

Pursuing a Just and Renewable Energy System

A Positive & Progressive Permitting Vision to Unlock Resilient Renewable Energy and Empower Impacted Communities



May 2023



Introduction

It is indisputable that the climate emergency requires the United States to rapidly transform its majority fossil energy system to 100% clean and renewable energy.

The United Nations Intergovernmental Panel on Climate Change's recent sixth synthesis report makes absolutely clear that an unprecedented bold transition to renewable energy with an equally aggressive effort to halt new fossil fuel development and phase out existing fossil fuel usage is absolutely vital to avoiding the most catastrophic consequences of climate change (1).

This necessary transformation presents a tremendous opportunity to pursue a far more just path forward—one that ends the status quo entrenchment of the fossil fuel industry; empowers federal agencies to use their authorities to accelerate the transitions to a justly sourced, justly implemented, resilient, and equitable power system; actualizes the principles of environmental justice; and preserves our core environmental laws.

This system is composed of our most commonsense and affordable solutions that can be deployed in an efficient and just manner: energy conservation, distributed and resilient renewable energy and storage, and responsibly-sited utility-scale renewables, all paired with robust community engagement and opportunities for real energy democracy.

However, both Congress and the Biden administration are failing to exercise their imaginations to embed justice in a renewable energy future.

After the passage of the Inflation Reduction Act, both Democratic and Republican Congress members have proposed numerous

“permitting reform” proposals, but the majority continue to argue that achieving a fast transition to renewable energy necessarily means undermining bedrock environmental laws like the National Environmental Policy Act (NEPA).

This false logic must be interrogated. While these proposals might marginally improve the deployment of utility-scale renewable energy particularly on pristine lands, our energy needs can and must also be met with renewable energy on built surfaces that is more resilient, affordable, and respectful toward communities and wildlands.

Furthermore, any such purported gains of “permitting reform” proposals would be massively dwarfed by the emissions of fossil fuel projects that would also be expedited and result in deepening substantial environmental injustices for countless communities around the nation.

Over 750 organizations have opposed Senator Joe Manchin's dirty deal legislation that would rollback NEPA and accelerate fossil fuels in the name of “permitting reform” (2).

This policy document outlines: 1) how Congress can build out a just, renewable energy system that prioritizes energy conservation, distributed and responsibly-sited energy, and robust community engagement; 2) how Congress can tackle major barriers to this just energy future, including transmission bottlenecks and utility obstruction; and 3) how Congress can compel the Biden administration to actualize this just energy system without new legislation. It is possible to embed justice into our renewable energy future, instead of entrenching the unjust and extractive practices of our current dirty, racist, unreliable, and grossly-profiteering energy system.

1. Congress Should Pursue a Just and Renewable Energy System that Maximizes Commonsense Solutions: Energy Conservation, Distributed and Responsibly-Sited Renewable Energy, and Robust Community Engagement.

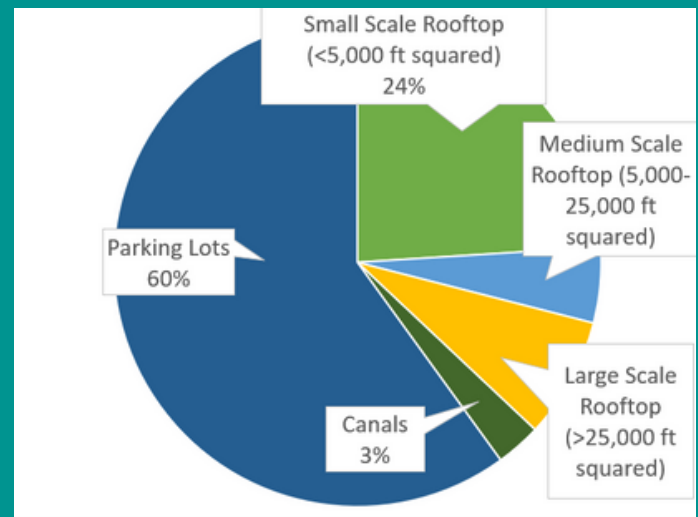
Most of Congress' "permitting reform" proposals assume that utility-scale renewable energy that relies on large-scale transmission build-out on public lands, regardless of responsible siting and community and environmental impact, is the silver bullet to decarbonization—an assumption that should be intellectually interrogated instead of being willfully accepted.

In pushing for permitting reform that seeks to enable large-scale transmission construction, ***Congress mistakenly overlooks first maximizing our most commonsense and affordable solutions: energy conservation technologies, distributed energy resources (DERs), and larger-scale renewables on parking lots, canals, rights-of-way, and degraded lands that have ready access to existing transmission lines and don't harm communities or wildlife.***

Academic studies show that these sources can generate enough electricity to fulfill our energy needs many times over. Specifically, building solar smartly on residential and commercial building rooftops, as well as on top of parking lots and existing canals, can generate enough electricity to have met our 2022 electricity demands (*See Chart 1*).

Further, studies show that prioritizing solar generation on built environments, along rights-of-way, and on degraded lands can generate energy potential that meets our current energy needs several times over (*See Table 1*). Smarter planning prioritizes more just, affordable and resilient solutions that benefit communities and avoid environmental damage.

Chart 1. Percentage of Electricity Sold in 2022 that can be Fulfilled by Different Solar Project Types



Distributed solar on rooftops alone can generate a significant portion of our energy demands while also bringing key benefits like resilience, local job generation, and avoided wildlife impacts. Once distributed energy is maximized, building renewables on top of parking lots and canals as additional built surfaces can fill the remaining gap in our current energy demand. Prioritizing these sites for renewable energy can avoid the community impacts and bottlenecks associated large-scale transmission construction.

Components of the just, renewable energy system include:

A. First, maximize energy efficiency and energy conservation—and reject unnecessary energy-intensive industries like crypto-mining and militarization. The most commonsense and cheapest route to decarbonization is conserving our energy use in the first place. Academics estimate that deployment of energy efficiency and conservation technologies could reduce annual electricity use by 26% in 2030 (3). Energy efficiency technologies include weatherization like insulation, basic electrification like heat pumps and electric or induction stoves, and demand response technologies like smart equipment, sensors, and controls.

