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Hunter Hydas, Enterprise Planning
Amy Henry, Enterprise Relations + Innovation
Ashley Pilakowski, NEPA Project Manager
Tennessee Valley Authority
400 W. Summit Hill Dr.
Knoxville, TN 37902

Re: Comments on 2019 Draft Integrated Resource Plan and Environmental Impact Statement from a Coalition of Organizations

Dear Mr. Hydas, Ms. Henry, and Ms. Pilakowski,

The Southern Alliance of Clean Energy (SACE), Appalachian Voices, Bellefonte Efficiency & Sustainability Team, Blue Ridge Environmental Defense League (Chattanooga Chapter), Conservatives for Energy Freedom, Mothers Against Tennessee River Radiation, Tennessee Conference of the National Association for the Advancement of Colored People (NAACP), Tennessee Conservation Voters, Tennessee Environmental Council, and Tennessee Interfaith Power & Light submit the following comments on the Tennessee Valley Authority (TVA) Draft 2019 Integrated Resource Plan (IRP) and Environmental Impact Statement (EIS).

Resource planning is an important process for electric utilities to look forward at ways to address sectoral changes and reorient themselves toward their goals of providing safe and reliable power at the lowest cost to all customers. We recognize that the IRP process is time and resource intensive, and appreciate that TVA is investing in this important process. However, TVA can and should do better, and we submit these comments on key areas for improvement without which the TVA Board of Directors should not approve a final IRP and EIS.

In the Draft 2019 IRP, TVA has constrained the potential portfolios to fit within its existing operating model. TVA has not explored the full range of options in order to optimize for what is best for TVA customers. Why undertake the future planning process at all? We

call on TVA to make fundamental changes to its current Draft 2019 IRP to prioritize low system costs and thus low customer bills, objectively evaluate options without imposing preferential treatment, and do so in a transparent and inclusive manner.

TVA Should Objectively Evaluate Options without Preferential Treatment

The analysis in the Draft 2019 IRP appears to drive the results away from renewables and energy efficiency in preference to building new natural gas generation and even new nuclear generation by forcing it in one case despite it being uneconomic.

TVA Should Treat Energy Efficiency as an Equal Resource

The Draft 2019 IRP represents an abrupt reversal of its prior two IRPs by proposing zero to minimal energy efficiency in any of the cases analyzed. The 2015 IRP projected less energy efficiency than the 2011 IRP, suggesting constraints and unrealistic assumptions were put into the models for energy efficiency, and these have only been made more unrealistic for this IRP. TVA chose before setting out on this IRP process to halt investment in energy efficiency, and tailored the assumptions and methodology toward an outcome with little to no energy efficiency. That goal was achieved in the results of the Draft 2019 IRP where energy efficiency levels are so low they are essentially meaningless.

If an IRP model is choosing supply-side resources at all, there are cost-effective demand-side options that should also be a part of that resource portfolio. TVA assumes some energy efficiency is available at a cost lower than its forecast power prices. Half of the measures (besides low-income) are cheaper than the lowest prices in TVA's Power Price Forecast, so why do the results include so little energy efficiency?[1] Unfortunately we do not have enough information to know definitively, but we suspect that TVA has put annual or overall constraints on the model and thus limited the amount of energy efficiency it can choose even if it is the most economic resource.

Utilities across the nation, including TVA's counterpart in the northwest, the Bonneville Power Authority (BPA), and regional utilities to the east and west, Entergy Arkansas and Duke Energy Carolinas, are all investing in energy efficiency and seeing reductions in system

[1] TVA FOIA documents Figure_B-9_EE_Detail_readonly.xls and Power Price Forecast_readonly.xls, provided to SACE via email on April 3, 2019 and made publicly available by SACE at: https://cleanenergy.org/blog/last-minute-transparency-tva-releases-key-planning-data-days-before-comment-deadline/

costs and customer utility bills. The Electric Power Research Institute (EPRI) estimates that by 2035, the economic opportunity for energy efficiency savings could reach 20,676 GWh in Tennsesse and 18,106 GWh in Alabama. In Tennessee alone customers have the potential to save over $300 million over the next 30 years just by Replacing electric furnaces when they wear out with high-efficiency heat pumps.[2] This one measure has an average payback period of less than 3 years in Tennessee and is applicable for 16% of homes state-wide.[3] But that cost-effective energy efficiency will not be captured without action by TVA.

