TESTIMONY BY

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NATURAL RESOURCES DEFENSE COUNCIL

Subcommittee on Energy

Committee on Energy and Commerce

United States House of Representatives

February 27, 2018

Mr. Chairman and members of the committee – thank you for the opportunity to testify. I'm Jennifer Chen, an attorney with the Natural Resources Defense Council (NRDC). NRDC is a nonprofit organization of scientists, lawyers, and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 3 million members and online activists nationwide, served from our offices in New York, Washington, Los Angeles, San Francisco, Chicago, and Beijing. Under the Sustainable FERC Project, I lead a coalition of environmental groups to jointly advocate before the Federal Energy Regulatory Commission (FERC) and PJM Interconnection, Inc. I'm also a board member of the Americans for a Clean Energy Grid, a coalition representing industry, trade groups, and environmental organizations seeking to broaden stakeholder support for modernizing our transmission grid in a way that is efficient, consumer-friendly, and sensitively sited.[1]

NRDC's general position on energy infrastructure

NRDC supports 21st century infrastructure investment that prioritizes performance-based projects that deliver economic, social and environmental benefits – such as jobs, clean energy and water, improved mobility and climate resilience. Technological innovations like smart meters and energy storage as well as upgrading the nation's power infrastructure will enable us to take advantage of clean, reliable, and cost-effective energy resources. Deploying information technology like broadband and wireless will help get us the data to run our cities and towns more efficiently. We also support preparing Americans for the future with clean energy jobs. Infrastructure projects are an opportunity for good jobs beyond construction, but we cannot afford to invest federal funding in constructing fossil fuel pipelines and refineries that lock us into unnecessary and outdated infrastructure that will burden generations to come.[2]

I will focus my comments on how we can address the real barriers to transmission infrastructure improvements most needed to modernize the grid[3] – the severely fragmented

[1] Americans for a Clean Energy Grid works with utilities, environmental advocates, transmission owners and developers, renewable energy companies, technology manufacturers, labor unions, and public-interest groups to educate the public and policy makers about the importance of modernizing America's high-voltage transmission system. https://cleanenergygrid.org/.
[2] Natural Resources Defense Council. March 2017. Infrastructure That Works for America—Not Just Wall Street. Retrieved from https://www.nrdc.org/experts/shelley-poticha/infrastructure-works-america-not-just-wall-street.
[3] Note that grid modernization importantly also includes updating existing infrastructure to reduce waste and emissions, and modernizing home, buildings, end-use appliances and processes to be more efficient – and including this efficiency in planning so that we do not over-build transmission and generation. Many aspects of H.R. 2479, the "Leading Infrastructure for Tomorrow's America Act," (LIFT America) introduced by Ranking Member Frank Pallone, Jr. and

planning process. But first, I want to emphasize that environmental laws are not driving the delay in modernizing our grid. And President Trump's infrastructure plan[4] that will cut corners in complying with them will not solve delay issues.

Environmental review is important and not a driver of delay

Claims that project delays are caused by federal environmental review or permitting requirements[5] are based on unsound logic and inaccurate and unsubstantiated assumptions. Studies have disproved these claims and have shown that it is not federal rules that are causing the delays.[6] For most types of infrastructure, the primary factor is lack of funding.[7]

As the U.S. Department of Energy (DOE) noted in its Quadrennial Energy Review on energy transmission, storage, and distribution infrastructure, "the environmental review and permitting requirements are accomplished effectively and efficiently."[8] The statistics DOE provides in support are impressive -- according to a partial inventory, between 2009 and early 2015:

- The Bureau of Land Management (BLM) has approved 90 major electric transmission line projects, spanning about 3,000 total miles and authorized more than nine major pipeline projects for oil, water, and natural gas.
- FERC has authorized about 4,500 miles of pipeline.
- The Rural Utilities Service has financed 5,591 total miles of transmission line.

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the Democratic members of the Energy and Commerce Committee on May 17, 2017 would further important grid modernizations efforts along these lines.

[4] The White House, Legislative Outline for Rebuilding Infrastructure in America, www.whitehouse.gov/wp-content/uploads/2018/02/INFRASTRUCTURE-211.pdf.

[5] Philip K. Howard, "Two Years Not Ten: Redesigning Infrastructure Approvals" (New York: Common Good, 2015), http://commongood.3cdn.net/c613b4cfda258a5fcb_e8m6b5t3x.pdf.

