6.

Renewables

ACCELERATING RENEWABLE ENERGY DEPLOYMENT

Key Takeaways:

- Cost-competitive renewable energy generation will diversify America's energy supply and provide families and businesses with affordable, clean power.
- Modernizing and streamlining regulations is essential for expanding renewable energy projects and building new transmission lines.
- Measures that hinder trade, such as tariffs, drive up costs for Americans and hamstring renewable energy development in the U.S. for no meaningful economic, national security, or environmental benefit.

Currently, wind and solar make up a relatively small percentage of America's electricity generation. Wind (9.2%) and solar (2.8%) energy provided 12 percent of the nation's power generation in 2021.[1] Renewable energy has made incredible strides in cost reduction and deployment over the last 15 years. The Business Council for Sustainable Energy reports that: "[t]he injection of $105 billion in new private capital in the U.S. energy transition in 2021 is an 11 percent year-on-year increase, and a 70 percent increase over the past five years. The 2021 total included $47 billion in renewable energy (45 percent), $35 billion in electrified transport (34 percent) and a doubling of hydrogen investments to $200 million in 2021."[2] Globally, the total investment in these energy sources and technologies was $755 billion in 2021.[3]

Subsidies and state renewable portfolio standards aid in some of that growth. Nevertheless, it is clear that private capital is mobilizing toward wind, solar, and other renewable energy technologies and would likely continue without preferential treatment. The business case for renewable energy sources is strong. Policymakers should remove barriers that drive up the cost and slow the deployment of renewable energy and establish a level playing field among all energy sources and technologies.

WIND AND SOLAR

From 2009-2019, the cost of solar and onshore wind declined 89 percent and 70 percent, respectively.[4] Roughly over that same time, renewables' share of the global electricity generation mix increased from 20 percent to 29 percent (2010-2020).[5]

"Rather than distorting markets by subsidizing mature technologies with targeted tax credits, Congress and the administration should fix the policy problems that artificially drive up the cost of renewable hardware, software, and connection."

In the United States, wind and solar investments are thriving. Utility-scale solar deployment for 2022 may be nearly double 2021 deployment, from 23 gigawatts to 44 gigawatts. Producers plan to build another 27 gigawatts of wind in 2022.[6] Given the significant cost reductions and the mobilization of private capital toward new wind and solar projects, a new policy strategy is necessary. **Rather than distorting markets by subsidizing mature technologies with targeted tax credits, Congress and the administration should fix the policy problems that artificially drive up the cost of renewable hardware, software, and connection.** Johnnie Taul, the CEO of an engineering, procurement, and construction firm that builds utility-scale solar plants, agrees. In an April 2021 interview, Taul said that policymakers could help increase solar deployment by getting the government out of the way. Taul argues: "The economics are in our favor; technology is continuing to innovate. And that's the great thing about a free market environment—when technologies have to compete."[7]

The same holds true for all energy technologies. Of course, the market is far from free. However, the solution is not to layer on more market-distorting interventions but to level the playing field by removing them. For instance, policymakers should phase

out targeted tax credits for all energy sources and technologies. A next-best solution would be to provide a technology neutral tax credit and explore the implementation of a reverse auction that improves economic efficiency and better stewardship of taxpayer money. In a reverse auction, the utility (or energy customer) would select the project developer meeting certain criteria that offers to supply the electricity at the lowest price.

POLICY RECOMMENDATIONS TO EXPAND WIND AND SOLAR DEPLOYMENT

To drive more private sector investment in wind and solar projects, Congress and the administration should:

"American solar modules are among the priciest in the world, and solar consumers paid an additional $1.3 billion in higher costs because of the Section 201 tariffs."

