

**Regional Energy Resource Council (RERC) Minutes  
Tennessee Valley Authority  
April 18 and 19, 2023**

**Meeting location:  
Drury Inn  
Knoxville, Tennessee**

The Tennessee Valley Authority (TVA) Regional Energy Resource Council (RERC or Council) convened for the 4<sup>th</sup> meeting of the 5<sup>th</sup> term, beginning at 8 a.m. Eastern on Tuesday, April 18, 2023. Meeting presentations are available at [www.tva.gov/merc](http://www.tva.gov/merc).

**Council members attending in-person:**

Mike Butler, Erin Gill (Chair), Rebecca Goodman, Rodney Goodman, Chrissy Heard, Candy Johnson, Jonathan Levenshus, Dan Miller, Patrice Robinson, Alexa Voytek, Lloyd Webb

**Council members attending virtually:**

Pete Mattheis

**Designated Federal Officer:** Melanie Farrell

**Designated Federal Officer Alternate:** Althea Jones

**Facilitator:** Jo Anne Lavender

- Appendix A – TVA staff and stakeholders who attended the meeting
- Appendix B – Agenda

**Purpose**

The purpose of the meeting was to provide information on TVA's New Nuclear Program (presented by TVA staff) and new nuclear technologies across industry (presented by a representative from the Nuclear Energy Institute), and to obtain an RERC Advice Statement on TVA's New Nuclear Program. The meeting also included important presentations by TVA staff on TVA's Demand Response Program, its work in the electric vehicles sector as well as how it determines charging rates, and its considerations of two new standards under the Public Utility Regulatory Policies Act (PURPA) of 1978.

**1. Welcome and Introductions**

- A.** Melanie Farrell, TVA Vice President of External Strategy and Regulatory Oversight, and Erin Gill, Chair, welcomed everyone to the meeting.
- B.** Bert Robinson, Director, Government and Community Relations for TVA's East Region, welcomed the RERC members to Knoxville and provided information on the TVA's East Region.
- C.** Bob Deacy, Senior Vice President for TVA's Clinch River project, welcomed the group and described TVA's work and partnerships to evaluate innovative technologies for the future, including small modular reactors (SMRs), as TVA works toward its aspirational goal of net-zero by 2050.
- D.** Jo Anne Lavender, meeting facilitator, welcomed everyone joining in person and virtually. She noted there would be a public listening session on Day 2, and that TVA and the RERC welcome public comments.

E. Jennifer Brundige, with TVA's Office of General Counsel, reviewed the meeting requirements as well as the process for crafting and approving an Advice Statement.

**2. Designated Federal Officer Briefing — Melanie Farrell**  
(Presentation can be found at [www.tva.gov/rrsc](http://www.tva.gov/rrsc))

Melanie Farrell provided an update on TVA activities since the last RERC meeting, including:

- TVA filled its Board of Directors on January 4, 2023, when six new members were sworn in and joined the three other Board members. Joe Ritch, a former Board member, has returned to the Board and will be the new Chair when Bill Kilbride's term expires.
- During Winter Storm Elliott on Dec. 23 and 24, 2022, the extreme weather event prompted unplanned outages at some of TVA's gas and coal plants. TVA asked local power companies (LPCs) to reduce 5% of their load for about two hours on the morning of Friday, Dec. 23, and to curtail 5% to 10% of their load for a five ½ -hour period on Saturday, Dec. 24. TVA organized an After-Action Review Team to evaluate what caused the issues and how to prevent them from happening again. TVA expects the After-Action Report to be released in late April.
- TVA is focused on building the Energy System of the Future. Farrell reviewed recent and upcoming asset decisions, including retiring both units at its Cumberland Fossil Plant and building a combined-cycle natural gas facility to replace one of the units by 2026; exploring new pumped storage and considering possible locations; evaluating new nuclear technology; and reviewing proposals submitted for TVA's request for proposal for carbon-free sources.
- TVA is partnering with the Baker Center for Public Policy at the University of Tennessee to evaluate what can be done to decarbonize the Tennessee Valley region. The Valley Partner Study will determine a baseline for carbon emissions in the region and evaluate how all sectors can work together to reduce carbon emissions.
- TVA has established the Hydropower Technology Development Partnership with the U.S. Department of Energy to ensure TVA stays abreast of the latest hydropower technology and engages in discussions related to climate change and the best ways to operate the river system in these times of change.
- TVA published its second annual Diversity, Equity, Inclusion and Accessibility (DEIA) Report this spring.
- Farrell highlighted TVA's Signature Transformative Innovation Initiatives, which include electric vehicle evolution, connected communities, regional grid transformation, future grid performance, storage integration, decarbonization options, and advanced nuclear solutions.

