



**Testimony of**

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**before the**

**SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT  
COMMITTEE ON ENERGY AND COMMERCE  
UNITED STATES HOUSE OF REPRESENTATIVES**

**Hearing on**

**THE FUTURE OF THE GRID: PROPOSALS FOR REFORMING NATIONAL  
TRANSMISSION POLICY**

**June 12, 2009**

Thank you Mr. Chairman for this opportunity to testify today.

My name is Christopher G. Miller and I am President of the Piedmont Environmental Council (PEC), a non-profit organization working to safeguard the landscapes, communities and heritage of the Virginia Piedmont by involving citizens in public policy and land conservation. PEC has been an active participant in energy and transmission planning since our inception in 1972, most recently as a Respondent in a state proceeding considering the proposed Trans-Allegheny Interstate Line project, and in the Department of Energy's proceedings on implementation of §1221 of the Energy Policy Act of 2005.

On April 27, 2007, I testified before the House Committee on Government Oversight and Reform about the implementation of §1221 of the Energy Policy Act of

2005. A section we still believe should be repealed. And in July of 2007, PEC joined with the utility commissions in a successful challenge<sup>1</sup> to Federal Energy Regulatory Commission's (FERC) interpretation of §1221.

Our participation in these proceedings has given us a very practical insight into electrical transmission and the strengths and weaknesses of current federal policies. And we appreciate the opportunity to provide this testimony as the Committee continues its consideration of the appropriate federal role in transmission policy.

As a land use and land conservation organization PEC deals with transmission not just as an energy issue, but also as a particularly intrusive land use. Current engineering of high voltage electric transmission has a substantial footprint, requiring rights of way that often exceed 200 feet in width and tower heights that can exceed 180 feet. In addition to the impact on the properties that these lines cross, the impact on cultural, historic and economic interests of the surrounding areas cannot be ignored. In some cases, land protections take the form of public ownership, such as Federal and state park lands. But in other cases, environment, historic or scenic values have been protected by tools such as conservation easements. We believe that the potential conflicts should be avoided whenever possible and adequately mitigated.

### **The Greenwashing of Transmission Lines**

As important or more important than the potential impacts and conflicts with other public policies is that the current and proposed transmission policies may produce a transmission grid that is over-built, overly complex and subject to reliability problems, and encourages increased reliance on fossil-fuel generation rather than distributed renewable generation, energy efficiency, conservation, and load management. Expanded,

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<sup>1</sup> United States Court of Appeals for the Fourth Circuit ruling in Case #07-1651

guaranteed, enhanced, virtually risk-free regulated returns on transmission investments and economic dispatch will increase use of coal based power plants and result in increased greenhouse gas emissions. Those emissions will not be subject to financial and regulatory controls for years, even under this Committee's proposed legislation.

Three years ago the utilities were claiming that they must 'build, build, build' for reliability reasons. That pressure has been removed by the drastic economic slowdown and the initial commitment to energy efficiency and energy conservation measure. Now, the claim is that additional transmission is necessary to encourage renewables. Any federal siting authority and financial incentives for transmission should require a FERC decision supported by findings and conclusions based upon a record that clearly shows that power needs cannot be met through conservation, efficiency, improvements to existing lines and distributed, clean generation.

As I will argue throughout my testimony, transmission is just one part of an energy equation that includes everything on the supply side and everything on the demand side. The location, amount and timing of generation and demand are crucial to making a decision on when and where to build transmission, and whether transmission is necessary at all. Before we set federal policy that permits a \$100-200 billion grid build out, we should make every effort to better utilize existing transmission infrastructure, reduce the need for new supply, and encourage clean distributed generation.

Let me begin by outlining two of our observations regarding transmission:

**Transmission planning is overwhelming energy planning** -- Federal policy and state utility commissions are increasingly deferential to the energy planning done by Regional Transmission Organizations (RTO) and Independent System Operators (ISO),

which are private entities run by member utilities and energy stakeholders, and are by design, predisposed toward transmission solutions. This “transmission first” planning, combined with the generous federal incentives that are being awarded by FERC, put non-transmission energy alternatives at a marked disadvantage, even when those alternatives have lower emission profiles, a smaller footprint, lower price tag, or would create more long-term jobs.

**There is no transmission proposal shortfall** -- State Utility Commissions are siting transmission lines across the nation, often in less than two years<sup>2</sup>. There is no compelling reason to go to a federal siting process, thereby putting the people whose lands will be taken even farther away from the decision makers.