- **Prohibit new tariffs on solar panels.** At the request of a petition from a domestic solar manufacturer petition, the U.S. Department of Commerce has launched an investigation as to whether China is circumventing antidumping and countervailing duties by moving manufacturing to other countries in southeast Asia.[8] As a result, new tariffs could be imposed on solar imports from Malaysia, Thailand, Cambodia and Vietnam. Even the threat of tariffs has resulted in lower projections for solar growth.[9] More efficient mechanisms exist to combat the problems associated with Chinese solar production, whether that is human rights violations, concerns over dumping, or its abysmal environmental record. For instance, the U.S. Customs and Border Protection is ramping up its efforts to block imports of products made with the forced labor of ethnic Uyghurs. Last December, President Biden signed the Uyghur Forced Labor Prevention Act into law. The World Trade Organization has a dispute-resolution body to address such issues. The administration should rely on these processes rather than imposing new tariffs.
- **Fully eliminate Section 201 tariffs.** In 2018, President Trump used Section 201 of the Trade Act of 1974 to levy a tariff on certain solar cells and modules. **American solar modules are among the priciest in the world, and solar consumers paid an additional $1.3 billion in higher costs because of the Section 201 tariffs.**[10] The Biden administration extended the tariffs for another four years, though it eased the burden slightly by raising the tariff rate quota and continuing to exclude bifacial panels.[11] Tariffs have failed to accomplish the objective of growing a domestic manufacturing industry. Wood Mackenzie estimates that the tariffs make solar projects in the United States 55 percent more expensive when compared to projects in Europe.[12] The administration should reconsider its stance and eliminate the Section 201 tariffs.
- **Extend Master Limited Partnerships to renewable projects.** Under a Master Limited Partnership (MLP), firms have the tax structure of a partnership or a limited liability company, but ownership equity trades publicly on a securities exchange. The combination of the partnership tax status and the liquidity of a publicly traded company make MLPs an attractive investment vehicle. In the energy sector, MLP formation is available for mineral extraction, oil and gas pipelines, processing, transportation and storage, as well as for the transportation and storage of ethanol, biodiesel, and other alternative fuels.[13] MLPs are also available for geothermal energy.[14] Congress and the administration should extend MLP structures to all renewable energy projects.
- **Repeal the Jones Act or waive Jones Act requirements to increase the competitiveness of offshore wind.** The Jones Act mandates that goods shipped between two ports in the U.S. must be transported on a U.S.-built, U.S.-flagged vessel with a crew that is at least 75% American. That includes vessels used to build and service offshore wind projects. The Washington Post highlighted that the lack of Jones Act compliant vessels made an offshore wind project off Virginia's coast logistically more difficult and more expensive. Rather than using a closer port, "supplies shipped from Europe were first staged in Canada before being ferried on repeated trips to the construction site."[15] Using Jones Act ships is pricier, adds to the cost of projects, and could delay projects from coming online faster.[16] Congress should repeal the Jones Act or at the very least repeal the foreign-build requirement.
- **Increase revenue sharing for offshore wind.** Through the Outer Continental Shelf Renewable Energy Program, the Department of Interior conducts competitive and noncompetitive lease sales.[17] The company that wins the bid or negotiates the contract with DOI pays bonus bids, rent, and royalties. These revenues accrue to the federal and state

governments.[18] Congress should increase the revenue sharing for offshore energy development to be a 50/50 split among the federal government and states. Coastal states and adjacent coastal states receive 27 percent of revenues generated from qualified projects.[19] Increasing the states' share would attract more buy-in, and states could allocate those resources toward coastal protection and restoration or however they see fit.

TRANSMISSION POLICY

To expand renewable energy generation, additional transmission capacity is necessary to deliver electricity to consumers. As with other energy infrastructure, however, transmission lines can take up to a decade to build.[20] Through the years, Congress and the Federal Energy Regulatory Commission (FERC) have taken several actions to improve transmission planning, siting, and permitting.[21] In July 2021, FERC issued a Notice of Proposed Rulemaking on reforms for electric regional transmission planning, cost allocation, and generator interconnection.[22] FERC's rulemaking would take a longer-term approach to transmission buildout and would help ensure the transmission investment is more competitive and cost effective. R Street electricity experts Jennifer Chen and Devin Hartman stress that the proposed rulemaking would reform flawed transmission and generator interconnection regulations that "constrain trillions of dollars' worth of productive investment and skew capital deployment toward inefficient applications, all to the detriment of consumers, innovation and the clean transition."[23]

"Making transmission more transparent, holistic, and independently administered would be beneficial for consumers and emissions reductions."

