THE BLUEPRINT FOR

MARCH 2012

A SECURE ENERGY FUTURE: PROGRESS REPORT

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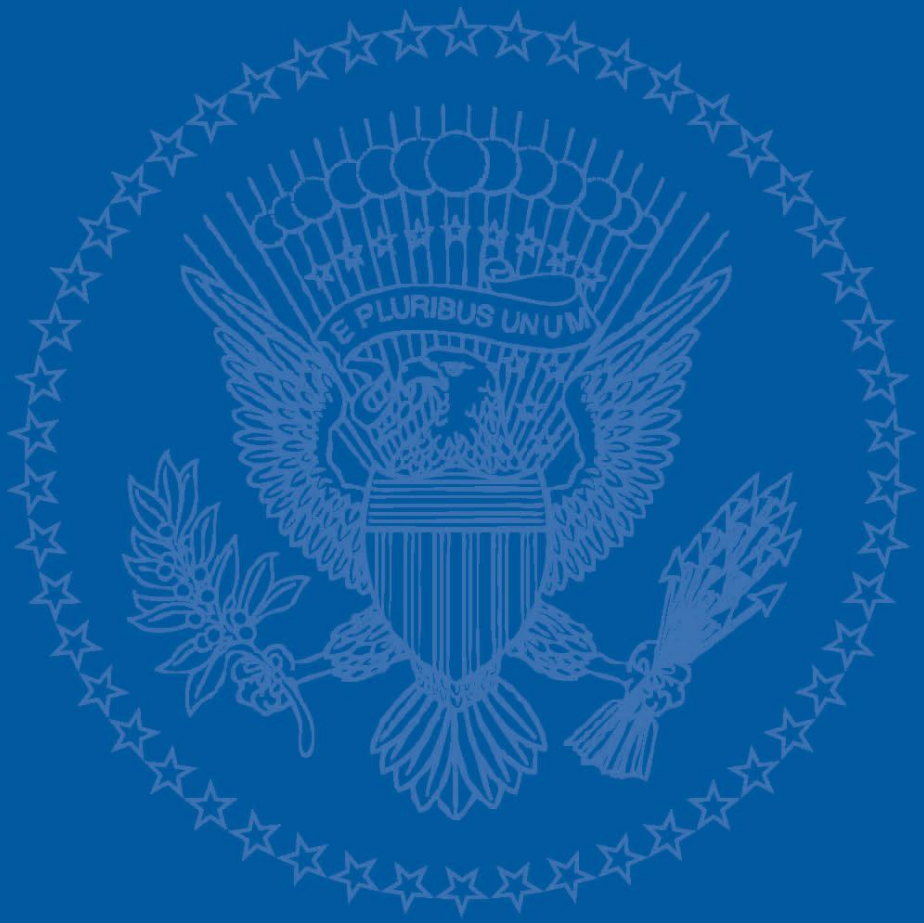

BARACK OBAMA - 44TH PRESIDENT | THE WHITE HOUSE | WASHINGTON DC

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March 12, 2012

President Barack H. Obama
The White House
Washington, D.C. 20500

Dear Mr. President:

In your inaugural address, you called for bold and swift action to lay a new foundation for growth. Your plan for action included an all-out, all-of-the-above energy strategy to reduce our dependence on oil, save businesses and consumers money, and position the United States as the global leader in clean energy. You made this a priority because you believe – and we agree – that an economy built to last must make the most of America's energy resources. It must be fueled by homegrown and alternative energy sources that make us more secure and less dependent on foreign oil.

On the one-year anniversary of your *Blueprint for a Secure Energy Future*, which outlined your goals for American energy, we wanted to present a report on the significant progress we have made. During the last year alone, we established new incentives to increase safe and responsible domestic oil and gas production; proposed the toughest fuel economy standards for cars and trucks in history; provided millions of Americans with efficient and affordable transportation choices; launched new programs to improve energy efficiency in our homes, buildings, public transit, aviation and roadway systems; and took unprecedented steps to make the United States a leader in the clean energy race.

Already, there are signs that our all-of-the-above strategy is making an impact. Domestic oil and natural gas production has increased every year you have been in office. And in 2011, American oil production reached the highest level in nearly a decade and natural gas production reached an all-time high. The Administration's new fuel economy standards are making cars and trucks rolling off assembly lines today more efficient and saving American families and businesses money at the pump. Finally, because of our record investments in energy and transportation, the use of renewable energy like wind and solar has doubled since 2008, communities all across America are seeing new transit, rail and bus services, and tens of thousands of Americans have jobs as a result.

But even with this progress, there is much more work to do. Right now, we're experiencing yet another painful reminder of why developing new American energy is so critical to our future. Just like last year, gas prices are climbing across the country – except this time, even earlier. We know that there are no quick fixes to this challenge. That is why we continue to focus on an all-of-the-above energy approach that builds on the progress we've made over the past three years and makes America more energy secure in the years ahead.

Thank you for your leadership on this critical issue. And thank you for the opportunity to continue to work on behalf of the American people. This past year is a testament to the fact that when we act together, in common purpose and common effort, there is nothing the United States of America cannot achieve.

Sincerely,

Heather Zichal
Deputy Assistant to the President
Energy and Climate Change

Steven Chu
Secretary
Department of Energy

Ray LaHood
Secretary
Department of Transportation

Ken Salazar
Secretary
Department of the Interior

Lisa Jackson
Administrator
Environmental Protection Agency

Tom Vilsack
Secretary
Department of Agriculture

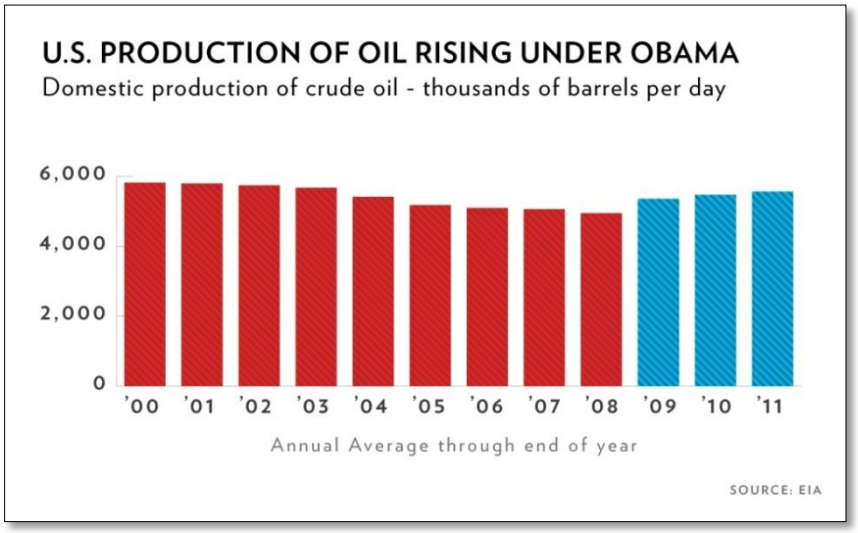
Shaun Donovan
Secretary
Department of Housing and Urban Development

I. Increasing America's Energy Independence

Highlights

- Domestic oil production has increased every year President Obama has been in office. In 2011, U.S. crude oil production reached its highest level since 2003, increasing by an estimated 120,000 barrels per day over 2010 levels to 5.6 million barrels per day.

- Since 2009, the United States has been the world's leading producer of natural gas. In 2011, U.S. natural gas production easily eclipsed the previous all-time production record set in 1973.



- Overall, oil imports have been falling since 2005, and net imports as a share of total consumption declined from 57 percent in 2008 to 45 percent in 2011 – the lowest level since 1995.

