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## Obama Has Done More for Clean Energy Than You Think

The Great Recession enabled bold steps to seed a clean-energy revolution

By David Biello | September 8, 2015 | 0

A blue-black field of 5.2 million solar panels tilted toward the Arizona sun might just be the Hoover Dam project of the Great Recession. The Agua Caliente Solar Power Project hosts nearly 300 megawatts of silicon photovoltaics (PV) that turn sunshine into electricity. That made the Yuma County facility the largest working solar farm in the world when it opened in April 2014. But when it comes to mega-energy projects, Agua Caliente has competition, including four of the world's largest solar-power plants to use the sun's heat and one of the largest wind farms on the planet. And it's all thanks to billions in loans from the U.S. Department of Energy's Loan Programs Office (LPO).

The most important thing the Obama administration has done to combat climate change may not end up being raised fuel-efficiency standards for cars and trucks or even its Clean Power Plan to cut carbon dioxide emissions from power plants. The most important thing may turn out to be the loans that enabled large power facilities that run on sunshine or Earth's heat to break ground out west, wind farms to be built from coast to coast and construction of the nation's first brewery for biofuels not made from food—as well as a host of other advanced manufacturing energy projects.

The loan program got its start a full decade ago with the Energy Policy Act of 2005—legislation that aimed to provide incentives to produce energy in the U.S., whether by drilling for oil in the Gulf of Mexico or building new power plants. Only companies with established credit histories, however, like utility giant Southern Co., could take advantage of the loan program created by that bill. Companies behind new, alternative energy projects, like electric-carmaker Tesla Motors, typically did not have the benefit of such track records, however. As a result, almost no one applied for a loan.

So in 2009, as part of the American Recovery and Reinvestment Act to deal with the economic fallout of the Great Recession, the loan program got new terms. Most importantly, the federal government agreed to take more of the financial risk for renewable energy projects. The result was a stampede of applications. "There were hundreds of applications and 15 people working as hard as they possibly could when I got there," recalls Jonathan Silver, who became head of the LPO in 2009 and is now a managing director at Tax Equity Advisors and a clean-energy investor and consultant. "We were building this car as we drove it, which is not easy."

The loan program still required innovative technology, defined as "new or significantly improved technologies as compared with commercial technologies" (with commercial defined as used in three or more other projects over more than five years), but suddenly



**AGUA CALIENTE:** This big solar project in Arizona is just one of the large clean power plants enabled by the Energy Department's Loan Program Office.

*Courtesy of NRG*

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had a lot more money, specifically some \$16 billion to loan before September 2011 on top of the \$56 billion already available. The program also had the full expertise of the Energy Department to evaluate projects and help new technologies overcome the hurdles to commercialization, often dubbed the "valley of death" by those in the finance and tech industries. Those innovations range from the basic layout of solar farms of more than 100 megawatts to [storing sunshine in molten salts](#) and using lens to concentrate it and improve photovoltaic efficiency.

Between March 2009 and August 2010, when the window closed for new applications, the loan program received hundreds of submissions. By September 2011, the \$16 billion had been loaned to various renewable energy projects. An additional \$16 billion in loans, guarantees or commitments have been made since then, including \$8 billion to help build the nation's [first new nuclear reactors in more than 30 years](#) in Georgia.

The biggest challenge the loan program faced may not have been public criticism of failed deals like [Solyndra](#), Fisker Automotive and [Beacon Power](#) or technology letdowns such as the [Ivanpah solar-thermal power plant](#) producing less electricity than expected. Rather, the biggest challenge came from within the Obama administration itself, particularly the White House Office of Management and Budget (OMB), which stood athwart greater ambition. For example, one deal, dubbed [SolarStrong](#), would have loaned \$344 million to put solar panels on housing on military bases across the country. But OMB axed the deal because budget rules require it to assume that the Department of Defense might not have the appropriations to repay the loan in future decades. "At which point, all you can do is go home and have a scotch," Silver recalls.

"Military appropriations are not considered permanent appropriations," explains Peter Davidson, who oversaw the LPO from 2013 to June of this year. "It's the environment we have to work in, we try and do what we can."

