United States House of Representatives
Select Committee on the Climate Crisis

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"Financing Climate Solutions and Job Creation"

Questions for the Record

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The Honorable Kathy Castor

1. **Mr. Larsen, in your testimony, you highlight some critical improvements to clean energy tax credits, like making them available for direct pay, allowing developers to choose between the Production and Investment Tax Credits, and providing a long-term full value extension of the tax credits. Given that wind and solar are abundant and affordable, why do we need to extend and expand clean energy tax credits? Can we just assume we'll meet our climate goals without them?**

Wind and solar costs have come down dramatically over the past two decades. As a source of new electricity, they now represent the majority of annual capacity additions in the US outpacing natural gas (EIA 2021). In the absence of a national climate policy that cuts electric power emissions, extension and expansion of clean energy tax credits can do more than just outcompete new fossil fuel-fired power plants to meet new demand. Clean energy tax credits can make new wind and solar competitive against *existing* fossil fuel-fired power plants. The capital expenses associated with most existing coal and natural gas-fired power plants are largely paid off, and these assets are fully depreciated. This means that all they need to compete in electric markets is to covering their operating costs on an annual basis. This is a much smaller amount of cost than recovering the operating *and* capital costs associated with new capacity. To date, wind and solar have largely led to avoiding emissions from new fossil fuel fired power plants. Enhanced and extended tax credits, combined with continued technology costs declines will allow the next wave of wind and solar to both displace new and existing power plants and lead to greater reductions of greenhouse gases.

2. **Mr. Larsen, we will need more than public investment to meet our climate goals. How do Federal tax credits help leverage private capital to accelerate the transition to a clean energy economy?**

Federal tax credits provide a stable, certain and familiar incentive for private capital to invest in renewables as opposed to conventional fossil alternatives. The incentive is large enough to entice private capital away from fossil investments and attract capital that might otherwise sit on the

sidelines. Investors then get the benefit of a rate of return on the investment as well as a reduction in their tax liability. Meanwhile, more clean energy gets built around America.

3. **Mr. Larsen, we know zero-emission vehicles are cleaner and cost less over a vehicle's lifetime than vehicles with internal combustion engines. Based on your work at the Rhodium Group on EV policies, could you please explain how tax credits for zero-emission vehicles would help increase deployment?**

Long-term extensions of the 30D EV tax credit and removal of manufacturer sales caps cut the cost of new EVs for consumers and make them more competitive with conventional vehicles on an upfront cost basis. Previous Rhodium analysis found that a ten-year extension of the tax credit could drive EV sales to 40-52% of total light-duty vehicle sales in 2031. In a scenario, with no tax credit extension, we found that EVs only achieve 27-39% of total LDV sales in 2031.

4. **Mr. Larsen, many of the clean energy technologies we need to achieve deep decarbonization across our economy are still under development. The International Energy Agency estimates that 75% of the cumulative CO_2 emissions reductions needed to shift to a sustainable path come from technologies that are in the demonstration and early deployment phase. How can Congress better support innovation and emerging clean energy technologies via the array of available financial tools, policies, and incentives?**

There are four general categories of policies that can help the development and deployment of emerging clean technologies.

- First, investing in research and development (R&D) of a diverse array of new and emerging technologies. The US is a leader in this space. The Energy Act of 2020 constructs and revamps clean energy R&D and the Infrastructure package contains even more enhancements.
- Second, funding the construction of large-scale demonstration projects and early commercial deployment of developed technologies. Without government support, many emerging clean technologies get to initial deployment and stall because it's difficult to attract investors to fund new and untested technologies. Government direct investment and cost-share programs, as well as tax credits, can help get new technologies off the ground at scale and reduce financial risks.
- Third, long-term commercial incentives are required to send firm signals to the market that clean technologies need to be deployed to achieve emission reductions goals. There are many forms these signals can take. Carbon pricing, regulations, clean energy standards (including clean fuel or clean product standards), and tax credits can all play a role. The key is to make the deployment of emerging clean technologies more profitable than continuing the status quo.
- Fourth and finally, non-cost barriers to clean technology deployment need to be addressed or else efforts in the first three categories won't drive change. Non-cost barriers include but are not limited to permitting constraints, access to resources, public understanding/acceptance of new technologies, access to and siting of infrastructure and

other issues. The federal government has a role to play in all of these areas to allow clean technologies to scale up in a safe and responsible way.