At the same time, wasteful energy-guzzlers like crypto-mining should be restricted and regulated. Bitcoin crypto-asset mining facilities use up to 1.4% of domestic electricity—the same as the electricity needed to light every home in the country and produce as much GHG emissions as seven million gas-powered cars (4). The U.S. military is one of the world's largest energy consumers, emitting more carbon pollution than some industrialized countries (5).

The annual ballooning of the U.S. defense budget is incompatible with a future free from the fossil-fueled climate crisis. Demilitarization is a key pathway for decarbonization and stopping violence against the same communities impacted by fossil pollution and climate disaster.

What Congress Can Do:

In addition to directing IRA funds toward just energy solutions, expand funding for implementation of energy efficiency technologies, prioritizing disadvantaged communities. Congress should vastly expand funding to the woefully underfunded Weatherization Assistance Program and technical implementation programs, potentially run by DOE, that can implement these technologies. Existing bills that can forward these efforts include: American Energy Efficiency Act of 2019 (S. 2288 g8); Reauthorizing the Energy Efficiency and Conservation Block Grant Program (H.R. 2088); Moving Forward Act (H.R. 2, Sections 33131, 33203, 33231, and 33241); Heating and Cooling Relief Act (H.R.893); and, Weatherization Assistance Program Improvements Act (S.3769).

Regulate and restrict Bitcoin and other energy-guzzlers. No legislation currently exists that requires regulation of energy-intensive crypto-mining. A starting point is the Crypto-Asset Environmental Transparency Act (S.5210), which requires the EPA to conduct a comprehensive study of U.S. crypto-mining activity.

Demilitarize. Congress should cut national defense spending by 50%, which currently sits at \$816.7 billion for FY2023; Biden has requested an increased \$842 billion budget for FY2024. This figure is larger than the military spending of the next 9 countries combined (6). Instead, this funding should be redirected to fighting the climate crisis and environmental injustice.

B. Second, maximize distributed energy resources like rooftop and community solar, storage, and microgrids that increase health and environmental benefits and avoid large-scale transmission harms.

DERs include distributed solar, battery storage, and microgrids that can be placed on roofs of residential, commercial and public buildings, and warehouses; roofs on parking lots; and other developed areas that are near the source of consumption and can be fully incorporated with electrified vehicles as additional storage. Academics have found that the technical potential of solar on residential, commercial and public buildings, parking lots and other developed areas that are near the source of energy consumption have the potential to fulfill the current demands for electricity in this country, which is subject to further change with increased energy conservation in the future (7).

DERs present a tremendous opportunity to rebuild a new energy system that is just, affordable, and renewable for all communities. In comparison to large-scale transmission systems, DERs are proven to offer co-benefits that elude their utility-scale counterparts: greater affordability; greater resilience in extreme weather events, power outages and disasters; local economic benefits of jobs; avoided wildlife impacts with larger scale clean energy projects and transmission; avoided waste of power lost in line transmission, as 5-20% of such energy is lost just in the transmission alone; and public health benefits when quickly displacing fossil fuel generation and pollution (8). Critically, DERs also localize these benefits and pair well with energy democracy ownership models that empower communities to shape how energy infrastructure can best serve their needs.

The utility industry often poses obstacles to the deployment of energy-efficiency measures and DERs because these undermine their profits (9).

What Congress Can Do:

Build distributed energy resources on all private and public rooftops and parking lots, prioritizing service to disadvantaged communities. Every rooftop in America should be covered in solar PVs, where applicable. Congress should prioritize deployment of solar power systems on the roofs of every single residential, commercial, and industrial building, where appropriate, by setting new national building codes, establishing funding mechanisms, and financial and tax incentive programs. For example, the Low Income Solar Energy Act ([H.R. 4291](#))—expands Low-Income Home Energy Assistance Program (LIHEAP), creates a financing program at DOE for low-income families, provides homeowner interest free loans, allows public housing authorities to enter into third party agreements with solar companies, updates HUD rules on utility allowance to ensure solar savings don't increase rent, and requires DOE to create a solar workforce program.

Solarize roofs over all parking lots, a massively overlooked potential for solar power that could generate nearly half of the federal government's 2035 solar goal of 1,000 MW ([10](#)). California has already introduced a law that would create incentives for companies to build "solar canopies" ([11](#)), following France's landmark law that would require the owners of large parking lots to install solar panels. Congress can follow suit.

Give financing avenues for non-federal public entities to also go solar, including schools, public housing, and other key community buildings. Existing bills that can forward these efforts include: Energy Resilient Communities Act ([H.R. 891](#)); Green New Deal for Public Schools Act of 2021 ([H.R.4442](#)); Green New Deal for Public Housing Act ([H.R.2664](#)); to provide direct funding to local, Tribal, and territorial governments to establish Green New Deal programs and initiatives, and for other

purposes ([H.R.2644](#)).

Mandate that FEMA must build back communities with resilient, reliable DERs instead of the fossil system with post-relief and pre-disaster relief funds ([12](#)).

C. Third, fulfill remaining energy demand with responsibly-sited large-scale renewable energy and transmission that has gone through robust environmental review and early community engagement.

For remaining energy needs that require bringing large-scale renewable energy projects online, Congress should effectively master plan the placement of new renewable generation, maximize the existing transmission system, and plan only necessary new transmission. This planning and execution must engage potentially impacted communities, Tribal governments, and other local governments with early and robust engagement and ramp up agency review capacity to ensure meaningful and timely review. Any new renewable energy projects and any necessary new transmission should be built smartly on degraded lands and surfaces first.