Making transmission more transparent, holistic, and independently administered would be beneficial for consumers and emissions reductions. The creation of an Independent Transmission Monitor could significantly help to carry out these objectives. Furthermore, consumer-focused groups including the Electricity Consumers Resource Council recommend setting minimum criteria for FERC to consider for further improving transparency and better assessing what transmission investments are needed. The recommended minimum criteria include: grid enhancing technologies and other measures to increase the performance and capacity of existing infrastructure; the frequency and intensity of extreme weather; anticipated energy resource mix taking into account federal, state, local, utility, industrial, and commercial clean energy goals; age and potential retirement of existing generation and transmission; anticipated increase in levels of electrification in the transportation, home heating, and manufacturing sectors; anticipated load profiles; future penetrations of distributed energy resources; increased use and cost-effectiveness of energy storage; and existing rights-of-way including usage of highway and railway corridors to inform siting decisions.[24]

POLICY RECOMMENDATIONS TO INCREASE TRANSMISSION CAPACITY

In addition to FERC's recent efforts, Hartman outlined ten legislative reforms for Congress to take up on transmission policy.[25] The reforms should build off bipartisan objectives to protect consumers, enhance competition, improve transparency, and reduce emissions. Reforms (taken directly from Hartman's post) include:

Five Areas Where Congress Could Provide a FERC Push Without Altering Statutes

1. **Redefine "good utility practice" to incorporate grid-enhancing technologies (GETs).** Technologies including power flow control, topology optimization, and dynamic line ratings can save billions and avoid millions of tons of carbon[26] annually just by enhancing the use of the existing transmission system. But unlike a competitive marketplace, cost-of-service regulation motivates utilities to use the system less efficiently. Encouragingly, FERC voted unanimously[27] across party lines last December to implement one type of GETs: temperature-adjusted line ratings. This was easy as a uniform best practice, but FERC needs more surgical tools for other GETs. Through the ANOPR and separate procedural vehicles, Congress could ask FERC to employ cost-benefit tests of GETs in areas of the grid with chronic congestion to set a higher bar for "good utility practice."

2. **Reduce artificial barriers to entry in generator interconnection.** The process for generation developers to apply for grid interconnection is "causing a massive backlog and delay"[28] in new construction. The amount of capacity backlogged equals 70 percent[29] of 2030 clean energy targets. In the ANOPR and beyond, Congress should press FERC to prioritize reducing information and procedural barriers in interconnection, while ensuring network upgrade costs adhere to the beneficiary pays principle[30] with the dispersed nature of the evolving resource mix.

3. **Bolster regional transmission planning, cost allocation, oversight and competition.** A handful of planning and cost allocation improvements[31] alone could net trillions in private investment, save consumers billions and pave the way for eliminating most industry emissions. Planning processes are notoriously short-sighted and uneconomic, requiring an overhaul to plan for long-term conditions and use of higher quality cost-benefit analyses. This is important within organized electricity markets but even more so outside of them, where transmission opacity reigns supreme. Instituting independent planning and oversight would improve planning parameters and ensure incumbents cannot stymie use of GETs and competitive solicitations, with the latter providing a 20-30 percent discount[32] for transmission expansion. Most of this falls under the scope of the ANOPR, and it is no secret that FERC leadership seeks congressional cover to overcome resistance from incumbent transmission owners.[33]
4. **Overhaul interregional transmission planning. FERC's ANOPR is heavy on regional transmission reform and overlooks most aspects of interregional planning, which is largely non-existent in practice.** Congress could add major value. On the technical side, requiring economics-based interregional transfer requirements could bolster grid resilience and build superhighways for clean energy while ensuring consumer benefits easily outweigh costs. Congress should also press FERC to overhaul the institutional design of interregional planning, such as incorporating third party expertise and community considerations about locations in an efficient planning process. For example, Congress could require FERC and the Department of Energy (DOE) to sign a memorandum of understanding[34] for DOE to convene stakeholders to help plan, provide technical input and file before FERC pursuant to Section 403[35] of the Department of Energy Organization Act.
5. **Remove barriers to electric commodity market innovation and liquidity.** Irrespective of transmission reforms, improving the tools to manage grid congestion will be crucial as the resource mix evolves. Liquid, granular markets for congestion management reduce artificial costs for clean energy development and integration while improving risk management. Regulatory rules for market pricing and congestion products vary by region and result in some areas having no granular market, while others face limitations on granularity or forward periods. Some markets still suffer from subpar credit policies.[36] Ambiguous FERC enforcement practices leave commodity markets with no clarity on what constitutes market manipulation,[37] which chills commodity innovation and decreases liquidity. Congress should direct FERC to reform market rules and enforcement practices that inhibit nodal congestion products, while ensuring tools to detect legitimate market manipulation like physical withholding[38] during tight natural gas periods.

