Testimony of Richard J. Powell Chief Executive Officer, ClearPath Inc.
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Good morning Chairman Blumenauer, Ranking Member Smith, and members of the Committee. My name is Rich Powell, and I am the CEO of ClearPath, a 501(c)(3) organization devoted to accelerating breakthrough innovations to reduce emissions in the energy and industrial sectors. To further that mission, ClearPath provides education and analysis to policymakers and collaborates with relevant partners to inform our independent research and policy development.

Given this Committee's vital role in America's energy trade policy, and how that relates to the global climate challenge, I will discuss three key topics today:

- First, we need to think globally, and ensure that America leads the world in clean energy technology. U.S. emissions are a smaller and smaller part of the global total, down from 14 to 11 percent, and unless we work together with international partners and allies, our efforts at home will never solve the problem. A new energy revolution — both in the U.S. and globally — is going to require an enormous amount of resources. We have to be a leader among like-minded trading partners to ensure reliable, affordable clean energy supply chains for American-made products.

- Second, we must unleash American energy resources and manufacturing capabilities to grow our economy and drive down prices. The fact is, the U.S. industry is much cleaner than the vast majority of the rest of the world. Deploying advanced clean energy technologies in industrial manufacturing domestically today allows us to take the lead on future global trade relationships tomorrow.

- Third, by exporting clean American energy, we can lower global emissions while boosting our own economy. That includes exporting affordable, abundant American natural gas to lower emissions and provide energy security. It also includes exporting advanced nuclear reactors, clean hydrogen, and energy storage technologies.

We must not ignore that the climate is changing, and global industrial activity is contributing to it. We hear that statement from the oil and gas industry, power companies, the agriculture sector, and the folks running our supply chains. Everyone is clear: it's time to talk about solutions.

We can't damage the economy in our efforts. And the good news is, we can point to solutions that are good for the economy and the environment. There are exciting opportunities to develop new clean energy technologies. Rapidly scaling and diversifying American clean energy technologies can reduce global emissions, foster economic growth, and provide safe and reliable energy on a global scale. If done right, solutions can meet the needs of everyday Americans and reduce

household costs, while also lowering global emissions. It can also help with U.S. soft power by providing developing countries energy to improve their own economies and provide them with an alternative to projects with China and Russia.

But far too often, energy and climate change policy is oversimplified to false choices. Renewables versus fossil fuels, economy versus environment, emissions reductions around the world versus inaction here at home — these false choices ultimately cloud potential solutions.
We can invest in innovative emissions reduction technologies alongside improved trade policies. Ultimately, we will need both.

Most studies suggest that climate change has intensified, but you don't need a study to see the impacts across the U.S., and in American communities, and you don't have to study science to realize the global market for new clean energy technologies is getting competitive. Other countries are rapidly investing in clean energy, with total investment in 2022 estimated at $1.5 trillion.[1] Remaining a global energy leader by building and exporting clean energy technologies and products is one of the greatest economic opportunities for the U.S. available today.

Think global, and lead with America first

Ongoing aggression and coercive tactics by Russia and China underscore the need for the United States to both be energy secure and provide our allies access to technologies and resources they need to reduce their reliance on adversarial nations while reducing emissions.

The world is looking to U.S. leadership, and we need to work with our allies and trading partners to tackle the global climate challenge, ensure reliable and responsible supply chains for clean technology, and grow our respective markets for these technologies. Concerted action with our friends around the world through American leadership is an essential counterweight to other nations that do not have our best interests, nor the world's climate, at heart.

Trade policy is a critical aspect of achieving this. For instance, recent painstakingly negotiated trade agreements like the U.S.-Mexico-Canada Agreement promote American industrial standards abroad. This helps create the international economic conditions to support clean technology innovation and deployment while establishing a bulwark against nations that do not adhere to such standards. Our network of trading partners is a powerful dimension of American leadership and should be continually expanded, in part, to help combat environmental arbitrage.

Critical minerals represent another area where we need to lead and expand our global trading relationships with like-minded countries to strengthen our clean energy supply chains. Mineral supply is an economic, environmental, and security imperative. The International Energy Agency

[1] https://www.iea.org/reports/world-energy-investment-2022/overview-and-key-findings

(IEA) estimates that global demand for minerals for energy systems will quadruple by 2050, creating market demand in the hundreds of billions of dollars.[2] A new energy revolution is going to require an enormous amount of resources like lithium, copper, cobalt, graphite, and nickel. Currently, China dominates the supply chain, and dependence on China increases global emissions and handicaps American businesses. At present, China has a dominant position in the extraction, and especially processing, of minerals necessary for energy. Its midstream market share ranges from 35 percent to 60 percent of critical mineral supply and 80 percent of rare earths. The concentration of mineral supply chains creates risks of disruption from political or environmental events, poor transparency, and traceability, and sacrifices the expertise necessary for value-adding innovation and jobs.

