**POST-HEARING WRITTEN TESTIMONY OF WIRES, LLC**
**ON**
**ENERGY INFRASTRUCTURE LEGISLATION**

**Before the Committee on Energy and Natural Resources**

**United States Senate**

**Chair Murkowski, Ranking Member Cantwell, and Members of the Committee:**

WIRES[1] respectfully submits the following comments on certain of the bills considered during the **hearing of May 14, 2015**, and on the oral testimony provided to the Committee. WIRES thanks the Chair for affording the industry an opportunity to enhance and complete the record of this proceeding. WIRES applauds the Committee for preparing to move energy legislation forward for the first time in several Congresses.

WIRES contends that the Committee's consideration of improvements to energy infrastructure must include the future of investment in the high-voltage electric transmission network. Past experience shows that inadequate investment in the grid brings with it enormous reliability risks and costs, hampers markets and competition, and limits resource diversity. A new analysis recently conducted for WIRES confirms that, notwithstanding the major transmission investment in recent years, the potential high risks and costs to future consumers and the economy that will result from poor transmission planning practices and insufficiently robust investment in the most beneficial projects are not diminishing.

WIRES believes that many of the Committee's proposed legislative reforms are constructive and could help ensure that transmission facilities are evaluated more expeditiously, despite the cumbersome nature of the current regulatory regime that governs transmission.[2] The Energy Policy Act of 2005 exhibited a clear policy of encouraging transmission development through incentives, federal backstop siting, encouragement of regional interstate compacts, and coordination of federal agency

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[1] WIRES is an international non-profit association of investor-. member-, and publicly-owned entities dedicated to promoting investment in a strong, well-planned and environmentally beneficial high-voltage electric transmission network. WIRES wishes to foster an understanding among policy makers and the public of the evolving role of the transmission grid in the 21st Century electrical economy. Its principles and other information are available on its website: www.wiresgroup.com.

[2] Hoecker & Smith, *Regulatory Federalism and Development of Electric Transmission: A Brewing Storm?,* 35 Energy Law L.J. 71 (2014).

authorizations. However, those measures have not produced the anticipated results. Rather than argue for more comprehensive reforms at this time, WIRES simply urges the Committee to continue its ongoing oversight efforts to promote infrastructure investment by reducing federal regulatory burdens and holding the Federal Energy Regulatory Commission ("FERC") to a standard of performance that will lead to construction of regional and interregional transmission projects that are capable of delivering multiple benefits to the system and the economy. The tools and analytical techniques that will ensure that transmission planners support the most beneficial projects are readily available but are not used. After four years of implementation and debate, FERC's Order No. 1000 fails to require the use of new techniques and approaches, such as scenario planning and consideration of all potential project benefits that could ensure the development of the most beneficial transmission projects. The fact that interregional project development (*i.e.*, development between two or more regional transmission organizations or bilateral markets) is languishing altogether should be of concern to the Committee, and should be addressed along with the historical complications surrounding transmission permitting and siting that remain serious impediments to infrastructure development.

## THE IMPORTANCE OF THE INTEGRATED TRANSMISSION NETWORK TO IMPLEMENTATION OF THE COMMITTEE'S PROPOSALS

The Committee's legislative proposals in the area of distributed generation, energy efficiency, micro-grids, storage, and other innovative technologies are a recognition that the industry's current structure and operation will change in fundamental ways in the coming decades. However, WIRES' own research and reports demonstrate that these innovations will be deployed and will succeed in proportion to the ability of the grid to support, aggregate, deliver, and deploy them. Grid "modernization" does not pose an 'either-or' choice between transmission investment and distributed technologies as much as it forces us to recognize that, as our electric system evolves, it will require a resilient, adaptable platform to support innovation. That platform is high-voltage transmission in interstate commerce, which in most cases will span multiple jurisdictions, resource bases, and regulatory preferences and protocols.

Transmission, if adequate, will be instrumental in making this transformation economically efficient and reliable. The recent testimony before this Committee by American Electric Power executive Lisa Barton[3] sets forth three fundamental propositions that make investment in a strong electric transmission system a winning proposition for technological innovation:

She stated, and WIRES concurs, that:

[3] *State of Technological Innovation Related to the Electric Grid:* before Senate Energy and Natural Resources Committee, 114th Cong. (March 17, 2015) (Statement Lisa M. Barton, Executive Vice President, Transmission, American Electric Power).

