we have invested in over 100 cutting-edge projects in areas ranging from smart grid technology, to carbon capture, to battery technology for electric vehicles. Past Budgets funded three “Energy Innovation Hubs” that explore building efficiency, fuel from sunlight, and nuclear reactor modeling and simulation. The FY 2012 Budget request more than doubles funding for ARPA-E and doubles the number of Hubs to include new hubs that will advance grid technology, critical materials research, and smart grid technology.
- **Promoting Renewable Electricity in Rural America:** In FY 2010, to modernize our rural electricity infrastructure, the Rural Utilities Service at USDA approved \$313 million in new loan guarantees for renewable electric generation facilities (wind, solar, geothermal, and biomass). In just the past two years, RUS funded over 240 megawatts of renewable energy projects,

including 270 wind energy projects. This year's budget builds on this effort and allows RUS to support baseline generation accompanied by a renewable energy component.

- **Siting Record-Breaking Renewable Projects on Public Lands:** In the last year, the Department of Interior green-lighted the first nine commercial-scale solar energy projects for construction on public lands, including the world's largest solar power plants. When built, these projects will provide nearly 3,700 MW of new generating capacity and support an expected 7,300 jobs.
- **Opening a New Frontier for Atlantic Offshore Wind Development:** In 2010, the Department of Interior approved the Cape Wind offshore wind project, which will be the first commercial scale offshore wind project in the U.S. Interior has also launched a "Smart from the Start" initiative to accelerate the rapid and responsible development of other wind projects in the Atlantic. Interior will continue to work with local communities, state regulators, industry, and other Federal agencies to harness America's vast offshore wind potential in the Atlantic Ocean.
- **Expanding and Modernizing the Grid to Integrate Renewables and Increase Reliability:** Expanding and modernizing our electric power grid can provide access remote sources of solar and wind power, reduce costly power outages, and ultimately save consumers money by helping them to use electricity when it is most abundant – and least expensive. Through the Recovery Act, the Administration helped fund new transmission lines to access renewable resources, as well as a planning process for the low-carbon grid of the future, to identify the most cost-effective investments in new transmission.

In 2009, nine agencies created an MOU to improve how high-voltage, interstate transmission projects are sited on Federal lands. Federal agencies are working with stakeholders to identify high-priority transmission lines whose development can be accelerated. In June 2010, FERC proposed a rule to address issues about who pays for new transmission lines. And to promote a smarter grid, the Recovery Act deployed \$4.5 billion for Smart Grid investments, demonstrations projects, and capacity building.

- **Supporting Prudent Deployment of Nuclear Energy Through Loan Guarantees:** To help restart the domestic nuclear industry, the Administration issued a conditional loan guarantee for a nuclear plant at the Vogtle site in Georgia in 2010. After being licensed by the Nuclear Regulatory Commission, this will be the first new nuclear plant to come online in the United States in decades.
- **Supporting the Development and Deployment of Clean Coal Technologies:** The United States has enormous coal reserves, and the Administration is committed to developing clean coal technologies that will enable us to continue to use this abundant energy source. With \$3.4 billion in Recovery Act funding, the Administration is making an unprecedented investment in the development of carbon capture and storage (CCS) technologies. In addition, the Administration convened an Interagency Task Force on Carbon Capture and Storage to identify ways to overcome barriers to widespread, cost-effective deployment of CCS within 10 years.

Moving Forward

- **Setting a New Standard for Clean Energy:** The centerpiece of the Administration’s strategy for creating clean energy markets is the Clean Energy Standard to meet the goal laid out by President Obama in his January 2011 State of the Union Address. A Clean Energy Standard, or “CES,” is a flexible approach that taps American ingenuity and innovation – and channels it toward a clean energy future. The CES sets an annual target for electricity from clean energy sources, while allowing businesses and entrepreneurs to figure out the best way to meet it.

A CES would work by giving electric power plants clean energy credits for every megawatt-hour (MWh) of electricity they generate from clean energy. Utilities that serve retail customers would be responsible for making sure they had enough credits to meet their target. Utilities that generated more clean energy than they needed could bank their extra credits for later use, or sell them to other companies. This flexible, market-based approach ensures that clean energy will be produced wherever it makes the most economic sense. And by creating a market here at home for innovative clean energy technologies, we will unleash the ingenuity of our entrepreneurs – and ensure that America leads the world in clean energy.