[6] Center for American Progress, *Debunking the False Claims of Environmental Review Opponents* (May 3, 2017), cdn.americanprogress.org/content/uploads/2017/05/02115452/DebunkingEnvironmentalReviewFalseClaims-brief1.pdf; Congressional Research Service, Memo to House Committee on Transportation and Infrastructure on *Questions regarding the report Two Years Not Ten Years: Redesigning Infrastructure Approvals* (Jun. 7, 2017). https://fas.org/sgp/crs/misc/twonot.pdf.

[7] House Committee on Energy and Commerce, *Hearing on Closing the Digital Divide: Broadband Infrastructure Solutions,* Testimony of Natural Resources Defense Council Legislative Director Scott Slesinger, 115th Cong. (Jan. 30, 2018).

[8] U.S. Department of Energy, Chapter IX: Siting and Permitting of TS&D Infrastructure, Quadrennial Energy Review (April 2015) https://energy.gov/sites/prod/files/2015/08/f25/QER%20Chapter%20IX%20Siting%20and%20Permitting%20April%202015.pdf.

- The Forest Service has approved and reauthorized 4,921 power line projects covering 31,678 miles, 2,160 natural gas and oil pipelines covering 12,907 miles, and 158 water transmission projects covering 847 miles.[9]

FERC, too, has said it has been efficient in reviewing and approving proposed gas pipeline and LNG facilities:

> FERC's "natural gas project review processes are thorough, efficient, and have resulted in the timely approval of interstate natural gas pipelines, LNG facilities, and facilities at our international borders for the import or export of natural gas. Since 2000, the Commission has authorized nearly 18,000 miles of interstate natural gas transmission pipeline totaling more than 159 billion cubic feet per day of transportation capacity, over one trillion cubic feet of interstate storage capacity, and 23 facility sites for the import and export of LNG. . . . . Since August when the Commission gained a quorum, the agency has authorized more than 12 billion cubic feet per day of additional pipeline capacity and more than 1,300 miles of pipeline."[10]

Gas pipeline projects have been routinely approved by FERC under its current guidelines for project review, adopted in 1999.[11] Since that time, FERC has rejected only two of the approximately 400 pipeline applications filed.[12] As FERC continues to approve nearly every pipeline proposal it reviews and in light of underutilized existing pipelines (at a little above 50 percent utilization),[13] there are concerns that gas infrastructure is being overbuilt.

Permitting and siting of the majority of transmission, storage, and distribution infrastructure projects depends on state and local decisions. Federal agencies have siting authority over proposed infrastructure projects that cross Federal land or water, interstate natural gas pipelines, and, to a limited extent, interstate electricity transmission projects.

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[9] *Id.*

[10] Testimony of Terry L. Turpin, Director, Office of Energy Projects, Federal Energy Regulatory Commission, Hearing Before the U.S. Senate Energy and Natural Resources Committee at 4 (Dec. 12, 2017).

[11] Congress in the Energy Policy Act of 2005 already made changes to FERC's authority to address concerns of delay of pipeline approvals, including placing FERC in charge of coordinating NEPA reviews and federal approvals needed for pipeline certification. Paul W. Parfomak, Congressional Research Service, Interstate Natural Gas Pipelines: Process and Timing of FERC Permit Application Review, Summary (Jan. 16, 2015).

[12] Susan Tierney, Analysis Group, *Natural Gas Pipeline Certification: Policy Considerations for a Changing Industry* at 1 (Nov. 6, 2017).

[13] The average utilization rate from 1998-2013 was only 54 percent. U.S. Department of Energy, *Natural Gas Infrastructure Implications of Increased Demand from the Electric Power Sector* at 22 (2015).

In general, the National Environmental Policy Act, or NEPA, is triggered if a transmission project is on federal land, if the project receives federal funding or support, or if a federal permit is required for projects that would fill wetlands, might impact our nation's waters, or potentially harm threatened or endangered species. NEPA and federal permitting requirements are important components of "smart from the start" planning, which enables developers to anticipate potential issues with prospective construction sites, and consider alternatives and engage affected communities early in the process.[14]

One important way that federal agencies are advancing regional planning for infrastructure development in the west is through Regional Reviews of the West-wide Energy Corridors designated under Section 368 of Energy Policy Act 2005.[15] These reviews are being led by the Bureau of Land Management, U.S. Forest Service, and Department of Energy (the Agencies) and are scheduled to be completed in 2019; the reviews will result in recommendations for improvements to the corridors to better facilitate infrastructure development while limiting impacts to the environment. The Agencies are making good progress and it is crucial that they continue to improve their approach and ensure the reviews are completed in a way that helps us plan for smart transmission line and pipeline development on federal lands across the west.

