



400 West Summit Hill Drive, Knoxville, Tennessee 37902

February 2, 2022

U.S. House of Representatives
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515-6115

To:

The Honorable Chairman Frank Pallone, Jr.
The Honorable Chairman Bobby L. Rush
The Honorable Chair Diana DeGette
The Honorable Chairman Paul Tonko

Thank you for your January 13, 2022 letter and inquiry regarding the Tennessee Valley Authority's (TVA) progress in meeting its statutory mission to pursue the physical, social, and economic development of the Tennessee Valley, and to make life better for those we serve. I appreciate the opportunity to engage with you and your staff on these important issues and look forward to the ongoing dialogue.

Every day, 10 million people across the seven-state Tennessee Valley region depend on TVA to be their low-cost, reliable energy provider to generate and deliver the energy that powers their lives and the region's economy.

Our 10,000 dedicated employees, 60% of whom are represented employees¹ and nearly 20% of whom are veterans, rise to that challenge, ensuring the lights come on for our customers. Our teammates are adapting and innovating, while never losing sight of the unique, long-standing mission TVA has been carrying out for nearly nine decades:

- Providing low-cost, reliable, resilient energy;
- Fostering the economy by stimulating capital investment and jobs growth; and
- Preserving and protecting the environment and the lands and waters that have been entrusted to us.

This is our sole mission – one grounded in our passion and commitment and rooted in the TVA Act of 1933.

TVA is the nation's largest public power provider. Unlike investor-owned utilities, we do not seek to make a profit each quarter or year. TVA's business model is based on generating the

¹ TVA has strong relationships with its union partners, recently becoming the first employer to sign two 10-year agreements with major unions representing both its contractor and full-time workforce. See <https://www.tva.com/newsroom/press-releases/tva-announces-historic-extension-of-labor-agreement>; <https://www.tva.com/newsroom/press-releases/tva-extends-trades-and-labor-contract>.

revenue needed to manage our system costs while keeping rates low for our customers – all without receiving federal appropriations. Our revenues are used to support the communities we serve through investments to build cleaner generating facilities and integrate renewables, strengthen energy efficiency programs and enhance the transmission system that carries reliable, resilient energy to customers' homes and businesses. Our investments also support the critical partnerships we have with 153 Local Power Companies (LPCs).

TVA agrees that climate change is one of the major challenges that our nation and that the world faces today, and it must be responded to with innovation and urgency. TVA is aligned with the Biden Administration, as well as other stakeholders, in that reducing carbon emissions across the economy must be a shared priority. Working in partnership with our 153 LPCs, TVA has achieved inspiring results. For more details, you can visit our [Sustainability Report](#).

TVA is a national leader in carbon reduction, but we know there is more to do. We are executing an industry-leading plan to reduce carbon emissions, which builds upon our progress – having already slashed carbon emissions by 63% from 2005 to 2020. We are proud that these efforts have positioned TVA as the leader in carbon emissions reductions in the Southeast. As we look ahead, we are executing a plan to reduce carbon by 70% by 2030 and have a path to an 80% reduction by 2035 – without affecting energy costs, reliability, or resiliency. We continue to invest in emerging technologies, including energy storage, electric vehicle evolution, decarbonization options, connected communities, regional grid transformation, and advanced nuclear solutions.

Beyond 2035, we aspire to achieve net-zero emissions by 2050 and are actively pursuing and researching the technologies needed to get there. This highlights the need for accelerated innovation not only by TVA, but also with the support and resources from other federal agencies and peer utilities. We recognize our role and are prepared to lead these initiatives.

Even now, TVA is having critical conversations with others in the utility industry and other major sectors (such as transportation), policymakers and our communities to determine cost-conscious and equitable solutions to achieve this ambitious net-zero target. The ongoing transition to cleaner energy must be intentional and balanced to deliver the greatest value for the 10 million Americans that we are privileged to serve, and ensure no one is left behind in that transition. This is particularly important given the Tennessee Valley region has a unique set of challenges including widespread areas with depressed incomes, harsh summers and winters, severe weather events, and aging and energy-inefficient housing.

At TVA, our approach is multi-faceted:

Maintaining affordability, reliability, and resiliency while reducing carbon emissions: TVA is balancing the pace of our clean energy transition with our obligation to provide affordable, reliable, resilient power. Nearly 60% of the energy we generate today comes from carbon-free sources. We are on a path to increase that percentage over the next decade, while continuing to deliver 99.999% reliability as we have each year since 2000.

Our existing generation fleet includes the nation's third largest nuclear fleet, which generates safe, reliable, low-cost, carbon-free power and meets approximately 40% of the energy needs of TVA's service territory. To achieve our carbon reduction goals in the future, TVA is actively exploring options to construct new nuclear generation at the Clinch River Site in east Tennessee. This first-of-a-kind construction is dependent on additional funding sources for the project.

