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## The White House

Office of the Press Secretary

For Immediate Release

February 25, 2016

# FACT SHEET: The Recovery Act Made The Largest Single Investment In Clean Energy In History, Driving The

# Deployment Of Clean Energy, Promoting Energy Efficiency, And Supporting Manufacturing

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***Transforming our Energy System, Creating Good Paying Jobs, and***

***Saving Americans on their Energy Bills***

Through the American Recovery and Reinvestment Act (Recovery Act), President Obama made the largest single investment in clean energy in history, providing more than \$90 billion in strategic clean energy investments and tax incentives to promote job creation and the deployment of low-carbon technologies, and leveraging approximately \$150 billion in private and other non-federal capital for clean energy investments.

Clean energy investments made up over one eighth of total Recovery Act spending and provided a meaningful boost to economic output. [A new report released today](#) by the White House Council of Economic Advisors (CEA) estimates that the entire Recovery Act raised the level of GDP by between 2 and 3 percent from late 2009 through mid-2011. In addition to providing a stimulus, the funding helped address market failures in clean energy markets. The funding reached nearly every aspect of the value chain for numerous key clean energy technologies, including advanced vehicles, batteries, carbon capture and sequestration, and technologies to enhance energy efficiency. These investments were a down payment toward an innovative sustainable 21st century clean economy and helped the country take a large step forward to reducing fossil fuel consumption and reducing carbon pollution.

These investments transformed America's clean energy economy by:

- **Supporting Job Creation:** [In a new report released today](#), CEA estimates that the Recovery Act clean energy-related programs supported roughly 900,000 job-years in innovative clean energy fields from 2009 to 2015. In fact, the Recovery Act provided funding for 180 advanced energy manufacturing projects, including Saft America in Jacksonville Florida where the President is visiting tomorrow, bringing direct and indirect jobs to communities across the country.
- **Scaling up Renewable Energy Generation:** Through loan guarantees to support more than \$40 billion of investment as well as tax credits, the Recovery Act spurred a major expansion of renewable energy generation through more than 100,000 projects across the country, including one of the world's largest wind farms and the first large scale solar

projects. These investments have helped lead to dramatic increases in renewable energy generation and reduced carbon pollution. Since 2008, solar electricity generation has increased over 30 times and wind generation has increased over three times. In fact, renewable energy accounted for more than half of new installed power sector capacity in 2015.

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- **Reducing Costs:** The Recovery Act funding supported a plunge in technology costs for many clean energy technologies, making them even more competitive against fossil fuel generation. Since 2008, the cost of utility-scale solar PV installations has fallen nearly 60 percent. In fact, solar is currently at grid parity in 20 U.S. states and 42 states are expected to reach that milestone by 2020 under business-as-usual conditions. Battery costs for electric vehicles have fallen from almost \$1,000/kWh in 2008 to under \$300/kWh in 2014. The cost reductions for these and other technologies resulted from a number of factors—including economies of scale, technology learning, and new business practices—that were assisted by the widespread deployment made possible through the Recovery Act.
- **Driving Innovation:** *The Recovery Act provided the seed funding needed to start the Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) program.* Today, the Administration is announcing that the program has invested in 475 transformative energy technologies and its projects have secured \$1.25 billion in private sector follow-on funding. ARPA-E is also announcing up to \$30 million in funding for a new program called Integration and Optimization of Novel Ion Conducting Solids (IONICS) that seeks to create innovative components for the next generation of batteries, fuel cells, and other electrochemical devices.
- **Improving Energy Efficiency:** The Recovery Act funding for Department of Energy's Weatherization Assistance Program improved the energy efficiency of low-income residences by weatherizing more than one million homes. On average, these improvements are saving families more than \$3,000 on their heating and cooling bills over the lifetime of measures installed.
- **Promoting Grid Modernization:** Recovery Act funding for the Smart Grid Investment Program helped to support the installation of 16 million smart meters by 2016. Smart meter projects around the country can help consumers understand their energy use and pricing, helping to facilitate the transition to a more resilient electric grid infrastructure.
- **Increasing Advanced Vehicle and Fuels Technologies:** Fuel efficient vehicle choices for consumers have increased dramatically due in part to the Recovery Act. When the Recovery Act was signed into law, there were very few electric vehicle options available to consumers and a limited number of hybrids. Now we have a huge set of options for consumers to choose from with more models to come. Today, 16 manufacturers offer 28 electric vehicle models, presenting consumers with real choices as they look to adopt new technology, enhancing the competitive position of U.S. industry, driving job creation through American innovation, and increasing the number of plug-in electric vehicles on

U.S. roads to 400,000 at the end of 2015. Recovery Act investments have also supported public transit through the purchase of 12,000 buses, vans, and rail vehicles and the construction or renovation of over 850 transit facilities.