## **QUESTIONS/ANSWERS**

Questions and answers related to Farrell's presentation include:

- Lloyd Webb noted that Interruptible Power significantly supported load during Winter Storm Elliott.
  - Farrell agreed that it helped keep the bulk system stable during the storm.
- Mike Butler asked about TVA's strategies for mitigating a situation like the one during Winter Storm Elliott as new technologies are brought onto the system.
  - Farrell said TVA does both long-term planning, such as the upcoming Integrated Resource Plan, and short-term planning, which considers factors such as weather and how to manage the load within a 10-day window. TVA knows there are additional assets that will need to be built, and its long-term planning

considers that. At the same time, it is studying what it can do to harden the existing system while also relying on products such as demand response and energy efficiency to reduce the load.

- Scott Hunnewell, Vice President, TVA New Nuclear Program, said TVA learned from the power outages that occurred in Texas in 2021 and took steps to harden its nuclear fleet, which operated well during Winter Storm Elliott.
- Mike Butler asked how TVA plans for severe weather and how the system would be impacted when it is using 10,000 megawatts of solar.
  - Farrell said TVA maximizes solar when it can, but as it builds the system and plans for a winter peak on a cold January morning at 7 a.m., it is not assuming that solar will contribute much at that early hour. So, it must plan accordingly.
  - Deacy said natural gas will be a bridge as solar is added to the system. TVA currently is constructing three natural gas turbine plants. These will enable TVA to be flexible, load follow and make adjustments with solar.
- Lloyd Webb said given constructs in the marketplace today, TVA can no longer rely on surrounding utilities and ISOs for contracted power and must be self-sufficient.
- Mike Butler asked if TVA, in its new regional structure, is engaging with concerns over solar in rural Tennessee.
  - Farrell said TVA talks about it regularly and is engaged at the local level.

### **3. New Nuclear Overview: New Nuclear Program** (Presentation can be found at [www.tva.gov/erc](http://www.tva.gov/erc)) — **Scott Hunnewell, Vice President, TVA New Nuclear Program**

As TVA aspires to achieve net-zero carbon emissions by 2050, advanced nuclear technology is expected to be an important component in TVA's toolbox. Scott Hunnewell provided a comprehensive overview of TVA's New Nuclear Program, including its strategic planning, the potential for small nuclear reactors (SMRs) at the Clinch River Nuclear Site and beyond, how nuclear power complements other technologies in the generation fleet, and how TVA plans to engage with communities about the work.

In February 2022, the TVA Board authorized a program to advance new nuclear considerations, with up to \$200 million in funding to perform design engineering, scoping, estimating and planning associated with potential future deployment of an advanced reactor(s) at its Clinch River Nuclear Site. He said TVA's leadership includes nuclear experience to support SMR development and deployment, an already approved site at Clinch River, a strategic approach with decision gates that will reduce risk ensure the right timing for deployment, and a future-looking vision that will inform upcoming SMR decisions and potential deployment locations across the region.

TVA has not yet decided to deploy an SMR, which typically produces 300 megawatts or less – in contrast to a traditional reactor that generates 1,000 megawatts or more. TVA has identified the GE Hitachi BWRX-300 reactor design as the most promising for near-term development, because it is proven technology (X means tenth generation) and it uses existing supply chain components.