What Congress Can Do:

Pass the A. Donald McEachin Environmental Justice for All Act. This Act restructures current permitting processes so that cumulative impacts are considered properly and consistently as new infrastructure develops in environmental justice communities. The bill also directs federal agencies to seek Tribal government input in the NEPA process, and to ensure that Indian Tribes are invited to hold the status of a cooperating agency for proposed actions that might impact their reservation lands and sacred sites. Further, the bill codifies 2016 EPA guidance on consultation and coordination with Indian Tribes and 1997 Council on Environmental Quality guidance on environmental justice under NEPA. Taking a page from the process used to create the bill, the

legislation would ensure that environmental justice communities most impacted by infrastructure projects have influence over the permitting process.

Create a master energy planning agency that can craft and execute a master energy plan that drives forward renewable and just energy systems and addresses major barriers to inefficient energy systems. *See below for more details.*

Maximize responsible siting of large-scale renewable energy infrastructure on canals, degraded lands, and non-residential highway corridors. A recent study concluded that if every canal in California was covered by solar panels, that would generate approximately 13 gigawatts of energy annually (13)—enough to power nearly 10 million homes—while simultaneously reducing water loss by 63 billion gallons of water per year due to evaporation, and reduce aquatic weed growth, reducing the need for pesticides. The canals covered by solar panels would also reduce the use of diesel-powered irrigation pumps, which would improve the local air quality. If such an effort were to target the nearly 8,000 miles of canals across the western United States managed by the Bureau of Reclamation, this could generate more electricity than called for in President Biden's Executive Order 14008 of deploying 25 gigawatts of onshore renewable energy, and all of this could be accomplished without destroying a single acre of habitat on public lands.

Additional renewable energy and needed transmission should be built on degraded lands or lands with existing rights-of-way, such as highway or railway corridors but with no communities implicated (14), because they would not require significant new review processes and could onboard projects more quickly. Congress should amend existing laws as necessary to allow co-siting of transmission projects with existing federal highway and railway corridors and amend the Federal Power to

incentivize transmission development on existing rights of way and degraded lands.

D. Fourth, halt dangerous distractions that perpetuate fossil fuels and pollution from coming online and also ensure responsible mineral recovery, reuse, and recycling and minimized critical mineral extraction.

Dangerous distractions—including carbon capture and sequestration, direct air capture, enhanced oil recovery, dirty hydrogen, so-called “advanced” or “chemical recycling” processes for plastics, and other technologies that perpetuate fossil fuels—and biomass and factory farm biogas, must be banned from coming online. Renewable energy is now cheaper than fossil fuels, and public funds should not be used to prop up oil and gas companies’ efforts to extend the demand for fossil fuels and existing infrastructure for as long as possible. Environmental justice and frontline communities should not be subject to dangerous and unproven projects that increase local pollution and harm human health. There is no technology that can make continued use of fossil fuels safe for communities or the planet. Rather than wasting public resources on expensive, ineffective, and unsafe distractions, the fastest, most certain way to avert the looming climate emergency is to phase out oil and gas.

Congress must ensure that the buildout of a renewable energy future does not itself cause serious environmental injustice and harm through a massive increase in mining and other extractive activities. It must plan for a circular economy and responsible extraction of renewable energy minerals that uphold human and Indigenous rights, avoids ecological and social negative impacts on freshwater and groundwater, land, air, ecosystems and imperiled species, excludes seabed mining, and prioritizes recycling and extending the life of materials used in renewable and energy efficiency technologies. Recent research has demonstrated that the volume of mining for energy transition minerals is not a given. Investing in mass transit, limiting battery size,

increasing city density and limiting suburban sprawl, and instituting robust recycling could reduce 2050 US demand for lithium by 92 percent from the most lithium intensive scenarios (15). The U.S. must take a whole-of-supply chain approach to decarbonizing the transportation system that uses manufacturing, land use, and transportation policy as mechanisms for minimizing the amount of mining needed and developing a more equitable society.

Congress should democratically plan and coordinate energy transition mineral supply chains in ways that limit harm and share the benefits of the transition in the U.S. and abroad by embedding climate, labor, Indigenous, and transit justice at each step of the supply chain. To ensure a race-to-the-top in manufacturing around the world, and prevent environmental impacts from being borne by the Global South, Congress should also reform the Export-Import Bank and other federal agencies engaged internationally to help transition their economies to recycling rather than extraction, and prevent other nations from committing human rights violations or exploiting weaker or non-existent environmental protections for critical minerals.

hazardous waste, to give the agency the mandate to ensure 100% recycling of all minerals needed for the wide-scale deployment of renewable energy without furthering environmental harms.

Establish a leasing system for hardrock mining, like what's in place for oil, gas, and coal, and pass laws that jump start the circular economy to reduce the need for more mining. A leasing system with meaningful Tribal consultation would allow for comprehensive planning, competitive bidding, and could help reduce conflict, steering mining away from areas where it is incompatible with other uses and values. Congress should pass laws that incentivize collection and ensure robust recycling systems are established to reduce the need for new or expanded mines and virgin materials.

2. If Congress Wants to Rapidly Deploy a Just and Renewable Energy Future, It Should Rationally Tackle Major Barriers: Lack of a Master Energy Planner and Inefficient Permitting Systems, Poor Community Engagement, and Utility Obstruction

What Congress Can Do:

Stop allocating all federal funding—including 45Q and 45V tax credits, subsidies and grants—that support CCS, CCUS, EOR, DAC, dirty hydrogen, plastic-to-fuel, biomass and factory farm biogas and other dangerous distractions. Congress should tighten its definition of clean energy to exclude greenwashed technologies that perpetuate the use of fossil fuels and other forms of pollution.

Amend the Resource Conservation and Recovery Act of 1976, which provides EPA the authority to regulate all solid and

There is no question that the country's energy system is inefficient, broken, and inflexible in bringing new clean energy sources online. Barriers to interconnecting renewable energy projects onto the grid are numerous and require different solutions (16), and major barriers are discussed below. As a threshold matter though, undergoing major NEPA reform for the purpose of building out more transmission lines is not the purported silver bullet to clean energy project deployment and instead carries vastly negative costs that undermine environmental justice and support more fossil fuel project deployment.