We are rapidly increasing renewable resources on our system. Over the past several years, TVA has contracted over 2,300 megawatts of solar capacity expected to come online by the end of 2023 with total additions of 10,000 megawatts by 2035. These new resources will complement TVA's existing hydro fleet, which represents 16% of our portfolio, and TVA will continue to review and consider additional opportunities for wind. Regardless of our inability to take advantage of renewable energy credits, we remain committed to these new renewable targets.

TVA is also championing the expansion of renewable resources by its LPCs. All of the 146 LPCs that signed a long-term agreement with TVA have the option to procure 5% of their energy from non-TVA sources, representing an additional 2,000 megawatts of solar potential. LPCs are taking advantage of this option – there are 15 solar projects underway and two solar projects already in operation. TVA is enabling the increase in renewables while also maintaining reliability with our generation when these intermittent resources are not available. This further reinforces the value of the long-term agreements between TVA and its customers.

In addition to enabling greater levels of renewables, our investments in future natural gas generation enable additional retirements of older coal-fired units with higher carbon intensity and provide additional reliability, complementing the increased renewable resources.

Prioritizing a low-cost approach: TVA understands the importance of maintaining affordable rates. Our current residential rates are lower than 80% of large utilities in the country, and we plan to keep base rates flat until 2030 – a commitment that stands out in the industry. Additionally, our industrial customers benefit from rates lower than 95% of customers served by the largest utilities in the country.

Recognizing that energy costs can create a burden for economically challenged households and communities, TVA employs a least-cost planning approach consistent with the TVA Act to deliver energy at rates as low as feasible. Consistent with this approach, TVA selects economical resources that ensure continued reliability of the system. And our strategy for new intermittent renewable resources is executed in a way that does not unfairly shift costs.

We have taken numerous steps over the past eight years to ensure low rates: removing \$800 million of annual operating and maintenance costs, reducing our overall debt by \$7 billion, lowering annual interest expense by \$200 million, lowering our fuel cost by \$1 billion per year, and offering partnership and pandemic relief and recovery credits to our customers. These efforts have resulted in a 4% reduction in TVA's overall wholesale electric rates. Although TVA has not received any federal appropriations over that time, our strategic financial efforts have

enabled TVA to reduce its debt to the lowest level in 30 years. I would encourage you to review the February 2021 [Lazard, Freres & Co. report](#)² on TVA's financial performance.

Strengthening energy efficiency programs and economic development: While working to keep costs as low as feasible, TVA is also working alongside our 153 local power companies to make energy efficiency programs available to every household and business in the region. This is a shared responsibility with our LPCs.

TVA has transitioned our energy efficiency programs to address gaps that are otherwise not being addressed by market and regulatory changes. Our objectives are not to preserve load. Instead, we continually study the best way to confront this important issue and have emphasized outreach in lower income communities. In recent years, we partnered with LPCs to establish the Home Uplift program, to provide guidance to low-income residents on how to make their homes more efficient. This has resulted in saving participants more than 25% on their energy bills. In December, we reached a significant milestone – with more than 500 homes upfitted through the program – in the Memphis area alone – and we were proud to do this in partnership with Memphis Light, Gas & Water, as well as the City of Memphis. In total, TVA has partnered with LPCs and others in the TVA region to complete over 2,600 home uplifts to date.

TVA also has an enviable track record in driving economic development – one of the three essential parts of our mission pursuant to the TVA Act. In the last year, we have seen a significant uptick in companies selecting to locate in our service territory, citing the benefits of TVA's affordable reliable, resilient, and increasingly clean energy. Our unwavering commitment to economic development has helped create and retain 80,000 jobs and \$8.8 billion in capital investment – all amidst the pandemic. Over the last five years, TVA has helped attract or retain 350,000 jobs for the region and \$45.9 billion in capital investment.

TVA is proud to serve 10 million people and over 775,000 businesses across seven states in partnership with our LPCs. We recognize our important role in accelerating the energy transition for the region – and we are prepared to collaborate and help identify cost-effective, equitable energy solutions that position the Tennessee Valley region to lead the way to a cleaner, more sustainable future.

²Lazard Report to the Tennessee Valley Authority, [https://s25.q4cdn.com/191816265/files/doc_downloads/lazard-report-information/TVA-Strategic-Assessment_vF\[4\].pdf](https://s25.q4cdn.com/191816265/files/doc_downloads/lazard-report-information/TVA-Strategic-Assessment_vF[4].pdf)

In closing, please find attached specific responses to your questions. I would also encourage you to explore the detailed resources included throughout the letter for more context, as well as our [FY 2021 Annual Report](#),³ [Strategic Intent and Guiding Principles](#)⁴ document, and [Sustainability Report](#).⁵

Thank you for the opportunity to share information and dialogue on these critical issues facing our nation. Please consider TVA both a partner and a resource going forward.

Sincerely,



Jeffrey J. Lyash
President and Chief Executive Officer
Tennessee Valley Authority

³ FY 21 Annual Report, <https://www.tva.com/annualreport>.

⁴ May 2021 TVA Strategic Intent and Guiding Principles, <https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/about-tva/board-of-directors/may-6-2021/strategic-plan-documentc67079e2-d479-4f3d-a13b-1fa6fd714cde.pdf>.