Hunnewell said this first-of-a-kind reactor project will require an integrated team approach across all disciplines and organizations. It would take about two years to develop an NRC Construction Permit Application (CPA) and to identify/evaluate risks, about two years for NRC review of the CPA and to develop plans for construction readiness, and about five years of construction and testing prior to commercial operation. TVA has developed a 10-year labor strategy and is partnering with unions, universities and other organizations to help create a

diverse talent pipeline for the future. It also is doing siting so potential sites could be construction-ready, which would reduce the timeline from approval to deployment.

TVA is involved with numerous partnerships with research and industry, including a technical collaboration agreement between TVA, Ontario Power Generation and Synthos Green Energy to invest in the design development of the GE Hitachi BWRX-300. The New Nuclear Program is working with groups within TVA to identify potential sites beyond Clinch River for SMRs and advanced reactors in the future. TVA also is considering siting for potential large nuclear plants. Throughout this work, TVA plans to engage communities and seek their input.

## QUESTIONS/ANSWERS

- Based on a question from Lloyd Webb about the interest of SMRs from a global standpoint, Hunnewell said the number of new units by 2050 is expected to generate about 99 gigawatts from about 300 plants. He knows peer companies in the industry also have new nuclear programs. He used the analogy that it's like a cliff with a lake at the bottom, and everyone is waiting for the first person to jump. He believes there will be deployment in the near future.
- Jonathan Levenshus asked about the testing of Steel Bricks™, which are modular steel-concrete composite structures that could significantly reduce the labor required on site. Hunnewell said DOE plans to put up a scale model and demonstrate how they would be assembled, to ensure they meet safety requirements. Deacy said TVA will look at five areas of Steel Bricks that could be a challenge and will do a demonstration project onsite that will help de-risk the project.
- Answering a question from Erin Gill about the availability of new technology that will ensure redundancy for SMRs, Hunnewell said that an SMR is a passive plant. There aren't motors that humans need to touch. Digital technology will control the turbine and produce electricity, and protecting the core is a more passive activity.
- Based on a question from Jonathan Levenshus about siting work, Hunnewell said TVA's work is site-specific. TVA uses EPRI guidelines to consider what sites might not be suitable for nuclear, and it uses the NEPA process to determine which sites are most viable.
- Jonathan Levenshus asked if TVA is eligible for credit for new nuclear positioned at a retired coal plant through the Inflation Reduction Act (IRA). Hunnewell said TVA is named in the Act as being an eligible entity, and Farrell noted that TVA has created a new Project Management Office to focus on all facets of determining the funding that is available.
- Erin Gill asked how many future sites TVA is considering? Hunnewell said using EPRI methodology funnels it down. There were about 60 sites within TVA's inventory, and a lot were eliminated because they didn't meet EPRI criteria. The TVA Board will determine the number based on factors such as electrification and the projections on load growth.
- Erin Gill asked how TVA is determining communities' readiness for SMRs in their area, and Hunnewell said TVA needed to determine potential sites before it could engage communities. It got that information about two weeks ago, and is now ready to start that discussion. Deacy added that TVA seeks community involvement upfront, and will do so for this as well.
- Based on a question from Lloyd Webb about how TVA would respond if a company wanted to put its own SMR unit on its site and work with TVA, Hunnewell said TVA will look at each of them on a case-by-case basis. TVA is not in discussions with anyone

about that, but conceptually, it is thinking who may benefit from that and what it would look like.

- Jonathan Levenshus asked about the considerations around waste. Hunnewell said with the BWRX-300, TVA knows how to store the fuel. In terms of the volume per megawatt, it will be close to traditional nuclear plants. There are some reports that talk about different volumes, but those reports are more about the Gen 4 reactors and potential TRISO (TRi-structural ISOtropic) particle fuel. How to dispose of waste on the back end is one of the reasons TVA hasn't selected a Gen 4 yet. Deacy said there is an Operations working group looking at designs and considering, among other things, what can be done related to waste.
- In response to a question from Lloyd Webb about how TVA plans to address load growth and the demand increase, Farrell noted that TVA is on the cusp of kicking off the next IRP, which will address load growth and how to meet demand in the future. She also said TVA's Enterprise Planning team creates plans several times a year, and as assumptions and technology evolve, new information is fed into TVA's planning models on a routine basis.

