

The US Office of Clean Energy

The Biden Administration has proposed a \$400 million investment in the next fiscal year to create an Office of Clean Energy Demonstrations, which would focus initially on energy storage — a technology that CFTI recommended scaling up through more **funding for pilots and grant programs**. Additionally, DOE would receive \$1.8 billion for **demonstration projects** across its applied energy programs, including, but not limited to, advanced nuclear, **carbon capture**, hydrogen and zero-carbon fuels, and **advanced renewables**.

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Biden's Clean Energy Loan Program Will Give Tomorrow's Teslas A Jolt

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When the U.S. Department of Energy made a \$465 million loan in 2010 to an upstart called Tesla Motors, controversy swirled. But the Obama administration had wanted to rev up the green energy economy. And the loan was the perfect vehicle by which to accelerate the cause. Tesla made good on its promise to repay the loan — a decade ahead of schedule. It now employs thousands.

But the same loan guarantee program had also made some bad bets. The one that drew the most ire from critics was Solyndra, a solar company that failed to repay its \$528 million debt. The skeptics said Solyndra typified government largess and favoritism — comments that smacked of hypocrisy, given that those same lawmakers backed tax breaks and support for their pet projects.

The Biden administration is speeding up the pace of the green energy economy. It is thus creating a foundation **to achieve carbon neutrality by 2050**. A **revived loan guarantee program** is one of the pieces. And last week, Energy Secretary Jennifer Granholm said that **the fund would start with \$40 billion** — and

be managed by Jigar Shah, a clean energy entrepreneur. About half of that money will be **targeted to renewable energy and alternatively-fueled vehicles** while the other half will go to **carbon capture projects** and advanced nuclear designs — quelling some of the expected noise. Already, the bipartisan COVID-relief passed in December 2020, which allocates \$35 billion to **green energy technologies**.

“Let’s focus on the research and development that is needed: green hydrogen, **carbon capture and sequestration**, advanced nuclear, modernizing the grid, and **battery storage technologies**,” says Arshad Mansoor, chief executive of Electric Power Research Institute, in an interview with this writer. “The technologies to get to net-zero by 2050 are neither scaled nor affordable. We need to super-size funding and innovation. Jigar Shah is the best person to manage this process.”

To be clear, a loan guarantee is not an outright subsidy. Rather, it is a form of insurance that is needed to get projects going and **to entice Wall Street to also invest**. Altogether, the Energy Department had awarded about \$30 billion to 42 alternative energy projects. Granholm says that the previous program returned the principal plus \$500 million in interest payments to taxpayers.

The Biden administration has a goal of getting to **100% green energy by 2035** and to net-zero by 2050. It says that a \$23 trillion economy will be created as a result — one that will “Build Back Better.” If those objectives are to be realized, then energy storage must be developed. The cost of producing green hydrogen from wind and **solar power** must also come down. And continuing the use of nuclear energy is instrumental; it makes up about 55% of this country’s carbon-free power.

Getting to net-zero does not mean the abolition of fossil fuels; rather, it means offsetting their emissions. One such mechanism is **carbon capture and sequestration**. “It is wishful to think we will have no use for natural gas. That is where carbon capture and sequestration comes in,” says EPRI’s Mansoor.

Indeed, a key pathway to decarbonization is the electrification of the economy: today, 20% of all energy used in homes and industry is electric, says Mansoor. But he would expect that number to at least double — to potentially as high as 60% — in 2050: not only will the power sector be using more renewables and battery storage but other sectors will be deploying their own green energy tools, including buildings, cars, homes, ships, and planes.

If **achieving carbon neutrality** — and the goal of electrification — is to be realized, then the grid must become more robust. It will need to handle as much as four times the amount of renewable energy that is now transmitted. At the same time, Mansoor adds, **electric vehicles** will rise from 2% of the auto market today to around 45% in the next two decades.

“We must have smart grids,” he says. “Peak energy usage is double the average load. We need to bring those peaks down because it will unleash new capacity from the grid. We can get it done smartly and reduce customers’ energy bills. It does not mean we won’t have to build out the grid — we will, mainly on the transmission side. It will also require **quadrupling the charging infrastructure**. Utilities will have the excess revenue, which can be invested to make the grid ready.”

Mansoor goes on to say that getting to 80% of the country’s net-zero goals is within reach. But he emphasizes that the remaining 20% will be the most daunting challenge, given that the tools to do so have yet to be invented or commercialized. And they are not yet affordable. Consider: the United States has reduced its CO2 emissions from 6 gigatons to 5 gigatons over the last 15 years. It needs to drop to 3 gigatons in the next 15 years. But the “last leg” to 2050 will be the hardest.

EPRI is collaborating with the Gas Technology Institute to achieve carbon neutrality by 2050. Their so-called **Low-Carbon Resources Initiative** expects to leverage \$100 million and to work with 100 companies: Alliant, Ameren, American Electric Power, CenterPoint Energy, ConEdison, Dominion Energy, **Duke Energy**, National Grid, and Southern Company are among those involved.

The power and transportation sectors contribute more than half the U.S.’ carbon emissions. But it is an economy-wide dilemma that requires all-hands-on-deck. The Biden administration is leading the charge and will bring back the loan guarantee program. It’s a potential jolt for promising technologies — just as it was for Tesla. No doubt, the controversy will follow. But given the widespread support for carbon mitigation, those shrieking voices will get dulled and reasonable minds will prevail.