The Northwest Power and Conservation Council, which performs resource planning for the region that includes BPA, estimates that energy efficiency investments reduced customer bills by one third in 2014.[4] By leaving these savings on the table, TVA will be charging customers more to generate the electricity they could have paid less to save.

TVA will fall further behind Southeast utilities in EE under this plan

In the 2011 IRP, the TVA Board set goals to achieve 1% annual savings from energy efficiency. Its goal was dropped to 0.6% in the 2015 IRP. The draft 2019 IRP further drops the energy efficiency goal to zero by the end of the study period. TVA's annual energy savings fell below the regional average and well below the national average in 2017. TVA should return to the goal of being a regional leader in energy efficiency.

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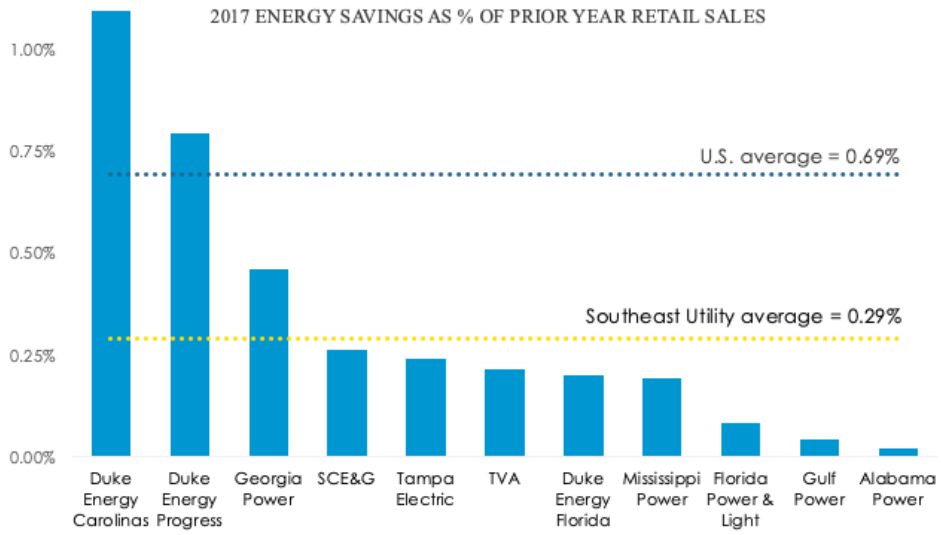
[2] NREL Residential Energy Efficiency Potential: Tennessee Fact Sheet, Available at: https://resstock.nrel.gov/factsheets/TN.

[3] Ibid.

[4] Northwest Power and Conservation Council, Energy Topics: Energy Efficiency, Available at: https://www.nwcouncil.org/energy/energy-topics/energy-efficiency.

Figure 1. 2017 Energy Savings for Major Southeast Utilities



Source: SACE [Energy Efficiency in the Southeast 2018 Annual Report]

TVA now treats energy efficiency as a threat to its revenues, and is adding large mandatory fixed fees to customer bills. The draft 2019 TVA IRP fails to quantify the impact of shifting costs from energy rates to mandatory fixed fees on customer energy use. It is well known that this rate design approach will lead to higher, less energy efficient behaviors. Furthermore, as these billing changes take effect, the economic incentive to invest in energy efficiency will be reduced. For example, Knoxville Utility Board's decision to triple fixed fees has effectively wiped out 10 years' worth of efficiency savings effect.