⁵ FY 2020 Sustainability Report, https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/environment/tva-sustainability-report-fy2020.pdf?sfvrsn=a194b897_7.

**TVA's Responses to the January 13, 2022, Letter from the
Committee on Energy and Commerce of the U.S. House of Representatives**

1. Please provide the percentage of TVA's annual energy savings from energy efficiency for each year from and including 2014 to present. Please describe how TVA defines "energy efficiency" for purposes of these calculations.

Evolving market conditions have led TVA to shift its energy efficiency programs to focus on specific needs, especially reducing energy burden for low-income residents in the Valley, while continually studying ways to further improve its incentive offerings.

Listed below are the percentages of TVA's annual energy needs provided by TVA energy efficiency (EE) programs for fiscal year (FY) 2014 through FY2021, followed by high-level context on the evolution of TVA EE programs over the past 15 years. The US Energy Information Administration (EIA) defines energy efficiency as using less energy to provide the same level of energy services. Examples of energy-efficient practices include replacing incandescent light bulbs with compact fluorescent or light-emitting diode (LED) bulbs and purchasing energy-efficient appliances and electronic equipment. The cumulative net impact of TVA EE programs since 2007, based upon industry-standard evaluation, measurement, and verification practices conducted by a leading industry consultant (DNV), can be compared to TVA sales to show how TVA programs have reduced energy needs in the region each year:

FY2014	0.9%
FY2015	1.0%
FY2016	1.2%
FY2017	1.3%
FY2018	1.4%
FY2019	1.5%
FY2020	1.5%
FY2021	1.4%

In addition, energy efficiency impacts driven by evolving codes and standards have reduced TVA energy sales by about 5-6% over this same time frame.

To spur the energy efficiency market, TVA initiated the most recent wave of EE efforts in 2007 and steadily grew the program to contribute about 1.5% of sales by 2019. The evaluation, measurement, and verification of TVA programs showed that these efforts were effective in spurring the market and more consumers in the Valley were now choosing more efficient options for their electricity needs without needing an incentive. Since FY 2019, the net contribution to reducing electricity needs in the Valley has remained relatively steady. Earlier EE impacts have declined as customers replace lighting, appliances, and HVAC with more efficient technology now required by current codes and standards. As this shift has occurred, TVA continues to offer a broad suite of EE programs to our customers and has shifted the emphasis for incentives to those with the greatest energy burden, explained in more detail in responses to following questions.

2. Please describe TVA's energy efficiency programs from 2014 to present. In doing so, please provide the annual amount of funding for each energy efficiency program, the rationale for any funding changes, and the number of households assisted annually through TVA's energy efficiency programs.

TVA's energy efficiency programming has evolved over time as a result of changes in the marketplace for energy efficiency technologies and changing needs of the TVA energy system. Muted growth in Valley electricity demand can be attributed to several social and environmental factors, including improved building practices due to U.S. Department of Energy (DOE) codes and standard adoption; technological advancements leading to increasingly efficient appliances; and changes in consumer preferences toward more environmentally friendly products, such as LED light bulbs. While TVA's past energy efficiency programs also impacted Valley consumers' energy consumption, these impacts have been greatly surpassed by market-driven efforts.

Therefore, TVA has become more targeted with energy efficiency efforts in recent years. While TVA continues to partner with local power companies to offer energy efficiency education and advice for all market sectors, TVA currently places more emphasis on forming partnerships and catalyzing investment in programs that help consumers and organizations that have been left behind by market-driven efforts to help them reduce their energy burden.

This is a list and description of TVA's current EE programs, followed by a chart showing annual funding for the requested period:

- **EnergyRight Business and Industry:** Programs for Valley businesses that encourage technologies and upgrades that save energy. These include offerings targeted at schools and underserved communities, as well as online energy-saving tools, strategic energy management training, and incentives for targeted technologies.
- **EnergyRight Residential:** Programs for Valley residents and builders that encourage technologies that meet or exceed base codes and standards. Services include access to a quality contractor network, financing options, energy education, and more.
- **EnergyRight Residential – Low Income (LI):** Partnership between TVA, LPCs, and other funding partners to provide no cost energy upgrades to income-qualified Valley residents. TVA also supports, and helps administer, federal weatherization assistance and low-income home energy assistance programs.
- **Federal Facilities Compliance Agreement (FFCA):** Between 2013 and 2018 TVA invested \$240 million into energy efficiency programs, as part of an FFCA between TVA and the Environmental Protection Agency. These programs included Voltage Optimization, Smart Energy Communities, Whole Home Efficiency Upgrades, Commercial Custom and Prescriptive Efficiency Upgrades, and Industrial Custom and Prescriptive Efficiency Upgrades.