Major barriers to large-scale clean energy project deployment include:

A. Lack of a Federal Master Energy Planner to Lead the Country's Transformation to a Just and Renewable Energy System—and Address Ineffective Transmission Planning, Grid Congestion

Rapid decarbonization in a just manner demands deliberate planning to make sure we are deploying the right technologies and machinery in the right places. Under the current system, there are no central nodes of planning to get things right from the start. Instead, we have a balkanized system involving not only the Department of Energy and FERC, but also central roles played by private, for-profit companies and the regional transmission organizations many of them effectively control. The result is that across the country we have inefficiencies in the application process (17), increased grid congestion and reliability concerns, and minimal regulatory oversight and accountability. Less than a quarter of solar and wind projects are making it through the interconnection queue (18).

Grid congestion is a key concern, with new projects coming in and trying to connect to a system that can no longer accommodate new load. In the Pacific Northwest, the Bonneville Power Authority's transmission lines are overcapacitated to the point that the utility offered limited "long term firm transmission rights" to 10% of renewable energy projects requesting to connect to the grid. Some of the remaining projects were offered "conditional firm service" with the caveat that they would be at higher risk of curtailment.

A master energy planning body is desperately needed but does not exist. This body can help regulators and project developers understand where the interconnection bottlenecks exist and help developers scope out where new projects can be built and how best to minimize risks to the grid, ecosystems, and communities (19).

As FERC has suggested, Independent Transmission Monitors could be deployed to fill this key planning gap across the grid, helping to determine where and when new transmission is appropriate, and ensuring that we first exhaust all non-wires alternatives before building new transmission lines (20). Similarly, if done properly, DOE's Transmission Needs Study can help to identify the optimal areas for new transmission, taking into account both whether energy needs can be met with alternatives—including both non-wires alternatives and improvements in existing transmission systems—as well as how to minimize the adverse impacts of any new transmission, as required in the IJA (21).

This new approach to project planning would also help grid operators plan transmission upgrades that are broadly beneficial and help to avoid saddling project developers with the costs of grid upgrades—a financial burden that has often stopped projects in their tracks (22).

What Congress Can Do:

Create an energy planning agency that can craft and execute a master energy plan that drives forward renewable and just energy systems and addresses major barriers to deployment. This could come in the form of a newly created federal agency, as these duties are currently disaggregated among FERC, DOE, and other agencies. This new body should be governed by a board made up of environmental justice leaders, energy planners, and other experts who can lay out a blueprint that advances this just energy future and not be captured by corporate interests. This could also be paired with creating regional independent transmission monitors to oversee transmission planning and instruct that they exhaust all non-transmission alternatives before recommending new transmission projects.

Legislate the integration of the national grid by connecting the Texas electric grid and bringing it under federal jurisdiction.

Currently, our “grid” is composed of three largely separate grids: (a) the Western Interconnection, connecting Western Canada south to Baja California in Mexico, and reaching eastward over the Rockies to the Great Plains; (b) the Eastern Interconnection, connecting Central Canada eastward to the Atlantic coast (excluding Québec), south to Florida and west to the foot of the Rocky Mountains (excluding most of Texas); and (c) the Electric Reliability Council of Texas (ERCOT). In 2020, DOE released the Interconnection Seams Study, demonstrating that significant new renewable energy capacity could be achieved through these existing grids if they were interconnected (23). More recently, in February 2023, DOE released its draft National Transmission Needs Study, which similarly shows that the most economical way to expand transmission capacity is to connect ERCOT to the Western and Eastern Interconnections (24). However, ERCOT is not within FERC’s authority under the existing Federal Power Act.

Pass existing bills that can forward these efforts: Inter-regional Transmission Planning Improvement (H.R. 2678/S. 1015); CHARGE Act (S. 3879); see generally SEEC’s Permitting Reform for the Clean Energy Future (25).

B. Failure of Federal, State, and Local Agency to Engage Communities Early-On in Permitting Review Process

Rather than NEPA and other federal environmental reviews, a real obstacle to bringing large-scale renewables and additional transmission to the grid has been state and local opposition. A recent MIT study analyzed a range of sources of opposition to renewable energy projects and found that local opposition is multi-faceted,

yet the most significant sources of concern relate to land use (62% of cases) and environmental impact (60% of cases) (26).

The solution to this obstacle is not curbing community engagement but expanding it. Early and meaningful stakeholder engagement can address legitimate siting and related concerns and pave the way for community acceptance of these projects (27). This approach is also more likely to lead to projects on degraded lands or existing right-of-way, such as highways, which may have great community acceptance.

Federal and state regulators also frequently neglect the legally recognized sovereignty of Tribal Nations. This is a cornerstone of Federal Indian Law and ensures Tribal jurisdictional authority within the reservation and extends to off reservation Treaty reserved customary rights. Therefore, to ensure renewable energy development proceeds in an equitable and just way, permitting authorities must engage in a process of meaningful consultation with Tribal Nations. This means the dialogue needs to start at the inception of the project. Meaningful consultation must be approached as an ongoing process through every step of development and review. To be truly meaningful consultation it must also include—in addition to engagement of Tribal governments—engagement of Tribal community members, elders, historians, and cultural and spiritual practitioners. When a Tribal Nation and/or those that have an inherent relationship with the Tribal lands, waters and air objects to a project affecting their lands, health, cultures, spiritualities, and/or well-being, they should have the right to reject any permits. There also needs to be a mechanism to enforce meaningful consultation with judicial review.

What Congress Can Do:

Pass the A. Donald McEachin Environmental Justice for All Act. See above.

Bolster funding for all federal, regional, state, and local agencies undertaking environmental review.

Pass a bill codifying and standardizing Tribal consultation across federal agencies, in line with Rep. Grijalva’s Requirements, Expectations, and Standard Procedures for Effective Consultation with Tribes Act (RESPECT Act).