## **Transmission Myth vs. Reality**

As we consider whether new federal transmission authority is warranted, a number of inconsistent justifications continue to emerge:

### **Myth 1: The current regulatory scheme discourages transmission from being built**

Not true, interstate transmission line proposals are being pursued and approved throughout the country. Lines are rarely turned down by State Utility Commissions, and such denials are exceptions, not the norm. In many jurisdictions, new transmission lines are being approved with scant attention to alternatives such as improved efficiency and better generation alternatives.

The poster child for delayed state siting is AEP’s Wyoming to Jackson Ferry 765 kV line between West Virginia and Virginia. This line which was originally announced

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<sup>2</sup> For example, the Trans-Allegheny Interstate Line through Pennsylvania, West Virginia and Virginia and CapX2020 through South Dakota and Minnesota. Many others are proceeding unimpeded through the state’s regulatory process.

in 1990 did not go into service until 2006. This single incident is frequently cited as a reason to remove siting authority from States. But an examination of the history of this line demonstrates that the reason for the delay had more to do with evolving electricity markets and a proposed crossing over National Forest property. Once legitimate state concerns were addressed and the federal land issue was resolved, the line was approved and built.

**Myth 2: Future renewable generation will be located far from the load and require massive transmission investment.**

According to a number of the bills pending before Congress, future generation sources, particularly renewable generation sources, will be located “distant from load centers”, in “rural areas,” or be “location-constrained.” This assumes a continued reliance on distant generation sources, and ignores the significant potential for off-shore wind, distributed solar, geothermal, natural gas peaking plants, and other forms of generation that could be more easily located near the load.

To the degree that future renewable generation is sited in the solar-rich Southwest or wind-rich Midwest, that generation can be used to serve urban centers closer to the source --Las Vegas, Los Angeles, Phoenix, Denver, Madison, Wichita, and Sioux Falls.

As for the East Coast, as PJM Interconnection pointed out in comments to FERC on March 6, 2009:

...off-shore wind from New Jersey and Canada, and greater strides in energy efficiency, may be deliverable to customers in New England, New York and New Jersey sooner and more cost-effectively than the Midwest wind resources.<sup>3</sup>

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<sup>3</sup> Motion to Intervene and Comments of PJM Interconnection, L.L.C in FERC Docket No. ER09-681-000

This point was reiterated in a May 4 letter from ten East Coast governors, in which the governors argued:

While we support the development of wind resources for the United States wherever they exist, this ratepayer-funded revenue guarantee for land-based wind and other generation resources in the Great Plains would have significant, negative consequences for our region: it would hinder our efforts to meet regional renewable energy goals with regional resources and would establish financial conditions in our electricity markets that would impede development of the vast wind resources onshore and just off our shores for decades to come.

### **Myth 3: Transmission can be easily targeted toward renewables**

Operators cannot control which electrons flow along a given transmission line. That flow is determined by the laws of physics. Once a transmission line is built, it will fill with whatever electrons are produced by the available generators. In a December 2008 report<sup>4</sup>, the Union of Concerned Scientists warned:

Expanded capacity to transmit electricity would likely mean an even greater near-term flow of coal-fired electricity from western PJM to eastern PJM and other RGGI states. Lower congestion costs would make coal-fueled power plants in the west even more competitive, while power producers in eastern PJM states continued to face higher fuel costs because of their greater dependence on natural gas. This trend could spur even more proposals for new coal plants and new transmission capacity, as electricity production moved away from higher-priced states. The result would be greater amounts of heat trapping emissions.

And as Bill Raney, President of the West Virginia Coal Association, outlined in a recent statement in support of the proposed Potomac Appalachian Transmission Highline through West Virginia, Virginia and Maryland:

Enhanced transmission capacity helps increase the amount of low-cost, coal fired generation dispatched into the regional grid. This helps preserve the future of existing power plants already on line, justifies additional investment in these plants and increases the likelihood that new, clean-coal electric fired generation will be constructed in the state.<sup>5</sup>

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<sup>4</sup> [http://www.ucsusa.org/assets/documents/clean\\_energy/importing-pollution\\_report.pdf](http://www.ucsusa.org/assets/documents/clean_energy/importing-pollution_report.pdf)

<sup>5</sup> Letter filed under West Virginia Public Service Commission Case # 09-0770-ECN

As shown in the two attached maps the grid backbone concept put forward by American Electric Power and the American Wind Energy Association has the very real potential to enable access to large coal deposits rather than wind energy. For this reason, it is critical that no such grid expansion take place prior to enactment of strong and enforceable carbon regulations or a reform of the dispatch system to emphasize environmental priorities, as opposed to the current system prioritizing economic dispatch.