- **Stimulating the Growth of Energy Storage:** While the deployment of renewable energy like wind and solar continues to accelerate, thereby reducing the use of carbon-intensive fossil fuels, it is critical that we have storage capabilities to successfully integrate new power sources into the electric grid. Due in part to investments made during the Recovery Act, we've made a lot of progress. According to a new report that will be released next week, the amount of battery storage increased by 500 percent from 2012 to 2015. And this occurred while, according to external analysts, the average lithium-ion battery price fell 53 percent between 2012 and 2015, and by 2019 prices are forecast to decline by half again. As more renewable energy comes online, we expect the amount needed for storage to accelerate substantially. External analysts have projected that storage installations in the US over the next four years will total nearly 10 times what is currently deployed. These estimates could be even higher due to the extensions of the renewable energy tax credits.

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### ***Accelerating Clean Energy Manufacturing.***

The Recovery Act increased our capacity to manufacture wind turbines, electric vehicles, batteries, and other clean energy components domestically. The Recovery Act authorized a 30-percent tax credit for investments in more than 180 advanced energy manufacturing projects provided \$2.3 billion for renewable energy generation, energy storage, advanced transmission, energy conservation, renewable fuel refining or blending, plug-in vehicles, and carbon capture and storage. The funding helped support a dramatic increase in the share of domestically-produced wind turbine components used in the United States from 25 percent in 2006-2007 to 72 percent in 2012. Recovery Act funds were also critical to setting the foundation for the plug-in electric vehicle market by accelerating the development of advanced battery and electric drive component manufacturing plants in America. A few examples of manufacturing companies supported through the Recovery Act include:

Ø **Saft America:** Under the Recovery Act, the Department of Energy awarded \$95 million to Saft America to build a 235,000 square foot battery factory capable of manufacturing high quantities of lithium-ion cells, modules, and batteries in Jacksonville, Florida. The factory was dedicated in September, 2011, and the three lithium ion cell production lines in operation produce advanced batteries for industrial, agricultural, and military applications. Saft's Jacksonville plant brought nearly 300 new jobs to the community, including for many veterans and is playing an important role in helping expand the clean energy economy.

Ø **Ford Motor Company:** Using Recovery Act funds, the Department of Energy invested \$62 million in boosting production at the 47 year old Van Dyke Transmission

Plant. This facility produces electric drive transaxles with integrated power electronics for the multiple hybrid and hybrid plug-in vehicles. Once produced overseas, the HF35 transaxle is now produced exclusively at the Van Dyke plant in Sterling Heights, Michigan, which currently employs 1,497 total. Ford's electric motor supplier for the HF35 has built a U.S. manufacturing plant to meet Ford's increased demand.

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### ***Scaling up Renewable Energy Generation.***

The Recovery Act made unprecedented investments in renewable generation, contributing to the largest growth in installation of wind turbines, solar panels, and other renewable energy sources in U.S. history. The Section 1603 Payments-In Lieu-Of-Tax-Credits program, which began with the Recovery Act, provided nearly \$25 billion in funding to support the installation of more than 104,000 wind, solar, geothermal, and biomass projects with the power to provide more than 33 gigawatts of power, enough to power more than 8 million homes each year. Additionally, the Recovery Act extended an existing 2 cents per kilowatt-hour (in 2008 dollars) production tax credit for wind, geothermal, and hydroelectric generation and a 1 cent per kilowatt-hour production tax credit for biomass and landfill gas, which was extended for wind another five years last year.

The Recovery Act also provided a major infusion of funds to the Department of Energy's (DOE) Loan Programs Office (LPO), which guaranteed \$16.1 billion in loans to Recovery Act projects. These include one of the world's largest wind farms, several of the world's largest solar generation and thermal energy storage systems. Commercial lenders are often unwilling or unable to take on the risk of supporting the deployment of a new technology until it has a solid history of commercial operation, and this was only exacerbated during and after the financial crisis. LPO played a crucial role in bridging this financing gap by issuing loan guarantees available under the American Recovery and Reinvestment Act. Specifically, LPO helped address this market barrier by providing \$4.6 billion in financing for the first five utility-scale PV projects larger than 100 MW in the United States. In 2009, there was not a single solar PV facility larger than 100 megawatts operating in the United States. These loans jumpstarted the utility-scale PV solar market, financing the first five utility-scale PV projects larger than 100 MW in the United States. Today, there are 28 utility-scale PV plants in the U.S. larger than 100 MW, all financed privately, with a total capacity greater than 6,870 MW. The successes of the program have supported a host of new jobs and more than \$40 billion in total investment, including:

#### **Ø NRG Solar and MidAmerican Renewable's Agua Caliente Photovoltaic Solar Plant:**

LPO provided a \$967 million DOE loan guarantee in August 2011 to Agua Caliente for a 290-megawatt solar PV generation plant located in Arizona that is the first to use new inverter technologies that make the plant more reliable and allow operation during larger voltage variations than traditional inverters. Use of this technology improves the delivery of clean electricity generated by PV systems to the utility grid. The project

features more than 4.9 million of First Solar's thin-film cadmium-telluride solar modules and 39,000 metric tons of American steel. When built, Agua Caliente was one of the largest utility-scale solar PV projects in the world.

