



Clean Energy Innovation Roundtable Series

Summary:

Session III: Revolutionizing Clean Energy Project Finance

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On April 15, the Aspen Institute Energy & Environment Program virtually convened the third in its 2021 series of Clean Energy Innovation Roundtables. This convening brought together experts to discuss the U.S. Department of Energy's Loan Programs Office, tax incentives, market reforms, and other issues related to clean energy project finance. This summary captures some of the key topics of discussion.

Loan Programs Office

Industry and government need to work more closely together to unlock American clean energy innovation. The U.S. Department of Energy's Loan Programs Office (LPO) can play a key role in that. LPO operates within the Department of Energy which exists within an Administration that has a clear objective and agenda on climate change. The market, society, and politics are all currently more supportive of deploying clean technologies, and LPO aims to operate synergistically within that, wherever it can help move the ball faster and farther. LPO has far more potential than it has achieved to date, but there are signs that it is looking to extend and maximize that potential.

There are hundreds of billions of dollars of climate-related investment opportunities that are being turned down because the senior debt markets are not comfortable with them, and equity investors will pass on them if not paired up with the senior debt. LPO can help save those projects by providing the debt. LPO has roughly \$46 billion of capacity, split up among the Title 17 Innovative Energy Loan Guarantee Program, the Advanced Technology Vehicle Manufacturing (ATVM) Direct Loan Program, and the Tribal Energy Loan Guarantee Program. Title 17 is basically a project finance structure for advanced fossil energy projects (about \$8.5 billion), advanced nuclear energy projects (about \$10.9 billion), and renewable energy and energy efficiency projects (about \$4.5 billion). ATVM (about \$17.7 billion) is largely focused on improving the fuel economy of vehicles, which can involve vehicles, materials, critical minerals needed for components, and other supply chain elements. The Tribal Energy funding (about \$2

billion) can be used for any tribal energy development, as long as more than half of the project is tribally owned.

There is not a lack of money for LPO. Its score in deficit spending is incredibly small, as it is only scored on the money it loses; the rest of it cycles back to Treasury. The reason LPO does not have more money now is because Congress does not believe LPO can get the money out the door; historically, LPO has had a hard time pushing money out. If it proves it can do so, LPO should be able to get more funding.

LPO's recent history – at least politically – has been dominated by the failed Solyndra loan. That loan is embarrassing not because it failed but because due diligence was not done; there are protections in place now to ensure that will never be repeated. There are risks inherent in getting LPO money out the door, and some projects will not pan out. In battery manufacturing, for example, there are lots of companies claiming to be the future, and while many will be funded, it is impossible to know which ones will actually win. The risks of supporting companies that make it through the due diligence process are worth taking. Due diligence is important, but it also should not take forever to get money out to good projects. The average time to evaluate a deal now, though, is only around four months.

LPO is a bridge to the private sector. When the risks LPO takes work out, the private sector can eventually take over. As a bridge to bankability, LPO can take on deals that are outside the comfort level of existing financial players and help get commercial banks comfortable with them. At some point, banks could use LPO as a guarantor, bringing deals to LPO that could go forward only with an LPO guarantee; that would enable LPO to outsource some of the due diligence to the commercial banks. Commercial banks can also invest in projects alongside LPO; LPO does not have to be the sole debt financing in every deal, as long as LPO remains senior in the capital stack.

LPO is a public policy bank, but it is still a bank and needs a reasonable prospect of repayment. The potential projects at LPO span technologies, including carbon capture and storage, green hydrogen, advanced nuclear, and others that have bipartisan support. LPO will support projects that not only have great loan applications but also have real environmental value in terms of greenhouse gas reductions. There are many clean energy projects that could use LPO's capacity, and they are being encouraged to apply. The Energy Act of 2020 included reforms that got rid of a lot of the fees involved in applying for LPO financing, which had been a big barrier. Applying to LPO had not been a riskless, no-regrets undertaking, but now it is. LPO absorbs all broken deal costs, so LPO is now getting more applications.