A. Expanding Production of Oil and Natural Gas

The United States: Domestic oil and natural gas production has increased every year President Obama has been in office. In 2011, U.S. crude oil production reached its highest level since 2003, increasing by an estimated 120,000 barrels per day over 2010 levels to 5.6 million barrels per day. In addition, U.S. natural gas production grew by more than 7 percent in 2011 – the largest year-over-year volumetric increase in history – and easily eclipsed the previous production record set in 1973. Currently, the United States has a record number of oil and gas rigs operating – more than the rest of the world combined.

In November 2011, the Department of the Interior (DOI) announced the proposed 2012-2017 Outer Continental Shelf Oil and Gas Leasing Program, which makes more than 75 percent of estimated undiscovered technically recoverable oil and gas resources on the U.S. Outer Continental Shelf available for exploration and development. The proposed program schedules 15 potential lease sales, 12 in the Gulf of Mexico and 3 off the coast of Alaska. Over the coming months, DOI will be working to finalize the Program, building on feedback received during the public comment period, which recently concluded.

On December 14, 2011, DOI held the first oil and natural gas lease sale in the Gulf of Mexico since the *Deepwater Horizon* explosion and oil spill. The sale attracted nearly $338 million in total bids – about $100 million more than the average for Western Gulf sales over the previous decade. Moving forward, DOI will hold the consolidated Central Gulf of Mexico Lease Sale 216/222 in New Orleans on June 20, 2012. The sale will include all available unleased areas – nearly 38 million acres – in the Central Planning Area offshore Louisiana, Mississippi and Alabama.

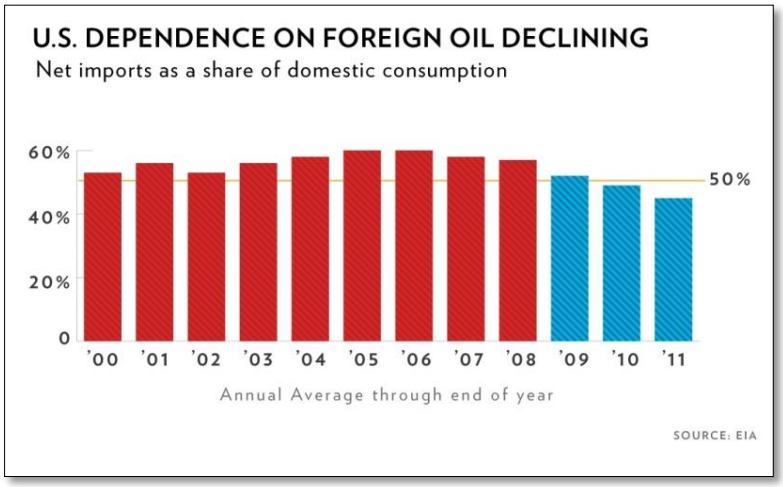
Finally, on America's public lands, DOI held 32 onshore oil and gas lease sales during calendar year 2011, offering 1,755 parcels of land covering nearly 4.4 million acres. In total, 1,296 parcels of land were leased – nearly three-quarters of those offered – generating approximately $256 million in revenue for American taxpayers, a nearly 20 percent increase in lease sale revenue over 2010 levels.

Worldwide: On February 20, 2012, the Departments of the Interior and State joined officials from the government of Mexico to sign an agreement on the exploration and development of transboundary oil and natural gas reservoirs along the United States' and Mexico's maritime boundary in the Gulf of Mexico. This Transboundary Agreement removes uncertainties regarding development of transboundary resources in the resource-rich Gulf of Mexico and paves the way for development of common safety and environmental standards.

As a result of this agreement, an additional 1.5 million acres of the U.S. Outer Continental Shelf will be made more accessible for exploration and production activities. DOI is working with the Government of Mexico to develop common safety and environmental standards that apply not only in the area covered by the Transboundary Agreement, but in the entire Gulf of Mexico. DOI is also continuing to build strategic relationships with other oil producing countries through its leadership in the International Regulators Forum, the Ministerial Forum on Offshore Energy Safety, and the Energy and Governance Capacity Initiative sponsored by the Department of State.

B. Reducing Imports of Foreign Oil

Every president since Richard Nixon has called for America's independence from foreign oil, but Washington gridlock has prevented action again and again. In order to create a more secure energy future and protect consumers at the pump, that has to change.



In March 2011, the President set a bold but achievable goal of reducing oil imports by a third in a little over a decade, relative to where they were when he ran for office.

We are on track to achieving that goal. When President Obama took office, America imported 11 million barrels of oil a day. By the end of last year, that number dropped to 8.4 million barrels per day.

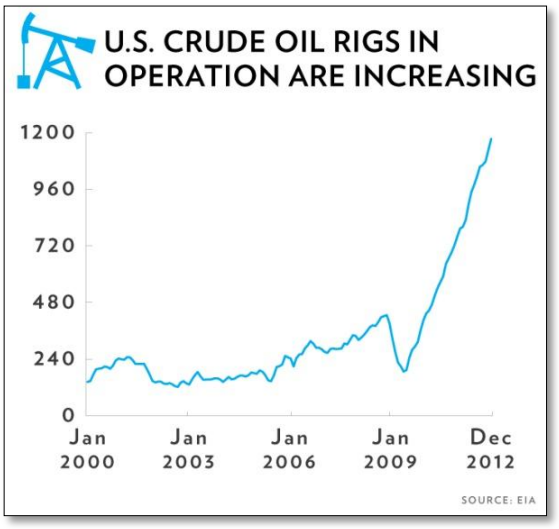
In the last year alone, in part because of booming U.S. oil and gas production, more efficient cars and trucks, and a world-class refining sector that last year was a net exporter for the first time in sixty years, we have cut net imports by ten percent – a million barrels a day. And with the new fuel economy standards the President announced last year, we are on pace to meet our goal by the end of the decade.

Since President Obama took office, America's dependence on foreign oil has decreased every year. In 2010, the United States imported less than half of all oil consumed – a first in 13 years. In fact, net imports as a share of total consumption declined from 57 percent in 2008 to 45 percent in 2011 – the lowest level in 16 years.

C. Providing Incentives to Spur More Efficient Oil and Gas Development

In March 2011, President Obama directed DOI to determine the acreage of public lands and waters that had been leased to oil and gas companies but remained undeveloped. DOI issued a report that reached several important conclusions: First, the Department has offered substantial acreage for leasing and resource development, but much of this acreage has not been leased by industry. Second, tens of millions of acres that are currently under lease remain idle. Soon after the release of the report, President Obama released the

Blueprint for a Secure Energy Future, which called for a number of reforms to incentivize efficient oil and gas development.



DOI has reformed the terms of offshore oil and gas leases to include a range of incentives that encourage prompt development and ensure a fair return to taxpayers. These measures include escalating rental rates and tiered durational terms to incentivize prompt exploration and development. In addition, DOI recently issued guidance reinforcing the requirement that offshore lessees demonstrate a commitment to produce oil or gas in order to be eligible for further suspension of the expiration of a lease.

Beginning with Western Gulf of Mexico Lease Sale 218 held in December 2011, DOI increased the minimum bid in deepwater to $100 per acre, up from only $37.50, to ensure that taxpayers receive fair market value for offshore resources and to provide leaseholders with additional impetus to invest in leases that they are more likely to develop. Rigorous analysis of the last 15 years of lease sales in the Gulf of Mexico showed that deepwater leases that received high bids of less than $100 per acre, adjusted for energy prices at time of each sale, experienced virtually no exploration and development drilling.