C. Utilities’ Obstruction of Interconnecting Small and Large Clean Energy Projects

Interconnection is a crucial, yet often overlooked, issue for enabling timely deployment of clean energy projects. Monopoly utilities have consistently delayed interconnecting competing generation sources—including both small rooftop solar to large-scale renewables—to the transmission grid they own (28). Research from the Lawrence Berkeley National Laboratory suggests large-scale renewable projects now spend about 3.7 years in interconnection queues in some grid operators in the country (29).

Vertically-integrated utilities—which exist in approximately two-thirds of states—make money based off infrastructure they build and own, including fossil projects and transmission lines. They are incentivized to obstruct interconnection of third-party clean energy projects that they do not own, thereby hindering new generation competition while gaining a competitive advantage for their own generation sources (30). The absence of new generation, in turn, effectively props up incumbent resources, in particular fossil fuel resources, to the detriment of hundreds of gigawatts of new wind, solar and storage waiting in interconnection queues.

What Congress Can Do:

Make unlawful utilities’ obstructive practices that delay or deny interconnection of renewable energy.

Congress can legislate blanket laws that make unlawful utilities’ interconnection delays to clean energy. Congress can also impose stronger antitrust enforcement against utilities obstructing

both small-scale and large-scale solar and amend antitrust law to eliminate state action immunity defenses available to utilities undergoing anti-competitive behavior (31).

Eliminate right of first refusal laws.

Congress should eliminate Rights of First Refusal (ROFR) laws to level the playing field between utilities who own the transmission and grid system and third-party transmission developers who want to enter the system. In many states, ROFR laws allow utilities to build local projects without facing competition (32), increasing their profitability. This is a major reason these companies are much more focused on these local transmission projects than interstate transmission (33).

Prevent utilities from using ratepayer funds to finance political influence activities and impose penalties for violations. Congress should stop utilities from directing ratepayer funds to finance political influence activities that are anti-environment, pro-fossil fuel, and ultimately hurt ratepayer communities. Both Colorado and Connecticut legislators have introduced such utility accountability bills.

3. The Biden Administration Already Has Vast Authorities to Advance This Just Energy System, and Congress Should Compel It to Act

Many of the policy reforms outlined above are indeed actions the Biden administration can take—without new legislation. Congress should use instruments available to it—including oversight hearings, comments, and letters—to compel the Biden administration to deliver a just and renewable energy system through the following mechanisms:

(1) Compel President Biden to declare a climate emergency, phase out the fossil fuel era, and phase in a just and renewable energy system.

Central to the positive and just energy system is ensuring that both renewable energy displaces existing fossil fuels domestically and fossil fuel production and exports are phased out to halt pollution and climate disasters disproportionately experienced by Black, Brown, Indigenous, and other communities of color, as well as low-wealth communities and their international counterparts. Under both emergency and ordinary executive authorities, President Biden and his agencies can halt new fossil fuel production approvals, phase out fossil fuel production on public lands and waters, halt crude oil and dirty gas exports, and stop fossil fuel finance going abroad (34). President Biden can also catalyze more funding toward clean and just energy systems using his emergency authority, including declaring a climate emergency under the Stafford Act to direct FEMA funding toward clean energy deployment and leveraging the Defense Production Act to manufacture in economically-devastated communities and deploy just energy systems in impacted communities first.

(2) Ensure the Inflation Reduction Act funds are directed toward building out this renewable, just and resilient energy system and prohibit investment in carbon capture and other climate scams that perpetuate the fossil fuel industry.

Congress should compel the EPA, DOE, and all other IRA-implementing agencies to maximally fund and finance distributed energy resources, energy efficiency, microgrids, and storage with prioritized deployment in and engagement with environmental justice communities. At the same time, Congress should compel these agencies to halt financing that favors carbon capture and other climate scams.

(3) Compel the Biden administration's enforcement agencies to hold utilities and other actors accountable for any obstruction to advancing this just and resilient clean energy future.

Congress should compel the Federal Trade Commission and Department of Justice to hold utilities accountable for obstructing deployment of renewable, distributed energy technologies by bringing antitrust and consumer protection enforcement actions. The Federal Trade Commission should also conduct an utility industry-wide investigation to expose political corruption and obstruction of clean energy and recommend a re-structured utility model that works to advance the just, renewable energy system (35).

(4) Mandate the Federal Emergency Management Agency and the Department of Housing and Urban Development disperse mitigation and disaster relief funding for renewable energy systems, not status quo fossil fuel systems whenever possible.

Intensifying climate disasters are leaving communities—particularly people of color and low-wealth—without safe and reliable power. Biden can directly change FEMA regulations or declare a climate emergency under the Stafford Act that mandates that disaster and mitigation funding be used to boost distributed and renewable energy systems, like rooftop solar, microgrids, and battery storage. They should not be used to build back fossil fuel status quo.

Table 1. Generation Potential for Socially and Ecologically Responsible Solar

<i>Site Type</i>	<i>Project Type</i>	<i>Scale</i>	<i>Sample Generation Potential Estimates (~% of electricity sold in 2022) (36)</i>
Built Environment	Small Scale (< 5,000 ft2) Rooftop Solar	LCL	926 TWh/yr (24%) (37)
	Medium Scale (5,000-25,000 ft2) Rooftop Solar	LCL	201 TWh/yr (5%) (38)
	Large Scale Rooftop Solar (>25,000 ft2)	UTCOM	305 TW/yr (8%) (39)
	Solar on parking lots	LCL/UTCOM	3,697 TWh/yr (38%) (40)
	Canals	LCL	114 TWh/yr in Californian canals alone (3%) (41)
	Solar on right-of-ways <i>e.g., along roads, railways, existing transmission infrastructure</i>	UTCOM	4,610 TWh/yr (118%) (42)
Total Built Environment (sum of sample estimates)			7,646 TWh/yr (196%)
Degraded Lands	Toxic suprfund sites, brownfields	UT	3870 TWh/yr (99%) (43)
	Landfills	UT	540 TWh/yr (14%) (44)
	Abandoned mine land (UT)	UT	940 TWh/yr (24%) (45)
	Contaminated agricultural lands (UT)	UT	2,390 TWh/yr (61%) (46)
	Abandoned agricultural lands (UT)	UT	562,200 TWh/yr (144%) (47)
Total Degraded Lands (sum of sample estimates)			639,600 TWh/yr (16,362%)
Co-Located with Other Industries	Floatovoltaics (floating solar panels on man-made reservoirs)	UT	786 TWh/yr (20%) (48)
	Agrivoltaics (solar on agricultural land)	UT	17,348 TWh/yr (in California Central Valley alone) (~444%) (49)
Total Co-Located (sum of sample estimates)			18,134 TWh/yr (464%)
TOTAL	Built Environment, Degraded Lands, Co-located with other industries		667,587 TWh/yr (~17,078%)

