ALABAMA CENTER FOR SUSTAINABLE ENERGY

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RE: Comments on the Tennessee Valley Authority's 2015 Draft Integrated Resource Plan

On behalf of the board of directors and volunteers of the Alabama Center for Sustainable Energy (ALCSE), thank you for allowing stakeholders and the public to participate in the 2015 Tennessee Valley Authority (TVA) Integrated Resource Plan (IRP) process. We also commend TVA for its leadership on clean energy issues in the Southeast and for their willingness to respond to input.

We write today to summarize our concerns regarding the Draft IRP. The concerns include:

- TVA employs restrictive energy efficiency growth caps that limit the growth of energy efficiency.
- TVA assumes a high cost escalation of energy efficiency that is not in line with existing information or experience from other Southeastern examples.
- TVA uses outdated wind energy cost and technology data that results in a Draft IRP with low investment in wind.
- TVA allows for a moderate growth of solar resources (2,000 MW) but almost all of the growth are utility scale power plants that do not address a rapidly changing market, consumer preference or resiliency concerns.
- TVA employs restrictive solar growth caps that limit the growth of solar in the Tennessee Valley.

We believe that these issues are opportunities for TVA to more appropriately model and analyze various clean energy issues through its IRP process. We are hopeful that further information as described below will help TVA improve its Draft IRP. We are committed to providing additional supporting information if requested by TVA.

1) Conservative Energy Efficiency Growth Caps

TVA employs a growth cap of 25% in the Draft IRP and these energy efficiency growth caps are not completely reflective of experience throughout the Southeast. Utilities such as Gulf Power, Duke Energy, and many in Arkansas have grown at higher than 25% annual growth while still keeping costs in line. We are unsure of the data on which TVA bases the 25% annual growth cap, especially during the early stages of program implementation.

Further evaluation of Southeastern utilities can help TVA learn from their positive experiences with energy efficiency. Furthermore, as technology continues to produce more performance for less cost, growth caps may hinder the ability of the market to provide additional cost effective solutions.

2) High Cost Escalation of Energy Efficiency

Estimates by TVA are unfortunately not representative of regional energy efficiency experience and lead to a low overall investment in energy efficiency. A recent study by the American Council for an Energy Efficient Economy (ACEEE) show that energy efficiency costs have changed little over the past ten years.[1] As such, TVA's use of Tiers 2 and 3 for energy efficiency costs are not consistent with experience across the region and the country. ACEEE's study shows that utilities are able to maintain low energy efficiency costs over time even though savings increased. According to the data, energy efficiency costs do not increase over time as the 'easier' savings are consumed. Rather, technology and program design changes to achieve even further efficiency without increased cost. A deeper look at other examples in the Southeast, such as Arkansas, as well as the national study from ACEEE can help TVA improve its cost data in the 2015 Draft IRP.

3) Outdated Wind Cost and Technology Data

The Draft IRP uses assumptions about wind performance and costs that are not representative of the market or experiences by other utilities in the Southeast. The Draft IRP shows little to no investment in wind except in the "Decarbonized Future" and "Maximize Renewables" scenarios. However data shows that unsubsidized wind is competitive both on cost and performance even under a "business as usual scenario." To illustrate this point, Navigant Consulting, who was hired by TVA to evaluate its data assumptions, found that only 55% of the wind energy data values were consistent with current experience and information.[2]

Lazard, the world's leading independent financial advisory and asset management firm, reports the unsubsidized cost of wind energy in 2013 ranged from $37-$81/MWh based on recently reported power purchase agreement (PPA) prices from around the country.[3] Exploration of wind energy purchases from other Southeastern utilities such as Alabama Power (404 MW)[4], Georgia Power (250 MW)[5] and Gulf

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[1] Maggie Molina (March 2014), The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs, Available at http://aceee.org/research-report/u1402.