#### **4. Discussion about Advice Questions**

The Council members were asked to provide their thoughts on the two Advice Questions.

##### **Advice Questions**

The New Nuclear Program established by the TVA Board in February 2022 provides a roadmap for TVA's exploration of advanced new nuclear technologies to accelerate progress toward its aspiration of a net-zero carbon future.

1. What other considerations should TVA take into account in implementing the New Nuclear Program?
2. What are the topics and methods for stakeholder engagement that TVA should consider in implementing the New Nuclear Program?

##### **DISCUSSION**

- Patrice Robinson asked how the New Nuclear Program fits into the national dialogue around renewable energy. Melanie Farrell said TVA has a clear path to 2035 to get to 80% carbon reduction. But the gap from 80% to beyond is really the gap that needs new technology development. TVA sees new nuclear as one of the key technologies to help get to a decarbonized energy sector. She said SMRs and renewables go hand-in-hand. Robinson emphasized that TVA needs to simplify its messaging in ways that will help the public understand.
- Candy Johnson said TVA talks about the "what" and the "how," but it would be helpful to also talk about the "why" in common language that people will understand. She said it would be beneficial to explain what happens if TVA doesn't invest in new technologies, and it needs to be explained in basic terms.
- Jonathan Levenshus said he hoped TVA's investment in new nuclear does not replace or distract from the other innovations. He said there is an opportunity for rapid scaling up of renewable energy, battery storage, electric vehicles, all of those things in that cycle. Deacy said there are teams like his across TVA working on other new technologies. Levenshus said that objective evaluation is something he thinks TVA should highlight and tell the public and stakeholders, because that information will be given to TVA working groups and will help direct TVA's future.

- Rebecca Goodman said affordability is a big issue with the public. She suggested that when talking with stakeholders, especially residential stakeholders and small businesses, TVA talk about affordability as well as how the region will benefit from these investments.
- Lloyd Webb suggested that when talking with the public about new nuclear, TVA should clearly explain that it is one of many initiatives TVA is pursuing.
- Chrissy Heard noted that TVA information shows nuclear at 42% of TVA's generation portfolio in 2030. She asked if that number would change if an SMR is built and operational. TVA staff members noted that TVA will always have its base nuclear and that it will likely have to add more gas and renewables as well as products like demand response until new technologies are available. Until that proves itself out, TVA will continue to meet demand with the diverse assets it has.
- Dan Miller said the Valley might have the opportunity to be first with new nuclear, and it could be a real economic driver. A part of that, too, is investing in the workforce and education programs. Hunnewell noted that part of TVA's strategy is to establish what it calls the nuclear ecosystem in the Tennessee Valley to help support not just what it is doing to develop new nuclear but as the country adopts new nuclear, to attract entities into the Valley that will support the country's efforts.
- Mike Butler asked what the water need will be for an SMR near the Clinch River, and he encouraged TVA to consider – and avoid – thermal pollution, which could harm fresh water resources. Hunnewell said the planning is for 55,000 gallons per minute per unit. Clinch River would be closed cycle, meaning it would use cooling towers to cool the water and recycle it through without discharge back to the river. TVA is also looking into air cooled condensers.
- Mike Butler encouraged TVA to be creative in its communications and to use pop culture formats to reach broad audiences with engaging messaging. He said people need to understand what an asset they have in the Valley and how important it is for this model to stay viable moving forward.
- Alexa Voytek agreed that messaging really is key.
- Rodney Goodman encouraged TVA to identify people who could serve as members of community feedback groups. He said people don't think about their power until it goes out or they get their bill, so addressing things around reliability and rates are important issues.
- Jonathan Levenshus flagged the following considerations: water, waste, safety, the life cycle of new nuclear products and how the regulatory space will shape up related to advanced nuclear. He said partnership work with the federal government as well as labs and academia should be amplified and highlighted. He noted that advanced nuclear is a new technology, and there may be communities that might be hesitant, so it is important to communicate with the public about safety and risk. He commended TVA for trying to be at the front on this and said being humble and pragmatic and honest with the public will be important.
- Mike Butler encouraged TVA to coordinate with organizations such as the University of Tennessee Extension, which is heavily focused on STEM and robotics in schools and could help deliver information and messaging to students and families about the interesting work TVA does.
- Erin Gill asked if TVA's approach to building the workforce of the future is sufficient, noting that jobs that exist today will be different than in the future, so TVA needs to ensure it is developing a local pipeline.
- Candy Johnson encouraged TVA to work with community colleges now to develop talent for the future.