There are further legislative reforms, though, that could make LPO more effective. In ATVM, for instance, LPO is currently limited only to passenger vehicles, but the biggest opportunities are likely in medium- and heavy-duty vehicles. In Title 17, there is not much credit subsidy left, which limits LPO's ability to help small borrowers. In Tribal Energy, LPO cannot use the Federal Financing Bank (as it can in Title 17 and ATVM), which leaves LPO at the mercy of banks to underwrite particular loans for tribes.

LPO is the only entity in government that does what it does – fundamental due diligence and reports on every project – and there are other parts of the government that want to tap into that expertise. LPO coordinates with other federal entities to enhance efficiency. One particular entity, the Office of Management and Budget (OMB), has micromanaged LPO in the past, but that may be less the case under the Biden Administration, giving LPO more freedom to operate. There may still be conflicts to sort out with OMB, though. For instance, OMB requires LPO to use S&P and Moody's in assessing credit risk, but they focus on FICO score models tied to credit card debt and healthcare, whereas default has been far lower in the experiences of electric utilities and appliance financing companies. All actors in the clean energy finance space will need to weigh in on the various frictions between LPO and OMB.

Tax Incentives, Opportunity Zones, & Clean Energy Project Finance

Financial markets crave certainty and predictability. The ability to scale the clean energy market is about being boring, like the municipal bond market. Clean energy project developers are therefore in the business of manufacturing long-duration, low-risk cash flows in order to mobilize private investment into power sector modernization. This means making the complex into simple, sustainable solutions that can get financed with bond-like returns. It is also important to create predictability and certainty for the capital needs of given projects, including aligning capital with the lifespans of the underlying technologies.

To align incentives, increase competition, and accelerate deployment, federal actions are needed, including making the investment and production tax credits longer (e.g., 10 years), steady (e.g., at 30%), and applicable to more technologies. No tax credits at all might be preferable to tax credits that are short and episodic, as at least the former provides certainty. Tax credits also are not the answer to everything. For instance, there are differences in thinking about financing projects at the distributed versus the utility scale; accelerating the deployment of distributed technologies into communities – particularly hard-hit communities – could involve structures under which cash can flow directly into projects, not indirectly via tax credits. The types of financing and structures are also not the same for mature clean energy technologies and for newer clean energy technologies. There is no one-size-fits-all approach for technologies or for regions.

That said, tax incentives can be powerful. Tax incentives tied to opportunity zones, for example, could be an innovative and disruptive tool to bring capital for clean energy to low- and moderate-income (LMI) communities. Opportunity zones, which are based on geography, were part of the 2017 tax law, but drafting regulations took two years, at which point COVID hit and caused further delays – so their potential is only just starting to be understood and acted upon. The final rules now give clear guidance for investors, funds, and projects, each with their own sets of requirements and timing. Any capital that goes into building things in those LMI census tracts that stay in place for the requisite number of years gets the tax break, across asset classes.

Opportunity zone investments to date have focused on real estate, since all the guidance at first was about real estate, but with the final rules now in place and the economy starting to emerge

from the COVID hit, animated discussions are under way about projects beyond real estate, including clean energy. (Real estate is also easier and more pro forma than some other investments; the turnkey model does not exist yet for big clean energy infrastructure projects.) It is possible there could be \$1 trillion of equity coming off the sidelines and into opportunity zones for new-builds over the next few years. Banks are looking at opportunity zones for Community Reinvestment Act credit. ESG investors will want to invest. Innovation companies and venture capitalists are looking to put deals in opportunity zones. Opportunity zones open up the potential for infrastructure buildouts related to offshore wind and port communities. The Biden Administration wants 40% of clean energy investment going to frontline communities, and opportunity zones could be a great vehicle for that (as could community solar), though care must be taken that opportunity zone projects are sensitive to environmental justice concerns and are siting things in the communities that they actually want, that bring great jobs, and that are not exacerbating the impacts that communities are already feeling. The equity unleashed by opportunity zones could be a source of long-term predictable capital, and long-term equity brings in the rest of the capital stack.