- A robust grid is a critical enabler of generation diversity, new storage and demand-side technologies.
- Maintaining a reliable and resilient grid is critical to economic and national security.
- To maximize the beneficial impact of new technologies, policymakers should avoid picking winners and losers and allow the market to identify the best solutions for a particular circumstance.

Remarkably, new levels of U.S. transmission investment (averaging over $10 billion annually over several years to date) and the persistent folklore about the possibility that transmission could be "overbuilt" have obscured both an understanding of the long-term need for investment in this infrastructure and the fact that planners regularly overlook or reject transmission projects that could yield the most economic, reliability, and public policy benefits, because utilization of modern benefit/cost analysis is difficult and the exception in planning practices, especially when proposed projects are interregional. The industry's ongoing transformation, including foreseeable changes in the electric generation mix, creates significant uncertainties. For that reason, policy makers are increasingly open to a basic reassessment of how long-term planning of the grid is performed.[4] Therefore, in response to the portrayals of transmission expansion as an opponent of new technologies and services or a competitor to existing electric generation, WIRES requested London Economics International ("LEI") to explore the relationship between demand-side resources, storage, micro-grids, and other so-called "market resource alternatives" ("MRAs")[5] and investment in high-voltage transmission.

The completed study concluded that "based on the characteristics of MRAs today, MRAs are rarely a complete substitute to transmission, and individual MRAs typically provide only a partial suite of the services that transmission provides. Nevertheless, MRAs (either individually or in combination) can provide specific benefits and can serve as complements to transmission, and vice versa."[6] The LEI study is the state-of-the-art analysis of how mutually dependent investment in

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[4] For example, the Indiana Utility Regulatory Commission staff recently noted that:

> [F]ew industries are as important as the electric system, which has been called the most complex man-made system in the world. Because of the critical importance of the industry, state-of-the-art planning processes are essential. The urgency for continual and immediate improvements are heightened by the risks resulting from significant changes due to aging infrastructure, increasingly rigorous environmental regulation, substantially reduced costs of natural gas, a potential paradigm change resulting in long-term low load growth, declining costs of renewable resources, and new technologies.

*See Draft Report of The Indiana Utility Regulatory Commission, Electricity Director Dr. Bradley K. Borum, Regarding 2014 Integrated Resources Plans* (March 3, 2015) at 2.

[5] Although Order No. 1000 describes these technologies as "non-transmission alternatives", the LEI authors re-designated NTAs as "Market Resource Alternatives" ("MRAs") in the resulting study because these technologies are so seldom viable substitutes for transmission in the planning and operation of the utility functions.

[6] Julia Frayer & Eva Wang, *A WIRES Report:*, *Market Resource Alternatives: An Examination of New Technologies in the Electric Transmission Planning Process*, 136-142 (London Economics International LLC 2014) Appendix A is a comparison of services provided by MRAs and transmission. It is taken from the London Economics study, at Figure 2. The report is available at http://www.wiresgroup.com/wires_reports.html.

transmission infrastructure and investment in new market technologies have become. In sum, WIRES contends that this fundamental compatibility of new technology and the grid can help chart a new direction for legislation and for transmission planners who will be responsible for creating a future "network of things" in the electricity area, just as a platform of network facilities have fostered innovation on the Internet and across the interstate highway system. The efficiency goals of many of the bills being considered by the Committee are compatible with, and in many cases dependent upon, a robust transmission system. There is no basis for excluding measures favoring pro-transmission investment from consideration in omnibus electricity legislation.

**THE IMPORTANCE OF CONTINUED TRANSMISSION INVESTMENT**

The U.S. Department of Energy's National Electric Transmission Congestion Study[7] highlighted the problems that result from a common failure of planners to examine and consider all of the transmission benefits that a transmission project can produce:

> Construction of major new transmission facilities…raises unique issues because transmission facilities have long lives—typically 40 years or more. Evaluating the merits of a proposed new facility is challenging, because common practices take into account only those expected costs and benefits from a project that can be quantified with a high degree of perceived certainty. This has two effects:
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> First, it leads to a focus on the subset of cost and benefits that can be readily quantified. Not taking into account the costs and benefits that are hard to quantify has the effect of setting their value to zero in a comparison of costs and benefits.
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> Second, it leads to projections of costs and benefits that are generally based on extrapolations drawn from recent experiences. Projections based only on recent experiences will not value the costs and benefits a transmission project will have under very different assumptions or scenarios regarding the future because they ignore or discount the likelihood of these possibilities. Such a narrow view of the range of costs and benefits that could occur provides a false sense of precision.
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> [O]ne of the most strategically significant aspects of major transmission projects that is seldom taken into account explicitly in the planning phase is the multiple purposes that transmission might serve. That is, a well-designed transmission system enhancement will not only enable the reliable transfer of electricity from Point A to Point B—it will also strengthen and increase the flexibility of the overall transmission network. . . . The options

[7] U.S. Dept. of Energy, *National Electric Transmission Congestion Study* (August 2014) at xiii-ix.

created by a strong and flexible transmission network are real. Failure to take explicit account of these options in the planning process will severely understate the value of transmission.

The key deficiencies in the way that U.S. transmission planners plan for the expansion and upgrade of the system have recently been identified and explored in a study by The Brattle Group ("Brattle"). These deficiencies, asserts the study, will result in ineffective and insufficient grid infrastructure, with fateful consequences:

- Planners and policy makers do not account for the high costs and risks of an insufficiently robust and insufficiently flexible transmission infrastructure on electricity consumers and the risk-mitigation value of transmission investments to reduce costs under potential future stresses.
- Planners and policy makers do not consider the full range of benefits that transmission investments can provide and thus understate the expected value of such projects.
- The interregional planning processes are ineffective and are generally unable to identify valuable transmission investments that would benefit two or more regions.

These deficiencies collectively create significant barriers to developing the most valuable and cost effective regional and interregional transmission projects and infrastructure. If not addressed, these deficiencies will lead to: (a) underinvestment in transmission that results in higher overall costs; (b) lost opportunities to identify and select alternative infrastructure solutions that are lower-cost or higher-value in the long term than the projects proposed by planners; and (c) an insufficiently robust and flexible grid that exposes customers and other market participants to higher costs and higher risk of price spikes. . . .

In an industry where it can take a decade to plan, permit, and build major new transmission infrastructure, ***further delaying investment by understating transmission-related benefits can easily result in a higher-cost, higher risk outcome that is exactly the opposite of the goals of "conservative" planning.***[8]

The range of benefits underlying such ideas as the "beneficiaries pay" method of allocating transmission costs have been studied and fully articulated in a 2013 study, also by The Brattle Group,[9] and can be reasonably approximated in the interest of fairness to all ratepayers within the service territory, state, or region served by new transmission capacity. Unfortunately, planners in both RTO/ISO

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[8] Johannes Pfeifenberger, Judy Chang, & Akarsh Sheilendranath, *Toward More Effective Transmission Planning: Addressing the Costs and Risks of An Insufficiently Flexible Electricity Grid* (The Brattle Group 2015) at ii-iii. The report is available at http://www.wiresgroup.com/wires_reports.html.

[9] Judy Chang, Johannes Pfeifenberger, & J. Michael Hagerty, *The Benefits of Electric Transmission: Identifying and Analyzing the Value of Investments* (The Brattle Group 2013). The report is available at http://www.wiresgroup.com/wires_reports.html.

environments and bilateral markets seldom incorporate all of the potential benefits of proposed projects[10] into the study of project proposals, raising the critical question of whether the new generation of transmission facilities are likely to be the "right" or "best" ones for the electric industry to depend upon for the next half century. The Brattle economists therefore regrettably concluded as follows:

> The risks and costs of inadequate infrastructure typically are not quantified but can be much greater than the costs of the necessary transmission investments. We therefore urge federal and state policy makers to ensure that planning processes include an assessment and documentation of those risks and costs. With an informed understanding and appreciation of those costs and risks, regions will be in a better position to plan a transmission infrastructure that can better protect market participants against these risks. [L]eaving out or discounting the potential costs and risks of not having a sufficiently robust and flexible grid can significantly increase overall electricity cost for consumers and other market participants . . . . [11]