- Lloyd Webb said directly served customers would like to hear messaging on reliability, the impact on reliability, and the impact on cost competitiveness.
- Mike Butler said it will be helpful for the public to hear about TVA's plans for the future and the impact the region would face if the changes didn't take place. He also encouraged TVA to begin the education piece now so that by the time changes begin taking place, TVA will have a developed workforce and public support. He also suggested that TVA contact large companies in the Valley to partner on STEM.

Bob Deacy thanked the Council for its input and feedback. Farrell thanked the Council as well, noting that the input will be incorporated into the New Nuclear Program and also will enhance how TVA engages with the public.

## **5. Welcome to Day 2 and Recap of Day 1**

Jo Anne Lavender welcomed everyone back for Day 2. In her recap of Day 1, she noted the Council heard a presentation on TVA's New Nuclear Program and members provided their thoughts on the Advice Questions related to the program. Offering a timeline for Day 2, she said Marc Nichol of the Nuclear Energy Institute would make a presentation, and TVA staff members would present on demand response, electric vehicles, rates and PURPA standards. There would also be a public listening session, with one member of the public scheduled to speak, and the Council would discuss the draft Advice Statement and discuss possible changes before voting on a final statement.

## **6. New Nuclear Energy (Presentation can be found at [www.tva.gov/nerc](http://www.tva.gov/nerc)) — Marc Nichol, Senior Director, New Reactors, Nuclear Energy Institute**

Marc Nichol offered an overview of advanced reactors across the country and addressed topics that included the projected timeline for when advanced reactors might be in use, estimated costs, potential risks, regulatory changes, their safety and how the industry will deal with waste. He explained that currently, nuclear energy represents less than 20% of electricity supply in the United States, with 92 reactors in 34 states. He said that in the past couple years, people on both sides of the political spectrum have started to realize the country needs more nuclear energy and that it provides reliable, safe, clean power. He cited new studies that compare all generation types based on costs and total system costs, and that nuclear fares favorably – from reliability, cost, low-carbon and safety standpoints.

Nichol said advanced reactors offer numerous benefits, including low fuel and operating costs, reliability, better integration with renewables and storage, efficient use of transmission, clean energy, and the ability to operate independent from the transmission grid. There are currently about 60 companies developing advanced reactors, with a dozen closer to licensing than the others. He provided information on the variety of reactors being developed and their potential uses in the future. The Infrastructure Investment and Jobs Act as well as the Inflation Reduction Act both offer incentives for the development of advanced reactors.

States have shown support for advanced reactors, with 19 states introducing legislation and 11 passing bills – with work considered in three categories: removing barriers to development, conducting studies or forming commissions, and offering incentives for deployment. Currently, there are 20 projects in planning or under consideration in the United States and Canada and 30 globally. Nichol said nuclear has 70% favorability rating but a 40% rating when people think it might be built in their neighborhood. He said communities with no familiarity are supportive, and communities want a say in where it is built.