Endnotes

1. UN Intergovernmental Panel on Climate Change, 2023, AR6 Synthesis Report 2023, available at: <https://report.ipcc.ch/>.
2. Letter from 750+ Groups to Leader Schumer and Speaker Pelosi Re: Opposition to Fast-Tracking Fossil Fuel Project Approvals and Undermining the Clean Water Act and National Environmental Policy Act, Dec. 5, 2022, https://www.foodandwaterwatch.org/wp-content/uploads/2022/12/Dirty-Deal-Letter-II-final_12.2.22.pdf.
3. Jared Langevin et. al., US building energy efficiency and flexibility as an electric grid resource, 5 Joule 2102 (Aug. 18, 2021), <https://www.sciencedirect.com/science/article/pii/S2542435121002907#bib24>.
4. Press Release, Senator Edward Markey, Senator Markey Introduces Legislation to Combat Energy Intensive Cryptomining as it Strains Grid, Undermines U.S. Climate Goals (Dec. 8, 2022),
5. See, e.g., Neta Crawford, Brown Univ., Pentagon Fuel Use, Climate Change, and Costs of War, (2019).
6. Dave Lawler, U.S. spent more on military in 2022 than next 10 countries combined, Axios, April 24, 2023, <https://www.axios.com/2023/04/24/global-military-spending-2022-us-china-russia-list>
7. The technical potential of rooftop solar and distributed solar on parking lots is estimated to be 5,129 TWh, over 130% of the ~3,909 TWh of electricity sold in 2022. See Pieter Gagnon et. al., Estimating rooftop solar technical potential across the US using a combination of GIS-based methods, lidar data, and statistical modeling, 13 Environ. Res. Lett. 024027(2018), <https://iopscience.iop.org/article/10.1088/1748-9326/aaa554/meta>; Ciara Nugent, The Overlooked Solar Power Potential of America's Parking Lots, TIME, Dec. 8, 2022, <https://time.com/6239651/solar-parking-lots-france-us/>. For data on electricity sales, see Table 5.1. Sales of Electricity to Ultimate Customers, Electric Power Monthly, Energy Info. Admin., (Jan. 2023), https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_01.
8. See, e.g., Nat'l Renewable Energy Lab., Distributed Energy Planning for Climate Resilience (2018), <https://www.nrel.gov/docs/fy18osti/71310.pdf>; Nat'l Acad. of Science, Eng'g & Med., Enhancing the Resilience of the Nation's Electricity System (2017), <https://nap.nationalacademies.org/catalog/24836/enhancing-the-resilience-of-the-nations-electricity-system>; Mark Dyson & Becky Li, Rocky Mountain Institute, Reimagining Grid Resilience: A Framework for Addressing Catastrophic Threats to the US Electricity Grid in an Era of Transformational Change (2020), https://rmi.org/wp-content/uploads/2020/07/reimagining_grid_resilience.pdf.
9. Env't Am., U.S. PIRG & Frontier Grp., Blocking Rooftop Solar (June 2021), https://publicinterestnetwork.org/wp-content/uploads/2021/06/Blocking-Rooftop-Solar-Web_1.pdf; Ctr. for Biological Diversity, Rooftop-Solar Justice (2023), <https://www.biologicaldiversity.org/programs/energy-justice/pdfs/Rooftop-Solar-Justice-Report-March-2023.pdf>.
10. Ciara Nugent, The Overlooked Solar Power Potential of America's Parking Lots, TIME, Dec. 8, 2022, <https://time.com/6239651/solar-parking-lots-france-us/>.
11. Press Release, Sen. Josh Becker, Turning Parking Lots into Clean Energy Power Plants (Dec. 6, 2022), <https://sd13.senate.ca.gov/news/press-release/december-6-2022/turning-parking-lots-clean-energy-power-plants>; Steven King, Using parking lots and highways for solar power, Env't California (Feb. 24, 2023), <https://environmentamerica.org/california/articles/using-parking-lots-and-highways-for-solar-power/>.
12. Jean Su & Maya Golden Krasner, Ctr. for Biological Diversity, The Climate President's Emergency Powers (2022), <https://www.biologicaldiversity.org/programs/energy-justice/pdfs/Climate-Emergency-Powers-Report.pdf>.
13. Brandi McQuinn et al. Energy and water co-benefits from covering canals with solar panels, 4.7 Nature Sustainability 609 (2021).