The risks and exposure to future costs associated with a failure to comprehend the benefits of additional transmission are particularly troublesome in the case of interregional transmission planning and coordination. Lest we abandon the potential economic and reliability benefits of interregional and even interconnection-wide transmission in favor of business-as-usual solutions and least common denominator agreements across state and regional lines, WIRES points again to the potential high costs and risks of insufficiently robust and adaptive infrastructure. The Brattle Group again furnishes examples of how adherence to traditional "least cost," "least regrets," and "least common denominator" approaches and to local priorities create barriers to some of the most valuable projects. "[I]nterregional projects face hurdles that are considerably higher than those faced by regional projects. The limitations of the existing interregional planning processes mean that most potential projects will be disqualified, often during the qualifications stage before they are even evaluated."[12]

WIRES looks forward to the fulfillment of Order No. 1000's promise to foster stronger interconnections among regions. However, barriers inherent in current planning processes persist and continue to thwart the best outcomes. The Brattle report recommends specific avenues by which to overcome the obstacles to productive interregional planning and coordination. However, the authors' bottom line recommendation is "that state and federal policy makers encourage transmission planners to pay close attention to the transformation that our power system is undergoing, the risks and costs associated with challenging and extreme

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[10] *Id.* Appendix B is a high-level list of transmission benefits that should be considered by any regional or interregional planning process. It is derived from Brattle's 2013 report, Table 1.

[11] Pfeifenberger, *et al.*, *Toward More Effective Transmission Planning: Addressing the Costs and Risks of An Insufficiently Flexible Electricity Grid* (The Brattle Group 2015) at iv. This report is available at http://www.wiresgroup.com/wires_reports.html.

[12] *Id.* at 36.

market conditions, and the ability of a more robust, flexible transmission infrastructure to reduce the costs and risks of delivering power to consumers."[13] In its oversight role, the Committee can accomplish as much to advance interregional transmission planning and development as it is likely to do with incremental legislative reforms.

**ASSESSMENT OF THE PROPOSED BILLS IN LIGHT OF THE NEED FOR TRANSMISSION**

As WIRES noted in its recent letter to Senator Martin Heinrich with respect to proposed backstop siting reforms (S. 1017), any measure that will improve the responsiveness of state or federal facilities siting processes is important, especially in leveling the playing field among various modes of energy delivery. "As the Committee considers expediting authorizations of linear energy delivery projects like natural gas pipelines, we urge you and your colleagues not to overlook the fact that the challenges and timelines for electric transmission planning and construction are already *far greater* for companies trying to develop additions to the power grid."

In that regard, the Chair's proposed S. 1217 is a welcome recognition of the successes, however limited, that the Administration has had in helping complex transmission projects obtain the array of permits required from federal agencies. WIRES believes that true interagency coordination can prove critical in specific instances, as it has in the past four years. However, we are afraid that, without systemic reforms to how the accumulated half century of otherwise meritorious environmental measures operate, efforts to persuade various components within multiple federal agencies to work together in a transparent and efficient manner will ultimately prove largely ineffectual in resolving the complexities and challenges created by the magnitude of the transmission and other infrastructure projects that are likely to be proposed.

As it puts together an energy bill, WIRES encourages the Committee to focus on substantially improving the overall quality and timeliness of the existing federal permitting process for electric transmission on federal lands. In that regard, WIRES recommends strengthening S. 1217, Section 2 (b) (1) from "to improve the timeliness and efficiency of electric transmission infrastructure permitting" to actually include a specific timeframe.[14] S. 1217 could be improved by providing the Ombudsperson with authority to set and enforce deadlines applicable to the other agencies participating in the review of a particular project and to require that any extension requests be approved first by the Secretary who has jurisdiction over the requesting agency. Alternatively, WIRES suggests that the Committee consider

[13] *Id.* at 38.

[14] Berkshire Hathaway Energy's written testimony at the May 14, 2015 hearing suggests 3-4 years, which we view as reasonable/achievable. A January 2013 General Accounting Office study suggests review times could be reduced to 1.5 years with appropriate pre-application meetings. *See* http://www.gao.gov/products/GAO-13-189.

transferring the federal agency coordination responsibilities under Section 216(h) to the FERC, which performs an equivalent coordination function when certificating interstate natural gas pipelines. Either approach would be a marked improvement over the current permitting process for projects involving federally protected lands and resources.

