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ENERGY SUBCOMMITTEE

Hearing entitled:

“The clean future act and electric transmission: delivering clean power to the people”

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Thank you, Chairman Rush, Ranking Member Upton, and Members of the Subcommittee for inviting me to testify about the subject I have been working on since 1990: delivering clean energy to the American people. My firm consults to large energy buyers, clean energy sellers and their associations, NGOs including Americans for a Clean Energy Grid (ACEG) for which I serve as Executive Director, the ad hoc WATT Coalition on grid-enhancing transmission technologies for which I also serve as Executive Director, state governments, consumer groups, research organizations, grid operators, and universities. I am speaking for myself and will note where certain organizations may support certain legislative provisions.

My main point is that electricity transmission is infrastructure, plain and simple. Almost every element of living and working in modern society requires reliable electricity, including essential water, food, medical, and first responder services. Tragically, it appears that hundreds of Texans died in February when a failure of the power grid caused cascading failures of those other essential networks.

Transmission keeps electricity reliable and affordable by delivering it from where it is produced to where it is needed. Transmission is the only way to move power across space. We need to both make better use of our existing grid and expand its capacity to meet reliability and clean energy objectives.

I. Reliability requires large geographic movements of power

Severe weather can cause power shortages by increasing electricity demand and reducing supply in one region, but there is typically power available in neighboring regions. Transmission was essential for keeping the lights on during the Polar Vortex in the Mid-Atlantic in 2014, the “Bomb Cyclone” in the Northeast in the winter of 2017-18, Winter Storm Uri in February 2021, the heat wave across the West in August 2020 (which could have been addressed with power from the Central region if the interties were stronger), the Texas summer heat wave of 2019,

and the Polar Vortex in the Midwest in 2019. Across these events, regions that lacked strong transmission ties to neighbors experienced far more severe outages and price spikes than those that were able to import power. During February's cold snap Texas experienced severe outages after it fully utilized its import ties at 800 MW, while the adjacent Mid-Continent Independent System Operator (MISO) experienced only limited disruptions because it could import 15,000 MW from power systems to the east that were not experiencing extreme cold.

II. Clean energy and climate goals require large geographic movements of power

With a strong transmission network and other commercially available technology, nearly full decarbonization of the power, transportation, and building heating sectors is possible while maintaining the relatively low rates and reliable service we enjoy today. Last week the National Renewable Energy Laboratory released the North American Renewable Integration Study, which found net savings of nearly \$180 billion from expanding inter-regional transmission ties.¹ Numerous other studies have confirmed a doubling² or tripling³ of national transmission capacity is essential for affordable and reliable decarbonization. We need to access renewable resource areas with "collector" type lines and we need to move power back and forth with "connector" type lines among regions and the three electrical interconnections (Western, Eastern, and most of Texas).

Inter-regional transmission is particularly valuable, as it balances out local fluctuations in electricity supply and demand. For example, the Pacific DC Intertie between the Pacific Northwest and California was built in 1970 because California electricity demand peaks during the summer air conditioning season while Northwest demand peaks due to winter heating. Now that line also sends solar power from Southern California to the Northwest during sunny afternoons, and hydro and wind power back south in the evenings. East-west transmission is also valuable, as wind output is typically ramping up in the Midwest when solar output is ramping down in the Southeast and Southwest, and vice versa.

Transmission is needed regardless of how much future energy is provided by distributed energy resources (DERs), as solar power needs to be moved from region to region regardless of whether it is produced on a rooftop or in a utility-scale plant. In a recent analysis of the benefits of incorporating large amounts of DERs, the detailed modeling study found that almost the same amount of transmission was needed with or without a large amount of DERs.⁴

III. Transmission can benefit US global competitiveness

Many countries are building large-scale transmission networks to access renewable resources and reliably and affordably meet growing electricity demand. These countries are emerging as

¹ Brinkman, Gregory, Dominique Bain, Grant Buster, Caroline Draxl, Paritosh Das, Jonathan Ho, Eduardo Ibanez, et al. 2021. The North American Renewable Integration Study: A U.S. Perspective. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-79224. <https://www.nrel.gov/docs/fy21osti/79224.pdf> at p. 52.