Five Reforms That Require Altering the Federal Power Act (FPA)

1. **Make competitive generation the law of the land.** Historically,[39] the regulated monopoly generation model has stifled innovation, hurt consumers and undermined environmental[40] progress. The economic and environmental advantage[40] of competitive generation grows as capital and risk decisions become more complicated with the rise of unconventional resources. Large consumers argued for competitive power generation[41] half a century ago, culminating in national "diet" competition policy in the form of the Public Utility Regulatory Policy Act (PURPA) of 1978.[43] Consumers stepped that

up[44] in recent years, calling for an end to the "natural monopoly" model. Truly competitive policy would render PURPA obsolete, consistent with states' objectives.[45] Congress could require removal of wholesale barriers to consumer self-supply and establish a minimum threshold for competitive central plant procurement without right-of-first refusal by an incumbent utility, applicable in interstate bulk power systems.

2. **Strengthen competitive rules for affiliate transactions.** FERC uses competitive solicitations[46] criteria to mitigate affiliate abuse concerns. But this has not prevented some egregious anti-competitive conduct, such as those witnessed in Ohio and Illinois in 2020[47] where a parent company used a monopoly utility to cross-subsidize uneconomic legacy power plants owned by its competitive generation affiliate. FERC's criteria are sound, albeit limited in practice: transparency, definition, evaluation, and oversight. However, utility solicitations ostensibly satisfy these criteria but remain uncompetitive. FPA amendments could address this by requiring that solicitation criteria[48] do not narrowly define one technology to the exclusion of others and by having equitable evaluation criteria across all bids and bidders.
3. **Enable nationwide retail choice.** Recent studies[49] suggest properly designed and implemented retail competition programs send more accurate price signals, lower costs, and enable product differentiation. This includes expanding clean energy access, lowering the "green premium"[50] and ensuring any clean premium is fairly allocated based on individuals' voluntary preferences. The CLEAN Future Act[51] boldly had a "right to clean" provision, and ideally Congress would push a "right to anything" for consumers.
4. **Require granular emissions transparency.** Emissions data from the U.S. Environmental Protection Agency is severely lagged and lacks the granularity necessary to inform power consumers about their indirect emissions. The result is that the wave of voluntary corporate and retail clean energy investment—which now overwhelmingly outweighs[52] that driven by standards—is increasingly divorced from the objective of reducing emissions. Fixing this requires granular information: the emissions of the marginal power generator in a given area based on dynamic transmission congestion. Congress could require public utilities and/or balancing authorities to disclose average hourly emissions publicly for each pricing node within a specified timeline.
5. **Eliminate price controls on state policy.** FERC responded to proliferating state subsidies by imposing price controls to "fix" their price suppressive effects. The primary culprit is the "minimum offer price rule" (MOPR), which remains in litigation. A constant in economics is that when one government imposes price controls to counteract the effects of another government's subsidies, it exacerbates[53] harm to social welfare (i.e., two wrongs don't make a right[54]). MOPR is bad economic policy and even worse politics. Congress should eliminate this instrument of overreach and clarify the jurisdictional bright line, such as preempting facility-specific subsidies, not portfolio attribute subsidies that preserve a role for competitive forces.

"The potential for geothermal to supply affordable, reliable, and clean heat and electricity is enormous."

GEOTHERMAL

Geothermal energy uses the earth's heat to power homes and heat buildings. Geothermal taps into steam and hot water reservoirs below the earth for direct heat or to power generators. In contrast to intermittent sources of electricity such as wind and solar, geothermal is an "always-on" renewable resource.