Ø **Brookfield Renewable's Granite Reliable Wind Farm:** LPO provided a \$169 million partial loan guarantee to finance Granite Reliable, a 99MW wind power generation project located in New Hampshire. The project was one of the first onshore wind projects to use a 3MW turbine for its electrical generation technology, leading to cost reductions on a per megawatt basis.

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### ***Improving Energy Efficiency***

The Recovery Act promoted energy efficiency through investments that reduce energy consumption in many sectors of the economy, including nearly \$5 billion for the Weatherization Assistance Program which funded energy efficiency retrofits in low-income homes. In addition to WAP, efficiency efforts from the Recovery Act supported the installation of 200,000 energy efficient streetlights and 280,000 traffic signals across the country.

Ø **Weatherization Assistance Program (WAP):** Recovery Act investments in the weatherization program trained thousands of new workers to update inefficient homes, supported tens of thousands of jobs, and weatherized more than one million homes. Families who participated will save more than \$3,000 on their energy bills and benefit from thousands of dollars in health and safety improvements. More than 10,000 American businesses were supported by the activities of WAP including manufacturers, supply chain vendors, and private contractors. When combined with other home efficiency programs through DOE and HUD, more than 1.6 million homes have benefited from energy efficiency improvements, leading to \$16.4 billion in savings over the life of these measures, and avoiding more than 85 million tons of carbon emissions, equivalent to the annual greenhouse gas emissions from more than 17.7 million cars.

Ø **Traco, a division of Kawneer - Low Emissivity High Efficiency Windows:** Traco, a division of Kawneer, and a window manufacturer since the early 1940s, partnered with the EERE's Building Technologies Office to use a \$1.3 million Recovery Act investment to develop and bring to market new, energy efficient OptiQ™ Ultra Thermal Windows. These windows can substantially reduce energy losses. In fact, the energy losses are estimated to be reduced by up to 40 percent when compared to some of the most efficient windows previously available on the market, such as double-pane low-emissivity windows. This new technology will reduce the estimated 4 quadrillion Btu of energy lost through windows in the U.S. every year.

## **Promoting Grid Modernization**

The Recovery Act appropriated more than \$10 billion to support projects to help modernize the electric grid, enhance the efficiency of the U.S. energy infrastructure, and ensure reliable electricity delivery, largely through smart grid projects and interconnection transmission planning.

Important investments we made were on our grid. President Obama, allocated \$4.5 billion in Recovery Act funds to the Department of Energy for investments in modernizing our electrical infrastructure. DOE, in collaboration with the electricity industry, jointly invested over \$9 billion in 131 cost-shared projects through the Smart Grid Investment Grant Program and Smart Grid Demonstration Program. Today, we are seeing these investments bear fruit - increasing the resilience and reliability of our power grid. As a result of the Smart Grid Investment Grant program funding, nearly 16 million smart meters have been installed. In addition, we are building a modern 21st century grid - that means deploying thousands of automated switches and capacitors within distribution grids across the country, as well as hundreds of synchrophasors to improve the reliability and efficiency of the transmission system. With the deployment of these technologies, we are seeing both reductions in energy demand through the application of time-based rates -and improved operational efficiencies, including more efficient outage restoration efforts. Examples include:

Ø **Oklahoma Gas & Electric**, instituted a time-based rate program as they deployed smart meters—a program that is already resulting in significant peak demand reductions. OG&E expects to eventually reduce peak demand by 170 MW, allowing it to defer the construction of a gas-fired peaking power plant. In addition, OG&E customers enrolled in the pricing program saved on an average of \$150 per year on their electricity bills.

Ø **Electric Power Board (EPB) of Chattanooga under the Smart Grid Investment Grant Program:** EPB's smart grid project, cost \$226.7 million with federal cost share \$111.6 million, accelerated the deployment of a fiber optic network as the primary means of communication for all smart grid equipment and delivered time-based rate programs to customers to create incentives for peak load and overall bill reductions. In a part of the country that is often affected by severe weather, EPB made its distribution system more robust while improving operations with the deployment of smart grid technologies, allowing EPB to provide continued reliable electric service and respond more effectively to such events. EPB has estimated that the increased reliability is worth roughly \$50 million a year to Chattanooga area businesses and residents and that the number of customer-minutes lost to power outages has decreased by 50%.