In the end, the LPO's successes helped kill off some of its own portfolio of projects. Building utility-scale solar photovoltaic plants like Agua Caliente and [Antelope Valley](#) helped render obsolete solar thermal power plants like Ivanpah and [Solana](#) as silicon technology improved dramatically and costs dropped whereas the price of steel and glass remained relatively high. Large photovoltaic installations also helped make solar panels so cheap that it [drove companies like Solyndra](#)—whose business model relied on PV remaining expensive—into bankruptcy. "We were simply financing the best deals available," Silver says, noting that the program could not independently seek out good projects. "The single thing that bound all these applications together was not their size or technology or geography or financing structure. The single thing that bound them together is that they applied."

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That also means the loan program may have taken too little risk. The program has made a profit of nearly \$1 billion in interest payments to the U.S Treasury to date. At least \$5 billion more is expected over the next few decades as loans are paid back. That compares with \$780 million in losses to date, the bulk of which is accounted for by the [\\$535 million loaned to Solyndra](#). And more money could be made if the program were to ever sell its group of loans rather than managing them for the next few decades.

Already, [Tesla has repaid its \\$465-million loan](#) nine years early, thanks to the innovative financing terms devised in its deal, part of \$3.5 billion in loans that have already been repaid. Such advanced vehicle loans, for projects like [Ford's EcoBoost engine](#), will help achieve the Obama administration's higher fuel-efficiency standard. Combined, these fuel-efficiency technologies are expected to help save some 600 million metric tons of CO2 per year compared with existing vehicles. Elsewhere, [1366 Technologies](#), another loan recipient, may yet make silicon photovoltaics even cheaper with its new, less wasteful manufacturing technique. And wind turbines produce electricity at a price that is now competitive with burning fossil fuels.

Private banks have followed where the LPO first tread, building 17 additional photovoltaic power plants larger than 100 megawatts. "Since September 2011 more than 1,700 megawatts of solar [PV] projects have been built," Davidson notes. "There is not one dime of federal financing in any of those projects. That, for us, is a success." And the solar-thermal technology in use at facilities like [Crescent Dunes](#) is also being built worldwide, in countries like Chile and South Africa.

But much more is needed to accomplish an [energy transition](#) that would see U.S. greenhouse gas pollution drop by 80 percent in the

next 35 years. That's why some would like to see the loan program turned into a kind of permanent green development bank, although that is unlikely to happen in the current political environment. That's even though the LPO is a bipartisan achievement, launched under Republican Pres. George W. Bush and accelerated and amplified by the Democratic administration of Barack Obama. "Let's take the profits back and turn it into an evergreen fund," Silver suggests.

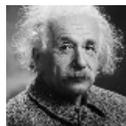
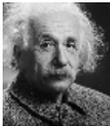
Regardless, the success of the loan program with Recovery Act money encouraged the Obama administration to reopen solicitations for loan applications in 2013: \$8 billion for "advanced fossil projects," including coal, gas and oil, especially employing [technology to capture and store CO2](#); \$4 billion for renewable and energy-efficiency projects; and \$12 billion for advanced nuclear projects, including any efforts to build the first so-called [small modular reactors](#) in the U.S.

All told, there is still \$40 billion waiting to be used in the loan program, including the money in its [Advanced Technology Vehicles Manufacturing program](#) for electric cars, better batteries, more efficient engines and the like. Still a large portion of all those monies may never be used, given the challenges faced by carbon capture and storage and nuclear, although there is an "active pipeline" of projects being evaluated, according to Energy Department spokesman Brian Mahar. The loan program also now hopes to receive [applications for Distributed Energy Projects](#), including solar on home rooftops, grid batteries and similar technologies, though that will likely require bundling together a large number of these typically smaller clean energy projects.

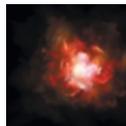
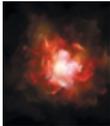
Still, the loan program is not what it once was, helping to turbocharge a clean-energy economy. But it did seed the ground for an energy revolution with some 30 major projects so far, 20 of which are already producing clean power or churning out clean vehicles. All that is left to fight about is the speed at which clean energy will grow. "We launched the utility PV and [cellulosic ethanol industry](#)," Davidson says, just as federal investment helped enable everything from the origins of the Internet to hydraulic fracturing (or "fracking").

These clean-energy projects will prevent the emission of some 14 million metric tons of CO2 and the clean-power plants will produce enough electricity for more than one million average U.S. homes, by Energy's estimates. These technologies will be available to help states meet the CO2-reduction goals laid out in the [Clean Power Plan](#), already proved to work and just waiting to be built. The Obama administration has left a clean-power legacy that will stand as facts on the ground in the fight against climate change.

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