The President’s proposal for a new Clean Energy Standard is founded on five core principles:

- **Credit a Broad Range of Clean Energy Sources:** To ensure broad deployment of new innovations, while giving utilities maximum flexibility to generate clean energy wherever it makes the most sense, clean energy credits should be issued for electricity generated from renewable sources as well as nuclear power, with partial credit for generation from efficient combined-cycle natural gas plants and fossil fuel plants that capture and store carbon dioxide. And a CES should ensure that clean sources that are developed in the future can get credits too – providing an incentive for inventors and entrepreneurs to design and build the next generation of energy technologies.
- **Double the Share of Clean Electricity over the Next 25 years:** Currently, 40 percent of our electricity comes from clean energy sources. To mobilize capital and create a market for innovation, the CES should set targets that steadily increase the share of delivered electricity generated from clean energy sources, rising to 80 percent by 2035.
- **Protect Consumers from Rising Energy Bills:** The CES should be tailored to protect consumers from rising energy bills, by coupling the CES with smart policies that will help American families and businesses save money by saving energy.
- The CES should be paired with energy efficiency policies that will lower consumers’ energy bills, such as stronger appliance efficiency standards, tax credits for energy efficiency upgrades, the proposed Home Star rebate program, the ENERGY STAR program, and technical assistance for industrial efficiency. Using reliable, cost-effective, energy-saving products, practices, and services across residential, commercial, and industrial sectors, Americans – with the help of ENERGY STAR – saved about \$18 billion on their utility bills in 2010.

- The CES should also include provisions to help manufacturers improve efficiency and reduce energy costs, through technologies such as combined heat and power systems and waste-heat recovery. For example, credits could be granted to businesses that invest in clean, high-efficiency, on-site electricity generation at manufacturing facilities.
- **Ensure Fairness Among Regions:** Different regions of the country rely on diverse energy sources today, and have varying clean energy resources for the future. The CES must ensure that these differences are taken into account – both regionally, and across rural and urban areas.
- **Promote New and Emerging Clean Energy Technologies:** The CES should encourage commercial deployment of new and emerging clean energy technologies, including coal with carbon capture and storage.
- **Modernizing and Securing Our Electric Power System:** While a Clean Energy Standard will provide powerful incentives for innovation, a comprehensive strategy must also modernize the electric power grid and ensure the safety of our nuclear power fleet – both today’s plants and tomorrow’s technologies.
- **Continued Permitting of Utility-scale Renewable Energy Projects:** The Interior Department is committed to issue permits for 10,000 megawatts of renewable power generated from new project on our public lands and in our offshore waters by the end of 2012.
- **Investing in Smart Grid Innovation:** The Administration’s FY12 budget proposes a new Energy Innovation Hub focusing on the development of smart grid materials and systems.
- **Advancing new Nuclear Technologies through Funding for R&D and Certification:** As part of a broad effort to spur clean energy breakthroughs, Oak Ridge National Laboratory is leading an Energy Innovation Hub devoted to nuclear energy modeling and simulation. The Hub, which includes partners from universities, industry and other national labs, will use advanced capabilities of the world's most powerful computers to make significant leaps forward in nuclear reactor design and engineering. The President's FY 2012 budget request supports cost-shared design certification and licensing activities for two new small modular reactor designs.
- **Ensuring the Safety of our Nuclear Fleet:** Our nuclear power plants have undergone exhaustive study to ensure that they can safely withstand a number of extreme contingencies. At the same time, we must learn from the crisis in Japan and apply those lessons here in the United States as part of our continuous commitment to safety. That’s why the President has asked the Nuclear Regulatory Commission to conduct a safety review of domestic nuclear power plants in the aftermath of the Fukushima accident. In addition, the Administration's Blue Ribbon Commission on America's Nuclear Future will soon release their interim report, which should provide recommendations for domestic management of used fuel.

INNOVATE OUR WAY TO A CLEAN ENERGY FUTURE

Win the Future Through Clean Energy Research and Development

“The first step in winning the future is encouraging American innovation. None of us can predict with certainty what the next big industry will be or where the new jobs will come from...what we can do -- what America does better than anyone else -- is spark the creativity and imagination of our people.”

President Obama, State of the Union 2011

The Challenge

Innovation – the process by which individuals and organizations generate new ideas and put them into practice – is a foundation of American economic growth and competitiveness. Economic growth in advanced economies like the United States is driven by the creation of new and better ways of producing goods and services, a process that triggers new and productive investments.



Innovation has long been a cornerstone of our economic growth and the United States has led the world in creating new products and services. But we are in danger of losing our historic lead. There are signs across a range of innovation metrics – including growth in corporate and government R&D, the number of scientific and technical degrees and workers, access to venture capital and the

creation of new businesses – that show our nation has fallen behind in global innovation competitiveness.