Onshore, DOI's oil and gas leasing reforms – implemented in 2010 – are making oil and gas leasing more predictable and increasing certainty for industry and government alike. Between fiscal year 1998 and fiscal year 2009, the percentage of leases protested jumped from one percent to nearly 50 percent, leading DOI to invest vast amounts of staff time and attention in defending time-consuming and costly lawsuits and revisiting the leasing process after receiving direction from the courts. Since implementation of the reforms, the number of protests has declined and the protests that are received are now resolved more quickly. In fiscal year 2011, the percentage of DOI's protested oil and gas leases was down more than 20 percent from 2009.

D. Developing Region-Specific Strategies to Facilitate Responsible Development of Energy Resources

Gulf of Mexico: Currently, the Gulf of Mexico supplies more than a quarter of the nation's oil production, and the Central and Western Gulf remain the two offshore areas of highest resource potential and industry interest—and the areas where the infrastructure supporting the oil and gas industry, including the resources to support an oil spill response, are the most mature and well developed. In the midst of implementing the most comprehensive reforms to oversight of offshore oil and gas activity in U.S. history following the *Deepwater Horizon* oil spill, DOI has continued to approve plans and permits for exploration activities throughout the Gulf of Mexico.

In addition, in February 2012, President Obama welcomed the news that TransCanada plans to build a pipeline to bring crude oil from Cushing, Oklahoma, to refineries along the Gulf of Mexico. This project will help address the bottleneck of oil in Cushing that has resulted in large part from increased domestic oil production, currently at an eight year high. Moving oil from the Midwest to the world-class, state-of-the-art refineries on the Gulf Coast will modernize our infrastructure, create jobs, and encourage American energy production. The Administration has also approved dozens of new pipelines to move oil and gas, including a pipeline known as the Alberta Clipper, which brings oil from Alberta, Canada, to Superior, Wisconsin.

Alaska: A balanced and careful approach to energy exploration and development in the Arctic must account for a range of factors including resource potential; environmental needs; and the social, cultural, and subsistence needs of Alaska Native communities. Last year, President Obama issued an Executive Order to

establish an interagency Alaska working group, which has since been working to improve the efforts of Federal agencies responsible for overseeing the safe and responsible development of onshore and offshore energy in Alaska. For example, the group has been coordinating cross-agency review of Shell's proposed exploration activities in the Chukchi and Beaufort Seas, reviewing Shell's oil spill response plans, and coordinating a government-wide approach to address spill response issues associated with Shell's proposed activities beginning this summer. Potential sales in the Beaufort and Chukchi Seas off the coast of Alaska are scheduled late in the Proposed 2012-2017 OCS Oil and Gas Leasing Program for the next five year cycle in order to facilitate further scientific study and data collection and longer term planning for spill response preparedness and infrastructure. The proposed program also schedules a potential special interest sale in the Cook Inlet in 2013, if industry demonstrates interest.

Onshore, the Administration committed to holding annual lease sales in the National Petroleum Reserve-Alaska (NPR-A). Consistent with that commitment, DOI held a sale in December 2011 that resulted in new leases for over 140,000 acres of the Reserve and generated $3.6 million in total bids. Later this year, DOI will hold an additional lease sale and finalize an integrated activity plan that will guide future sales in the NPR-A, while providing for adequate consideration and protection of the Reserve's outstanding ecological resources.

E. Raising the Bar for Safety

Offshore Oil and Gas Reforms: Since the *Deepwater Horizon* tragedy, the Obama Administration has launched aggressive and comprehensive reforms to offshore oil and gas regulation and oversight. These new safety measures include heightened drilling safety standards to reduce the chances that a loss of well control will occur, as well as a new focus on containment and response capabilities in the event of an oil spill. New workplace safety rules, including significant ones recommended by the National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling, have also been implemented and an enhanced proposal is expected to be finalized before the end of 2012 following a public comment period which closed late last year. These reforms are helping to ensure that the United States can safely and responsibly expand development of its offshore energy resources. Since we put in place new safety standards in the wake of the Gulf oil spill, we have approved more than 400 drilling permits. In fact, we are now permitting at levels seen before the spill, all while meeting these important new standards.

Ensuring the Safe and Responsible Development of Natural Gas: The *Blueprint* directed the Secretary of Energy Advisory Board (SEAB) to establish a subcommittee and identify measures that can be taken to reduce the environmental impact and improve the safety of shale gas production. The final SEAB report was issued in November 2011. The Department of Energy, the Environmental Protection Agency, and the Department of the Interior are acting on many of the recommendations, For example the Administration's FY 2013 budget includes a $45 million interagency R&D program. In addition, DOI is developing new standards to ensure public disclosure of chemicals used in hydraulic fracturing operations on public lands, and the EPA is taking steps to address concerns about potential impacts to water and air resources.

F. Protecting Consumers by Strengthening Oversight of Energy Markets

Combating Manipulation and Fraud: The Administration has pursued unprecedented coordination through the oil and gas prices fraud working group and active monitoring of gasoline and diesel projects in 360 cities across the nation. The CFTC has also taken steps to address loopholes that allowed financial trades to evade oversight by trading in unregulated or overseas markets.

I. Building a 21st Century Transportation Sector

Highlights

- The Obama Administration has put in place the first-ever fuel economy standards for heavy-duty trucks, and proposed the toughest fuel economy standards for passenger vehicles in U.S. history, requiring an average performance equivalent of 54.5 miles per gallon by 2025. Over time, these standards will save consumers more than $8,000 in fuel costs.

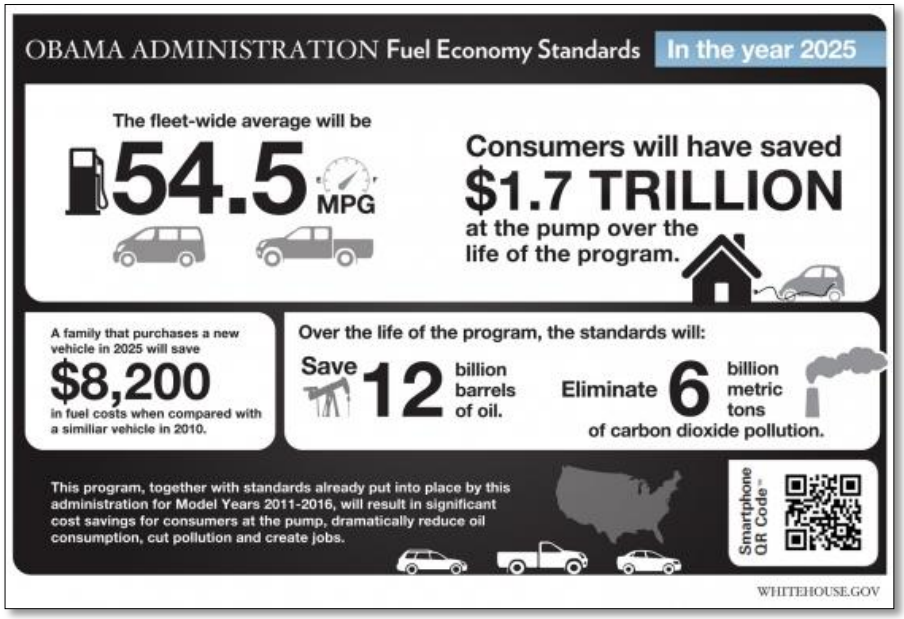
- By 2015, because of the investments made by the Obama Administration, the United States will be able to produce enough batteries and components to support the manufacture of one million plug-in hybrid and electric vehicles. The Administration is also carrying out research and development that is aimed at increasing the use of natural gas in transportation and reduce our dependence on oil.

- In 2011, President Obama set a goal of breaking ground on at least four commercial scale cellulosic or advanced biorefineries by 2013. That goal has been accomplished one year ahead of schedule. Together, these projects, and associated demonstration and pilot projects will produce a combined total of nearly 100 million gallons per year of advanced biofuels capacity.