Annual Funding:¹

TVA Energy Efficiency Spend by FY (\$M)	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	Grand Total
EnergyRight Business and Industry	4.1	26.9	19.0	33.6	15.5	3.7	1.0	4.1	107.8
EnergyRight Residential	9.0	16.3	25.4	28.5	14.4	8.7	6.8	6.9	116.1
EnergyRight Residential - LI	2.8	3.4	2.0	1.7	6.8	10.5	7.9	13.0	48.0
EnergyRight Residential - LI Funds Leveraged	-	-	-	-	1.8	2.1	2.0	8.8	14.6
Grand Total	16.0	46.6	46.4	63.8	38.4	24.9	17.6	32.8	286.5
Federal Facilities Compliance Agreement	66.6	36.9	41.1	26.9	1.4	2.3	0.9	1.0	177.1

As the chart reflects, TVA spent \$13 million, along with \$8.8 million in matching contributions from LPCs and others, in FY 2021 to address low-income energy efficiency needs, which includes the very popular Home Uplift program through which TVA and LPCs partner with others to provide funds needed for home energy upgrades and help people save money on their monthly bills.

From FY2014 to FY2021, TVA invested funding into other energy programs. Those programs include Demand Response (\$593M) and Electrification (\$85M). TVA's Federal Energy Services Program (FESP) also helps federal facilities in the Valley meet energy mandates (e.g., climate, resiliency, efficiency, renewables, and electric vehicles (EVs)) and improve aging infrastructure, allowing them to focus on their primary missions. TVA also administers an internal energy management program that creates energy savings at TVA buildings.

In addition to TVA's energy program offerings, local power companies often partner with their local communities to make a difference in the areas in which they serve. Some examples of how LPCs support their communities include: bill pay assistance, high bill audits, loan options, charitable programs, and energy education offerings. The amounts LPC spend on these programs are not included in the total presented in the above.

3. How many local power companies within TVA's service territory offer energy efficiency programs and how many do not? Does TVA offer incentives to local power companies to encourage their participation in energy efficiency programs?

TVA energy efficiency programs and services are available to all 153 LPCs and every LPC participates in at least one program offering. TVA encourages participation through incentives, program platforms, infrastructure, and marketing particularly for low income and underserved communities. Program platforms and infrastructure (e.g., contractor networks, operational systems, and tools) offered through TVA provide economies of scale and turnkey options for LPCs to readily offer EE in their communities. TVA provides direct financial investment and cost offsets for underserved communities to efficiently target TVA's funding to those who need it the most.

4. TVA performed a sensitivity analysis as part of its 2019 IRP that evaluated the effect on TVA's generation portfolio of greater energy efficiency and demand response market depth. Please describe the resource mix resulting from that analysis, and how those results influenced TVA's 2019 IRP.

The 2019 IRP recommendation indicated that energy efficiency could achieve load reductions of up to 1,800 MW by 2028 and up to 2,200 MW by 2038, depending on market depth and cost

¹ The "EnergyRight Residential – LI Funds Leveraged" represents LPC and third-party contributions to TVA's low-income energy efficiency programs.

competitiveness. Various scenarios and strategies were evaluated as part of the IRP process, and after feedback from the IRP Working Group, a sensitivity analysis was performed to evaluate the impact of potentially greater energy efficiency and demand response market depth. This sensitivity analysis informed the upper bound of energy efficiency included in the IRP recommendation, and if additional market depth could be realized, it would displace about 2,000 MW of gas and 2,200 MW of solar capacity expansion by 2038 relative to the base case. The IRP also included recommended near-term actions, one of which was to conduct a market potential study for energy efficiency and demand response, which is further discussed in the following question.

5. Energy efficiency is consistently identified as a low-cost resource critical to reduce greenhouse gas pollution. Will TVA commit to deploying greater amounts of energy efficiency as part of its next IRP?

One of the recommended near-term actions from the 2019 IRP was to conduct a market potential study for energy efficiency and demand response to determine the overall market depth above and beyond what is driven by evolving DOE codes and standards. TVA's Energy Programs Potential Study, expected to be complete in 2022, will help inform TVA's path forward for the next decade as the energy landscape continues to evolve. The study is intended to offer a detailed look at regional opportunities for influencing electric load through various programs, such as energy efficiency, demand response, and electrification. The study will inform TVA's next Integrated Resource Plan as we work with our external stakeholders who represent a broad range of interests from across the Valley at IRP Working Group meetings. Additionally, the study will inform future program design to capitalize on energy efficiency opportunities that can lower total cost while also considering the needs of those with the highest energy burden. TVA commits to investing more into its Energy Efficiency programs, specifically to those hit hard by high-energy burdens, as informed by the results of the Study.

6. TVA imposed a GAC on local power companies in 2018. Internal documents suggest that TVA viewed distributed energy resources as "a threat to our business model" and show that TVA believed the GAC would curtail the deployment of solar energy projects by 40 percent.

In 2018, TVA adopted a modest rate structure change to ensure that costs are not unfairly shifted between those who choose distributed energy resources (DER) and those who do not. TVA has seen no evidence that this rate change materially impacted the adoption of new solar resources in the Valley.

- a. What was TVA's purpose in adopting the GAC?