That is why the Administration has taken historic efforts to reignite American ingenuity and innovation through investments in research and development, especially in the area of clean energy. These important investments are helping to develop cutting-edge technologies with real world applications that can tackle our nation’s toughest energy challenges, address global climate change and advance a clean energy economy. In turn, these investments are also creating new jobs and industries and promoting U.S. competitiveness. The President believes that targeted and sustained investments in clean energy research and development that can jumpstart private sector innovation are critical to our long term economic growth, energy security, and international competitiveness.

Progress to Date

- **Spurring Innovation through Investments in Clean Energy Research and Development:** Through the Recovery Act, the Administration has invested in thousands of projects across the country targeted at the demonstration of clean energy projects in every state. We invested over \$4 billion to modernize the electricity grid, \$2 billion in advanced battery manufacturing, \$1 billion in research of new energy technologies for renewable energy and energy efficiency, \$800 million in advanced biofuels projects, and over \$3 billion in clean coal projects. Each of these projects has created jobs and saved energy or added new energy to the economy, all while propelling US innovation in energy technology.

The FY 2012 Budget continues this effort: compared to 2010, the Budget will more than double our investment in energy efficiency technology, increase our investments in renewable technology by over 70%, and continue key investments in the smart grid, nuclear energy (including small modular reactors), and clean coal technologies.

- **Investing in DOE's Advanced Research Project Agency-Energy (ARPA-E):** The Obama Administration funded ARPA-E for the first time ever with \$400 million as part of the Recovery Act. This funding is being used to support over 100 projects, including technologies for plug-in vehicles that cost no more to own and operate than conventional vehicles, batteries that convert wind power into a steady power source, and microorganisms that produce liquid biofuels from sunlight and carbon dioxide. ARPA-E focuses on transformational energy research that industry by itself cannot or will not support, the success of which would provide dramatic benefits for the nation. The program is designed to bring freshness, excitement, and urgency to energy research in breakthrough technologies, attracting many of the nation's best and brightest minds—from experienced scientists and engineers to young students and researchers to entrepreneurs.
- **Syncing R&D Investments and Clean Energy Technology Deployment:** The clean energy R&D priorities that will be supported through the President's Budget, including increased emphasis on solar, geothermal, offshore wind, and advanced biofuels, complement policies that are focused on the deployment of these technologies. For example, the SunShot initiative includes research to reduce dramatically the cost of solar modules, as well as partnerships with State and local governments to streamline permitting regulations. Together, these advances could reduce the total installed cost of solar electricity by about 75 percent – which in most parts of the country would make solar power cost-competitive without subsidies. Similarly, investments in vehicle R&D will be complemented by improvements to the electric vehicle tax incentive, as well as a new \$200 million "Race to the Top" competitive grant program to encourage communities to improve readiness to adopt electric vehicle technology.
- **Bringing Together the Best Minds to Advance Critical Energy Research and Development:** Innovation and breakthroughs often happen when scientists and thinkers from different disciplines collaborate. Our Energy Innovation Hubs bring together the best minds in universities, Federal laboratories, and private companies to focus on the hardest problems in clean energy. Currently, we have three Hubs in place and they aim to do extraordinary things, including converting sunlight directly into fuels more efficiently than plants, discovering new

technologies that can make buildings smarter and more efficient, and designing the next generation of nuclear power equipment that safer and less expensive to build and operate.