A. Reducing Consumer Costs at the Pump with More Efficient Cars and Trucks

The First-Ever Fuel Economy Standards for Heavy-Duty Vehicles: In August 2011, the Administration finalized the first-ever national fuel efficiency and greenhouse gas (GHG) emission standards for heavy-duty trucks, vans, and buses spanning model years 2014-2018. These standards, which were developed jointly by the Department of Transportation (DOT) and the Environmental Protection Agency (EPA), with input from key stakeholders, will cut GHG emissions by 270 million metric tons, reduce oil consumption by over 500 million barrels, and save truck owners and operators $50 billion in fuel costs over the life of the vehicles covered by the program.

Historic New Standards for Passenger Vehicles: In July 2011, President Obama announced the next phase in the Administration's national program to increase the efficiency of light-duty cars and trucks. Taken together with previous steps, the standards we have proposed span model years 2011 to 2025 and represent the first meaningful update in over three decades. Under the final program, average fuel efficiency is expected to nearly double, reaching an average performance equivalent of 54.5 miles per gallon by 2025, saving consumers $1.7 trillion at the pump – roughly $8,200 per vehicle – reducing oil consumption by 2.2 million barrels a day by 2025, and slashing greenhouse gas emissions by 6 billion metric tons over the lifetime of the vehicles covered by these standards. The standards were officially proposed by EPA and DOT in November 2011 and are on track to be finalized this summer.



B. Deploying Advanced Technology Vehicles

Bolstering U.S. Manufacturing Capability: To help realize the President's goal of putting one million electric vehicles on the road by 2015, the Department of Energy (DOE) has supported battery and component manufacturing facilities, research and development, deployment of electric vehicle charging infrastructure, and community-based grants to help cities plan for electric vehicles and adopt innovative policies to facilitate market acceptance.

By 2015, the United States will be able to produce enough batteries and components to support one million plug-in hybrid and electric vehicles. In 2009, the U.S. had only two factories manufacturing advanced vehicle batteries. Since then, we have supported 30 new advanced battery and electric vehicle component plants that are opening across the country. In addition, in March 2012, the President launched a clean energy grand challenge to make electric-powered vehicles as affordable and convenient as gasoline-powered vehicles for the average American family within a decade. This national effort is designed to bring together America's best and brightest scientists, engineers, and businesses to work together to solve one of the most pressing energy technology challenges of our time. *EV Everywhere* will enable companies in the United States to produce electric vehicles at lower cost, with an improved vehicle range and an increased fast-charging ability, so average American families will be able to own and drive an electric vehicle as affordable and convenient as today's gasoline-powered vehicles. The savings from using lower-cost electricity instead of gasoline, roughly $100 per month for the average driver, combined with the reduction of upfront vehicle cost, will lower energy costs for American consumers and businesses.

In addition, earlier this year, the Advanced Research Projects Agency – Energy (ARPA-E) announced that it will launch a new research competition in the coming months that will engage our country's brightest scientists, engineers and entrepreneurs to find ways to harness our abundant supplies of domestic natural gas for vehicles. Under this program, ARPA-E will support teams focused on overcoming several key barriers by developing innovative, low-cost natural gas storage technologies and methods to lower pressure in vehicle tanks and help enable the widespread adoption of natural gas vehicles.

Finally, research and development programs like the Energy Department's SuperTruck initiative are helping make our manufacturers and trucking companies more competitive. While long-haul trucks represent only 4 percent of the on-road vehicles in America, they are responsible for almost 20 percent of the country's on-road fuel consumption, and currently consume more than 30 billion gallons of gasoline a year. SuperTruck is focused on increasing the fuel efficiency of long haul trucks, or 18-wheelers, by 50 percent by 2015. To achieve this goal, companies are developing and improving vehicle technologies in engine efficiency, aerodynamics, waste heat recovery, and hybridization, among other approaches. Through these types of improvements, the Energy Department estimates fuel economy increases could save long-haul truckers more than $15,000 per truck per year in fuel costs.

Driving Demand: In April 2011, President Obama announced the launch of the National Clean Fleets Partnership, an initiative to help large, private sector companies improve the efficiency of their fleets and reduce the country's dependence on oil. The initiative provides fleets with specialized resources, expertise, and support to incorporate alternative fuels and fuel-saving measures into their operations. Less than a year later, the number of participating companies has tripled. Together, the partners operate more than 1 million vehicles across the nation. In addition, the FY 2013 Budget included a $1 billion National Community Deployment Challenge that would encourage investment in up to 10 to 15 model deployment communities to overcome the barriers to advanced vehicle deployment. This proposal would be 'fuel neutral,' allowing communities to determine if electrification, natural gas, or biofuels would be the best fit. Deployment Communities would serve as real-world laboratories, leveraging limited federal resources to develop different models to deploy advanced vehicles at scale. The proposal would also support the development of regional LNG corridors where alternative fuel trucks can transport goods without using a drop of oil.

Increasing Affordability: In 2008, a typical battery for a plug-in hybrid electric vehicle with a 40-mile electric range cost $12,000 (assumes 10kWh batteries). But in part because of the investments made by the Administration, the United States is on track to demonstrate technology by 2015 that would reduce the cost to $3,600. In addition, DOE is working with industry and state regulators to help our nation's electric distribution systems prepare for mass-market adoption.

The President has proposed to improve the current tax credit for electric vehicles by making the credit scalable based on vehicle performance up to a cap of $10,000, expanding applicability to a broader range of advanced vehicles, and reforming the credit to make it available at the point of sale. The Administration also supports a new tax incentive for commercial trucks that provides a credit for 50 percent of the incremental cost of a dedicated alternative-fuel truck, including electric and natural gas trucks, for a five-year period.

C. Developing Next Generation Fuel Technologies

Commercializing New Fuel Technologies: In 2011, President Obama set a goal of breaking ground on at least four commercial scale cellulosic or advanced biorefineries by 2013. That goal has been accomplished one year ahead of schedule. Together, these projects, and associated demonstration and pilot projects, will produce a combined total of nearly 100 million gallons per year of advanced biofuels capacity.

In addition, EPA's continued implementation of the National Renewable Fuels Standard (RFS) has supported a growing domestic renewable fuels industry. Last year, industry reported production of approximately 14 billion gallons of renewable fuels, about 8% of total U.S. highway vehicle fuel. In fact, U.S. biofuel production is at its highest level, as average monthly production increased more than 40 percent between 2008 and 2011. EPA worked with stakeholders in evaluating new fuel technologies and feedstocks to support expanded opportunity for these fuels to be an important part of the domestic transportation fuel market. To help support deployment of advanced fuel infrastructure, in 2011, the Department of Agriculture provided over $4 million in grants to fund 265 flex fuel dispensers in 30 states.

Supporting the Development of "Drop-in" Biofuels: In March 2011, the President directed the Secretaries of Agriculture, Energy and the Navy to work together to advance a domestic industry capable of producing "drop-in" biofuel substitutes for diesel and jet fuel. Responding to that challenge, in August 2011, the Secretaries of Agriculture, Energy, and the Navy announced an intention to partner with the private sector to help produce advanced drop-in biofuel to power military and commercial transportation. The Defense Department and USDA held an event in December 2011 to announce that the Defense Logistics Agency (DLA) has signed a contract to purchase 450,000 gallons of advanced drop-in biofuel—the single largest purchase of biofuel in government history. The fuel will be used in the U.S. Navy's demonstration of a Green Strike Group in the summer of 2012 during the Rim of the Pacific Exercise (RIMPAC), the world's largest international maritime exercise. In addition, later this year, the Administration will release a funding opportunity to initiate the development of one or more innovative pilot or commercial-scale facilities that will produce military grade drop-in biofuels.