The 2018 rate change that included the grid access charge (GAC) better reflects the wholesale cost of energy and recognizes the value of the grid's reliability and associated costs. The primary objectives of the 2018 rate change were to continue to improve the alignment of wholesale rates with their underlying costs to serve and to facilitate measured, managed changes in LPCs' retail rate structures.

The "threat" discussed in the 2016-2017 timeframe was that TVA's energy prices over-incentivize consumer installation of distributed energy resources, leading to overall uneconomic results for the people in TVA's service territory. The imbalance created by uneconomic DER investment means that costs are shifted from customers who adopt DER to customers throughout the Valley who cannot afford DER or otherwise do not choose to invest in DER. The GAC was designed to help reduce upward rate pressure by mitigating the effects of uneconomic

development in DER. The intent was to implement changes to enhance the fairness of the rate designs for both TVA and LPCs by diminishing cost shifting among consumers and among LPCs. This modernized approach to pricing provides bill stability while maintaining low rates, reliability, and fairness for all TVA's customers.

- b. Please provide data on whether local power companies served by TVA have passed the GAC along to ratepayers in the form of fixed charges.

The GAC was set at \$0.005/kWh, about 6% of TVA's total revenue. The charge is based on LPCs' rolling five-year energy levels, so it is not a fully fixed charge. TVA has found that only 11 of 153 LPCs submitted requests for some form of fixed charges based on the GAC. Those requests were reviewed and approved under the TVA Rate Review process.

- c. By what percent has the GAC decreased distributed solar installations in TVA's service area?

Given that most of the LPCs' residential rates since October 2018 have had little to no change related to the GAC, TVA expects there has been essentially no or very limited impact on the adoption of distributed solar installations due to the rate change. The public power model in the TVA region has evolved, and TVA is seeking more opportunity to work with LPCs and distributed consumer resources in a way that serves all customers. For example, TVA has worked with LPCs to create contract flexibility that has allowed LPCs to better support their customers' solar needs.

7. What other rate changes has TVA adopted in the last five years and why? In answering this question, please address whether any such changes were intended to "lessen the potential decrease in TVA load that may occur through the adoption of [behind the meter] generation."

TVA has not adopted any other wholesale rate changes in the last five years. The October 1, 2018, wholesale rate change was implemented over two years; approximately 50% implemented that rate change on October 1, 2018, while the remainder implemented the rate change beginning on October 1, 2019. As the market has evolved, TVA has not changed rates further, and is planning for more central renewable generation working alongside opportunities for LPC and distributed consumer renewable resources.

Although TVA has not adopted any wholesale rate changes other than the October 2018 wholesale rate change, the TVA Board has approved two additional rate structure changes over the last two years. The first is applicable to LPCs requesting separate retail rates for customers that self-supply some of their electric requirements. This change supports TVA's and the LPCs' shared focus on sending more accurate pricing signals and aligning rates with costs. The Customer Generator rate classification allows LPCs to both improve cost-based rates for these unique customers, and to send more accurate price signals to them. No LPCs have made a request for this rate classification. The second rate structure change, in November 2020, was an optional wholesale rate for EV Charging and corresponding retail rate, along with changes in policies to encourage widespread EV adoption that benefits consumers.

8. PURPA was intended to promote the development of certain qualifying facilities from non-utility power producers. Please describe the contract length, avoided cost, and other contract terms that TVA offers to qualifying facilities pursuant to PURPA.

TVA's [Dispersed Power Production Program](#)² complies with PURPA and allows Qualifying Facilities to sell all or excess generation to TVA at TVA's avoided cost over a five year term Purchase Power Agreement.

The avoided cost is offered to a Qualified Facility in either a standard flat rate or a time of use rate. These rates, along with additional Program guidelines are addressed in the [Dispersed Power Production Guidelines](#).³ Enrollment in the Dispersed Power Production Program is available online and outlined in the [TVA Dispersed Power Production Registration Process](#),⁴ which includes and makes available the Dispersed Power Production Purchase Power Agreement for the Qualified Facility through the online registration process.

9. According to publicly available data, wind and solar generation account for only three percent of TVA's generation mix, which is significantly less than comparable utilities. Please provide an explanation for TVA's comparative underinvestment in solar and wind resources.

While TVA is already a regional leader in renewable generation, TVA plans to add significant amounts of new renewable generation over the next decade.

Over the last three fiscal years (FY2019-2021), 15% of TVA's total power supply has come from renewable generation sources. In 2018, 14% of TVA's net generation came from renewable resources, which ranks TVA second overall and in the top quartile among investor-owned utility peers located in and around the southeastern region of the United States. Under TVA's 2019 IRP, solar expansion is expected to play a substantial role and increase the percentage of renewable generation on our system. Over the past several years, TVA has contracted for over 2,300 MW of solar capacity expected to come online by the end of 2023 with anticipated total additions of 10,000 MW by 2035, representing a 15-fold increase from today.

10. President Biden's Executive Order 14008 initiated a "government-wide" effort to achieve "a carbon pollution-free electricity sector no later than 2035." How is TVA revising its carbon emission reduction goals in light of Executive Order 14008?