Relatedly, nearly 50 countries have markets for advanced nuclear power, a potential $500-$740 billion market opportunity over the next 10 years, but Russia and China currently account for about two-thirds of reactors under contract worldwide.[3] Furthermore, Russia controls 46% of uranium enrichment capacity, meaning that the near-term uranium supply for the United States is threatened.[4] It is essential that the array of innovative new American nuclear technologies nearing commercialization accelerate through our own federal licensing and permitting process and then towards the global market, while we onshore and nearshore the nuclear fuel supply chain.

While the current Administration has convened a Minerals Security Partnership, along with other regional and multilateral clean energy dialogues with friendly nations such as Australia, Canada, Japan, South Korea, and others, to address these challenges, both the public and private sectors need to do more, faster to ensure reliable and responsible, clean technology supply chains.[5] Similar to how the U.S. has scaled up trade networks for crude oil and natural gas or how we are working with allies to commercialize energy storage, we can apply our talents to creating market-driven goals to develop alternative trading relationships for additional key energy technologies and their materials sourcing requirements.

Unleash American resource development

Energy-intensive industries operate on very low margins and often face unfair international competition. We can't afford to disadvantage American industry by saddling it with overly complex permitting processes and compliance requirements, nor should we neglect some of our most practical clean energy resources, such as natural gas or nuclear energy. The fact is, American manufacturing is among the cleanest in the world. Global industry – China in particular – is much dirtier than the U.S. industry. Numerous U.S. laws, programs, technology innovations, and voluntary actions by our industry have resulted in a much cleaner economy, and we need to level

[2] https://www.iea.org/reports/world-energy-outlook-2022
[3] https://www.energy.gov/sites/prod/files/2020/04/f74/Restoring%20America%27s%20Competitive%20Nuclear%20Advantage-Blue%20version%5B1%5D.pdf
[4] https://thehill.com/opinion/energy-environment/3519264-whats-at-risk-due-to-russias-nuclear-power-dominance/
[5] https://www.state.gov/minerals-security-partnership-convening-supports-robust-supply-chains-for-clean-energy-technologies/

the playing field so America can remain a global leader.

We should focus on returning manufacturing to the U.S. using clean American energy technology, where production is more efficient and environmental performance is far superior to places like China or Russia. For example, American steel has the second lowest CO2 intensity of any country,[6] and investors are clear they want clean and affordable steel. Two-thirds of U.S. steel is already produced using recycled steel and an all-electric process – and new processes are being demonstrated that make high-grade steel without any emissions. Yet, America is the largest importer of steel in the world. America must find a way to increase domestic production, reduce its reliance on foreign sources, and increase exports around the world that adhere to our strong environmental standards.[7]

Getting the domestic policies right, will allow us to scale up our clean technologies by driving down costs, and we already have a perfect model for how to do this.

We often hear about public-private partnerships in the clean energy space, and for good reason. Hydraulic fracturing is one of the biggest success stories on this front — thanks to research, development, and deployment efforts supported by the Department of Energy (DOE), a breakthrough made by a Texas entrepreneur in the 1970s has become the most affordable source of 24/7 power in America.

George Mitchell figured out how to break up shale rocks to release the natural gas stuck inside. This process, known as hydraulic fracturing, initially got off the ground with support from DOE, which cost-shared research, development, and demonstrations in the 1970s and 1990s, as well as tax credits from the 1980s to early 2000s.

Combined-cycle natural gas turbines now produce 24/7 reliable, affordable power. That early-stage investment and production tax credit, together more than $10 billion, both expired as the technology matured. Now we have a $100 billion annual shale gas market in America and saw emissions lower by 20% in the U.S. between 2005-2020. This is driving our rapid expansion of American gas into global markets that can be used to displace unmitigated Chinese coal or Russian gas, over time.

We should also accelerate American nuclear fuel production and expedite the deployment of emerging technologies such as advanced nuclear small modular reactors (SMRs). SMRs have the ability to deliver zero-carbon power generation, be built more rapidly, and at lower costs than traditional reactors. We lead the world in SMR-related patents, but countries, namely Russia, dominate uranium mining and enrichment capacity, thus limiting market potential. Russia and

[6] https://www.globalefficiencyintel.com/new-blog/2020/cleanest-dirtiest-countries-primary-steel-production- energy-co2-benchmarking
[7] https://legacy.trade.gov/steel/countries/pdfs/imports-us.pdf

China are already operating next-generation gas[8] and liquid metal[9] cooled reactors, which the U.S. originally pioneered in the 1960s. Here, we should focus on building up our own fuel production capacity and again work with friendly and trusted trading partners such as Australia and Canada as alternative potential sources for uranium. We must modernize the licensing process for new nuclear reactors.

