

Comments Regarding TVA's Planned Resource Planning Process: *TVA's Environmental and Energy Future*

Submitted by the Southern Alliance for Clean Energy

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The Southern Alliance for Clean Energy respectfully submits these comments regarding TVA's notice of intent to conduct a comprehensive study of its resource options for meeting future energy demand. We are hopeful that TVA will strive to make this process as open and transparent as possible, without preconception about the adequacy of various resource options, and with the intent to provide a full and fair consideration of all resource options, including non-traditional resources such as energy efficiency and renewable energy.

TVA's multi-tiered mission to provide electricity, steward the environment and partner in the economic development of the Tennessee Valley requires adequate resource planning. Since TVA's last comprehensive resource plan, *Energy Vision 2020*, was published in 1995, there have been significant changes regarding many of the issues that TVA must address. These include changing regulatory regimes in terms of energy generation, environmental management, security, and waste management. In addition, technological advances have brought new resources into the marketplace and increased the viability of other resource options so that they are now cost-competitive with traditional resources such as coal and nuclear. Finally, the potential of energy efficiency and the host of benefits that it provides has been recognized, elevating efficiency to a position of equal footing with typical supply-side options when seeking ways to meet future energy demand.

In sum, today's rapidly changing regulatory and technological environments, combined with TVA's multi-faceted mission, necessitates proper and up-to-date resource planning to ensure a safe, clean and reliable power supply for the residents of the Tennessee Valley.

I. TVA's planning process must be open and transparent to ensure the support of TVA's constituents.

TVA's past decisions have, in several instances, imposed significant economic and societal costs on the residents of the Tennessee Valley. TVA's failed attempts at nuclear generation, its mismanagement of its waste streams, including coal ash, air pollutants and greenhouse gases, as well as the air quality and climate change impacts of its fossil-fuel based generation practices have imposed significant health, environmental and economic costs on TVA constituents. An open and transparent process will allow constituents to recognize the societal costs of various generation resources, form their own priorities based on relevant information, and engage with TVA on the resource decisions that must be made.

To begin, TVA's resource planning process should include regular opportunities for both public and stakeholder input. The announced Stakeholder Advisory Group provides a good platform on which to begin this process. TVA should explain how it intends to ensure that the Stakeholder Group is representing a diverse range of constituents' interests. There are currently several

stakeholders that are not included in the advisory group, including prominent environmental organizations representing a wide range of interests that have been engaging with TVA on resource allocation issues for several years. TVA should address these shortcomings and explain how they chose the participants on the Stakeholder Group and what criteria were used to ensure a comprehensive range of interests are engaging in the process. Providing this information will build trust among TVA's constituents and help ensure a robust resource planning process moving forward.

As the resource planning process progresses, TVA should strive to keep the general public informed at regular intervals. To the extent practicable, understanding that certain information may be proprietary, meetings of the Stakeholder Advisory Group should be open to the public, and transcripts of each meeting should be made available through TVA's website. This will allow TVA's constituents to keep abreast of the issues being considered, the opinions of the various stakeholders, and the decisions that are made based on stakeholder input. If these measures are not adopted, TVA should address how it intends to keep the public informed as the process progresses and allow for public participation in the decision-making process as it is occurring.

By necessity, a high level of public engagement in the resource planning process must be accompanied by a high level of transparency. The resource planning process will involve complicated modeling that will necessitate decisions at several points throughout the process. While providing an opportunity for public input into each decision would be impractical, information should be provided regarding the rationale for these decisions, including a description of the assumptions made, risks calculated and the data used. By making this information available for public scrutiny, TVA will increase the credibility of both the decision-making process and the decisions themselves.

Openness and transparency are especially critical given the relationship between TVA and its distributors. Unlike utilities in other states that are regulated by a state utility commission, TVA is charged with acting as both regulatory body and party to contract with its distributors. This relationship gives TVA distributors additional leverage that utilities in non-TVA states do not enjoy over their regulatory bodies. In addition, the presence of the Tennessee Valley Public Power Association and the newly created Seven States Power Corporation gives the distributors unified and well-funded representation.