TVA is committed to supporting the Administration's decarbonization goals and is executing a plan that will continue to dramatically cut emissions.

TVA is already a leader among utilities in carbon reduction today. TVA's plans to achieve a 70% carbon reduction by 2030 and approximately 80% by 2035, which TVA believes can be achieved using existing technologies while maintaining reliability and affordability, as we continue to evaluate additional levers for deeper decarbonization.

² <https://www.tva.com/energy/valley-renewable-energy/dispersed-power-production-program>.

³ https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/energy/valley-renewable-energy/dispersed-power-program/january-2022-dppe8ef9233-a335-4479-911f-b3a5a62ed22b.pdf?sfvrsn=4568c802_3.

⁴ https://www.tva.com/docs/default-source/1-float/dpp_customer_process_flow_finala99b8478-07f0-4731-89ce-f65bb2799261.pdf?sfvrsn=22b72ca9_3.

As TVA works to achieve our aspiration for net-zero carbon, TVA can make a unique contribution to President Biden's goal through TVA's innovative developments in emerging technologies including: energy storage, electric vehicle evolution, decarbonization options, connected communities, regional grid transformation, and advanced nuclear solutions. TVA is investing in research and development with peers to achieve utility scale testing and development of these new technologies, and we are working to partner with federal agencies and others to lead the nation in deployment.

Internally, we continue to explore other ways that TVA can accelerate its emissions reductions journey, while maintaining safe, reliable, and low-cost power for our LPCs and the communities TVA serves, consistent with a primary objective of the TVA Act to keep rates as low as feasible and the statutory directive to use least-cost planning principles for the TVA system. TVA remains committed to fulfilling its statutory responsibilities to the people of the Valley while also striving to meet the goals of the Administration.

11. TVA announced in May 2021 that it plans to close its remaining coal fleet by 2035. Please provide a status update on TVA's plans to retire its existing coal fleet and explain whether TVA intends to accelerate the retirement of its existing coal generation portfolio in light of President Biden's carbon emission reduction objectives.

When TVA makes decisions to retire existing assets, it relies on its statutorily mandated least-cost planning principles, a primary objective under the TVA Act to keep rates as low as feasible, and all required environmental reviews.

For example, one of the recommended near-term actions from the 2019 IRP was to evaluate engineering end-of-life dates for aging fossil units to inform long-term planning. The result of this action was to recommend retiring the remaining coal fleet by 2035. Since 2005, TVA has already retired or announced the retirement of nearly 60% of its coal-fired capacity by 2023 when TVA's Bull Run plant will be retired. Additional coal retirements are anticipated by 2030, with the remaining coal-fired plants anticipated for retirement by 2035. This date is consistent with President Biden's carbon emission reduction objectives. TVA will prepare environmental reviews pursuant to the National Environmental Policy Act (NEPA) prior to retiring or building a plant. TVA is currently conducting environmental reviews evaluating potential retirements at the Cumberland Fossil Plant (Cumberland) and Kingston Fossil Plant (Kingston), along with evaluation of replacement generation.

12. What is the status of TVA's environmental impact statement on the planned retirements of its Cumberland and Kingston coal plants? Please describe the factors that TVA will consider, including carbon emissions and upstream methane emissions, in deciding whether to replace its coal plants with new fossil, renewable, or nuclear generation assets?

TVA is preparing separate Environmental Impact Statements (EIS) for Cumberland and Kingston (the "Plant" or collectively the "Plants") to assess the environmental impacts associated with the potential retirement of each Plant's coal-fired units and the construction and operation of facilities to replace part or all of the retired generation.

Scoping for each EIS occurred in 2021 and included 30-day public comment periods as well as virtual public meetings. Resource impacts analysis for these proposed retirement/replacement projects is currently underway. TVA plans to release the Draft EIS for Cumberland in April 2022. The Draft EIS for Kingston is planned for release in late summer 2022. TVA will solicit public input on both draft documents.

In each EIS, TVA is considering a no-action alternative (i.e., continuing to operate the Plants) and the following three action alternatives: (i) retirement of the Plants and construction and operation of a combined cycle combustion turbine gas plant at the Plant sites (and, in the case of Kingston, the potential for an additional simple cycle combustion turbine gas plant); (ii) retirement of the Plants, investment in local and regional transmission in the case of Kingston, and construction and operation of simple cycle combustion turbine gas plants at alternate locations; and (iii) retirement of the Plants and construction and operation of solar and storage facilities, primarily at alternate locations. The scope of the potential alternatives considered in each EIS may increase, decrease, evolve, or change based on comments received and TVA's analysis of the reasonableness of those alternatives. Retirement options also will include the demolition of the Plants. Related actions, such as the construction of natural gas pipelines and transmission upgrades, also will be considered as a part of the EIS processes. The Federal Energy Regulatory Commission will conduct a separate NEPA review on any proposed natural gas pipelines that may be needed for any alternative.