**Myth 4: All proposals for new transmission have been fully vetted and alternatives have been examined**

Operation of the electric transmission grid has been expressly delegated to the Independent System Operators and Regional Transmission Organizations. The continued availability of electricity on demand day after day is ample testimony to the skill of those operations. However in PEC's experience, the RTOs' single-minded focus on transmission does not translate well when it comes to planning.

PJM, the largest of the regional transmission organizations, has repeatedly stated that the only solution to electric reliability problems is to order the construction of new transmission lines. PJM is a limited liability corporation, authorized to do only what its members agree to. Its voting membership is composed of transmission companies, generators, utilities and industry insiders. When considering a new transmission project it does not consider whether alternatives would satisfy the identified problem nor does it consider the impact of the line on the environment, the cultural or historic properties that will be affected.

## **Myth 5: More transmission means better reliability and national security –**

From a technical standpoint, building more transmission to allow for greater inter-regional power transfers will make the power system less reliable, not more reliable. As electrical engineer and member of the New York State Reliability Council George Loehr said in his testimony to the Senate Energy & Natural Resources Committee in July, 2008:

Reliability is a function of the standards used, not the amount of wire in the air... If more generation is built in remote areas, and less generation and other resources are built close to load centers, then the load centers will be increasingly dependent on distant generating capacity – located perhaps hundreds of miles away. It would be like running a long extension cord to a friend's house a block or two away to power your toaster, instead of plugging it into an electric outlet right in your own kitchen. The more major cities depend on long transmission lines, the more subject they will be to power outages and blackouts due to major contingencies on the transmission system.

Or as it was put in a 2003 article<sup>6</sup> written by famed energy expert and Chief Scientist at the Rocky Mountain Institute, Amory Lovins:

...as one utility executive notes, the emerging policy consensus — that we need to build more and bigger power lines because usage has outpaced capacity — is as wrong as prescribing bloodletting for a patient with a high fever. It reflects a fundamental misunderstanding of what is amiss.

In fact, more wires may make cascading failures more likely and widespread. And they're almost always slower and costlier than three functionally equivalent alternatives: using electricity efficiently, letting customers choose to tailor their usage to price, and decentralized generation.

And as Dr. Vannevar Bush<sup>7</sup>, one of the 20<sup>th</sup> century's most brilliant electrical engineers predicted nearly forty years ago:

The more complex a society [or a system], the more chance there is that it will get fouled up . . . . Power systems have grown enormously and have become interconnected over vast regions. And we have had two severe blackouts and are undoubtedly headed for more.

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<sup>6</sup> [http://www.rmi.org/images/PDFs/EnergySecurity/E03-06\\_TowerDsnFlaws.pdf](http://www.rmi.org/images/PDFs/EnergySecurity/E03-06_TowerDsnFlaws.pdf)

<sup>7</sup> Head of the Office of Scientific Research and Development in World War II, he later served as Chairman of the MIT Corporation (Board of Regents)

### **Myth 6: Transmission needs additional incentives**

In 2006 FERC adopted regulations that promote transmission investment through the allowance of generous financial incentives.<sup>8</sup> The regulations allow transmission developers a higher return on equity (usually 50-200 basis points), recovery of construction work-in-progress, recovery of abandonment costs and include an advanced technology “adder”.

Since adopting these new regulations, FERC has approved twenty-seven of the thirty three transmission projects that have sought enhanced rates of return<sup>9</sup>. Those twenty seven projects are valued at \$27 billion dollars and if constructed, would cover 8,000 miles. Only three projects have been turned down for these enhanced returns.

### **Myth 7: Demand Growth dictates investment in new transmission**

According to the Energy Information Administration, in 2008 electric demand actually fell by 1.6% and in 2009 it is expected to fall by another 1.8%<sup>10</sup>. Over the next two decades, EIA expects average residential demand growth per capita to slow further, with overall growth increasing at a rate of around 1% per year.

If the current economy is any indication, demand growth may not rebound to previous growth levels for quite some time. In the meantime, aggressive implementation of energy efficiency standards will further blunt demand growth. According to the American Council on an Energy Efficiency Economy (ACEEE):

In total, the energy efficiency provisions in H.R. 2454 could reduce U.S. energy use by 4.4 quadrillion Btu's, which accounts for about 4 percent of projected U.S. energy use in 2020.... By 2030, these energy efficiency savings grow to 11

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<sup>8</sup> July 2006, FERC Order No. 679 pursuant to the Energy Policy Act of 2005

<sup>9</sup> <http://www.eia.doe.gov/conference/2009/session4/Agarwal.pdf>

<sup>10</sup> EIA forecasts available at <http://www.eia.doe.gov/oiaf/forecasting.html>

quadrillion Btu's, accounting for about 10 percent of projected U.S. energy use that year.<sup>11</sup>

ACEEE goes on to call for increasing the energy efficiency component of the Combined Efficiency and Renewable Energy Standard with H.R. 2454 to 10% savings by 2020 and devoting one-third of electric utility allowances to efficiency. They estimate that this strengthened energy efficiency component would increase these 2030 energy savings by about 25 percent. These investments in energy efficiency produce green jobs, save consumers money and are a better way to reduce carbon emissions than investment in expensive and intrusive investment in transmission.