D. Improving the Efficiency of the Federal Fleet

In 2009, the Administration set out to achieve a 30 percent reduction in petroleum consumption by the Federal fleet and ensure that 100 percent of fleet acquisitions are advanced technology, alternative fuel vehicles by 2015. In May 2011, the President issued a Memorandum on Federal Fleet Performance that committed the Federal government to achieve these goals. In the same month, GSA successfully launched the Electric Vehicle Pilot Program. Under this program, 116 EVs will be leased to 22 agencies in nine different cities across the United States, saving nearly 30,000 gallons of gas and saving American taxpayers over $100,000 in fuel costs annually. The first vehicle, a Chevrolet Volt, was delivered to the Department of the Navy in October. The remaining vehicles will be delivered by May 2012. Outside of the pilot, GSA continues to provide options for federal agencies that want to electrify their fleet. In June 2011, GSA

awarded its first light duty electric cargo van, which can carry a payload of up to 1,000 pounds roughly 80 miles without using gasoline. Since GSA's first electric vehicle purchase was made, the agency has handled 187 electric vehicle procurements, including the 116 for the electric vehicle pilot.

In addition to the vehicles, a key part of the pilot program is the acquisition and installation of electric vehicle charging stations. To date, five charging stations have been delivered and are being installed. The remaining 50 stations are being delivered and installed in the coming month. These efforts build on the Administration's strong record in this area. In FY 2010, GSA successfully doubled the federal hybrid fleet, saving nearly 400,000 barrels of oil over the lifetime of the vehicles.

E. Expanding High Speed Rail

President Obama's has established a goal to give 80 percent of Americans access to high-speed rail within 25 years. Over the past three years, the Administration has continued to develop and expand America's high-speed and intercity passenger rail system. In May 2011, DOT announced $2 billion in high-speed rail, bringing our unprecedented investment to $10.1 billion to date. In FY 2011, intercity rail ridership surpassed 30 million trips, marking a new record in Amtrak's history.

F. Modernizing the American Aviation Sector

The Federal Aviation Administration (FAA) has continued to improve the performance of commercial aviation and reduce jet fuel consumption through innovations in air space management under the NextGen program, which will transform the ground-based navigation of the last century with a satellite-based navigation of the future. Through 2018, NextGen's operational improvements will save about 1.4 billion gallons of aviation fuel, thereby reducing carbon dioxide emissions by 14 million tons. At an event in Houston in January 2012, NextGen solutions were launched at two major airports and the surrounding airspace. In Houston alone, between 3 and 8.6 million gallons of fuel will be saved, the equivalent of taking between 4,000 to 8,000 cars off the road in the metropolitan area.

II. Powering The Nation's Economy and Enhancing Energy Security

Highlights

- Through the American Recovery and Reinvestment Act, the Administration made the largest investment in clean energy in history and the United States has nearly doubled renewable energy generation since 2008. According to industry experts, America's wind and solar industry currently account for tens of thousands of jobs.

- Since 2009, DOI has approved 29 onshore renewable energy projects: 16 solar projects, 5 wind farms, and 8 geothermal facilities – with total capacity of approximately 6,600 megawatts. The first solar project on public lands – 50 MW in Nevada – is anticipated to be fully operational and delivering power to the grid by May 2012.

- Through DOE's Loan Guarantee Program, the Administration has conditionally committed to support the financing of a new nuclear power plant in Burke, Georgia. This plant received its license from the Nuclear Regulatory Commission in February, making it the first new commercial nuclear power plant approved in the United States in more than three decades. When built, the plant will provide clean electricity to 1.4 million people.

A. Positioning America as the Global Leader in Clean Energy

Doubling Clean Energy Generation: The Obama Administration has made the largest investment in clean energy in history and the United States has nearly doubled renewable energy generation since 2008. In fact, last year, according to industry experts, the United States reclaimed the title as the world's leading investor in clean energy technologies, besting countries like China, India, and Germany.

Financing Deployment: Through loan programs, DOE has supported nearly 40 clean energy projects that are expected to employ more than 60,000 Americans, generate enough clean electricity to power nearly 3 million homes and displace nearly 300 million gallons of gasoline annually. The programs are supporting the world's largest wind farm, the first new U.S. nuclear plant in three decades, and several of the largest solar photovoltaic generation facilities.



To support the continued manufacture, development, and deployment of clean energy technologies, the President's FY 2013 Budget includes $5 billion in tax credits that will catalyze nearly $20 billion of total investment in manufacturing capacity for clean energy technologies and create tens of thousands of new construction and manufacturing jobs. The FY 2013 Budget also proposes to extend the 1603 "payments in lieu of tax credits" program and the Production Tax Credit (PTC) for electricity from renewable sources like wind, for which it is due to expire at the end of 2012.

Eliminating Wasteful Fossil Fuel Subsidies: We should not devote scarce resources to subsidizing the use of fossil fuels produced by some of the largest, most profitable companies in the world. The President has called for the elimination of $4 billion in inefficient fossil fuel subsidies.

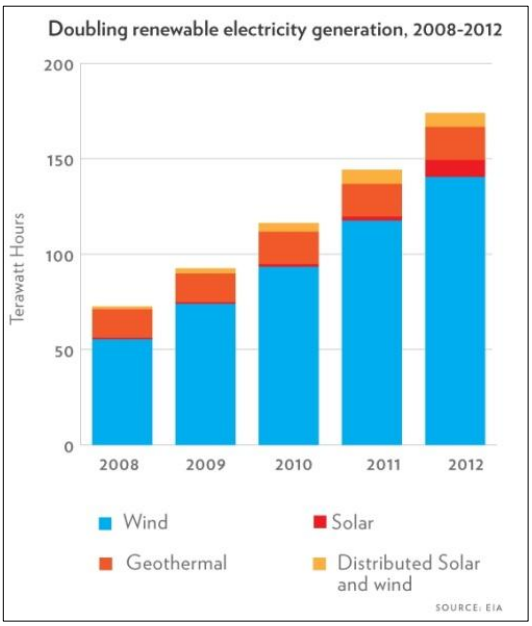
Permitting Clean Energy on America's Public Lands: As directed by the President, the Department of the Interior is working to permit 10,000 megawatts of renewable generation capacity – enough to power 3 million homes – from new projects by the end of 2012. Since 2009, DOI has approved 29 onshore

renewable energy projects—about 6,600 megawatts—including: 16 solar projects, 5 wind farms, and 8 geothermal facilities. These projects include the first solar projects *ever* permitted on public lands. In mid-2012, DOI expects that the first solar project on public lands – 50 MW in Nevada – will be fully operational and delivering power to the grid. The Department continues its work on environmentally responsible development of utility-scale renewable energy projects and has prioritized 17 projects, representing another 6,600 megawatts, for review in 2012.

The Department is also making progress on establishing a foundation for renewable energy development on public lands in the future. DOI has launched several important landscape level planning efforts including the Solar Programmatic Environmental Impact Statement (PEIS) that DOI is developing jointly with the Department of Energy. The Solar PEIS analyzes proposed solar energy development areas in six western States—Arizona, California, Colorado, Nevada, New Mexico, and Utah. The Department anticipates finalizing the Solar PEIS by the Fall of 2012.

Offshore, DOI is continuing to make progress in its "smart from the start" planning efforts to identify suitable areas for future wind energy development. Wind energy areas have been identified offshore Delaware, Maryland, New Jersey, Virginia, Massachusetts, and Rhode Island, with steps being taken to move toward holding the first competitive lease sales by the end of 2012. DOI is also proceeding with the permitting of a right-of-way for an offshore "backbone" transmission project that would be capable of transmitting up to 7,000 MW of offshore wind energy to the grid in the Mid-Atlantic States.