14. Jordan Macknick et al., Nat'l Renewable Energy Lab'y, Solar Development on Contaminated and Disturbed Lands (2013), <https://www.nrel.gov/docs/fy14osti/58485.pdf>. See also Steven King, Using parking lots and highways for solar power, Env't California (Feb. 24, 2023), <https://environmentamerica.org/california/articles/using-parking-lots-and-highways-for-solar-power/>; Jeff St. John, How transmission along railroads and highways could break open clean energy growth, Canary Media, Apr. 26, 2021, <https://www.canarymedia.com/articles/transmission/how-transmission-along-railroads-and-highways-could-break-open-clean-energy-growth>.
15. Thea Riofrancos, Alissa Kendall, Kristi K. Dayemo, Matthew Haugen, Kira McDonald, Batul Hassan, Margaret Slattery, and Xan Lillehei, "Achieving Zero Emissions with More Mobility and Less Mining," 2023, Climate and Community Project, <http://www.climateandcommunity.org/more-mobility-less-mining>
16. For a deeper discussion of barriers to the buildout of large-scale transmission, see Earthjustice, Building the Transmission Infrastructure for 100% Clean Energy, April 2023, <https://earthjustice.org/wp-content/uploads/2023/05/final-4.20-transmission-explainer.pdf>.
17. Gwen Brown & Sky Stanfield, Improving Interconnection Timelines: The Need for Data and Enforcement, Interstate Renewable Energy Council (Feb. 8, 2022), <https://irecusa.org/blog/regulatory-engagement/improving-interconnection-timelines-the-need-for-data-and-enforcement/>. See also Elisa Wood, The agonizing issue that no one cares about: Interconnection, Microgrid Knowledge, Feb. 16, 2022, <https://www.microgridknowledge.com/distributed-energy/article/11427439/the-agonizing-issue-that-no-one-cares-about-interconnection>.
18. Brad Plumer, The U.S. Has Billions for Wind and Solar Projects. Good Luck Plugging Them In, New York Times, Feb. 23, 2023, <https://www.nytimes.com/2023/02/23/climate/renewable-energy-us-electrical-grid.html>. See also Record amounts of zero-carbon electricity generation and storage now seeking grid interconnection, Lawrence Berkeley National Laboratory, Apr. 13, 2022, <https://emp.lbl.gov/news/record-amounts-zero-carbon-electricity>.
19. See Tom Rutigliano, Getting Renewable Energy Connected, Natural Resources Defense Council (Nov. 15, 2022), <https://www.nrdc.org/bio/tom-rutigliano/getting-renewable-energy-connected>.
20. FERC, Notice inviting post-technical conference comments (Dec. 23, 2022), <https://www.ferc.gov/media/notice-inviting-post-technical-conference-comments-docket-no-ad22-8-000>; Indep. Transmission Monitor Coal. (Mar. 23, 2023), https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20230323-5105&optimized=false.
21. Pub. Law 117-58 (2021), § 40105; see also 16 U.S.C. § 824p(a)(4)(G)(ii).
22. Brad Plumer, The U.S. Has Billions for Wind and Solar Projects. Good Luck Plugging Them In, New York Times, Feb. 23, 2023, <https://www.nytimes.com/2023/02/23/climate/renewable-energy-us-electrical-grid.html>. See also Chelsea Barnes, Justin Barnes, Blake Elder & Benjamin Inskeep, EQ Research, Comparing Utility Interconnection Timelines for Small-Scale Solar PV, 2nd Edition (2018), <https://eq-research.com/wp-content/uploads/2016/10/EQ-Interconnection-Timelines-2016.pdf>. See also Herman Trabisch, Interconnection delays can be costly, but some utilities have found ways to save time and money, Utility Dive, Nov. 3, 2016, <https://www.utilitydive.com/news/interconnection-delays-can-be-costly-but-some-utilities-have-found-ways-to-429351/>.
23. Interconnections Seam Study, Nat'l Renewable Energy Lab'y, <https://www.nrel.gov/analysis/seams.html> (last visited May 1, 2023).
24. U.S. Dep't of Energy, National Transmission Needs Study: Draft for Public Comment (2023), <https://www.energy.gov/sites/default/files/2023-02/022423-DRAFTNeedsStudyforPublicComment.pdf>; Ethan Howland, DOE finds 'pressing' transmission needs, with interregional links offering the biggest benefits, Utility Dive, Mar. 6, 2023, <https://www.utilitydive.com/news/doe-transmission-needs-report-interregional-webinar/644192/>.

