

Subcommittee on Environment and Climate Change
Hearing on
“Building a 100 Percent Clean Economy: Opportunities for an Equitable, Low-Carbon Recovery”
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The Honorable Nanette Diaz Barragán (D-CA):

1. Over 490,000 clean energy workers remain jobless since the pandemic hit, including over 84,000 workers in California. Can you describe the most effective policies and investments we can enact today to bring these jobs back?

RESPONSE: As the United States begins its recovery from the health and economic impacts of COVID-19, it is imperative that we address the next big global challenge: Climate change. While the pandemic has led to a high level of unemployment in the country, including in the clean energy sector, targeted policies and investments to address climate change can also create an opportunity to create jobs in the low-carbon sector and stimulate economic activity.

Specifically, WRI has identified [five priority areas](#) where Congress can take immediate action that can help create jobs and boost economic recovery:

1. **Building Energy Efficiency and Energy Assistance:** A targeted expansion of energy efficiency and energy assistance programming can provide three core benefits: it can put people to work immediately in quality jobs, contributes to a clean energy future, and provides relief to struggling households by alleviating energy costs. For more details, see [Building Energy Efficiency and Energy Assistance: Creating Jobs and Providing Relief to States Across the Country](#).
 - Increase the funding allocated to the Low-Income Home Energy Assistance Program (LIHEAP) to \$20 billion.
 - Increase the funding allocated to the DOE Weatherization Assistance Program to \$5 billion annually.
 - Increase grant funding to states by \$100 billion across the State Energy Program, the Energy Efficiency and Conservation Block Grant, and Community Development Block Grant to support upgrades of hospitals, schools, and public buildings to make these high-performance buildings, improve energy efficiency, improve indoor air quality, and lower capital, operating, and maintenance costs of these buildings.

- Increase consumer incentives for appliance replacement, including the Nonbusiness Energy Property Credit and the State Energy Efficient Appliance Rebate Program.
- 2. Public Transit and Transportation Infrastructure:** Investing in public transit and transportation infrastructure can create jobs and economic growth (every \$1 billion invested in public transportation creates nearly 50,000 jobs and returns \$5 billion in economic activity), while supporting financially stressed state and local governments. For more details, see [Public Transit and Transportation Infrastructure: Creating Jobs and Supporting Transit Across the United States](#).
- Increase funding to \$25 billion annually to fill the budget gaps of local transit agencies and support their ongoing operating costs.
 - Reorient transportation funding toward “fix-it-first” principles that focus on maintaining and repairing existing roads, bridges, and transit systems over the expansion of new roads and highways, and “complete streets” infrastructure projects that offer space for biking, walking, driving, and public transit
 - Invest in electric vehicle (EV) charging infrastructure in every state across the country.
 - Establish ‘Buy Clean’ incentives for the concrete used in transportation infrastructure projects.
- 3. Manufacturing Electric School and Transit Buses:** Investing in manufacturing electric school and transit buses can reduce operating and maintenance costs, reduce CO2 emissions, and avoid emissions of harmful local pollution with negative health impacts, all while creating jobs in the near-term and positioning the U.S. as a leader in the growing zero-emission vehicle market. For more details, see [Manufacturing Electric School and Transit Buses: Creating Jobs and Economic Growth](#).
- Scale up the Clean Cities, Clean School Buses and Low and No Emissions Vehicle programs to provide \$20 billion in grants to school districts and transit systems—enough to replace 60,000 school and transit buses, or about 10 percent of the national fleet.
- 4. Grid Modernization:** Investments in modernizing the U.S. electric grid infrastructure will be critical to unlocking the renewable energy investment required for a clean energy future, it provides consumers with cost savings and a more reliable/resilient grid. Transmission investment ranging between \$12 billion and \$16 billion annually through 2030 could stimulate \$30 billion to \$40 billion in annual economic activity and create 150,000 to 200,000 full-time jobs each year. For more details, see [Grid Modernization: Creating Jobs, Cutting Electric Bills, and Improving Resiliency](#).
- Make existing renewable energy tax credits refundable.
 - Extend the federal renewable energy tax incentives for five years and make energy storage systems and transmission projects eligible for the Investment Tax Credit.