Unfortunately, we have neglected one of our most clean and abundant resources – geothermal energy. The geothermal resources under our feet could literally power 10% of the entire country, if properly tapped, and lead to the export of this scalable, clean energy technology abroad. We should fix the permitting processes on public lands that hold back geothermal developers to develop the technology here first.

The U.S. is well positioned to be a global leader in the production of low-carbon hydrogen, particularly hydrogen made from natural gas with carbon capture. Our abundant renewable and natural gas resources, CCUS technology, and related infrastructure are all key enablers for our potential capabilities with low-carbon hydrogen.

We made significant progress over the past year. In particular, the energy portions of bipartisan Infrastructure Investment and Jobs Act (IIJA) enacted last year includes significant funding for energy programs originally authorized by the Energy Act of 2020, signed into law by President Trump, as well as a number of new energy and climate programs.[10]

Just last week, ClearPath launched a tracker[11] to follow the status of the Department of Energy's implementation of the energy programs funded by the bipartisan Infrastructure IIJA, because with great investment of taxpayer dollars comes great accountability. We've been able to visualize the progress the Administration has made on awarding projects with the infrastructure funds to help ensure we are making the best use of this investment in ourselves and bringing these projects to fruition.

We appreciate the focus of the House Republican Energy, Climate and Conservation Task Force on rolling out policies to unlock American resources, accelerate American innovation, cut through red tape, and invest in ourselves so that we can advance U.S. clean technologies globally to lower emissions and beat our adversaries who wield energy as a weapon.

To unleash clean American energy technologies, the U.S. and our trading partners will need to rapidly develop economies of scale and advance R&D to reduce costs and remain competitive with

[8] https://www.world-nuclear-news.org/Articles/China-s-demonstration-HTR-PM-reaches-full-power
[9] https://world-nuclear-news.org/Articles/Russia-starts-building-lead-cooled-fast-reactor
[10] https://static.clearpath.org/2022/02/key-energy-provisions-bipartisan-infrastructure-law-1-22.pdf
[11] https://clearpath.org/clearpath-infrastructure-tracker/

the rest of the world. This will also require greater international alignment on what constitutes zero- and low-carbon energy sources, such as blue hydrogen, to help facilitate trade. Technological innovation, the American entrepreneurial spirit, and targeted free market incentives have made the United States one of the most carbon-efficient economies in the world. We should prioritize policies that encourage the private and public sectors to accelerate down that path.

American clean energy exports

If we are successful at rapidly increasing the total amount of clean energy technologies deployed domestically, drive down their cost, and hold the lead in product quality through R&D, then we will have a significant opportunity to boost our exports of these technologies.

The economic opportunity for the U.S. is remarkable. A recent report from Boston Consulting group estimated the Serviceable Addressable Market (SAM) for six key clean energy technologies (clean steel, hydrogen, long-duration energy storage, EVs, direct air capture, and advanced nuclear SMRs). These alone have a domestic SAM of $9 to $10 trillion through 2050. Potential U.S. exports across these technologies in 2050 could reach roughly $330 billion annually. Additionally, adoption of these technologies alone could reasonably enable 20 Gt/yr in global emissions abatement if adopted at scale by 2050.[12]

Additionally, we should fast track decisions on things like American natural gas and hydrogen export facility permits to get our clean, and cleaner, fuels to global markets faster, rather than watch as global allies get their energy from hostile nations, or even get cut off.

While energy prices here at home remain elevated, Europe has seen even more dramatic price spikes given their tenuous energy supply chain. As part of Europe's drastic rethinking of their energy mix, U.S. liquefied natural gas (LNG) has become a critical lifeline to the European Union as it continues to wean itself from Russian gas.

In fact, the U.S. is now the leading producer of oil and natural gas in the world, exporting our LNG to 39 countries.[13] But just as importantly, a life cycle analysis conducted by the Department of Energy's (DOE's) National Energy Technology Laboratory shows that American LNG exports can be up to 30% cleaner than Russian natural gas.[14] So, the United States is in a prime position to lead global action on LNG, while boosting our exports, creating jobs, reasserting America's global technology and resources leadership over Russia and China, and driving down global emissions all at the same time.