For multistate transmission projects, the involvement of multiple jurisdictions adds time to siting, permitting, and review of infrastructure projects. As major infrastructure projects are proposed, Federal, state, local, and tribal governments must work to consider and minimize potential impacts on safety and security, as well as environmental and community resources. Close collaboration with tribal, state, and local governments is critical, and robust public engagement is essential for the credibility of the siting, permitting, and review process.

Major infrastructure projects may trigger conflicting stakeholder interests and have the potential to produce significant impacts on local communities and the environment. Early and robust stakeholder engagement is necessary to encourage compromise, minimize conflict, and

[14] Smart from the Start siting refers the following principles. Consult stakeholders early and involve them in planning, zoning and siting. Use geospatial information to categorize the risk of resource conflicts. Avoid land and wildlife conservation and cultural resource conflicts and prioritize development in previously disturbed areas. Incentivize resource zone development with priority approvals and access to transmission. Consider renewable energy zones or development sites that optimize the use of the grid. Maximize the use of existing infrastructure. Where zoning is not feasible (as in much of the Eastern Interconnection), use siting criteria based on these principles. Carl Zichella and Johnathan Hladik, Siting: Finding a Home for Renewable Energy and Transmission. http://americaspowerplan.com/siting/.

[15] http://corridoreis.anl.gov/.

mitigate these potential impacts – and is likely to reduce delays in reaching a decision.[16] And by disclosing a project's impacts and allowing for consideration of alternative solutions, we have saved money, lives, historical sites, endangered species, and public lands while encouraging compromise and found alternatives that were not previously considered, resulting in better projects with more public support.

A great example of the importance of public input is the Hoover Dam Bypass, an award-winning project led by HDR Inc. The Federal Highway Administration (FHWA) developed the 3.5-mile Hoover Dam Bypass project to address congestion at the Hoover Dam crossing. However, the environmental impact statement for the project failed to explore an adequate variety of options. Project manager Dave Zanetell and his team more thoroughly researched an alternative proposed by environmental groups and added features to the project in response to public comments. In its final form, the bypass runs closer to developed areas instead of cutting through pristine corridors and includes sidewalks, pedestrian facilities, and parking to enable pedestrian access. "Oftentimes the public is a huge influence on the project. NEPA is certainly the foundation for public participation," said Zanetell. "We don't look at it as a burden; it is something we relish," he added.[17] Zanetell went on to win the 2018 The ASCE OPAL award honoring outstanding civil engineering leaders for their lifetime accomplishments.[18] The Hoover Dam Bypass won the American Council of Engineering Companies' Grand Conceptor Award, given to the nation's best overall engineering achievement.[19]

Finally, it's worth noting that environmental review processes are not a beacon for litigation. Each year, about 50,000 major federal actions require an environmental assessment,[20] and another roughly 500 projects require full environmental impact statements. Yet only around

[16] U.S. Department of Energy, Siting and Permitting of TS&D Infrastructure; Federal Permitting Improvement Steering Council, Recommended Best Practices for Environmental Reviews and Authorizations for Infrastructure Projects for Fiscal Year 2018 (2017) (issued as a key part of Title 41 of the Fixing America's Surface Transportation Act), https://www.permits.performance.gov/sites/permits.performance.gov/files/docs/documentation/40856/fast-41fy-2018best-practices-report.pdf.
[17] https://www.nrdc.org/resources/never-eliminate-public-advice-nepa-success-stories.
[18] http://news.asce.org/engineer-who-managed-hoover-dam-bypass-project-earns-2018-opal/.
[19] https://www.businesswire.com/news/home/20110404006891/en/Hoover-Dam-Bypass-2nd-HDR-Project-Win.
[20] Council on Environmental Quality, Environmental Quality: The Twenty-fifth Anniversary Report of the Council on Environmental Quality (Executive Office of the President, 1996), https://ceq.doe.gov/docs/ceq-reports/ceq-25th-annual-report.pdf.

100 NEPA cases are filed.[21] This means that only one-fifth of 1 percent of federal actions triggering NEPA are subject to litigation.[22]

President Trump's infrastructure plan would short-circuit environmental protections, agency requirements to consider project alternatives, and public processes. And doing so would be counterproductive because experience has shown that insufficient public engagement breeds local opposition that can delay projects. In contrast, early stakeholder engagement can help the project approval process run smoothly, result in a more informed outcome, and avoid protracted legal battles, bad publicity, and protests.