S. 485 is the one piece of legislation under consideration that is likely to slow or arrest needed transmission development. While the bill currently affects one company that has sought to use Section 1222 of the Energy Policy Act of 2005 federal permitting process for almost 5 years now, its potential impact could be much broader. S. 485 would make interstate transmission lines more difficult to site and approve by requiring multiple new steps, including the requirement that transmission projects that are using the Section 1222 federal permitting provisions must be located to the maximum extent practical on federal rights-of-way or federal land managed by the Bureau of Land Management, the U.S. Forest Service, the Bureau of Reclamation, or the Corps of Engineers. S. 485 would also require specific approval from all affected tribes, governors, and public utility commissions. This could add years and millions of dollars to the development cost of interregional transmission facilities, for no obvious public benefit.

As WIRES' comments above clearly indicate, its members agree that modernization of the nation's electric system, including changing outdated technologies and operating practices, is a high priority. We clearly need an adaptable, resilient, and reliable system that delivers for consumers and industry on a regular basis. In that regard, WIRES supports the efforts outlined in S. 1243 and S. 1207 that could contribute to a more robust, flexible system, on the basic assumption that new technologies must be cost-effectively integrated into the system by the network of interstate transmission facilities.

For further information, please contact:

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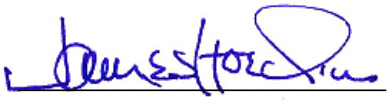

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# APPENDIX A

## Services Provided by MRAs Relative to Transmission

| | | Transmission | Energy Efficiency | Demand Response | Utility-scale Generation | Distributed Generation | Energy Storage | Smart Grid - Distribution |
|---|---|---|---|---|---|---|---|---|
| What | Energy | ● | ◑ | ◑ | ● | ◕ | ● | ● |
| | Capacity | ● | ◑ | ◑ | ● | ◑ | ◕ | ○ |
| | Ancillary Services | ● | ○ | ◑ | ● | ◕ | ● | ◑ |
| | Reduce system losses | ● | ◑ | ◑ | ○ | ◔ | ◔ | ◔ |
| When | Long lifespan | ● | ◕ | ○ | ◕ | ● | ● | ● |
| | Continuous basis | ● | ◕ | ○ | ◑ | ○ | ● | ● |
| Where | Regional | ● | ◑ | ◑ | ● | ◔ | ◔ | ○ |
| | Local | ● | ● | ● | ● | ● | ● | ● |
| | Micro | ● | ● | ● | ○ | ● | ● | ● |
| How | System/Wholesale | ● | ○ | ○ | ● | ○ | ● | ○ |
| | Customer/Retail | ○ | ● | ● | ○ | ● | ○ | ● |
| | TOTAL | ● | ◑ | ◔ | ◕ | ◑ | ◕ | ◑ |

● Provided ○ Not provided

## APPENDIX B

### Potential Benefits of Transmission Investments

| Benefit Category | Transmission Benefit |
|---|---|
| **1. Traditional Production Cost Savings** | Production cost savings as traditionally estimated |
| **1a-1i. Additional Production Cost Savings** | a. Reduced transmission energy losses<br>b. Reduced congestion due to transmission outages<br>c. Mitigation of extreme events and system contingencies<br>d. Mitigation of weather and load uncertainty<br>e. Reduced cost due to imperfect foresight of real-time system conditions<br>f. Reduced cost of cycling power plants<br>g. Reduced amounts and costs of operating reserves and other ancillary services<br>h. Mitigation of reliability-must-run (RMR) conditions<br>i. More realistic representation of system utilization in "Day-1" markets |
| **2. Reliability and Resource Adequacy Benefits** | a. Avoided/deferred reliability projects<br>b. Reduced loss of load probability or<br>c. Reduced planning reserve margin |
| **3. Generation Capacity Cost Savings** | a. Capacity cost benefits from reduced peak energy losses<br>b. Deferred generation capacity investments<br>c. Access to lower-cost generation resources |
| **4. Market Benefits** | a. Increased competition<br>b. Increased market liquidity |
| **5. Environmental Benefits** | a. Reduced emissions of air pollutants<br>b. Improved utilization of transmission corridors |
| **6. Public Policy Benefits** | Reduced cost of meeting public policy goals |
| **7. Employment and Economic Development Benefits** | Increased employment and economic activity;<br>Increased tax revenues |
| **8. Other Project-Specific Benefits** | Examples: storm hardening, increased load serving capability, synergies with future transmission projects, increased fuel diversity and resource planning flexibility, increased wheeling revenues, increased transmission rights and customer congestion-hedging value, and HVDC operational benefits |