The potential for geothermal to supply affordable, reliable, and clean heat and electricity is enormous. Although geothermal faces technological and economic challenges, the potential for enhanced geothermal systems is about half the installed generating capacity in the United States, according to the U.S. Geological Survey.[55] In 2019, the Department of Energy (DOE) called geothermal "America's untapped energy giant."[56] Particularly promising reenhanced geothermal systems are man-made reservoirs "created where there is hot rock but insufficient or little natural permeability or fluid saturation."[57]

While the commercial use of geothermal power dates back 60 years, advancements in smart drilling and extraction technologies have increased the potential for geothermal as a greater source of clean, domestic power. Several start-ups, with backing from venture capitalists and large energy companies, are investing to improve the economic viability of closed-loop geothermal systems. In a closed-loop system, "fluids are circulated through the system and heated by high underground temperatures, forming what they call a 'massive radiator.'"[58] According to DOE, these modern closed-loops systems have lifecycle greenhouse gas emissions four times lower than solar photovoltaics and six to 20 times lower than natural gas.[59]

POLICY RECOMMENDATIONS TO EXPAND GEOTHERMAL ENERGY

One way to improve the economic outlook for geothermal is to address the policy barriers that stifle its development. A 2019 DOE study concludes that putting geothermal permitting on equal footing with small oil and gas well exploration on federal lands would more than double geothermal electricity generation capacity (from six gigawatts in the business-as-usual case to seven gigawatts).[60] Several legislative reforms could improve the economic outlook for geothermal energy. The Enhancing Geothermal Production on Federal Lands Act would:

- Expedite the process by creating categorical exclusions to bypass the National Environmental Policy Act reviews for geothermal exploration activities (similar to oil and gas exploration wells).
- Require the Secretary of Interior to identify priority areas for geothermal development on federal lands.[61]

Congress should also:

- Open a central permitting office within the Bureau of Land Management and require BLM to process geothermal drilling permits at a similar pace for permits on state- and privately-owned lands.[62]
- Maintain that no less than 25 percent of the revenue generated from geothermal generation on federal lands goes to the county and no less than 50 percent goes to the state where the production is occurring.

HYDROPOWER

Hydropower provided 6.3 percent of America's power generation in 2021, roughly one-third of the country's renewable electricity.[63] As a low-cost, reliable, and flexible power source, hydropower will be a critical resource in supplying affordable energy and meeting decarbonization objectives. Pumped storage hydropower offers utility-scale backup power to complement intermittent wind and solar resources. Pumped storage uses two water reservoirs where a company pumps water to an upper reservoir as a source of energy storage, and the water flows down through a turbine to the lower reservoir for energy use.[64]

"The main priorities for policymakers should be to make it easier to relicense the existing hydropower fleet and make it easier to capitalize on America's hydropower potential."

The main priorities for policymakers should be to make it easier to relicense the existing hydropower fleet and make it easier to capitalize on America's hydropower potential. In a January 2022 testimony before the Senate Energy and Natural Resources Committee, Malcolm Woolf, President and CEO of the National Hydropower Association, outlined some noteworthy statistics that underscore the need for reform. Woolf points out that:

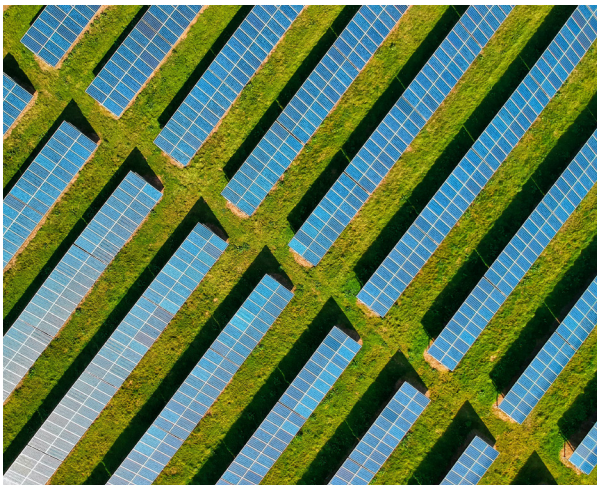
- 281 hydropower and pumped storage facilities, about 30 percent of active licenses, are set to expire by 2030.
- Relicensing takes on average 7.6 years and routinely takes more than a decade, according to the Department of Energy.
- Relicensing a hydropower plant takes longer than relicensing a nuclear plant.
- The processing of a license for a 100-megawatt hydropower facility can cost upwards of $100 million.[65]