Setting a New Standard for Clean Energy in America: President Obama continues to believe that the best way to create a domestic market for clean energy, drive innovation, and create new energy jobs and industries is to establish a clear, ambitious, and long term policy goal. The centerpiece of the Administration's strategy is a Clean Energy Standard, or "CES" – which would double the share of electricity from clean energy sources to 80 percent by 2035 from a wide variety of clean energy sources, including renewable energy sources like wind, solar, biomass, and hydropower; nuclear power; efficient natural gas; and coal with carbon capture utilization and sequestration. 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.



While a CES will ultimately require Congressional legislation, the FY 2013 Budget advances this goal by increasing funding for renewable energy research and development, spurring advances in fossil energy technologies that reduce carbon emissions from coal-fired power plants, supporting nuclear energy, and promoting the expansion and use of clean energy across the country, including in rural areas.

B. Leading the World towards A Clean Energy Future

The Clean Energy Ministerial: The Clean Energy Ministerial, announced by President Obama and the Leaders of the Major Economies Forum on Energy and Climate, and led by Energy Secretary Chu, has made progress towards its goal of driving transformational low-carbon, climate friendly technologies by providing tools and platforms to improve the policy environment for energy efficiency, renewable energy, and clean energy access. Notable progress has also been made in the area of appliance and equipment efficiency; Clean Energy Ministerial (CEM) initiatives in these areas alone are estimated to have the potential to save energy equivalent to that which would be generated by 600 mid-size (500-MW) coal-fired power plants by 2030.

Launched the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants: In February 2012, the United States launched the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollution, a new global initiative to make rapid progress on climate change and air quality. Reducing pollutants that are "short-lived" in the atmosphere, such as methane, black carbon, and hydrofluorocarbons (HFCs), which together account for one-third of current global warming, can prevent more than 2 million premature deaths a year, avoid the annual loss of over 30 million tons of crops, increase energy security, and address climate change. Founding coalition partners include Bangladesh, Canada, Ghana, Mexico, Sweden, and the UN Environment Program.

Asia-Pacific Economic Cooperation (APEC) Summit: At the 2011 Asia-Pacific Economic Cooperation (APEC) Summit chaired by President Obama in Honolulu, leaders agreed to eliminate non-tariff barriers to environmental goods and services, including local content requirements, and cut applied tariffs on such goods and services to 5% by 2015. This will help lower costs, increase the dissemination of clean technologies, and create more green jobs. Leaders further committed to phase out inefficient fossil fuel subsidies and aspire to reduce the energy intensity of APEC economies by 45 percent by 2035.

Ensuring a Level Playing Field through Enhanced Trade Enforcement: In February 2012, the President established a new Interagency Trade Enforcement Center that brings together resources and investigators from across the Federal Government to target unfair international trade practices. In doing so, we will help to ensure that American companies in all sectors, including clean energy, are able to compete and thrive on a level playing field.

C. Increasing Production of Natural Gas Resources



The United States: Since 2009, the United States has been the world's leading producer of natural gas. In 2011, U.S. natural gas production easily eclipsed the previous all-time production record set in 1973. The Administration is focused on building on this success and taking advantage of the nearly 100 year supply of American natural gas. In his 2012 State of the Union Address, the President announced a new goal to develop natural gas resources in a way that would, according to outside experts, support employment for 600,000 Americans by the end of the decade. This includes jobs involved in the production and distribution of shale gas as well as jobs in companies that supply services and equipment to the shale gas industry.

Worldwide: The State Department and partner agencies including the Departments of Energy, Commerce, and Interior continue to engage interested nations on the safe and environmentally-sound development of unconventional natural gas resources. The Unconventional Gas and Technical Engagement Program (UGTEP) shares the experience and expertise of U.S. federal and state regulators, academic institutions, industry leaders, and community advocacy groups with international partners, including Argentina, Chile, China, Colombia, India, Jordan, Estonia, Latvia, Lithuania, Poland and Uruguay.

D. Jumpstarting the Domestic Nuclear Industry

Supporting Deployment of Nuclear Energy: Since taking office, President Obama has been committed to restarting America's nuclear industry to create new jobs and provide clean power to America's communities. In 2010, the Department of Energy issued a conditional commitment for a loan guarantee to support the first U.S. nuclear reactors in more than three decades. The project, which received regulatory approval in February 2012, is located in Burke, Georgia, and will bring two new Westinghouse AP1000 reactors online, supporting 3,500 construction jobs and 800 permanent jobs. When built, the plant will provide clean electricity to nearly 1.4 million people.

Ensuring the Safety of our Nuclear Fleet and Addressing the Challenge of Nuclear Waste Disposal: In July 2011, the Nuclear Regulatory Commission (NRC) Japan Task Force released its final report to determine additional safety measures and procedures that should be required at U.S. reactors in the wake of the Fukushima accident. NRC staff is taking steps to respond to individual safety-related recommendations. In addition, in January 2012, the Administration's Blue Ribbon Commission (BRC) on nuclear waste completed its comprehensive review of policies for managing the back end of the nuclear fuel cycle, including all alternatives for the storage, processing, and disposal of civilian and defense used nuclear fuel and nuclear waste. The Administration is reviewing the BRC's recommendations carefully, and taking steps within DOE's existing authorities to lay the groundwork for a sustainable, consent-based nuclear waste strategy.

E. Investing in Cutting-Edge Clean Coal Technology

Today, approximately 80 percent of the energy consumed in the United States comes from coal, petroleum, and natural gas, with coal-fired power plants accounting for approximately half of the electricity generated. The implementation of clean, state-of-the-art coal-based technologies will help ensure America's energy security while mitigating the environmental impacts of fossil fuel use. With an historic $3.4 billion in investments, the DOE is working with industry to keep the United States at the forefront of carbon capture, utilization, and storage technologies. These investments are already making an impact. In 2012, we saw the first utility-scale agreement to purchase low-carbon power from a power plant that uses carbon capture technology in Midland-Odessa, Texas. At the same time, the Energy Department is leveraging investments in this technology to study and demonstrate the use of captured carbon to help develop marginal oil wells through enhanced oil recovery (EOR). The learning from these 6 EOR demonstration projects may help drive market demand for captured carbon as well as increase domestic oil production.

F. Leading by Example – The U.S. Military and the Federal Government

The U.S. Military: As part of the President's commitment to a strong national defense, the Defense Department is harnessing energy efficiency and new energy technologies to give our troops better energy options on the battlefield, at sea, in the air, and at home. Through energy improvements, including $2.5 billion in FY 2013 investments, our military will be better able to project and sustain forces around the world and improve energy security at our bases. Nearly 90 percent of that investment will go toward improving energy efficiency. DoD is investing in better aircraft engines, hybrid electric drives for ships, improved power for patrol bases in Afghanistan, and higher building efficiency at facilities worldwide. DoD is also investing in alternative and renewable energy to benefit the defense mission. That includes solar power at the tactical edge in Afghanistan, R&D on biofuels, and a commitment to add 1 gigawatt of renewable energy at our bases, mostly through private financing and performance based contracts at no net cost to the Federal government.

DoD is also using its military installations to test advanced technologies that can accelerate reductions in the Department's facility energy costs and improve its energy security. Finally, to guide investments and policy, the Operational Energy Strategy Implementation Plan, released in March 2012, serves as a roadmap to transform the way the Department uses energy in military operations.