#### **Myth 8: FERC sites gas lines, transmission is a natural evolution**

The comparison between gas transmission lines and electric transmission lines is inapposite. Transmission lines, which are strung on towers that range in height from 10-18 stories (compared to a 6 foot high or buried gas line) are visually intrusive, particularly in areas that aren't highly developed or industrialized. The 200 foot rights-of-way required by most transmission companies require regular maintenance and clearing, helicopter servicing for painting or visual inspection, and access roads. In addition, transmission conductors emit an electric field that crackle and pop during most months of the year.

From an engineering perspective, the comparison is even less appropriate. The flow of natural gas can be directed and controlled, the fuel can be stored, and the source and destination easily identified. Electric power, on the other hand, cannot be controlled or directed over one path rather than another. Further, it cannot be stored in bulk; it must be used instantaneously as it is created. But the most important difference between gas

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<sup>11</sup> <http://aceee.org/energy/national/index.htm>

transmission and electric power transmission systems is that gas transmission is essentially point-to-point, whereas electric transmission is through a highly integrated, extremely complex grid. As an electric engineer told us recently:

There is a kind of grid in the gas production field itself, and certainly at the customer distribution end. But it moves long distances between the gas fields and local distribution systems through a series of point-to-point pipelines, with *no connections between them*. Electric power, on the other hand, moves over extensive grids composed of many thousands of individual transmission lines. The grids themselves have literally thousands of nodes or junctions, and uncounted parallel paths. The difference in complexity between gas and electric systems is comparable to the difference between a flashlight's electric circuit, and the guidance system of the space shuttle.

### **Myth 9: Environmentalists agree we need more transmission, fast**

Not everyone thinks transmission is the answer – and to the extent that environmental groups do support new transmission policy, that support is limited to lines that would enable the rapid deployment of renewable energy generation. In a recent letter to Carol Browner and congressional leadership, environmental organizations warned:

Piecemeal energy policy –especially electric transmission policy reform—in advance of a comprehensive national climate regime can have the real but unintended effect of facilitating *more*, not less, greenhouse gas pollution.

For this reason, many environmental groups believe a federal transmission siting provision could do more harm than good unless it is part of a comprehensive climate strategy that puts strong and enforceable carbon regulations in place.

### **Conclusion**

Instead of new FERC siting authority, what we really need is federal policy that directs Integrated Resource Planning approach to energy planning at a state, regional and

federal level. We should look at demand, supply and transmission in concert, without being limited to or predisposed toward investments in transmission.

If Congress does choose a federal approach to transmission siting, it should require:

1) **An Integrated Resource Planning approach** --Energy solutions, be they new generation, transmission or demand side options should be reviewed together. The solution that best solves an identified problem, with the lowest environmental and economic impact, taking into account all costs, should be chosen.

2) **An open and inclusive process** – A federal process should include a thorough review of alternatives, and not be RTO-driven. Stakeholders should also include state utility commissions, environmental organizations and interested localities. And participants should have access to data resources to fully participate.

3) **Limited federal siting authority that targets transmission projects that directly enhance access to renewable generation** –If the problem is getting renewables on to the grid, then having strong carbon controls in place and requiring a greenhouse gas interconnection standard prior to implementation of federal transmission authority is critical.

4) **Genuine land and environmental protections** - Damages to private and public values from development of existing and new rights of way should be minimized and appropriately mitigated.