- Reauthorize DOE’s Smart Grid Investment Grant program and fund it at \$20 billion to promote investments in smart grid technologies, tools, and techniques.
 - Expand low-cost loans and grants to rural electric co-ops to expand electricity transmission and broadband access through USDA’s Rural Utilities Service (RUS).
 - Authorize the Department of Transportation to provide \$5 billion annually over 10 years in Transportation Infrastructure Finance and Innovation Act (TIFIA) loans to transmission projects that emphasize the integration of renewable energy.
 - Leverage the DOE’s Loan Guarantee Program to incentivize investment in transmission infrastructure.
 - Make strategic investments in energy storage deployment.
- 5. Restoring Trees to the Landscape:** Jobs on tree planting crews, in nurseries, and as foresters are literally “shovel-ready,” and support the single largest near-term opportunity for carbon dioxide removal at scale in the United States. An annual federal investment of \$4–4.5 billion could create more than 150,000 jobs and \$6-12 billion per year in economic activity. For more details, see [Restoring Trees to the Landscape: Creating “Shovel-Ready” Jobs Across the United States](#).
- Add new dedicated funding for tree restoration to the Environmental Quality Incentives Program (EQIP).
 - Expand incentives for tree restoration projects on historically forested lands through the Conservation Reserve Program (CRP).
 - Issue grants to state and local governments to boost tree restoration using their own policy tools.
 - In total, across these programs Congress could dedicate \$4–4.5 billion per year for tree restoration

2. We are going to need record levels of investment in clean energy to reach 100% clean energy. Are there financing strategies you recommend Congress support that can leverage private sector dollars to help us build the clean energy economy as fast as possible?

RESPONSE: Congress can look to the experience of several subnational governments across the nation that have created green banks to drive investments in clean energy. These subnational green banks have generated [\\$5.3 billion in clean energy investment](#) since 2011, with \$1.5 billion in 2019 alone. But to address climate change effectively, we need to invest many billions more.

The idea of a similar entity at the federal level is catching on in Congress. A federal green bank can use a range of financial tools to address barriers that currently prevent private sector investment from going into the low-carbon sector. If the private sector sees these types of investments as risky, it would be unwilling to provide capital at rates that are feasible for a project to move forward. The federal green bank can provide credit

enhancements, such as loan loss reserves and loan guarantees, to de-risk private sector investments.

Some important considerations should be kept in mind when designing a federal green bank. First, it should prioritize and incentivize investments in projects that significantly reduce carbon emissions across the entire economy. That means solutions like transit-oriented-development, including equitable, dense housing near reliable trains and buses will be as eligible for green bank as projects that fund improved insulation, windows and other energy use reduction measures in buildings. Second, the bank should be a nonpartisan nonprofit operating with complete public transparency. Once established and funded, all its investment decisions should be made by experts and should be insulated from political interference. Third, the green bank should have a unique focus on equity and community engagement. To that end, a federal green bank should enable low-income and minority communities to benefit from and afford projects and investments that reduce emissions, create jobs, and stimulate economic activity.

3. Strong and effective partnerships between federal agencies and state and local governments will be critical for effectively implementing many clean energy investment programs. Can you describe best practices that can ensure a green stimulus is well coordinated and respects the diversity of strengths and needs different areas of the country have?

RESPONSE: Experience from the American Recovery and Reinvestment Act of 2009 (ARRA) provides some guidelines on how a future green stimulus can be well coordinated between federal agencies and state and local governments. One lesson is to rely on established programs and implementation networks to provide rapid assistance rather than standing up new organizations or procedures. Some of the most successful elements of ARRA expanded upon existing programs and funding streams to the states. This enabled federal money to get out of the door rapidly and spent quickly and effectively by states and local governments.

Second, the federal government will need to adopt strategies for speedy and effective implementation of stimulus program. The Obama administration created the Recovery Implementation Office (RIO) within the Office of Management and Budget (OMB) to facilitate communication among federal agencies, states, and other funding recipients. RIO provided guidance and technical assistance, and helped states meet spending targets. In this manner, RIO served as a focal point for governmentwide problem solving and coordination. Creating a similar, high-level focal point for overseeing and implementing future stimulus programs will be important.

Third, the federal government has to strike the right balance between accountability and speedy implementation. On the one hand, there will be an emphasis on rapid program implementation that can lead to job creation and economic activity. On the other hand, there will oversight of these programs with clear expectation of accountability and transparency from state and local governments. The latter can slow implementation of programs as state and local officials and funding recipients wait for new rules, clear

guidance, and risk-reduction strategies. The more quickly such accountability rules and procedures can be issued and the simpler they are, the greater the likelihood that accountability requirements can be successfully implemented.

The Honorable Diana DeGette (D-CO):

1. Dr. Saha told us that promoting the deployment of clean energy technology can be a major boon to the US economy. I recently introduced legislation that will both invest millions toward the innovation of new clean-energy technologies and create the nation's first federal clean energy standard.

- a. Does the technology we need to provide Americans with 100% reliable, affordable, emissions-free electricity exist today?