² <https://www.sciencedirect.com/science/article/abs/pii/S2542435120305572?dgcid=author>

³ https://environmenthalfcentury.princeton.edu/sites/g/files/toruqf331/files/2020-12/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf

⁴ Clack et al., "[Why Local Solar For All Costs Less: A New Roadmap for the Lowest Cost Grid](#)," 53.

leaders in the global market for designing and building transmission. The US has an opportunity to retake the lead.

IV. Transmission brings well-paying domestic jobs

In a recent report,⁵ we found that if 22 shovel-ready transmission projects move forward, they will create 1.2 million new jobs, half of them in transmission and half in the generation projects that are currently waiting for delivery capacity. Transmission jobs are well-paying union jobs.

V. Congress can support regional and interregional capacity expansion through planning, permitting, and paying (cost allocation).

Congress can begin by expressing a national policy on transmission. Section 211 of the Clean Future Act would provide such a national policy statement. ACEG supports that provision.

Planning, permitting, and paying are the three P's of transmission barriers. Policies are needed to overcome these barriers.

a. Planning policies

Presently our transmission planning process is incremental and reactive. Transmission "planners" today tend to respond to individual generators' requests for service, and make only the upgrades needed to interconnect each plant. Most grid operators also separately plan transmission projects to meet reliability, economic, and generator interconnection needs, even though well-designed upgrades can meet all three needs. This is inefficient because there are massive economies of scale in transmission. If we build at the right scale, or "right-size" the investments, customers will be better off in the long run and fewer lines will be needed.

Our lack of planning has led to logjams in the queues for new generators to connect to the grid. 844 GW of proposed generation projects are stuck in interconnection queues around the country; for comparison, the total capacity of all existing U.S. power plants is 1,100 GW. Pro-active transmission to the areas of new generation projects would reduce the cost and expedite the interconnection of new generation resources. Texas and other parts of the Midwest have proven that pro-active transmission planning works, and saves consumers money. Planning can and should incorporate a "generation forecast," just as it currently incorporates a load forecast.

Congress can support regional and interregional planning by directing FERC to undertake a rulemaking to fix regional and interregional planning methods. While bipartisan FERC commissions since the early 1990s have attempted to foster regional and interregional planning, successes have been more the exception than the rule. The Commission can adopt and spread best practices in such a rulemaking.

Sections 216 and 217 of the Clean Future Act provide for rulemakings on regional and interregional planning, respectively. These provisions would encourage FERC to act and provide support such actions against legal challenges. Representative Casten's HR 2678 Interregional

⁵ <https://cleanenergygrid.org/wp-content/uploads/2019/04/Transmission-Projects-Ready-to-Go-Final.pdf>

Transmission Planning Improvement Act provides specific guidance that is consistent with best practice transmission planning. ACEG and many other entities support these provisions.

b. Permitting policies

There is a national interest in high-capacity multi-state transmission lines, yet individual states and sometimes counties can block their construction. It is much easier to build gas pipelines, as permitting is handled at the federal level.

Representative Peters' HR 1514 POWER ON Act is a good way to fix the federal backstop siting policy, as it undoes a Fourth Circuit court decision that rendered the program much less effective.⁶⁶ ACEG and a number of other clean energy interests support HR 1514.

If Congress wishes to fix federal transmission siting, it would be wise to fix the awkward and potentially unworkable two-step process where DOE designates corridors and FERC issues the permit, with multi-year NEPA reviews required at each step. An alternative approach would be to establish a capacity threshold so that 1,000+ MW multi-state lines, for example, can apply to FERC for a permit.

Section 218 of the Clean Future Act would provide assistance to states to support their constructive involvement in transmission siting and permitting processes, since they sometimes lack the resources to engage.

Another option is for greater use of the Power Marketing Administrations (PMAs), which have expertise in transmission planning, valuable local relationships, and authorities to permit transmission and partner with private investors. Section 1222 of EPAct 2005 provides for these authorities. Since that provision only applies in certain PMA territories, Congress could expand its application to other areas.

c. Paying (cost allocation) policies

There is no lack of private capital, private sector interest, or private sector ability to build transmission. What is missing is a functioning way to recover the costs of large-scale regional and interregional transmission. This type of transmission is a classic public good like national defense and interstate highways: everyone benefits, and it is in no individual's interest to pay for what everyone else will use. While the 330 transmission owners in the country *can* recover the costs of local transmission and distribution in their rates, they *do not* have a way to do that for interstate highway type lines. There is therefore a role for federal financial support.