The Federal Government: In April 2011, Federal agencies and departments released, for the first time, the Office of Management and Budget (OMB) Sustainability / Energy Scorecards. These scorecards enable agencies to target and track the best opportunities to lead by example in clean energy, and hold agencies accountable to meet a range of energy, water, pollution, and petroleum reduction targets. Data for FY 2010 indicate the Federal Government reduced direct greenhouse gas emissions and greenhouse gas emissions associated with electricity and other offsite generated energy used by the Federal government by more than 6 percent. This puts the Federal government on track to meet the goals of reducing direct emissions by 28 percent by 2020, from a 2008 baseline.

III. Building Stronger, Healthier, More Livable Communities

Highlights

- Since October 2009, the Department of Energy and the Department of Housing and Urban Development have completed energy upgrades in more than one million homes across the country. In many cases, these upgrades save families over $400 on their heating and cooling bills in the first year alone.

- Through the President's Better Buildings Challenge, more than 60 private companies, hospitals, cities, states, colleges, and universities, among others, have collectively committed $2 billion in energy efficiency retrofits to 1.6 billion square feet of property—roughly the equivalent of 500 Empire State Buildings. The President has also directed federal agencies to enter into at least $2 billion in performance-based contracts over the next two years to achieve substantial energy savings at no net cost to the American taxpayer.

- Through USDA's Rural Energy for America Program (REAP) and other USDA programs, the Administration has helped approximately 13,000 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 enough energy to power nearly 600,000 American homes for a year.

A. Promoting Energy Efficiency Across the U.S. Economy

Reducing Energy Bills for Low Income Americans: Since October 2009, the Department of Energy and the Department of Housing and Urban Development (HUD) have completed energy upgrades in more than one million homes. DOE's Weatherization Assistance Program alone has completed energy efficiency upgrades in approximately 860,000 homes across the country. On average, these upgrades save American families more than $400 on their heating and cooling bills in the first year alone. The Weatherization Assistance Program has also been a successful job creator, supporting an average of approximately 20,000 direct jobs per quarter and thousands more indirect jobs throughout the supply chain.

Lowering Energy Costs for Renters and New Homeowners and Stabilizing Communities: Through the American Recovery Act's Neighborhood Stabilization Program 2 (NSP 2), the Tax Credit Assistance Program (TCAP) and other housing assistance programs, HUD has completed over 9,500 ENERGY STAR installations; and has performed over 17,500 efficient energy modifications that are helping low and moderate income families them save money on their energy bills. The NSP 2 program rehabilitates foreclosed and abandoned properties and sells them to new homebuyers or uses them as rentals. It is estimated that the $7 billion in NSP 2 will ultimately support over 80,000 jobs.

Improving Energy Efficiency through the ENERGY STAR Program: DOE and EPA's ENERGY STAR program made significant progress in 2011 through its vast network of partners to help Americans make informed decisions about cost-effective ways to save energy at home, at work and in our communities. DOE and EPA began phasing in more rigorous requirements for qualified homes and new and rehabilitated multifamily high rise buildings became eligible to earn the ENERGY STAR for the first time. In another record setting year, more than 7,500 buildings and factories were certified as ENERGY STAR, for a total of 16,500 buildings. Since the program was established 20 years ago, Americans have saved billions on their utility bills.

A Framework for Continued Growth in the Home Energy Upgrade Industry: The Administration has continued to implement initiatives identified through the "Recovery Through Retrofit" initiative and address the barriers to a robust and self-sustaining home energy efficiency market. Accomplishments include the pilot of DOE's Home Energy Score, a new voluntary program that is helping homeowners make cost-effective decisions about energy improvements, and the development of standard work specifications and health protocols for energy upgrades and guidelines for effective training and certification.

Setting New Standards for Residential and Commercial Appliances: In August 2011, DOE issued final energy efficiency standards for home refrigerators and freezers that will improve their efficiency by about 25 percent by 2014. These new standards, developed through a consensus process with manufacturers, consumer groups and environmentalists, are expected to deliver more than $200 in electricity bill savings for the typical consumer over the lifetime of the refrigerator. These standards are part of a broader Department effort designed to help families save money by increasing the efficiency of residential and commercial appliances and products. Under the Obama Administration, DOE has finalized new efficiency standards for more than thirty products, which are estimated to save consumers more than $300 billion through 2030.

The "Better Buildings" Initiative: The Better Buildings Initiative the President announced in February 2011 consists of administrative actions, a challenge to the private sector, and legislative proposals aimed at improving energy efficiency in commercial buildings by 20 percent by 2020. The Administration also announced a MOU between the Department of Energy and the Appraisal Foundation to establish standards and guidelines for industry practitioners for factoring energy performance into buildings appraisals, as well as a new competitive grant program ($1.5 million) for technical and community colleges to create training programs for building energy management.



In December 2011, the President announced new commitments to the Better Buildings Challenge. This is the public-private partnership component of the Initiative and now includes public and private sector commitments totaling more than 1.6 billion square feet, 300 manufacturing plants, and nearly $2 billion in financing support for building energy upgrades. In addition, to encourage the Federal government to lead in energy efficient practices, the President issued a Memorandum directing agencies to enter into a minimum of $2 billion in performance-based contracts over the next two years. These contracts represent an approach to financing retrofits by using long term-energy savings to pay for up-front costs, achieving significant savings at net cost to the American taxpayer.

Unlocking Investments in Industrial Energy Efficiency: The Administration has partnered with manufacturing companies, representing over 1,400 plants, to improve energy efficiency by 25 percent over 10 years. If this performance were achieved by the entire U.S. manufacturing sector over the next decade, savings in total energy costs could exceed $100 billion. The Administration will continue to take new steps to work with manufacturers and states to support investment in industrial energy efficiency.

In addition, Federal agencies have partnered with state and local officials and businesses through the Economy, Energy, Environment (E3) initiative to help manufacturers streamline their operations, increase their profitability and sustainability, and become more competitive. Finally, the President is urging Congress to pass bipartisan legislation that supports investments in industrial energy efficiency such as combined heat and power and encourages state regulatory reform.

B. Promoting Energy Efficiency and Clean Energy in Rural America

Through USDA's Rural Energy for America Program (REAP) and other USDA programs, the Administration has helped approximately 13,000 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 enough energy to power nearly 600,000 American homes for a year. Since 2003, REAP has

funded over 1,000 solar projects and over 560 wind projects. In addition, a first-of-its-kind rule from the USDA Rural Utilities Service will soon be finalized and provide new opportunities for loan and loan guarantees in energy efficiency. This program will focus will attract new businesses and create new jobs in rural areas, encourage the use of renewable energy fuels, and support residential and commercial energy audits.

C. Developing Robust Public Transit Options

The TIGER Program: The FY 2013 Budget proposes to permanently authorize the TIGER (Transportation Investment Generating Recovery) program, which has supported innovative projects like multi-modal transportation hubs and streets that accommodate pedestrian, bicycle, and transit access. TIGER has leveraged hundreds of millions of dollars in private, State, and local funds. The proposal includes $500 million in competitive grant funding in FY 2013 and $3.4 billion over six years. In addition, the Budget proposes $108 billion for transit programs over six years, more than doubling the commitment to transit in the prior reauthorization for both existing capacity and capacity expansion.

In three previous TIGER rounds, DOT funded 172 innovative projects in all 50 states, the District of Columbia, and Puerto Rico. Demand has been incredibly high, with over 3,300 applications totaling over $93 billion requested. This unprecedented investment for buses, subways, and other systems of public transportation will help create thousands of jobs, improve and expand travel options, cut energy use and help make our communities more livable.

Improving Transportation Choices: In 2011, the Federal Transit Administration (FTA) entered into more congestion-relieving major capital construction grants in a single year than ever before. These projects will provide Americans greater transportation choice while reducing our nation's dependence on foreign oil. Looking ahead, the FTA intends to keep the momentum going by investing in many new projects, including Charlotte, North Carolina's 9.3 mile LYNX Blue Line Extension, which would provide commuters along the congested I-85/US-29 a fuel-efficient alternative to high-gas prices.