Given this complicated relationship, TVA should explain how it intends to maintain its role as the PURPA-designated regulatory authority over its distributors. Its role as regulatory authority should be included in the resource planning process, including a fair analysis of the costs and benefits of meeting the goals of PURPA to encourage: (1) conservation of energy supplied by electric utilities, (2) optimal efficiency of electric utility facilities and resources, and (3) equitable rates for electric consumers.

In sum, for TVA to produce a resource plan that has the support of the general public and that provides a responsible approach to meeting future energy demand, the planning process should be as open and transparent as possible. An understanding of how TVA intends to fulfill its legislative mandates, the decision-making process used, and the data upon which decisions are

based will increase the likelihood of maximizing the benefits of TVA's resource allocations and generate support for the planning process and chosen course of action.

II. The resource planning process must be entered into without preconceptions about the adequacy of various resource options or past decisions.

In order to conduct a comprehensive and objective resource planning process, TVA should enter the process without preconceptions about the adequacy of various resource options or past decisions made without the benefit of this planning process. TVA executives have recently made several public statements indicating that conclusions have been drawn about various resources that will be evaluated in this process. These claims include:

- That renewable energy resources are unavailable in the Valley or are too intermittent to be relied on as a generation option;
- That a massive expansion of TVA's nuclear generation provides the only viable option for meeting future energy demand in a carbon-constrained world; and
- That TVA's current efforts at energy efficiency will achieve all realistic potential for reductions in energy demand in the Valley.

However, TVA has yet to release any data to support these contentions.

In contrast, the data that are publicly available demonstrate the viability of renewable energy and a much greater potential for energy efficiency than appears to be appreciated by TVA. Organizations with expertise in evaluating energy resources that have provided these data to TVA include the Southern Alliance for Clean Energy, World Resources Institute, the American Council for an Energy Efficient Economy, the Appalachian Resources Council and the Southeast Energy Efficiency Alliance. The regional perspective described by these organizations is consistent with the national perspective illustrated by numerous organizations and government agencies, such as McKinsey, Lazard, Energy Information Administration, and National Renewable Energy Laboratory. TVA clearly has the burden of proof to justify its claims with analysis that is based on widely accepted data and assumptions that are not narrowly tailored to achieve desired results.

If TVA acknowledges the greater potential for renewable energy and energy efficiency resources in its future, the claim that nuclear generation is the only option for reducing greenhouse gas emissions cannot be supported. TVA's stated goal is to achieve 50% of generation from non-carbon emitting sources by 2020. However, with TVA's planned construction of as many as five new nuclear reactors, it is clear that TVA intends to meet its emission reduction goal almost exclusively with nuclear power. In its *Draft Environmental and Energy Future* (Draft Plan), TVA must reconsider all low carbon energy resources to meet its 50% target.

In order to effectively address these issues, best practices for utility resource planning must be adopted to ensure the full and fair evaluation of all resource options. We appreciated the thorough discussion of TVA's benchmarking efforts on IRPs. However, while it is appropriate to include regionally-relevant IRPs in the benchmarking process, the Southeastern utilities listed have deployed little renewable energy and modest to insignificant energy efficiency resources. In

order to understand how an IRP process can support the appropriate identification of energy efficiency, one must look outside the Southeast.

We appreciate the discussion of the resource planning process mandated upon the Bonneville Power Administration (BPA) through the Pacific Northwest Electric Power Planning and Conservation Act. This planning process includes:

- Comprehensive demand forecasting of at least 20 years with low-to-high range analysis;
- The defining of uncertainties and assumptions;
- A comprehensive risk assessment for each resource option;
- Comprehensive cost-benefit analysis of each resource option including the quantifiable evaluation of environmental costs and benefits;
- The prioritization of energy efficiency and renewable energy; and
- The regular review and amendment of plans to account for changing assumptions and technological advances.

We consider this planning process to be a much better choice than the other types of IRPs included in the benchmarking. It is particularly appropriate given the similarities between BPA and TVA. We encourage TVA to extend its benchmarking to include other utilities that have demonstrated strong track records on energy efficiency and renewable energy. Some that are comparable to the Southeastern utilities benchmarked would include Xcel, Alliant, PG&E, NV Energy and APS. Some large public utilities that are more comparable to TVA distribution utilities would be City of Seattle, Austin Energy, and Gainesville Regional Utilities. If TVA opts for a less stringent and extensive planning process than the one used by the Northwest Power Council, it should fully explain the rationale for this decision in its Draft Plan and make this decision available for public input.