5. **Mr. Larsen, according to analysis from the Rhodium Group, in order to be on track for 100% clean generation in 2035, emissions need to be 80% below 2005 levels in 2030. This means we need to both support rapid deployment of additional clean energy technologies and ensure we don't lose any of the existing sources of clean energy available to us today. What type of support could help existing clean energy generation sources stay online in the coming decades? And can we ensure new incentives go only towards supporting displacing fossil fuels?**

Due to competition with fossil fuels and a lack of valuing their clean energy attributes, some existing clean resources are at risk of early retirement by the end of this decade. For example, depending on market conditions, Rhodium estimates that nearly a third of the existing nuclear fleet could retire by 2030 without new policy support. If these plants retire, then even more new clean capacity will be needed to get on track for 100% clean generation in 2035, or fossil generation will replace it instead. A clean electric standard or clean electric performance program that provides a technology-neutral incentive to increase the amount of clean generation in the US (regardless of whether its existing or new) can provide incentives to retain at-risk existing clean capacity. Targeted federal programs or tax credits that provide incentives to retain existing clean generation can also be useful tools to do the same.

Beyond the goal of meeting 100% clean generation, retaining existing clean resources also helps to ensure that all new clean generation displaces fossil generation. This is one way to maximize the climate benefits of clean energy tax credits. Without existing clean support, there is a risk that new clean will outcompete existing clean generation leading to no net change in total clean generation and no change in emissions.

6. **Mr. Larsen, how can tax credits and a clean electricity standard serve as complementary policies?**

Tax credits complement a clean electricity standard (CES) in a few ways. First, they shift some of the costs of complying with a CES away from ratepayers and on to the federal government. This reduces the cost to consumers of decarbonizing the electric power sector. Second, tax credits can accelerate the deployment of grid improvements needed to meet high levels of clean electricity penetration, such as storage and transmission. They make it easier to achieve CES targets. Finally, they can shift CES compliance towards technologies that receive tax credits. This may be desirable if the CES is technology-neutral. Still, some tax credit eligible technologies help to meet other policy goals such as domestic manufacturing or increasing reliance on renewable energy instead of nuclear.

7. **Mr. Larsen, could you please explain how the investment tax credit (ITC) has driven access to, deployment of, and innovation in solar energy? How could a long-term extension of the ITC help build on this success?**

Since its inception 15 years ago, the ITC has been a critical incentive for the early and current commercial scale-up of utility-scale solar generation. Initially, solar's high cost and relatively low capacity factors made other deployment incentives such as the production tax credit ineffective at driving deployment. Over the last decade and a half, a whole industry has arisen around the scale-up of utility-scale solar. All of it is thanks to the ITC.

While a long-term extension of the ITC will help solar continue to thrive without more comprehensive decarbonization policies, its usefulness will diminish relative to other options. Since the value of the ITC is defined as a share of the costs of developing a solar project, that value has and will continue to decline as the cost of solar declines. In high-quality solar resource areas in the US today, the ITC is a less valuable incentive than the PTC because of this dynamic. The PTC is a fixed value payment based on generation. As solar costs decline, the PTC's value as a share of the total cost of solar energy will increase, whereas the ITC's value will decrease. This is why Rhodium research shows that a flexible tax credit framework that allows solar developers to choose the PTC or ITC, whichever works best for them, can lead to even faster clean energy deployment compared to simple extensions of the current tax credit framework.

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