As part of the EIS process, TVA considers the biological, cultural, and socioeconomic impacts of each alternative, including impacts on land use, air quality and greenhouse gas (GHG) emissions, water use, hazardous and solid waste, and environmental justice. TVA will assess GHG emissions as part of the climate analysis in the EIS being developed for the Plants. TVA will also consider GHG lifecycle analysis based on available published resources/reports similar to those used in our 2019 IRP EIS.

Factors considered by TVA in deciding whether to replace a coal asset with new fossil, renewable, or other generation source include, but are not limited to (1) the environmental impacts of the replacement alternatives assessed in the Cumberland and Kingston EIS; (2) the importance of maintaining safe, reliable and low-cost power for the LPCs and communities we serve; and (3) the statutory mandates to keep rates as low as feasible and to utilize least-cost planning principles in making resource planning decisions.

13. According to the Environmental Protection Agency (EPA), methane is the second-most abundant anthropogenic greenhouse gas and is significantly more potent than carbon dioxide at trapping heat in the atmosphere. A large percentage of methane emissions from natural gas occur at the wellhead and in transport on pipelines.

TVA sees natural gas as an important part of its clean energy future because it serves as an enabler for coal retirements and larger amounts of renewable resources today. At the same time, TVA supports both market-driven and regulatory actions minimizing methane leakage from the natural gas supply chain.

- a. Given TVA's statutory obligation to act as a leader in environmental stewardship, what actions is TVA taking to reduce its reliance on natural gas?

Natural gas currently remains the best available resource that allows TVA to backstop the intermittency of solar generation. One of the biggest challenges of renewables is their intermittent nature. Businesses and homeowners need and expect a steady and reliable source of electricity. Natural gas has a valuable role to play as a complement to renewables and provides a backstop to their inherent intermittency. TVA is also investing in battery storage that could provide this backstop. Current battery technologies are still more expensive than gas options, and they generally store only up to five hours of power for the grid. TVA continues to invest and partner in bringing this technology forward faster, and TVA plans to add battery storage as prices come down and technologies evolve.

Moreover, combustion turbine units fueled by natural gas hold promise in further contributing to a net-zero future using alternative fuels, such as hydrogen, and/or carbon capture and sequestration (CCS) technology. TVA is exploring partnerships with federal agencies and peer utilities to advance the research and development of both alternative fuels and CCS technology, which could enable their use at existing or future TVA gas facilities.

- b. To the extent TVA continues to rely on natural gas generation, will TVA commit to procuring natural gas from companies that focus on minimizing methane emissions?

Methane emissions occur during the sourcing and transportation of natural gas, but studies from the National Renewable Energy Laboratory as well as the National Energy Technology Laboratory have demonstrated that the GHG life cycle emissions for natural gas are substantially less than coal. [Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update \(nrel.gov\)](#).⁵ In addition, the natural gas industry is working to reduce methane emissions from gas extraction and transportation even further.

One natural gas supplier, Kinder Morgan, filed a tariff change with FERC to be effective March 1, 2022, to implement a responsibly sourced natural gas (RSG) supply aggregation pooling service. RSG is third-party certified natural gas that meets certain environmental, social and governance standards, particularly related to methane emission reductions. This recognizes a need to eliminate methane emissions and promote market forces driving more sustainable production standards across the gas supply chain. TVA has already filed supportive comments relative to Kinder Morgan's proposed tariff change.

In late 2020, Congress ordered pipeline companies to update their inspections and maintenance plans to find ways to reduce methane emissions, ordering the Pipeline and Hazardous Materials Safety Administration (PHMSA) to check those plans with inspections. The interstate gas pipeline companies are supportive of the effort on methane and already working to reduce GHG emissions. Further, Congress ordered pipeline companies to update their inspection and maintenance plans to include methane emissions reductions by the end of 2021.

In addition, the Environmental Protection Agency recently proposed a rule that would limit emissions of methane from facilities in the oil and gas sector. The EPA projects that, by 2030, its proposed oil and gas sector rule would reduce methane emissions from covered facilities by 74% relative to their emissions in 2005. These benefits would accrue to the natural gas procured by TVA for its gas plants.

TVA has and will continue to partner with natural gas suppliers who are seeking to reduce methane emissions in the natural gas supply chain, including through voluntary third-party certification of responsibly sourced gas (RSG). RSG certification, along with regular monitoring, ensures that produced natural gas meets the highest standards of responsibility with respect to air, water, land, and community, including meeting certain environmental, social and governance (ESG) standards. TVA is evaluating how best to incorporate RSG into its supply portfolio and has met with and sought proposals from numerous natural gas producers who have achieved or are actively seeking such certification under various programs including Project Canary, Equitable Origin, and MiQ.

14. TVA's 2019 IRP sensitivity analysis indicated that "higher natural gas prices" would increase TVA's procurement of solar capacity by 2,050 MW. According to correspondence from TVA, fossil fuel price volatility in 2021 has led to rising fuel costs that will be reflected in consumer

⁵ <https://www.nrel.gov/docs/fy21osti/80580.pdf>.

bills. How will TVA account for the increased volatility of global fuel prices in deciding whether to deploy additional fossil-powered generation, including in its decision as to how to replace the Cumberland and Kingston coal plants?