III. The resource planning process must involve a comprehensive and objective evaluation of all resource options, including the full costs, benefits, and risks associated with each resource option.

a. Energy efficiency and renewable energy should be evaluated as priority resources and planning should be conducted to account for future technological advances.

In recent years, the potential for energy efficiency and renewable energy technologies to compete with traditional generation options has been well documented. In order for a full and fair consideration of these resources to take place during the resource planning process, TVA must fully evaluate:

1. The potential for energy efficiency to provide significant energy demand at a greater rate of return than traditional generation resources through the use of the Total Resource Cost test: This test measures the net cost of a program based on the total cost of the program, including both the participant's and utility's cost.
2. The potential for natural gas resources to act as a bridge between traditional resource options and energy efficiency or renewable energy: Natural gas is a highly-flexible

resource that, when used in combined-cycle combustion turbines, can be operated at high levels of efficiency with significantly lower emissions than coal. Further, natural gas facilities can be designed to have biomass co-firing capabilities, typically with minimal modifications to the turbines themselves. Recent studies indicate that natural gas resources may increase dramatically in the near future, lowering and stabilizing fuel prices.

3. The potential for solar photovoltaic technologies to achieve grid parity in the near future: Industry estimates indicate that the cost of solar photovoltaic technologies will be cost-competitive with other energy resource within 5 to 10 years. This development will lead to rapid growth in this type of generation, reducing the need for new baseload power generation or accelerating the ability to retire aging coal-fired generation facilities.
4. The potential for widespread adoption of electric vehicle technologies: Significant investments are currently being made that will lead to the rapid deployment of electric and electric-hybrid vehicles. With this deployment comes several issues that must be addressed by the resource planning process, including:
 - a. The potential for electric vehicles to provide power storage capabilities;
 - b. The potential burden on peak and off-peak demand due to charging requirements;
 - c. The need for charging stations to be widely available to consumers; and
 - d. The need for grid technologies to be able to communicate effectively with electric vehicles to manage load.
5. The potential to co-fire biomass resources at existing thermal facilities: Co-firing biomass at existing natural gas and coal-fired facilities is often a rapid and cost-effective resource. Biomass resources should be evaluated on their ability to be used sustainably and in a carbon-neutral fashion.
6. The potential for rapid development of wind energy resources both within the TVA service territory and across the nation: Wind energy is rapidly gaining momentum as a viable means of large-scale energy generation. The development of offshore wind resources along the east coast will accelerate this. TVA must explore the possibility of responsibly developing wind resources within the Valley and the potential to tap into large-scale wind generation resources from other parts of the country.
7. The potential for innovative rate designs to change consumer behavior and incentivize investments in energy efficiency: Rate designs have been shown to have a significant effect on consumer behavior and an ability to incentivize investments in energy efficiency. Pursuing this potential resource is squarely in line with the PURPA standards that TVA is currently considering. The resource planning process should include the evaluation of the potential for rate designs to reduce energy demand over the 20-year planning horizon.
8. The potential for increased market penetration of recycled energy technologies: Recycled energy technologies, such as combined heat and power operations, have the

potential to reduce energy demand from industrial consumers. Several barriers to their market penetration exist, including onerous interconnection requirements, undervaluation of excess power, and confusion over environmental permitting requirements. TVA should analyze its ability to advance these technologies, including TVA's ability to incentivize their adoption, and factor the potential energy demand reductions into the resource planning process.

9. The necessary infrastructure improvements that will need to be made over the course of the planning horizon: The full development of renewable energy and energy efficiency resources may require investment in TVA's aging infrastructure. These investments would likely have been made anyway as TVA's infrastructure is nearing the end of its useful lifespan. The resource planning process must account for the potential costs of transmission upgrades to the TVA system.

This planning process provides a clean slate upon which to truly evaluate all resource options on an equal playing field. In terms of energy efficiency, rate designs, and renewable energy, TVA must first make available all data that it currently relies on to make decisions regarding these resources. Additional research needs must then be identified so that a full evaluation can be completed. In addition, TVA should make full use of the independent research that has occurred in recent years to complement TVA's own analysis and inform the resource planning process.

b. All resource options should be evaluated based on their total societal costs and benefits to determine the best mix of resources to meet TVA's future energy demand.