Further, additional amendments to the environmental review and permitting process are unnecessary and counterproductive. Congress has given the administration tools to expedite the permitting process without sacrificing environmental protections – tools that the administration has yet to take advantage of. In October 2015, the Fixing America's Surface Transportation Act (FAST Act) set up the Federal Permitting Improvement Steering Council, which is tasked with coordinating and expediting federal permit reviews. The House, however, appropriated only $1 million to the steering council, and the Trump Administration has not appointed its Executive Director.[23] Layering on new inconsistent or contradictory changes to the environmental review and permitting process would create new conflicts and delay.

A key issue impeding transmission grid modernization is a weak transmission backbone

It is far better to fix what we can all agree is a barrier to something a wide range of stakeholders want. We want our nation's transmission backbone to be able to deliver low-cost renewable electricity from the wind-rich heartland and sun-soaked states to more heavily populated regions. Importantly, that kind of grid modernization effort will create good, stable jobs,[24]

[21] Government Accountability Office, "National Environmental Policy Act: Little Information Exists on NEPA Analyses."
[22] Center for American Progress, https://www.americanprogress.org/issues/economy/reports/2017/05/03/431651/debunking-false-claims-environmental-review-opponents/#fn-431651-33.
[23] Center for American Progress, *President Trump's Infrastructure Proposal Recklessly Undermines Environmental Laws* (Feb. 16, 2018), www.americanprogress.org/issues/green/news/2018/02/16/446914/president-trumps-infrastructure-proposal-recklessly-undermines-environmental-laws.
[24] https://mjbradley.com/sites/default/files/PoweringAmerica.pdf.

improve the efficiency of our electricity markets,[25] promote clean, emissions-free electrification of our economy, and produce billions of dollars in benefits to electricity customers.[26]

The problem is that we need to fix a disjointed transmission planning process that does not plan on a geographic scale to produce long-line transmission projects. The contiguous United States has three separate interconnections – the eastern, western and Texas interconnections, with limited links between them. Not only is there no transmission planning between the interconnections, the transmission infrastructure planning is performed in even smaller regions within interconnections.

Currently, interregional transmission proposals are dying on the vine, if they are proposed at all – far in advance of the environmental review stage. This is due to mismatches in assumptions, models, definitions, determinations of need, valuation of benefits, and allocation of costs across neighboring planning regions.[27] Smaller, regional projects, on the other hand, have seen more success – about $77 billion was spent on regional transmission projects between 2008 and 2015 in North America, largely in Texas,[28] the Great Plains, New England, the West, and the Midwest.[29]

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[25] Edison Electric Institute, Transmission Projects: At A Glance (December 2016) http://www.eei.org/issuesandpolicy/transmission/Documents/Trans_Project_lowres_bookmarked.pdf.

[26] Well-planned transmission investments reduce total costs. For example, SPP analyzed the costs and benefits of transmission projects from 2012–2014 and found that the planned $3.4 billion investment in transmission was expected to reduce customer cost by $12 billion. https://democrats-energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Testimony-Kiernan-EP-Hrg-on-Part-II-Powering-America-Defining-Reliability-in-a-Transforming-Electricity-Industry-2017-10.pdf.

[27] Two neighboring regional grid operators, the Midcontinent Independent System Operator and Southwest Power Pool, have conducted two coordinated system plan studies that have failed to produce an approved interregional project, although they have studied several candidate projects. MISO Plans Interregional Improvements with SPP, (February 14, 2018) https://www.rtoinsider.com/miso-spp-interregional-process-86374/. A guiding principle of FERC's landmark order on transmission planning, Order No. 1000, is that the costs of transmission should be allocated roughly commensurately with the benefits accrued. But "benefits" was never defined – it was left to individual regional grid operators. The result has been a wide variance in regional compliance plans. https://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=2064&context=elq.

[28] Texas pioneered renewable energy resource zoning to develop transmission for remote wind energy projects. The Texas grid operator has estimated that up to 3,500 miles of new lines are needed to bring new wind capacity to the state's load centers.

[29] https://www.ferc.gov/legal/staff-reports/2017/transmission-investment-metrics.pdf.

FERC, in its landmark Order No. 1000 on transmission planning, tried to facilitate interregional project development by requiring neighboring regional grid planners to coordinate with each other, which falls short of requiring them to jointly plan. The neighboring regions plan separately – with different ways of modeling, determining the need for a project, valuing benefits, and allocating costs. Thus, simply asking them to coordinate has not sufficiently facilitated interregional transmission.[30] FERC revisited this issue by hosting a technical conference on Order No. 1000, including interregional coordination issues, on June 28 and 29, 2016, and solicited public comments (Docket No. AD16-18-000), but FERC has not acted in response to the comments since then.