TVA considers all elements of cost related to the construction and operation of a resource in system planning. When evaluating fuel cost, TVA uses a risk-informed range that accounts for variations in price and volatility. As fuel prices and fuel price volatility change, TVA will incorporate updated projections in exercising its least-cost planning mandate.

Over the past 15 years, TVA's portfolio has become increasingly diverse, which reduces the impact of any one variable on cost or reliability. While not immune to the effects of market fluctuations in the price of commodities that are critical to operations, TVA manages the overall impact of fuel price volatility to our customers through its portfolio diversity, fixed price commodity contracts, and other programs and processes. These efforts have collectively resulted in TVA achieving the lowest fuel expense per megawatt hour as compared to investor-owned utility peers located in and around the southeastern region of the United States.

15. In 2019, this Committee requested TVA explain whether its participation in the Utility Air Resources Group (UARG) funded lobbying or litigation activities to defeat public health and welfare regulations. Although TVA denied that its funds were used for those purposes, a recent Evaluation Report from TVA's Office of the Inspector General (OIG) investigating the authority's participation in UARG was "unable to determine if [TVA] funds were used for lobbying or litigation."

- a. Given the inconclusiveness of the OIG report, what safeguards or other measures has TVA adopted to ensure that ratepayer funds are not spent on lobbying or litigation opposing public health and welfare regulations?

TVA's Board practices and future implementation of the OIG's recommendations will further ensure that ratepayer funds are not spent on activities prohibited by the TVA Board.

The TVA Membership in External Organizations Board Practice permits TVA's membership in outside organizations so long as TVA funds are not used for lobbying or litigation on behalf of TVA without TVA's express authorization. To ensure compliance with this Board Practice, TVA includes in its membership agreements with these organizations a provision that specifically prohibits the use of TVA funds for lobbying or litigation. These external organizations do not administratively segregate funds. Consequently, in the final report on its investigation, the OIG stated:

We found no evidence TVA was out of compliance with the TVA Membership in External Organizations Board Practice. We did not identify any evidence of direct lobbying or litigation on behalf of TVA; however, the external organizations do not administratively segregate TVA funds, so we were unable to determine if funds were used for lobbying or litigation. We found all contracts or membership agreements contained required language limiting the use of TVA funds for prohibited activities such as litigation or lobbying; however, TVA does not have a contract or membership agreement with one of the six external organization.

The OIG also stated, "We did not identify any litigation activities on behalf of TVA by any of the three organizations that engaged in such representation" and "[w]e found no documents

indicating TVA's participation in potential litigation." Similarly, the OIG stated, "During interviews, representatives of the organization stated that although they did engage in lobbying activities, those efforts were not on behalf of TVA" and "[w]e did not find any documents or materials suggesting the organizations advocated on behalf of TVA."

In addition to recommending specifically that TVA implement a written agreement with the one external organization referenced by the OIG, the OIG report offered two general recommended Opportunities for Improvement: "(1) provide training of employees participating in committee or leadership roles in external organizations, and (2) [] coordination of all memberships in external organizations with the [TVA Office of General Counsel] to confirm compliance with all legal and ethical requirements." As reflected in the OIG's report, "TVA management agreed with the recommendations." TVA is in the process of finalizing a contract with the external organization referenced by the OIG, and TVA is currently developing training and processes to ensure coordination with TVA's OGC in accordance with the OIG's general recommendations.

16. After UARG disbanded in 2020, TVA executed an agreement with attorneys formerly representing UARG to monitor Clean Air Act regulatory developments, possibly under the guise of the Clean Air Act Monitoring Services and the Climate Legal Group. That contract barred the use of TVA funds for any "[Clean Air Act] or other litigation." However, an amendment to the contract executed in 2021 now permits those attorneys to represent TVA in litigation "without limitation."

- a. Are any TVA funds, including funding for the Climate Legal Group and Clean Air Act Monitoring Services, paying for lobbying or litigation to contest health and welfare regulations, including regulations issued by EPA?

TVA contractually restricts its external membership organizations from using TVA funds for lobbying and litigation, unless specifically authorized by TVA.

The contract that the Committee references for monitoring of Clean Air Act (CAA) regulatory developments was for services provided by a law firm, McGuire Woods, to keep TVA apprised of CAA developments. With respect to the CAA services, McGuire Woods was prohibited from providing litigation support. The contract contains a general restriction on the use of TVA funds for lobbying which applies to all work provided by the firm. The CAA services were terminated as of December 31, 2020.

Separate from the CAA services that terminated on December 31, 2020, TVA conducted a Request for Proposal (RFP) process in 2020 to select a small group of firms that could provide TVA with a broad range of legal services. As a result of the RFP, McGuire Woods was selected, along with four other firms, as a panel firm available to provide a broad range of legal services to TVA, and its contract was amended to allow McGuire Woods to provide many types of services, including litigation. To date, TVA has not authorized any litigation services under this contract, but it may do so in the future.