[2] Navigant Consulting (2014). Navigant Summary Letter Report on Generating Resource Cost and Performance Estimates. Available at http://www.tva.com/environment/reports/irp/pdf/TVA-Draft-Integrated-Resource-Plan.pdf

[3] Lazard (September 2014). Lazard's Levelized Cost of Energy Analysis - Version 8.0. Available at http://www.lazard.com/PDF/Levelized Cost of Energy - Version 8.0.pdf

[4] Alabama Power (2014). Chisholm View, Buffalo Dunes projects provide cost-effective power. Available at http://www.alabamapower.com/environment/news/chisholm-view-project-provides-low-cost-power.asp

[5] Georgia Power (2013, April 22). Georgia Power to acquire 250 megawatts of wind energy from leading developer EDP Renewables. Available at http://online.wsj.com/article/PR-CO-20130422-910916.html

Power (300 MW)[6] could help TVA add more cost effective wind power to its portfolio over the performance period.

Regarding performance data, TVA capacity factor assumptions for wind energy resources were derived from its own PPAs such as its much older Buffalo Mountain wind farms. National Renewable Energy Laboratory (NREL) data has shown that market deployment of new technology designed to increase capacity factors, particularly in lower wind speed regions, has dramatically altered the quantity of wind available in the TVA region. [7] [8]

4) Low Amount of Distributed Solar and Restrictive Growth Caps

ALCSE applauds TVA's use of a "Distributed Marketplace" scenario in its Draft IRP. A customer led shift to solar or other distributed resources appropriately reflects a monumental shift from "business as usual". However distributed solar generation primarily included only large and commercial solar photovoltaic (PV) systems rather than residential systems. ALCSE encourages TVA to address the benefits of truly distributed solar.

Some of the benefits of distributed solar that were not reflected in the Draft IRP include:

- A lower land requirement ratio than the stated 7.5 acres per MW due to the typical placement of systems on buildings and parking lots. TVA noted in its Draft Environmental Impact Statement (EIS) that over 30,000 MW of rooftop solar capacity exists, all without any additional land requirement.[9]
- Avoided line losses that occur on transmission and distribution systems when using central power plants.[10]
- Lower financial investment by TVA[11]

A recent report by the Rocky Mountain Institute, *The Economics of Load Defection*,[12] highlights that there is an opportunity for utilities to advance an "integrated grid" as opposed to one where there is

[6] Pensacola News Journal (February 15, 2015). Gulf Power to add wind power from Oklahoma. Available at http://www.pnj.com/story/news/2015/02/11/gulf-power-add-wind-power-oklahoma/23239883/
[7] National Renewable Energy Laboratory (2014). Wind Resource Potential for Tennessee. Available at http://apps2.eere.energy.gov/wind/windexchange/wind_resource_maps.asp?stateab=tn
[8] National Renewable Energy Laboratory (2014). Wind Resource Potential for Alabama. Available at http://apps2.eere.energy.gov/wind/windexchange/wind_resource_maps.asp?stateab=al
[9] TVA IRP Draft Environmental Impact Statement (EIS). Page 134.
[10] American Public Power Association. November 2013. "Distributed Generation An Overview of Recent Policy and Market Developments". Available at https://www.publicpower.org/files/PDFs/Distributed%20Generation-Nov2013.pdf
[11] Bain and Company. "Distributed energy: Disrupting the utility business model". Available at http://www.bain.com/Images/BAIN_BRIEF_Distributed_energy_Disrupting_the_utility_business_model.pdf
[12] Rocky Mountain Institute. April 2015. "The Economics of Load Defection". Available at http://www.rmi.org/electricity_load_defection

increasing levels of "grid defection." Including strategies for adapting to the distributed energy shift in the Draft IRP will help TVA adapt to a changing marketplace.

Lastly, TVA has placed restrictive growth caps on solar capacity expansion of 300 MW per year and 4,000 MW total by the end of the planning period in all but the "Maximize Renewable" scenario. Growth caps may inadvertently force TVA to leave cost effective options on the table whereas a simple cost-effectiveness test might be sufficient.

Conclusion

ALCSE is appreciative of TVA's efforts to engage stakeholders and the public to make the IRP a better tool to serve customers throughout the Tennessee Valley with clean, reliable and affordable energy. We are hopeful that TVA will evaluate our comments to ensure that clean energy, specifically energy efficiency, wind and solar, are given proper and accurate consideration. Clean energy is and will continue to be a vital tool for TVA to promote economic growth and competitiveness for the region. Please do not hesitate to contact us if we can be of additional assistance with your efforts.

Sincerely,

Daniel Tait
CEO
Alabama Center for Sustainable Energy