Maintaining a Reliable, Fuel-Efficient Bus Transit System: In FY 2011, DOT awarded more than $750 million through the FTA's State of Good Repair discretionary grant initiative, which will significantly help to modernize our nation's bus fleet, including more than $6 million awarded to Centre Area Transportation Authority in State College, Pennsylvania, to purchase 16 new energy-efficient, compressed natural gas fueled buses.

Investing in Zero-Emission Transit Technology: FTA announced more than $13 million through the FY 2011 National Fuel Cell Bus Program to continue the development of commercially viable fuel cell bus technologies that will significantly improve fuel efficiency and reduce our nation's dependence on foreign oil. For example, FTA will invest $3.3 million – half of the total project cost – for UTC Power to integrate the next generation fuel cell into a lightweight New Flyer transit bus. The zero-emission bus will be demonstrated in Connecticut.

The National Clean Diesel Campaign: Through EPA's National Clean Diesel Campaign (NCDC), the Administration has promoted clean air strategies by working with manufacturers, fleet operators, air quality professionals, environmental and community organizations, and state and local officials to reduce diesel emissions. This effort includes the State Clean Diesel Program which provides communities with funds to replace or retrofit outdated diesel engines or to replace older engines with cleaner emerging technologies. From 2008 to 2010, EPA awarded nearly $470 million to more than 350 grantees in 50 states and the District of Columbia to retrofit, replace, or repower more than 50,000 vehicles and equipment in a variety of industries.

D. Deploying Electrification Infrastructure in American Communities

Before 2009, there were fewer than 500 electric vehicle charging stations in America. But because of the investments made by the Obama Administration, there are over 3,000 chargers deployed today and there will be more than 18,000 by 2012. Under the Transportation Electrification Initiative at DOE, companies are developing, deploying and analyzing EVs and EV infrastructure, and educating the public to help accelerate the market adoption of advanced electric-drive vehicles. The eight projects under the Transportation Electrification Initiative represent the world's largest electric vehicle demonstration project and will result in the deployment of over 13,000 grid-connected vehicles and over 22,000 charging points in residential, commercial, and public locations nationwide by the end of 2013. Through these cost-shared projects, DOE will collect information about how consumers use and charge electric vehicles, which will be critical to informing the broader rollout of electric vehicles and chargers nationwide.

E. Tracking Greenhouse Gas Emissions

In January 2012, for the first time, the U.S. Environmental Protection Agency (EPA) released greenhouse gas (GHG) data collected under the GHG Reporting Program. The data set shows 2010 U.S. GHG emissions from large industrial facilities, and from suppliers of certain fossil fuels and industrial gases. Reporting entities used uniform methods for estimating emissions, which enables data to be compared and analyzed. The data set will be used to inform public policy, identify key sources of GHG emissions over time, and help communities and businesses track emissions and find cost-saving efficiencies.

IV. Innovation for the Next Generation

Highlights

- The Department of Energy's Advanced Research Projects Agency – Energy (ARPA-E), which the Administration funded for the first-time ever in 2009, has supported more than 120 individual projects aimed at achieving new and transformational energy breakthroughs.

- To unleash American innovation, the Administration has launched a series of clean energy innovation hubs, which bring together teams of the best researchers and engineers in the United States to solve major energy challenges. The hubs will focus on improving batteries and energy storage, reducing constraints from critical materials, developing fuels that can be produced directly from sunlight, improving energy efficient building systems design, and using modeling and simulation for advanced nuclear reactor operations.

- The cost of solar modules has come down 400 percent in the past four years, from about $4 per watt in 2008 to $1 today. We are well on our way to achieving our ambitious goal – that solar power that costs the same or less than fossil fuels by the end of this decade.

- In October 2011, the Obama Administration announced that it would accelerate the permitting review of seven proposed electric transmissions lines through a Rapid Response Team for Transmission. These infrastructure projects, when built, will increase grid capacity, facilitating better integration of renewable energy sources, avoiding blackouts, and helping to accommodate the growing number of electric vehicles on the road.

A. Building a 21st Century Electric Grid

Expanding the Grid: In 2009, nine agencies signed a Memorandum of Understanding to improve how high-voltage interstate transmission lines are sited on Federal lands. In October 2011, the Administration announced that it would accelerate the permitting review of seven proposed electric transmissions lines through a Rapid Response Team for Transmission. These infrastructure projects, when built, will increase grid capacity, facilitating better integration of renewable energy sources, avoiding blackouts, and helping to accommodate the growing number of electric vehicles on the road.

Empowering Consumers and Businesses with Energy Data: Building on our commitment in the *Blueprint* to empower energy consumers and foster innovation, the Administration launched a "Green Button" initiative in September 2011 to promote the common-sense idea that electricity customers should be able to download their own energy usage information in consumer-friendly and computer-friendly formats. In response to the Administration's call-to-action, the three largest electric utilities in California—plus utilities in Texas, Maryland, and Washington, DC – have publicly committed to offer customers the ability to download their own energy usage data in a nationally recognized standard. Armed with their own detailed electricity data, customers will have more opportunities and choices to use a growing array of on-line services that help homeowners and building owners save on their energy bills.

B. Staying on the Cutting-Edge with Clean Energy R&D:

The Advanced Research Projects Agency-Energy (ARPA-E): In 2009, the Administration funded ARPA-E for the first time ever with $400 million as part of the Recovery Act. The new agency invests in projects that swing for the fences – high-risk, high-reward efforts to develop transformational energy technologies that hold the potential to radically shift our Nation's energy reality.

Building upon the initial investment, in late September 2011, the ARPA-E program announced 60 cutting-edge research projects in 25 states. In total, The ARPA-E has supported more than 120 individual projects. Projects include: work to develop improved energy storage devices for the electric grid; intelligent building

systems; next generation vehicle batteries that could make longer range electric cars that are cheaper to own and operate than today's gasoline cars; and groundbreaking new liquid fuels that could be produced from bacteria in combination with carbon dioxide and chemical energy or electricity.

After just two years, many of ARPA-E's projects are already generating additional private sector investment. Eleven of the projects have collectively garnered more than $200 million in private outside funding after an original investment from ARPA-E of just $39.1 million. Also, several new ventures have already formed spin-off companies from ARPA-E-funded projects, creating yet more new technologies, products, and jobs.

Bringing Together the Best Minds to Advance Critical Energy Research and Development: In order to catalyze innovation, the Obama Administration has launched a series of clean energy innovation hubs, which bring together teams of the best researchers and engineers in the United States to achieve major energy goals. In 2010, the first Energy Innovation Hubs began operations with some of the top scientists from academia, industry, and government charged to collaborate and overcome known barriers in energy technology. The first three hubs focused on how to build more-efficient nuclear reactors, design more energy efficient buildings, and produce biofuel from the sun.

Modeled after the concentration of brainpower and resources that defined the Manhattan Project, these integrated research centers combine basic and applied research with engineering to accelerate scientific discovery in these critical energy issues. In FY 2012, Congress partly funded the President's request to double the number of hubs – providing resources to launch two new hubs this year. The Batteries and Energy Storage Hub will focus on accelerating research and development of electrochemical energy storage for transportation and the electric grid. The Critical Materials Hub will primarily focus on technologies and approaches that increase the availability and reduce or eliminate the need for critical materials for energy efficiency and renewable energy systems. Together, the five hubs will shorten the path from laboratory innovation to technological development, and lead the way toward American competitiveness, economic growth and energy security.