RESPONSE: At present, we do not have every single tool we need to get to net-zero emissions in the power sector. It can be useful to think of decarbonization in chapters. Variable renewable energy is available and relatively cheap now. Short-duration energy storage is quickly becoming economic. Those solutions are scalable now and can make a significant contribution to power sector decarbonization in the short term. However, we also need other technologies, such as advanced nuclear, CCUS, and long-duration storage, each of which faces differing challenges along the innovation curve. For instance, for carbon capture and storage, some technologies have reached the demonstration phase, but none of them have low costs for them to be commercially deployed at scale. For long duration storage technologies, the high costs of demonstration are a significant obstacle. Therefore, rapid innovation is needed for these three technologies and for other emerging low-carbon technologies to be able to provide Americans with 100% reliable, affordable, emissions-free electricity.

- b. Would a federal clean energy standard, combined with the type of investment you've discussed -- both of which are included in my bill -- drive innovation of the technologies we need to solve the climate crisis?

RESPONSE: Rapid decarbonization of the electricity sector is critical for addressing the climate crisis. While an economy-wide price on carbon should be enacted as soon as possible, a well-designed Clean Energy Standard (CES) could jumpstart decarbonization of electricity, and might provide a useful complement to a broader carbon price if it were designed to provide targeted incentives to speed the development and deployment of technologies and practices that may be needed as the electric sector approaches zero emissions, such as electricity storage, demand response, electrolysis to create hydrogen fuel, and carbon capture and storage (CCS).

In terms of design CES should be technology neutral to encourage competition and innovation in the electric power industry. It can thereby increase demand for clean energy technologies, provide investment certainty for those technologies, drive forward commercialization, cost reductions, and innovation for zero emission technology.

Congress should also look at ways to account for the full emissions impact of any particular technology, such as methane leakage and the climate impacts of different biomass resources rather than assume that all biomass is carbon-neutral. Congress should allow states to pursue a more ambitious policy than the federal CES and preserve the benefits of their stronger standards. This might be achieved by allowing states to set their own more ambitious standards under the program, by allowing states to opt out of the federal CES if they have a stronger standard in place, or by allowing states to not issue clean energy credits to generators in excess of what they would receive based on the state standards, or by other means.

- c. By driving innovation, will this combination also benefit our economy?

RESPONSE: A well-designed clean energy standard will help push out the dirtiest generation while directing greater investments in the zero-emission clean energy we all want to see. It will deliver clean energy to American consumers, while enhancing the reliability and resilience of the nation's power grid, creating jobs domestically, and increasing American economic competitiveness globally.

- 2. Most states have enacted either a renewable energy standard or a clean energy standard.

- a. Have clean and renewable energy standards been successful at the state level, and do you feel they offer a useful model for federal action?

RESPONSE: Yes, clean and renewable energy standards have been successful at the state level, and they offer a useful model for federal action. The details of state renewable portfolio standards vary from state to state, with different levels of ambition and differing qualified technologies. In addition, state RPS exist amidst a broad array of market and policy drivers for renewable energy growth, as a result of which separating out the incremental impact of any one driver can be challenging. Having said that, a number of studies have come to the conclusion that state RPS policies have been successful in driving U.S. renewable energy growth. Many states have exceeded their original standards ahead of schedule and have responded by setting increasingly aggressive requirements. Researchers at the [Lawrence Berkeley National Laboratory](#) observed that more than 60% of renewables deployment since 2000 has occurred in states with an RPS in place. Furthermore, studies estimating the costs and benefits of RPS policies have found that the benefits tend to outweigh the costs by significant amounts. [Another study found](#) that the national costs of RPS compliance in 2013 were approximately \$1 billion, while benefits from reduced carbon emissions totaled \$2.2 billion and

public health benefits came to an impressive \$5.2 billion. In short, RPS policies appear to foster renewables deployment, and their benefits exceed their costs. A federal clean energy standard can build on the successful experience of those states that have implemented renewable and alternative energy portfolio standard.

3. The Clean Energy Standard in my bill is designed to account for the fact that we can't predict the pace of clean energy innovation. I think of my bill as having three speeds. If technology doesn't develop quickly enough, my bill will offset any carbon emissions in 2050 with verified carbon reductions outside the power sector. If technology moves much more quickly as a result of the support we're providing for innovation, we could accelerate to zero emissions as soon as 2037. Finally, any power company ready to replace all emitting technologies with non-emitting technologies before 2037 will receive funding assistance to do so. This will be available upon enactment.
 - a. Do you think it makes sense to design a Clean Energy Standard to adjust to the pace of technology innovation, while ensuring adequate federal investment to ensure that that innovation occurs?

RESPONSE: While in the past, technology innovation has often happened at a faster speed than was previously anticipated, as of now we do not possess all the technologies we need to fully decarbonize the power sector. A federal CES should, therefore, not only require power companies to ramp up their use of existing clean energy technologies such as solar, wind, and hydro, but also spur the innovation of new technologies that will be required to fully decarbonize the power sector. In designing a federal clean energy standard, one thing that will need to be kept in mind is its interaction with other policies such as existing federal tax credits such as the production tax credit and a possible technology neutral tax credits policy in future.