As a federal agency and public power provider, TVA's mission is to operate in a manner that maximizes benefits to the residents of the Tennessee Valley. By necessity, this mission must include efforts to minimize the external costs of TVA's power generation. Impaired air quality, global warming, damaged ecosystems and wealth transfer to other regions of the nation are all costs that must be considered when planning for meeting future energy demand. Typically, the costs are externalized, but as the Kingston ash spill and the court's decision in *Tennessee Valley Authority v. North Carolina* exemplify, these costs are ultimately forced back on TVA, and subsequently on its constituents. The resource planning process must be designed to account for these external costs of power generation.

On the other hand, resource allocations can also have external benefits that TVA should also evaluate in the resource planning process. These external benefits include such things as economic growth, improved health, and increased value of natural resources. In order to maximize TVA's ability to balance the total costs and benefits of resource options, the cost-benefit analysis undertaken during the resource planning process must include a full consideration of external costs and benefits and the risks associated with their mitigation. This should involve full modeling similar to that undertaken by the Northwest Power Council as discussed above.

Some issues that TVA must fully evaluate in order to maximize the benefits and minimize costs to its constituents include:

1. The total life-cycle impact of various generation resources on TVA's greenhouse gas emissions: Recent reports by state-government and public interest entities indicate the southeastern US will experience significant impacts from climate change and it should be TVA's goal to mitigate its impact on this process. This requires a full evaluation of the life cycle contributions of various resource options to climate change, including the greenhouse gas contributions associated with:
 - a. The construction of new generation resources;
 - b. The fuel extraction and delivery processes for various fuel sources.;
 - c. The continued operation of existing generation resources;
 - d. The operation of new generation resources; and
 - e. The decommissioning of various generation resources.

 2. The full environmental costs of each resource option, as well as the cumulative effects of multiple resource options, including a comprehensive review of:
 - a. Potential thermal loading of the Tennessee River system due to new and current nuclear generation, including the evaluation of risk scenarios surrounding potential drought conditions in the future;
 - b. The cumulative impacts of radioactive waste accumulation in the Valley;
 - c. The cumulative impacts of the storage and disposal of coal combustion waste, including the possibility of more stringent regulation of coal as in the future; and
 - d. The environmental costs associated with transmission requirements of various resource options.

 3. The societal costs, benefits and potential risks of relying too heavily on a narrow range of resource options: TVA's current generation mix is too heavily dependent on fossil fuels and nuclear, which comprise 60% and 30% of TVA's generation mix respectively. This leaves TVA susceptible to fluctuations in fuel prices, operating costs, and increased environmental and security requirements. TVA should fully consider the benefits of a well-diversified resource mix that includes non-traditional resources such as energy efficiency and renewable energy.

 4. The full range of societal benefits associated with aggressively developing energy efficiency and renewable energy as resources: Several recent studies have shown increased societal benefits of energy efficiency and renewable energy over traditional energy resources. These benefits include cleaner environments, reduced greenhouse gas emissions, higher rates of job creation, and lowered costs to consumers. These benefits should be included in TVA's resource planning process.
- c. TVA must consider regulatory and societal unknowns in its evaluation of resource options.**

TVA must fully evaluate the various risks associated with each resource option in order to produce the mix of resources that is most likely to maximize societal benefits and minimize

societal costs. This includes a comprehensive evaluation of regulatory and societal unknowns that will impact TVA's ability to develop particular resources or will significantly impact load forecasting. In the resource planning process, TVA must account for the uncertainty associated with:

1. The instability of economic conditions: The possibility of future economic downturns must be considered in the resource planning process. The current economic downturn has reduced overall demand in the Valley by 5% and similar economic conditions could significantly reduce the amount of new generation that is required to meet future energy demand.
2. The potential for comprehensive climate legislation to be passed by Congress: Congress is currently debating proposals to significantly limit greenhouse gas emissions in the United States, and such legislation would have a significant impact on TVA's future generation mix. This possibility should be evaluated on a range of factors, including:
 - a. Different levels of targets for greenhouse gas reductions;
 - b. Different costs associated with carbon emissions; and
 - c. Different timelines for compliance.
3. The potential for renewable energy and energy efficiency resource standards to be passed by Congress: Congress is also currently debating proposals for mandated levels of energy efficiency and renewable energy. The resource planning process should evaluate this possibility in terms of:
 - a. The level of renewable energy and energy efficiency required;
 - b. The possible timeframe for compliance;
 - c. The inclusion or exclusion of various resource options that will qualify;
 - d. The ability of TVA to comply with any requirements within the timeframe allowed; and
 - e. The potential cost of purchasing credits due to TVA's inability to comply with renewable energy and energy efficiency requirements.
4. The potential for increased security and safety requirements for new and existing nuclear facilities: There are significant concerns over the safety of nuclear facilities, both in terms of potential accidents and potential attack by domestic or foreign terrorists. TVA must account for the possibility of significantly increased regulatory requirements for the construction and operation of nuclear facilities. The risks associated with increased security and safety regulations that must be addressed include:
 - a. Increased cost due to changing requirements for the physical characteristics of the facility;
 - b. Increased cost of permitting and inspection due to both increased reporting requirements and the delay in adjusting to new regulatory regimes;
 - c. Increased cost of on-site radioactive waste storage;
 - d. Increased cost due to restrictions on movement of radioactive waste;

- e. Increased cost due to the unfamiliarity of the industry with new technologies and requirements;
 - f. Increased cost due to security requirements (staffing, inspection, etc.)
5. The potential for Recovery Act funding for energy efficiency and renewable energy to impact TVA's future load requirements and ability to develop energy efficiency and renewable energy resources: The American Reinvestment and Recovery Act has provided significant funding for energy efficiency, renewable energy and research and development efforts. It is likely that these programs will have an impact on TVA's future load requirements and TVA should include an evaluation of this potential in the resource planning process. Energy efficiency programs will reduce future energy demand; renewable energy projects on a state and local level will provide both a resource option for TVA and facilitate the continued expansion of these resources; and expanded research and development efforts will increase the speed by which solar photovoltaic achieve grid parity. These factors will have a large impact over the 20-year planning horizon and must be fully evaluated and accounted for.

IV. The resource planning process should include regular review and amendment to allow for the inclusion of changing assumptions and new opportunities.

One of the key elements to true integrated resource planning is the inclusion of regular review and amendment of resource plans to allow for the inclusion of changing assumptions and new opportunities due to technological advances. TVA has made no mention of a plan for periodic review and amendment of *TVA's Environmental and Energy Future*. In contrast, resource planning across the nation includes this provision. The Northwest Power Council, for example, requires a new planning process every five years to reevaluate the assumptions and conclusions of its previous plan. In addition, the planning process required by the state utility commissions in several TVA-served states, including Georgia, North Carolina, Kentucky, and Virginia, requires regular review and amendment of utility resource plans every two or three years.

Without regular review of TVA's resource plan, the likely scenario is similar to what we are experiencing today: TVA diverging from its 20-year plan through piecemeal decisions based on possibly inadequate information and without meaningful public participation. True integrated resource planning remedies this through a formal review and amendment process. The review and amendment is accomplished by following the same modeling process that is used for the original planning process, accelerated due to the institutional knowledge gained during the original plan development.

To ensure a robust planning process well into the future and the flexibility to adjust to changing conditions, TVA must adopt a process for regular review and amendment of *TVA's Environmental and Energy Future*.

V. Conclusion

These comments provide a long list of issues that must be addressed in order for TVA's upcoming resource planning to provide a true evaluation of all resource options for meeting

future energy demand. The Southern Alliance for Clean Energy strongly recommends that the resource planning process include a full and objective evaluation of the issues outlined here as well as the full suite of issues that surround energy generation in a carbon-constrained world. Further, in its *Draft Environmental and Energy Future*, TVA must fully document how each of these issues was evaluated and the outcome of these evaluations. If certain issues addressed here are not evaluated, TVA must explain the reasoning behind this decision along with a full explanation of the modeling process used to ensure that the final course of action will provide the maximum societal benefits while minimizing costs.

Respectfully submitted,

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