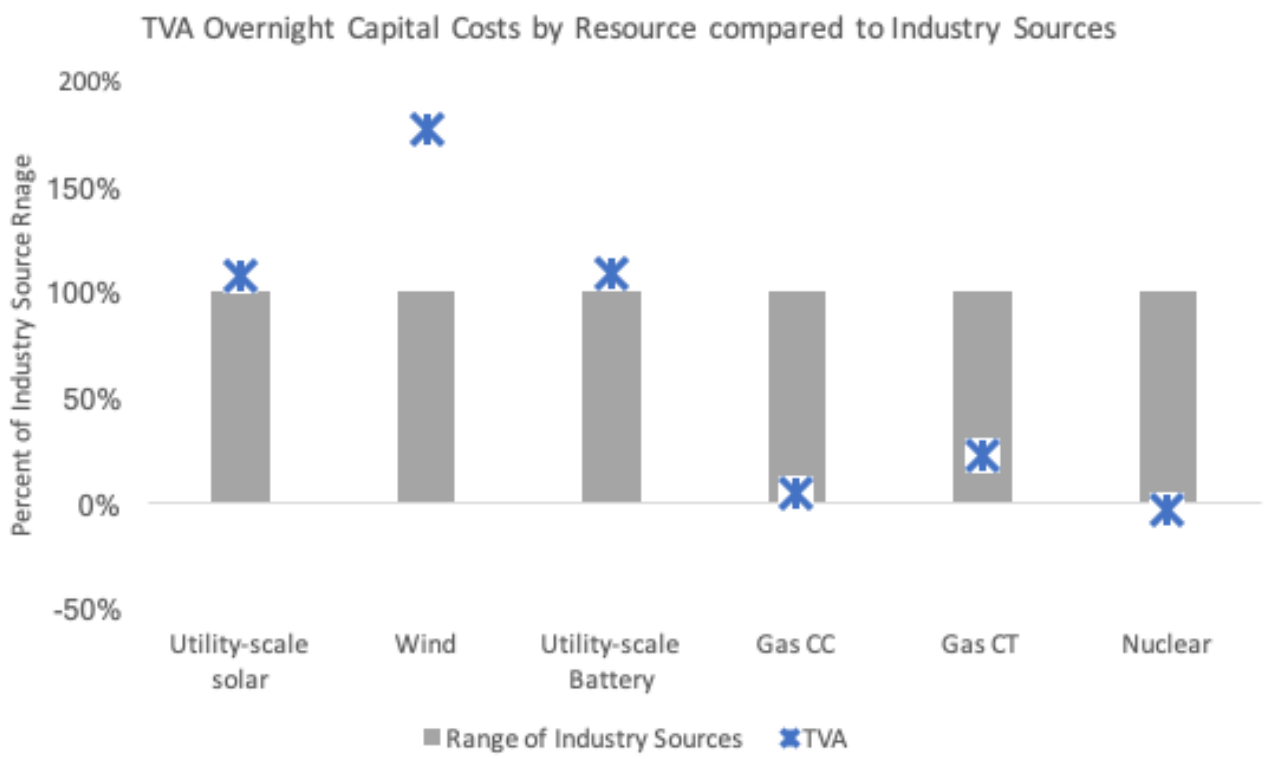
TVA was once a leader on certain energy efficiency programs. TVA pioneered a low-cost, high-impact program for manufactured homes that now serves as a model for other utilities. This important customer sector continues to be overlooked by many other utilities, and TVA is to be commended for developing this program. This program also serves as an example that energy efficiency savings are within TVA's reach if the utility is willing to make the investment in a resource that will save customers money and improve livelihoods across the Valley.

TVA Should Use Objective Capital Cost Assumptions for Supply Resources

We commend TVA for using a third party to benchmark supply-side resource assumptions, including capital costs, but it appears that TVA disregarded Navigant's recommendations in favor of assumptions that would drive their desired outcome. As indicated Figure 2, TVA used high estimates for solar, wind, and storage (outside the range

of industry sources) but low estimates for natural gas and nuclear resources (within the first quartile of or below the range of industry sources).