While there are many successes to FERC's order on transmission planning, it can be improved. Integrated interregional transmission planning – not just coordination between regions – must be the next priority for FERC. As a next step, Congress today could encourage FERC to implement a rule, using its existing authority, requiring interregional transmission planning and encourage FERC to require planning that includes the following important factors:

- First, planning should be anticipatory – transmission is a long-lived investment, and it would be prudent to account for public policies that drive changes in the energy resources we use to power the grid,[31] the falling costs of wind and solar power, and growing corporate demand for renewable energy.[32]
- Second, planning should be holistic.
    - Planning should account for modern transmission technologies and other ways to increase the capacity on the system, reduce energy loss, and maximize the use of existing lines and rights of way. We need to stop building new transmission infrastructure with old, inefficient technology, a common practice today. Technological advancements can increase capacity on existing towers, reduce

[30] Stakeholders See Shortcomings in Western Interregional Tx Planning, https://www.rtoinsider.com/western-interregional-transmission-planning-39424/. Even though this article was published a year ago, very little has changed and the same issues remain.

[31] According to a Brattle Group study, a more proactive and immediate approach to building a strong transmission grid will yield net savings in total generation and transmission investment costs ranging from $30-70 billion through 2030 for compliance with current regulations, up to almost $50 billion in savings annually on consumers' bills in an even more environmentally constrained future. Brattle Group, Well-Planned Electric Transmission Saves Customer Costs: Improved Transmission Planning is Key to the Transition to a Carbon-Constrained Future (May 2016) http://wiresgroup.com/docs/reports/WIRES%20Brattle%20Report_TransmissionPlanning_June2016.pdf.

[32] http://windenergyfoundation.org/2018/01/16/report-transmission-needed-to-meet-corporate-americas-growing-demand-for-renewable-power/.

line losses and emissions, control power flows, reduce visual and land-use impacts, improve reliability, enhance security, and lower net costs.

- Planning should account for the growing penetration of behind-the-meter resources and energy efficient appliances and buildings, and the willingness of customers to reduce electricity consumption during peak electricity demand.
- Planning should account for non-transmission alternatives. States like New York have successfully incentivized non-wires solutions to defer or avoid unnecessary distribution system upgrades. FERC and regional grid planners should learn from their experiences to make rule changes at the federal level to ensure technologies that could provide transmission services, like storage, demand response, and energy efficiency, can do so and be fairly compensated for it.
- Planning should account for all benefits of transmission. Transmission planners only provide estimates of short-term cost savings under simplified system conditions.[33] These estimates undervalue transmission investments, because they miss a significant portion of transmission's total production cost savings and its overall economy-wide benefits. FERC should require a full accounting of transmissions benefits, including:
  - Additional savings from reduced line losses and mitigation of extreme weather.
  - Improved reliability and resource adequacy benefits, such as reduced reserve margins.
  - Generation capacity savings, including reduced peak energy losses, deferred generation capacity investments, and access to lower-cost generation resources.
  - Electricity market benefits, such as increased competition.
  - Environmental benefits, such as reduced emissions.
  - The benefits of meeting adopted public policy goals.
- The transmission planning and generation interconnection process should be combined. Project-by-project interconnection requirements are often costly, especially for smaller resources, and efficiencies of coordinating many projects in a sub-region are missed.
- Planning should include proactive consideration of impacts to lands, wildlife, cultural resources, recreation opportunities and other resources on federal and non-federal lands. Planning should emphasize avoiding and minimizing these impacts, which will facilitate infrastructure development by reducing conflicts and associated delays.

- Third, planning should employ modern modeling techniques that can simultaneously account for wind and solar generation patterns and peak electricity demand to

[33] WIRES Brattle Group Study, 2013.

determine transmission needs.[34] And planning should take advantage of new mapping tools that identify environmentally or culturally sensitive sites.[35]

- Fourth, and not least, planning should use consistent definitions, modeling, assumptions, and metrics across planning regions.

To conclude, infrastructure is a decades-long – if not century-long – investment, and it's expensive. It's important to build it right, and to do so, it's critical to takes steps now to improve the planning process. We must be diligent but also patient. President Trump's plan to circumvent environmental protections would encourage rushing to solve the wrong problem.

Thank you for the opportunity to testify, and I look forward to your questions.

[34] http://www.noaanews.noaa.gov/stories2016/012516-rapid-affordable-energy-transformation-possible.html.

[35] Argonne National Laboratory's mapping effort could be used to identify more optimal, lower-conflict sites for renewable energy and transmission development. The Eastern Interconnection Planning Collaborative is completing a planning initiative that may include a tool that uses geospatial information to suggest the location of potential renewable energy development zones.