The opportunity zones designated thus far have been focused on areas where there are lots of people, not the less populated areas nearby that might be a better fit for some clean energy infrastructure. An opportunity coming up in the push for infrastructure legislation is a new round of opportunity zone designations to supplement the previous ones – tied to the same communities, but opening up the land next door for brownfield redevelopment.

Market Reforms & Other Measures to Advance Clean Energy Projects

Market reforms are part of making clean energy projects into long-duration, low-risk cash flows. In addition to more transparent and competitive pricing for power, ways must be found to finance storage, demand response, transmission, and firm, dispatchable resources that will be needed to integrate high levels of variable renewable energy and create an affordable, reliable, zero-emission grid.

States have made significant progress in getting variable renewable energy sources deployed and financed, but they face challenges in creating durable revenue streams for zero-emission resources that can integrate more of those variable renewable sources on the grid. A challenge with financing some projects involving firm, dispatchable, low-carbon resources is that most utilities and public service commissions do not have compensation mechanisms in place for them yet. For pumped hydro, geothermal, nuclear, low-impact hydro, or other projects that will cost a bit more but will provide significant value in a portfolio, it is unclear who will pay for the ancillary benefits and other elements of value. Debates about the Minimum Offer Price Rule and capacity markets have been taking up lots of oxygen, but reforms are also needed in ancillary service and energy markets to help incentivize needed resources. Once public service commissions approve the revenue streams for these kinds of resources, financing – whether from LPO or others – will be easier and more cost-effective.

More mature ancillary services markets that can value integration of renewables onto the grid can also help states focus on reforming energy efficiency programs to incentivize demand

response and other resources. Capacity markets are not sending the price signals that would promote deployment of demand response programs to avoid construction of peaker plants, though there is hope that Order 2222 from the Federal Energy Regulatory Commission can lead to capacity market structure reforms that can better identify value and unlock demand response at scale. Performance-based regulation could also make a big difference in rewarding utilities for investments in smart meters, bidirectional capabilities, and other measures to advance demand response and load optimization. In vertically integrated states, there is a need for demand-side management and energy efficiency programs to evolve toward carbon reduction and not energy savings as their primary goal. There also need to be tools to find and mobilize scalable opportunities for demand reduction that are as powerful and accessible as the tools that have benefited solar deployment (e.g., net metering programs, roof mapping).

In addition, it is important to speed up processes for interconnection; capacity markets are keeping low-utilization fossil resources on the system that are taking up interconnection. The capacity market structure is built around the needs of fossil plants, but there has to be a hard look taken at what capacity and reliability benefits those incumbent generators are actually providing, what resource adequacy actually means, and which resources are truly providing value and should be retained – and which should be retired to unlock more interconnection resources for clean energy to plug into. More broadly, states are increasingly coming to appreciate the critical investments needed in transmission infrastructure. There is a need to build a 21st century transmission grid and to be more forward-looking in planning for transmission. The grid is operating at 50% of capacity utilization, but adoption of newer technologies could bring it up to 80%; the need is not just for new wires, but also for better-functioning wires. The sooner policies and laws change to align incentives for interconnection, the sooner clean energy projects will be able to scale up and the sooner there will be a better, integrated grid with high utilization levels.

States can couple such reforms with revisions to renewable portfolio and clean energy standards to procure around inter-day greenhouse gas reduction opportunities instead of around average annual load. Expansion of the scope and ambition of these standards can drive innovation and accelerate deployment of clean energy projects, particularly leveraging the expected influx of federal funding.

States have to focus on removing other barriers to project deployment as well, such as siting and permitting. Some states, for example, are working on public species datasets, so developers can pre-clear or avoid sites and do not have to wait weeks for answers from agency staff. Given the importance of natural sinks and working lands, states could also do a better job of directing clean energy projects to preferred locations and away from greenfield sites. Likewise, cleaning up more contaminated sites, clearing the title, and so forth can make more sites ready to be repurposed for clean energy development.