Focusing for a moment on hydrogen, because of our abundant domestic energy resources the U.S. can be a dominant exporter in this domain as well, but there is a global race to capture that market.[15] Many countries, like Japan, South Korea, and the EU, are beginning to include hydrogen in their decarbonization efforts, but are unable to produce the necessary amounts domestically. It's

[12] https://www.bcg.com/publications/2022/usa-competitive-advantage-in-key-emerging-clean-tech
[13] https://www.eia.gov/dnav/ng/ng_move_expc_s1_a.htm
[14] https://rmi.org/which-gas-will-europe-import-now-the-choice-matters-to-the-climate/
[15] https://static.clearpath.org/2021/10/american-clean-hydrogen-1.pdf

estimated that cumulative global demand is roughly 1 - 2 billion metric tons. American clean hydrogen could competitively meet that demand with low-carbon hydrogen and ammonia hydrogen produced from natural gas with a high rate of carbon capture as well as from renewables. Several U.S. regions are poised to benefit from hydrogen exports. These future hydrogen hubs are able to support hydrogen production capacity and delivery infrastructure and can include major industrial centers and geologic storage capacity for carbon dioxide sequestration.

In the wake of the Russian invasion of Ukraine, it has become clear that civil nuclear exports are vital to our core national interests and other countries are looking at the U.S. to lead. They recognize that partnering with Rosatom is a bad deal that locks them into a 60-100 year relationship with Russia. In particular, Eastern European countries have been inking MOUs and contracts with the U.S. – Poland signed up for several U.S.-designed AP1000 reactors, and Romania plans to build a NuScale small modular reactor. We already know that not all countries play fair, and the U.S. must leverage the numerous financing tools at our disposal to support nuclear energy exports. These tools include utilizing the Export-Import Bank, and the U.S. Development Finance Corporation, which lifted their ban on nuclear energy two years ago.

We should also look at new authorities that may be required to support nuclear energy exports. A significant piece of legislation, the International Nuclear Energy Act (INEA), passed out of the Senate Foreign Relations Committee just last week by voice vote. The companion bill in the House was introduced by your colleagues Reps. James Clyburn (D-SC) and Byron Donalds (R-FL) in October. INEA creates a national strategic plan for nuclear energy exports and will be essential to competing against China and Russia. Future enactment of this bill will result in sustained industry, high-paying jobs, abundant clean energy for developing nations, and strong international partnerships.

There is more to be done for international nuclear energy. As I mentioned previously, Russia and China dominate nuclear energy development today, and offer significantly stronger incentives to partnering countries. The U.S. needs stronger coordination between agencies, and a fast-track nuclear energy export process for allied countries. Additionally, we must fully end our reliance on Russia for nuclear fuel, and establish a domestic fuel industry that can support both the U.S. and its allies. None of these tasks are easy, but they are worth doing.

Necessary Next Steps

Trade policy is critical to creating a global economic landscape that supports innovation and deployment of clean energy technology. For years, the United States led negotiations on a high-standards Environmental Goods Agreement, and although the negotiations were not completed, significant progress was made.

We appreciate the efforts that Reps. Kevin Brady (R-TX), Adrian Smith (R-NE), Suzan DelBene (D-WA), and other members of this subcommittee have devoted to raising the importance of an Environmental Goods Agreement with the Administration.

We need to get back to the lead position at the negotiating table.

For many of the clean energy products under consideration for an Environmental Goods Agreement in the past, U.S. tariffs are already very low in comparison to tariffs imposed on American-made products by countries with whom we would want to negotiate. Accordingly, an Environmental Goods Agreement would help open international markets to U.S. clean energy technologies – like the ones I've discussed – with little disruption to our domestic market.

An ambitious Environmental Goods Agreement would go a long way to reduce the price of U.S. clean energy technologies abroad, making them more viable across the developed and developing world, thus helping to reduce carbon emissions and supporting American jobs.

We need to be thoughtful and forward-leaning in our opposition to China's belt-and-road initiative for clean energy infrastructure projects. For many countries looking to continue their economic development, China is often their primary financing partner. The U.S. must use its authorities at Commerce, State, DFC, USTDA, and Ex-Im to provide an alternative partner, while also supporting clean energy manufacturing here in the United States. These agencies offer robust financing options for technologies important to the developing world. Due to the size of these energy projects, almost every major project requires financing backstops from the exporting country. Cementing the mission of clean energy exports and development in these agencies by law will go a long way to building new clean energy markets globally for American products. This will further ensure that future energy projects in developing countries emit less and eliminate forced labor, particularly as it relates to current human rights violations throughout the existing supply chain in China.

To address a massive global challenge like climate change, every tool must be available. No country will use a single clean power technology – every country will need to find the right mix given its national circumstances, resource endowments, and pre-existing industry.

Thank you again for the opportunity to testify today. ClearPath is eager to assist the Committee in developing innovative policy solutions to ensure US leadership in international clean energy trade. We applaud the Committee for taking on this important task to help ensure the appropriate action, including trade policies that will help advance innovative technologies to provide clean, reliable, and necessary energy to our nation and the world.