Figure 2. Comparison of Overnight Capital Costs



Notes and Sources:

- *Industry sources are NREL's 2018 Annual Technology Baseline (a compilation of 9 projections) for projects online in 2023 and Lazard's 2018 Levelized Cost of Energy that summarizes actual current costs.*
- *TVA's costs are derived from the draft IRP pages A-4 and A-5.*
- *TVA's nuclear costs are for SMR plants. Industry sources quote costs for conventionally-sized "advanced nuclear" plants because these industry sources consider the costs of SMRs too speculative to quote.*

The most egregious evidence that TVA's modeling is biased is that its assumed capital cost for Small Modular Reactors (SMR) is unrealistically low. The assumed cost in the Draft 2019 IRP is half the assumed cost of this resource in TVA's 2015 IRP despite the fact that no SMRs have been built nor have any designs been certified yet by the NRC. Recent experiences with new nuclear power construction projects did not demonstrate cost reductions, rather project cost estimates skyrocketed, which led to the cancellation or suspension of all but one new nuclear power projects in the country. The only remaining under construction new nuclear power project is Southern Company's Plant Vogtle in Georgia. The two Toshiba-Westinghouse AP1000 design reactors at Plant Vogtle have been

under construction since 2009 and have more than doubled in cost from original estimates of $14 billion and are more than five years delayed, if they are ever even completed.

Why is TVA willing to be aggressive with these unsubstantiated costs of an unproven technology and at the same time be overly conservative on the costs of proven technologies like wind and solar? As a planning assumption, these fantasy costs are reckless and potentially dangerous to ratepayers – it lays the groundwork for TVA to develop an SMR, which will inevitably saddle ratepayers with the exorbitant costs as budgets and schedules are busted. Construction of new nuclear is such a big risk that outgoing TVA CEO Bill Johnson explained when speaking in Memphis on November 6, 2018: "My point is simple," Johnson said. "Nuclear construction is the riskiest activity you can engage in in the power business. Take it from me."[5]

Despite attempts by TVA to skew the IRP results, some conclusions sneak through the stacked assumptions. The models do not pick SMRs in any cases, even those where SMRs are incentivized. One case builds SMRs because TVA forced it into the model despite the economics. On the other hand, the results show that solar is too attractive to suppress completely. In the Draft 2019 IRP TVA imposes arbitrary annual caps on utility-scale solar additions. However, a little farther south Florida Power & Light, which is a comparable utility to TVA in terms of sales and customers, is projecting to add an average of 750 MW of solar per year in the next 10 years with additions growing to over 1 GW in a year in the later 2020s.[6] In 22 of the 30 IRP cases the resource planning models built up these caps, indicating that the plans are missing out on additional cost-effective solar. Unfortunately, energy efficiency and wind resources did not fare so well under TVA's unrealistic assumptions.

TVA Should Prioritize Low System Costs

A successful IRP seeks to minimize total system costs without limiting customer choice, thus leading to the lowest possible customer costs. TVA is misguiding readers by

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[5] Daily Memphian, "TVA head tells City Council Bellefonte power plan 'risky'" November 7, 2018. Available at: https://dailymemphian.com/article/1129/TVA-head-tells-City-Council-Bellefonte-power-plan-risky.

[6] FPL *Ten Year Power Plant Site Plan*, Submitted to Florida Public Service Commission in April 2019, Available at: http://www.psc.state.fl.us/Files/PDF/Utilities/Electricgas/TenYearSitePlans/2019/Florida%20Power%20and%20Light.pdf.

including the Total Resource Cost in TVA's 2019 IRP metrics. This is a frankly patronizing analysis: customers may have very good reasons to invest in technologies such as building insulation, energy efficiency appliances, self-generation, or storage. These customer-driven investments help TVA reduce costs, and TVA should incentivize them appropriately. But TVA fails to include the customers' non-energy benefits – such as health, comfort, resilience, or values-based investing. Indeed, how would TVA comprehensively value such varied personal benefits? But by presuming to call this a "total resource cost" metric, TVA has adopted a patronizing attitude that these benefits are not part of the "total." It is not up to TVA whether customers should invest in such technologies beyond TVA's definition of economic rationality.