POLICY RECOMMENDATIONS TO EXPAND HYDROPOWER

Ample opportunities exist to increase hydropower's share as a clean, reliable electricity source. They include upgrading existing infrastructure and adding generation to non-powered dams. Less than three percent of the 90,000 dams in the United States are powered. Furthermore, expanding the use of pumped storage would provide additional supply and storage, which would be particularly beneficial to accompany future wind and solar buildout.[66] The Infrastructure Investment and Jobs Act allocated $700 million to "improve efficiency, maintain dam safety, reduce environmental impacts, and ensure generators continue to provide emission-free electricity."[67] To stretch taxpayer dollars further and incentivize investment in existing fleet upgrades and increasing new hydropower generation, deeper regulatory improvements are necessary.

For instance, the Hydropower Clean Future Act would expedite and modernize hydropower licensing while ensuring environmental protection for aquatic ecosystems. Specifically, the legislation would:

- Designate the Federal Energy Regulatory Commission as the lead agency for federal permitting and improves interagency coordination.
- Expedite licensing for small and next generation hydropower projects that are unlikely to affect critical habitat or endangered species and for technologies that enhance environmental protection.
- Require a report to Congress to further reduce barriers for conventional, pumped-storage, conduit, and emerging hydropower technologies.
- Include hydropower in the definition of renewable power, which would allow hydropower to count towards the federal government's renewable power procurement requirements.[68]



Additional legislative reforms should:

- Require a "two-year, start-to-finish licensing process for adding generation to non-powered dams, and require the Army Corps of Engineers to develop a coordinated, consistent, and nationwide strategy to expedite the development of non-powered dams."[69]
- Allow the U.S. Army Corps of Engineers to engage in private-sector financing for the federally owned fleet of power projects.[70] The Army Corps is the largest owner of hydropower in the United States, and while Congress should require a study to examine which parts could be privatized, incorporating private financing could be beneficial for maintaining and expanding the government's hydropower fleet.
- Empower states to manage their water resources while preventing them from abusing Section 401 of the Clean Water Act to block projects for non-water issues. [71]

Other major regulatory overhauls, such as legislative fixes to the National Environmental Policy Act, would go a long way to improve the environmental review and permitting process for new and existing hydropower plants. Even without legislative fixes, the Federal Energy Regulatory Commission could reduce timeframes, improve coordination, extend licenses for longer durations, eliminate duplicative processes, and implement more dispute resolutions to avoid litigation.[72] Such fixes should instill more regulatory discipline, reduce costs for companies and the taxpayer, keep existing hydropower online longer, and provide more certainty for new hydropower investment.

MODERNIZE THE NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) requires federal agencies to conduct comprehensive environmental assessments for a wide range of projects, including many renewable energy projects.[73] The NEPA process commences when a federal agency proposes a major action that could significantly impact the environment. While well-intentioned, NEPA has caused regulatory paralysis and opened doors for litigious organizations to block projects even if the environmental assessment deems the project to be safe. New York Times columnist Ezra Klein wrote that NEPA is "part of a broader set of checks on development that have done a lot of good over the years but are doing a lot of harm now. When they were designed, these bills were radical reforms to an intolerable status quo. Now they are, too often, powerful allies of an intolerable status quo, rendering government plodding and ineffectual and making it almost impossible to build green infrastructure at the speed we need."[74]

Both the Undoing NEPA's Substantial Harm by Advancing Concepts that Kickstart the Liberation of the Economy Act (UNSHACKLE Act) and the Building United States Infrastructure through Limited Delays and Efficient Reviews Act of 2021 (BUILDER Act) are legislative fixes that would expedite permitting timelines, increase accountability, improve efficiency, and curb excessive litigation.[75]

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