## **Increasing Advanced Vehicles and Fuels Technologies**

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In addition to supporting a domestic manufacturing capability for advanced batteries and electric drive components, the Recovery Act funded research, development, demonstration, and deployment of a broad portfolio of clean and efficient alternative fuel vehicles and fueling infrastructure. ARRA directed \$6 billion toward programs to promote research on and deployment of the next generation of automobile batteries, advanced biofuels, plug-in hybrids, and all-electric vehicles, and the infrastructure needed to support operationalizing these technologies. These pivotal investments have positioned the United States as a global leader in transportation innovations. Today, 16 manufacturers offer 28 electric vehicle models, presenting consumers with real choices as they look to adopt new technology, enhancing the competitive position of U.S. industry, driving job creation through American innovation, and increasing the number of electric vehicles on the road to 400,000 in 2015. Recovery Act investments also helped lay the groundwork for a transition to a cleaner and more energy efficient transportation system with over \$18 billion initially allocated towards cleaner transportation. This investment supported public transit with purchase of 12,000 buses, vans, and rail vehicles, the construction or renovation of over 850 transit facilities, 49 high-speed rail projects, 98 percent of which are either complete or with construction underway. A few examples include:

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Ø **SuperTruck:** Cummins and Peterbilt received \$38.8 million, while Daimler Trucks North America received \$35.8 million, bringing the total Federal funding to \$74.6 million for Recovery Act-funded, DOE-managed SuperTruck projects. The SuperTruck Initiative originally focused on boosting freight efficiency by 50% over baseline tractor trailers by 2015. SuperTruck partner Daimler Trucks North America achieved a 115% freight efficiency improvement over the baseline with their Freightliner truck achieving 12.2 mpg.

Ø **General Motors' Brownstown Battery Assembly Plant:** With \$105.7 million (GM's share was \$129.1 million) in support from the Recovery Act, the plant was built to assemble battery packs for GM's Volt extended range electric vehicle, with the potential to assemble packs for additional electric and hybrid electric vehicles. Currently the plant is producing battery packs for the second generation Chevrolet Volt, the Cadillac ELR, the all-electric Spark EV, as well as packs for future undisclosed vehicles. The Volt and ELR packs are made with battery cells manufactured in the United States in a facility supported by the Recovery Act.

### ***Investing in Carbon Capture and Sequestration.***

One strategy for limiting greenhouse gas emissions is to prevent the carbon released by fossil fuel combustion from entering the atmosphere. The Recovery Act provided \$2.1 billion to support initiatives that range from characterizing the carbon sequestration potential of geologic formations, to cost-sharing agreements to demonstrate advanced carbon capture and storage technologies for coal, including:

Ø **Petra Nova - W.A. Parish Post-Combustion CCS Sequestration project:** DOE provided \$163 million in financial assistance through the Clean Coal Power Initiative (CCPI) Round 3, which includes funding from the Recovery Act. The Petra Nova project, a joint venture between NRG Energy and JX Nippon Oil & Gas Exploration will be the first commercial-scale post-combustion carbon capture retrofit project in the U.S. Once completed, the energy technology project will capture about 1.4 million metric tons of carbon dioxide (CO<sub>2</sub>) annually from an existing coal-fired power plant in Texas, and the captured CO<sub>2</sub> will then be used to extract additional, hard-to-access oil from a previously depleted field 80 miles away. Construction is expected to be completed in early 2017, and already there are solvent tanks, absorber sections, and the cogeneration unit in place.

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Ø **Archer Daniels Midland (ADM) Industrial CCS Project:** DOE awarded \$141 million to ADM for the Illinois Industrial Carbon Capture and Storage project, which demonstrates an integrated system for collecting carbon dioxide from an ethanol production plant and geologically sequestering it deep underground. ADM finished construction on the project and began operations in 2015. It will inject an estimated 900,000 metric tons of carbon dioxide a year into the Mt. Simon Sandstone Reservoir - one of the largest and best saline aquifers in the world.

### ***Driving Innovation***

The Recovery Act invested in the science and technology needed to provide the foundation for the clean energy economy. A total of \$400 million was allocated to the Advanced Research Projects Agency - Energy (ARPA-E) program, to fund new, creative research ideas aimed at accelerating the pace of innovation in advanced energy technologies. ARPA-E's mission is to accelerate transformative energy technologies too early for the private sector. The agency received its initial budget of \$400 million through the Recovery Act. Since 2009, ARPA-E has funded more than 475 potentially transformational energy technology projects through 30 focused technology programs and three open funding solicitations. These include innovative solar technologies, second-generation biofuels, which utilize agricultural and municipal waste, as well as more efficient batteries, superconducting wires, and vehicles powered by natural gas. These technical achievements have spurred millions of dollars in follow-on private sector investment that have created jobs and grown the economy.


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