The Energy and Commerce Committee can help with cost allocation and recovery through:

- A transmission facilitation program whereby DOE initially reserves up to 50% of the capacity on a new line, and then sells it to other users once the line is complete. This provision was included in Senator Manchin's discussion draft, in Section 1007.

⁶⁶ See <https://www.justice.gov/osg/brief/edison-elec-inst-v-piedmont-envtl-council-opposition>

- Power Marketing Administration grants and expansion of loan authority for certain investments would allow them to expand capacity while protecting their existing preference customers from increased costs.
- Banning the policy of assigning 100% of transmission network upgrade costs to individual generators, and providing an option for utilizing Grid-Enhancing Technologies in interconnection. The problems with the current approach of assigning all upgrade costs to generators, which is much like asking a driver entering a congested highway to pay for the full cost of adding a new lane, were outlined in our report mentioned in the Committee’s memo.⁷ HR 4027, the Efficient Grid Interconnection Act, would accomplish these objectives and improve the functioning of interconnection queues around the country. ACEG and the WATT Coalition support this legislation.
- Passing Section 217 of the Clean Future Act, or Representative Casten’s HR 2678, which require FERC to address cost allocation and planning for interregional transmission.

The bipartisan Senate discussion draft that was discussed in a Senate Energy and Natural Resources Committee hearing last week includes around \$4 billion for transmission, out of a total of \$73 billion for power sector infrastructure. A tax credit for regionally significant transmission, as recommended in the President’s FY 2022 budget, contained in the Sen. Wyden’s Clean Energy for America Act and currently being considered in the Ways and Means Committee, would lessen the difficulties of transmission cost allocation, both for regionally planned and for “merchant” (private, market-based) transmission lines. A tax credit for regionally significant transmission, which would cost taxpayers around \$10 billion, would stimulate most of those 22 shovel-ready transmission projects and their associated 1.2 million jobs. That tax credit plus the \$4 billion in the reported Senate agreement is a good start. However, we need to keep in mind that that level of spending would only cover about 10 percent of the new transmission needed for 2030 decarbonization goals.

VI. Congress and FERC can support seamless inter-regional power transfers

Moving power across large geographic areas requires not only transmission investment, but also seamless transmission service rules and operations. Regional Transmission Organization congestion management systems provide for regional re-dispatching of generation to enable transfers between regions. When two neighboring power systems have seams agreements that include re-dispatch provisions, power can flow quickly and efficiently from one region to another. Otherwise the transactions are curtailed by “Transmission Loading Relief” protocols under the antiquated 1990s-vintage trading rules in Open Access Transmission Tariffs.

Congress can encourage RTOs and reliability-improving re-dispatch by encouraging RTO participation by all utilities. A Sense of Congress provision could provide this policy guidance. Large clean energy buyers are very supportive of this type of provision, to increase their ability to access markets and choose the type of power they would like to purchase.

⁷ <https://cleanenergygrid.org/wp-content/uploads/2021/01/Disconnected-The-Need-for-a-New-Generator-Interconnection-Policy-1.14.21.pdf>

VII. Congress can support active grid management through Grid-Enhancing Technology deployment

Large movements of power can also be accomplished by deploying Grid-Enhancing Technologies on the bulk power system, like dynamic line ratings, power flow control, and topology optimization. Just as most infrastructure, modern vehicles, appliances, and other products now monitor conditions and control performance, the power system can be more actively managed through new smart technologies. These technologies are commercially available today and in wide use in other countries where the incentives for utilities are different from those in the US.

Congress can advance deployment of Grid-Enhancing Technologies through:

- Targeted funding through Smart Grid Investment Grants, originally authorized by the Energy Independence and Security Act (EISA) of 2007, Section 1306. That program has historically focused on distribution system and end-user technologies, but it can include bulk transmission as well. GETs should be specifically identified in such legislation. The WATT Coalition recommends that change.
- Directing that FERC review and report to Congress on policies to encourage deployment of Grid-Enhancing Technologies. Section 212 of the Clean Future Act provides for this action. The WATT Coalition also recommends this change.