Accordingly, TVA should restore its focus on a lowest system cost metric. The TVA Act is clear that TVA's resource planning process must aim for the lowest system cost. The act specifies that "the term 'system cost' means all direct and quantifiable net costs for an energy resource over its available life, including the cost of production, transportation, utilization, waste management, environmental compliance, and, in the case of imported energy resources, maintaining access to foreign sources of supply."[7] Even given the skewed and opaque assumptions TVA used develop the potential supply portfolios under each Scenario and Strategy case one thing is clear: investing in DERs and large-scale solar is the best option for the Valley. The cases with the lowest PVRR are those in the Economic Downturn Scenario and Rapid DER Adoption Scenario.[8]

TVA IRP Process Needs More Transparency

IRP processes should be transparent and involve stakeholders throughout the process. In its 2015 IRP TVA worked with stakeholders and industry experts to provide TVA with current data related to performance and costs for both renewable energy and energy efficiency resources. For the 2019 IRP process TVA benchmarked its supply-side resource

[7] U.S. Code Title 16, Chapter 12A, §831m-1(b)(3)

[8] Nine cases are within one standard deviation of the lowest PVRR value: Scenario 2: Economic Downturn and Strategies A: Base Case, B: Promote DER, C: Promote Resiliency, and E: Promote Renewables, and Scenario 5: Rapid DER Adoption and Strategies A: Base Case, B: Promote DER, C: Promote Resiliency, D: Promote Efficient Load Shape, and E: Promote Renewables.

assumptions behind closed doors, and does not appear to have sought stakeholder input or industry expertise on demand-side resource assumptions.

Multiple stakeholder organizations, including SACE, have requested additional documentation and records used in the Draft 2019 IRP. The National Environmental Policy Act (NEPA) requires that TVA perform an Environmental Impact Statement (EIS) for its IRP. NEPA's implementing regulations mandate that TVA "shall to the fullest extent possible . . . [e]ncourage and facilitate public involvement."[9] To accomplish that objective, the regulations require that "environmental information [be] available to public officials and citizens before decisions are made and before actions are taken" so that "public officials make decisions that are based on understanding of environmental consequences."[10] Moreover, while TVA is permitted to "incorporate material" into its EIS, the regulations mandate that any such incorporated material must be "reasonably available for inspection by potentially interested persons within the time allowed for comment," and that any "[m]aterial based on proprietary data which is itself not available for review and comment shall not be incorporated by reference."[11]

NEPA also states that any materials on which an EIS relies must be made "available for inspection by potentially interested persons within the time allowed for comment." TVA sent most requested documents directly to requesting organizations instead of publishing them on the IRP website, and refused to extend comment period to allow more than three business days to review over 60 new documents. In addition, the documentation and data shared with SACE was still incomplete. Several spreadsheets had key data missing, and TVA has yet to provide three studies on which key assumptions in the IRP are based: the Reserve Margin study, the Intermittent Resources Study, and the Flexibility Study. TVA should release all of these documents and data and allow the public an additional comment period. For future IRPs, TVA should release all studies and the data behind each figure in the IRP when it releases the draft IRP to allow stakeholders to provide informed comments in a timely fashion.

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[9] U.S. Code Title 40, Chapter 5, §1500.2

[10] Id. §1500.1(b)(c)

[11] Id. § 1502.21

TVA Board of Directors Should Require Overhaul of Draft IRP

IRP processes should be transparent and involve stakeholders throughout the process. A successful IRP minimizes total system costs without limiting customer choice, leading to the lowest possible customer bills, not a myopic focus on rates or a patronizing focus on spending choices by private customers. A successful IRP evaluates the entire life-cycle cost of all resources, both supply and demand and both existing and potential. A successful IRP should be overseen by an engaged oversight body.

TVA states that its mission is "to improve the quality of life in the Valley through the integrated management of the region's resources." This IRP reflects a different mission – a mission to hold on to a 20th century business model without regard to the quality of life in the Valley, through centralized TVA management of the region's electricity resources. As a result, TVA appears poised to further downsize its investment in helping customers manage their energy bills and burdens, slow-walk solar additions, and continue to invest in old, expensive, inflexible resources. We call on TVA to rebuild this IRP in a transparent and objective manner, and if its staff will not, we call on the TVA Board of Directors to reject the IRP in its current form.

Sincerely,

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