Moving Forward

- **Eliminating Fossil Fuel Subsidies to Help Support Clean Energy:** The President's FY 2012 Budget eliminates \$46 billion in tax subsidies for fossil fuel production. In his State of the Union, the President proposed using these funds to support clean energy innovation.
- **Expanding ARPA-E to Catalyze Energy Breakthroughs:** The President's FY 2012 Budget invests \$650 million in ARPA-E. This will allow ARPA-E to continue the promising early-stage research projects that aim to deliver game-changing clean energy technologies by providing enough funds to more than double the portfolio of projects funded through this important program.
- **Doubling the Number of Energy Innovation Hubs to Focus on Key Energy Challenges:** The FY 2012 Budget doubles the number of Energy Innovation Hubs, creating three more Hubs across the country. These new Hubs will bring together top scientists to work in teams on new approaches for tapping our vast renewable energy resources in cross-disciplinary research related to: critical materials, including rare earth elements; batteries and energy storage; and the development of new Smart Grid technologies and systems to improve energy transmission efficiency.
- **Supporting Applied R&D that Supports Innovative Manufacturing and Technology Deployment:** The President's FY 2012 Budget supports efforts to decrease the costs of solar energy, tap the enormous offshore wind resources along America's coastlines, including the Great Lakes, expand geothermal energy, and increase industrial efficiency in the U.S. manufacturing sector. The Budget includes funds to improve advanced manufacturing for materials technology related to energy, such as flexible electronics for lighting, batteries, and solar cells. The Budget also supports critical materials for electric vehicles and wind turbines – to better identify supply sources, reduce material requirements, and design devices that use alternative materials.
- **Deploying Smart Grid Technologies:** Smart grid technologies hold the potential to enhance the market penetration of intermittent renewable energy sources and sophisticated systems for reducing the energy requirements to heat, cool and power homes and offices. The Administration is pursuing collaborative efforts in the U.S., Europe, and Asia to accelerate deployment of smart grid technologies.
- **Ensuring Access to the Critical Minerals Needed for Clean Energy:** Many new and emerging clean energy technologies, such as the components of wind turbines and electric vehicles, depend on critical materials with unique properties, such as rare earth elements. The availability of a number of these materials is at risk due to their location, vulnerability to supply disruptions and lack of suitable substitutes. The President's FY 2012 Budget supports a DOE Innovation Hub to pursue R&D in all aspects of critical minerals, including environmentally safe and responsible extraction, mineral recycling and reuse. To complement these R&D efforts, the

administration is pursuing complementary efforts to evaluate the domestic development and use of critical materials at all stages of the supply chain.

INNOVATE OUR WAY TO A CLEAN ENERGY FUTURE

Lead by Example: Clean Energy and the Federal Government

“As the largest energy consumer in the United States, we have a responsibility to American citizens to reduce our energy use and become more efficient. Our goal is to lower costs, reduce pollution, and shift Federal energy expenses away from oil and towards local, clean energy.

President Obama, March 2010



The Challenge

The Federal government owns and manages approximately 500,000 buildings and operates more than 600,000 fleet vehicles. The electricity used for its buildings, the fuel used in its cars and trucks, and the energy required in military operations make it the largest energy consumer in the US economy.

In October of 2009, President Obama signed an Executive Order that directed every Federal agency to help move the nation towards a clean energy economy by leading by example, practicing what we preach, and improving the government’s energy efficiency while expanding our use of clean energy.

Progress to Date

- **Developing Utility-Scale Renewable Energy Projects on Public Lands:** The Department of the Interior is working with local communities, state regulators, industry, and other Federal agencies to build a clean energy future by permitting environmentally responsible development of renewable energy on public lands. In 2010, the Department of the Interior began to unleash the potential of renewable energy resources on Federal lands in unprecedented ways. The Department focused resources on completing the environmental reviews and permitting for a set of renewable energy projects in time for them to take advantage of American Recovery and Reinvestment Act funds, so they will produce thousands of new jobs right here at home.

Through this historic effort, last year Secretary Salazar approved renewable energy projects on public lands and in offshore Atlantic waters that, when built, will produce more than 4,000 megawatts of energy – enough energy to power more than 1,200,000 American homes, create thousands of construction and operational jobs, and provide millions of dollars in revenue to the Federal Treasury. The solar energy projects approved by Secretary Salazar are the first solar projects ever permitted on public lands, and they include what will

be the world's largest solar project. The Cape Wind offshore wind project approved by the Department will be the first commercial scale offshore wind project in the U.S.