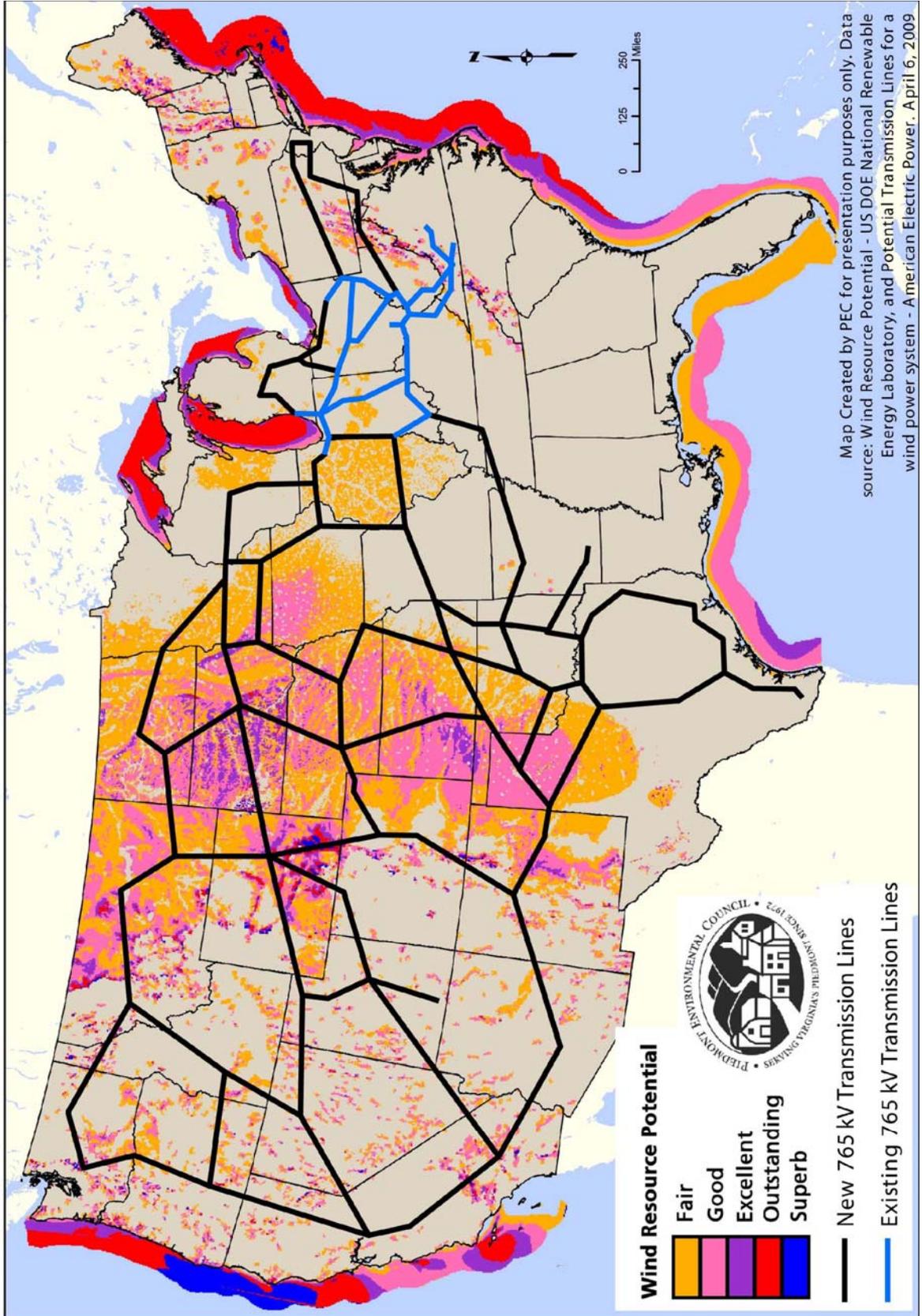
A number of transmission titles have been introduced to date, some try to target renewables while others provide for grid expansion regardless of the generators that would benefit. Congressman Inslee's title does include a greenhouse gas interconnection

standard, and we have spoken with his office about the need to include provisions for avoidance of transmission siting on lands conserved through a conservation easement. Subcommittee Chairman Markey and Committee Chairman Waxman have focused their transmission title on planning and setting national objectives on the deployment of renewable and other zero-carbon sources. In the Senate, the titles appear more transmission-first oriented. On the positive side, Senator Reid's title includes a 75% renewable reserve and Senator Cantwell has authored language that would impose an alternatives analysis at an early stage of the planning process and a greenhouse gas interconnection standard into Senator Bingaman's title. We are grateful for those efforts and hope to continue to work with Senators and Members to achieve a balanced energy program.

However, if we fail to change the policies and we continue on this rate payer financed experiment in massive grid expansion, we run the very real risk of building a gold-plated, highly intrusive system that benefits old ways and methods, while deterring new investment in energy efficiency and renewable energy going forward. What is worse, in some cases we are planning these lines in non-inclusive manner that ignores adverse impacts and produces results that are unnecessary and unfair. If we just plan for transmission, transmission will be all that we build. And in the end many of your constituents will be left living beneath an aluminum sky.

Thank you again for this opportunity to testify. I would be happy to answer any questions you may have.

# AEP Conceptual Transmission Plan for Wind Energy



...or is it for Coal?