Endnotes (cont.)

25. Sustainable Energy & Env't Coal., Permitting Reform for the Clean Energy Future (2022), <https://seec.house.gov/sites/sustainableenergyandenvironmentcoalitioncaucus.house.gov/files/22.11.21%20SEEC%20Policy%20Brief%20-%20Permitting%20Reform%20for%20the%20Clean%20Energy%20Future.pdf>.
26. Lawrence Susskind et al., Sources of opposition to renewable energy projects in the United States, 165 Energy Policy 112922 (2022), <https://www.sciencedirect.com/science/article/pii/S0301421522001471>.
27. Ams. for a Clean Energy Grid, Recommended Siting Practices for Electric Transmission Developers (2023), <https://cleanenergygrid.org/wp-content/uploads/2023/02/Recommended-Siting-Practices-for-Electric-Transmission-Developers-February-2023-Americans-for-a-Clean-Energy-Grid.pdf>.
28. Ari Peskoe, Energy Bar Ass'n, Is the Utility Transmission Syndicate Forever? (2021), <https://www.eba-net.org/assets/1/6/5-%5BPeskoe%5D%5B1-66%5D.pdf>; Gwen Brown & Sky Stanfield, Improving Interconnection Timelines: The Need for Data and Enforcement, Interstate Renewable Energy Council (Feb. 8, 2022), <https://irecusa.org/blog/regulatory-engagement/improving-interconnection-timelines-the-need-for-data-and-enforcement/>; Chelsea Barnes, Justin Barnes, Blake Elder & Benjamin Inskeep, EQ Research, "Comparing Utility Interconnection Timelines for Small-Scale Solar PV, 2nd Edition (2018)", EQ Research, October 2016, <https://eq-research.com/wp-content/uploads/2016/10/EQ-Interconnection-Timelines-2016.pdf>. See also Herman Trabish, Interconnection delays can be costly, but some utilities have found ways to save time and money, Utility Dive, Nov. 3, 2016, <https://www.utilitydive.com/news/interconnection-delays-can-be-costly-but-some-utilities-have-found-ways-to/429351/>.
29. Joseph Rand et al., Berkeley Lab, Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection As of the End of 2020 (2021), https://etapublications.lbl.gov/sites/default/files/queued_up_may_2021.pdf; Record amounts of zero-carbon electricity generation and storage now seeking grid interconnection, Lawrence Berkeley National Laboratory, Apr. 13, 2022, <https://emp.lbl.gov/news/record-amounts-zero-carbon-electricity>.
30. Chelsea Barnes, Justin Barnes, Blake Elder & Benjamin Inskeep, EQ Research, "Comparing Utility Interconnection Timelines for Small-Scale Solar PV, 2nd Edition (2018)", EQ Research, October 2016, <https://eq-research.com/wp-content/uploads/2016/10/EQ-Interconnection-Timelines-2016.pdf>. See also Herman Trabish, Interconnection delays can be costly, but some utilities have found ways to save time and money, Utility Dive, Nov. 3, 2016, <https://www.utilitydive.com/news/interconnection-delays-can-be-costly-but-some-utilities-have-found-ways-to/429351/>; Ari Peskoe, Energy Bar Ass'n, Is the Utility Transmission Syndicate Forever?, Energy Bar Association (2021), <https://www.eba-net.org/assets/1/6/5-%5BPeskoe%5D%5B1-66%5D.pdf>.
31. Petition for FTC Investigation into the Electric Utility Industry's Abusive Practices that Stifle Renewable Energy Competition and Harm Consumer Protection, June 14, 2022, <https://www.biologicialdiversity.org/programs/energy-justice/pdfs/FTC-Petition-Re-Utilities-2022-05-16.pdf>.
32. Ari Peskoe, Energy Bar Ass'n, Is the Utility Transmission Syndicate Forever?, (2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3770740.
33. Joisah Neeley, Right of First Refusal Laws for Electric Transmission are Anticompetitive in Interstate Commerce, R Street (June 24, 2021), <https://www.rstreet.org/research/right-of-first-refusal-laws-for-electric-transmission-are-anti-competitive-in-interstate-commerce/>.
34. Jean Su & Maya Golden Krasner, Ctr. for Biological Diversity, The Climate President's Emergency Powers (2022), <https://www.biologicialdiversity.org/programs/energy-justice/pdfs/Climate-Emergency-Powers-Report.pdf>; Ctr. for Biological Diversity, Biden's Climate Powers, <https://bidensclimatepowers.org/> (last visited Apr. 27, 2023); Kassie Siegel & Jean Su, Ctr. for Biological Diversity, Legal Authority for Presidential Executive Action on Climate (2019), <https://climatepresident.org/Legal-Authority-for-Presidential-Climate-Action.pdf>.
35. Petition for FTC Investigation into the Electric Utility Industry's Abusive Practices that Stifle Renewable Energy Competition and Harm Consumer Protection, June 14, 2022, <https://www.biologicialdiversity.org/programs/energy-justice/pdfs/FTC-Petition-Re-Utilities-2022-05-16.pdf>.
36. 3909 TWh of electricity was sold in 2022. For data on electricity sales, see Table 5.1. Sales of Electricity to Ultimate Customers, Electric Power Monthly, Energy Information Administration, January 2023, https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_01.
37. Pieter Gagnon et al., Estimating rooftop solar technical potential across the US using a combination of GIS-based methods, lidar data, and statistical modeling, Environ. Res. Lett. 13, Feb. 13th, 2018, <https://iopscience.iop.org/article/10.1088/1748-9326/aaa554/met>.
38. *Id.*
39. *Id.*
40. See Ciara Nugent supra note 9. The author's conducted a literature review of related studies and came to a conservative estimate that the capacity for solar on rooftops is 422 GW. To get the TWh value, we multiplied this by the number of hours in a year, 8,760, and then converted the GWh value to TWh. The result was 3,697 TWh.
41. According to Brandi McQuin, "if California's ~4,000 mile canal network were covered with solar panels, it could produce 13 gigawatts of renewable capacity." 1 GW is equal to 8,760 GWh per year (hrs in a year). If you multiply this by 13 you get 113,880 GWh. This then converts to 113.88 TWh. See Nathan Frandino, California to cover canal with solar panels in experiment fight drought, climate change, Reuters, Aug. 25, 2022, <https://www.reuters.com/business/environment/california-cover-canal-with-solar-panels-experiment-fight-drought-climate-change-2022-08-25/#:~:text=If%20all%20of%20enough%20to%20power%20750%20000%20homes>. See also Brandi McQuin et al. Energy and water co-benefits from covering canals with solar panels, 4.7 Nature Sustainability 609 (2021).
42. According to the National Renewable Energy Laboratory, about 3 acres of land are required for 1 GWh of solar. See page V. Sean Ong et. al. Land-Use Requirements for Solar Power Plants in the United States, National Renewable Energy Laboratory, June 2013, <https://www.nrel.gov/docs/fy13osti/56290.pdf>. Authors from Hernandez's study converted the square kilometers for each land type, found in Table 1, to acres and then divided by 3 to get a GWh per year value. This was then converted to TWh above. See Table 1 on page 564. Hernandez et. al., Techno-ecological synergies of solar energy for global sustainability, Nature Sustainability, Vol. 2, July 2019, <https://doi.org/10.1038/s41893-019-0309-z>.
43. *Id.*
44. *Id.*
45. *Id.*
46. *Id.*
47. *Id.*
48. See page D. Robert S. Spencer et. al., Floating Photovoltaic Systems: Assessing the Technical Potential of Photovoltaic Systems on Man-Made Water Bodies in the Continental United States, Environmental Science & Technology, Vol. 53, 2019, https://www.osti.gov/pages/servlets/purl/1489330_estimate_based_on_utilization_of_27%25_of_surface_area_of_all_24,419_eligible_water_bodies_in_the_US.
49. See page 14, 472. Madison K. Hoffacker et. al. Land-Sparing Opportunities for Solar Energy Development in Agricultural Landscapes: A Case Study of the Great Central Valley, CA, United States, Environmental Science & Technology, Vol. 51, 2017 <https://pubs.acs.org/action/doSearch?field1=Contrib&text1=Madison+K.+Hoffacker>.