- **Leading in Advanced Net-Zero Energy Buildings:** The Department of Energy's National Renewable Energy Laboratory's (NREL) new Research Support Facility is among the first large net zero energy buildings in the world. The 220,000-square-foot office facility will generate as much energy as it uses, including solar arrays atop its adjacent parking garage. The building incorporates a number of new technologies, such as NREL- developed transpired solar collectors that pre-heat outside air to cut down on the energy required for heating; as well as traditional design practices such as orienting the building to take maximum advantage of the sun.
- **Scaling up New Technologies to Support Energy Security:** The Department of Defense's Installation Energy Test Bed initiative demonstrates emerging energy technologies in real-world situations to reduce risk, facilitate commercialization, cut DOD's long-term energy costs, and improve energy security. Test Bed programs include projects such as microgrids and advanced energy management and control systems.
- **Promoting Sustainable Siting of Federal Facilities:** President Obama directed the Department of Transportation to lead an interagency task force that developed recommended criteria for ensuring that sustainable Federal buildings are built or leased in sustainable locations. The criteria include promoting efficient travel and ensuring access to transit, locating in existing central business districts and rural town centers, locating near or with ready access to affordable housing, using existing buildings and structures, preserving the natural environment, and coordinating siting decisions with local and regional planning officials.
- **Targeting Clean Energy and Using Less Oil:** The Federal government is measuring and reporting greenhouse gas pollution from its own operations in order to manage and track its use of clean energy. By meeting its 2020 greenhouse gas pollution reduction goals, the Federal Government will eliminate pollution from its own activities equivalent to the emissions from 101 million barrels of oil, and will cut its energy costs by as much as \$11 billion.
- **Doubling the Number of Hybrid Vehicles in the Federal Fleet:** GSA purchased 5,603 hybrid vehicles in 2010, doubling the number of hybrids in the Federal fleet. GSA is also preparing an initial purchase of 100 plug-in hybrid electric vehicles that are anticipated to be delivered in 2011. Both actions were taken toward meeting the clean fleet goals of President Obama's Executive Order 13514 on Federal Leadership in Environmental, Energy, and Economic Performance. GSA's investments in cleaner vehicle technologies will help spur growth in the emerging domestic plug-in hybrid electric vehicle market.
- **Improving Efficiency of Federal Buildings:** In the last two years, agencies have invested \$5.8 billion in energy efficiency projects for Federal buildings. Building on statutory requirements, the President signed an Executive Order directing Federal agencies to design all new Federal buildings to require zero net energy by 2020 and employ high-performance and sustainable design principles for all new construction and alterations. At least 15 percent of the Federal buildings inventory must meet these guiding principles by FY 2015.

- **High Performance Buildings with Operational Cost Savings:** In August 2009, the National Aeronautics and Space Administration (NASA) broke ground for the Ames Sustainability Base, which is expected to be completed in late 2011. The Base will feature innovative technology, including 72 on-site geothermal wells, efficient heating and cooling through sub-floor systems, high performance insulation, ultra low-flow plumbing, and non-toxic and bio-friendly materials. Through thoughtful design and building systems, the Base is targeting a 90 percent reduction in potable water consumption compared to traditional buildings of similar size. NASA estimates the building will pay back the increased initial cost within 6 years.

Moving Forward

- **Better Federal Fleet Performance:** Additional executive action will be taken to make sure that the cars and trucks in the Federal fleet are a leading example of efficiency and clean fuels. These measures will improve the Federal fleet's performance so that it is fuel-efficient, meeting its 30% petroleum reduction goals, and so that 100% of fleet acquisitions are alternative fuel vehicles in 2015. This initiative will also focus on "right-sizing" fleets so that resources from excess vehicles can be devoted to having leaner, more fuel efficient fleets. These actions will also include ensuring adequate access to alternative fuels and fueling stations. Finally, the Administration supports legislative steps to eliminate conflicting statutory Federal fleet goals, baselines, and requirements, as recommended by GAO.
- **Continuous Improvement: Keeping Score:** In spring 2011, the Federal agencies will, for the first time, publicly release performance scorecards and a greenhouse gas emissions inventory that will enable the Administration to replicate what's working, fix what's not, and target waste and pollution. In this approach, the Administration has been inspired by leading American companies that are cutting costs and creating value for their shareholders by improving energy and environmental performance.
- **Continued Permitting of Utility-Scale Renewable Energy Projects:** The Interior Department is committed to issuing permits for a total of 10,000 megawatts of renewable power generated from new projects on our public lands and in our offshore waters by the end of 2012. This is enough energy to power more than 3 million homes.
- **Leveraging the Buying Power of the Federal Government to Improve Energy Efficiency in Public Transit:** Public transit systems are and traditionally have been funded in substantial part by Federal investment. To ensure that future Federal investments are made wisely, the President has directed his Administration to work with local transit agencies to identify and eliminate barriers to a cleaner transit fleet. Removing these barriers would allow for more widespread purchase and deployment of alternative vehicles in public transit systems.

Conclusion

We've known about the dangers of our oil dependence for decades. Presidents and politicians of every stripe have promised energy independence, but that promise has so far gone unmet.

That has to change. And while there are no quick fixes, we have one critical, renewable resource that the rest of the world cannot match: American ingenuity.

To make ourselves more secure and to control our energy future, we will need to harness that ingenuity. This will be no small endeavor, but if we build on the historic progress the Administration has made over the last two years, we won't just spark new jobs, industries and innovations. We will leave this generation and future generations with a country that is stronger, healthier, and more prosperous.