## QUESTIONS/ANSWERS

- Lloyd Webb asked how many of the projects in the United States and Canada are over 300 megawatts. Nichol said about half are grid scale (300 megawatts) and others are microreactors.
- In response to a question from Lloyd Webb about the cost of producing electricity over the life of an existing nuclear plant versus for an SMR, Nichol said they don't have anything that directly compares them, but they do have data points on both. The national average is about \$30 a megawatt hour. For advanced reactors, it is a \$60 a megawatt hour price point. There is a lot of variability and uncertainty, because SMRs have not been built yet.
- Erin Gill asked if the IRA provides tax credits for ratepayers that have supported existing nuclear, a clean source. Nichol said the Infrastructure Act and the IRA provide some benefit for operating fleets. The Infrastructure Act provides \$6 billion in a credit toward at-risk plants. The tax incentive in the IRA is \$18 per megawatt hour for facilities that qualify. Hunnewell said TVA is named in the Act, so it can benefit.
- Asked by Spencer Sessions how long SMRs are expected to last, Nichol said the licensing period would be 40 years. There would probably be a 60- to 80-year design life, with possibly 100-year lifetimes. From an economic planning standpoint, the industry is considering a 40- to 60-year timeframe.
- In response to a question from Lloyd Webb about the availability of fuel for the new technology, Nichol said for water-cooled SMRs, the fuel is almost identical to what is used today. For the non-water cooled SMRs, there are a lot of different fuel technologies. One of the biggest considerations is the accessibility of the enrichment level for non-water cooled reactors. Beyond that, non-water cooled fuels also incorporate different aspects within the design. Companies are beginning to set up manufacturing facilities for non-water cooled fuels.
- Asked by Dan Miller about the regulatory timelines for new reactors, Nichol said there currently are two designs are currently being reviewed by the NRC. They are both test reactors, not commercial reactors. For the commercial designs, there are about 11 in preapplication engagement, where the companies have some level of engagement with the NRC to prepare for a formal application. For the two test reactors, the NRC is looking at 20-month reviews, which is a lot faster than previous reviews. It is unclear if the NRC will transfer that speed to commercial reactors.

### **7. TVA Demand Response (Presentation can be found at [www.tva.gov/lerc](http://www.tva.gov/lerc)) — Ray Knotts, Senior Manager, Energy Services and Programs**

Ray Knotts explained that TVA's EnergyRight® program includes energy efficiency, demand response, electric vehicles (EVs) – essentially, products and services consumers use related to energy. His presentation highlighted demand response, because TVA currently is addressing two new standards in the Public Utility Regulatory Policies Act of 1978 (PURPA), one of which relates to demand response.

Within its Demand Response Program, TVA contracts with thousands of end-users to reduce their power use to the agreed-upon level when TVA needs to lower its load, either for economic reasons (when cost of procured energy is high) or for reliability reasons (when demand exceeds TVA's load capacity). When TVA determines that demand response is needed, it sends a notification to participants, asking them to curtail power within the agreed-upon period of time for the contracted amount of power reduction.



TVA's Demand Response portfolio includes:

- Interruptible Power (IP), which suspends a portion of participating industrial or commercial customers' load, upon 5- or 30-minute notice, during time of power system need.
- Peak Power Partners, a TVA-managed program that enables smaller customers such as schools or large retail stores to provide economic load reduction through an aggregator that manages the portfolio.
- Voltage Optimization, which enables LPCs to operate distribution feeder voltages in the lower half of the standard voltage range to lower peak demand.

Knotts said given the industrial and residential growth in the region, TVA is considering ways to grow its Demand Response Program. It is recruiting new participants, with goals of adding 400 megawatts of additional demand response by summer and up to 1,000 megawatts by winter. He said demand response has worked well for TVA's system, performing over 100%. He said TVA system operators count on the load reduction in their planning.

### QUESTIONS/ANSWERS

- Asked by Erin Gill if there is potential for demand response growth, Knotts said TVA is assessing the depth of the potential. There was a decade of no growth, but now TVA is seeing growth. He said TVA has had a good response to its Demand Response Program. During Winter Storm Elliott, demand response was about 5% of the peak, which is significant. He said he suspects it will stay in that range, maybe a little more.
- Mike Butler asked about the macroeconomic impact of demand response and if it is a recruiting hindrance. Knotts said most potential customers ask if TVA has a Demand Response Program, because the payments are beneficial to them. He said companies with operational flexibility participate, and those that find it too costly don't sign up.
- In response to a comment by Chrissy Heard that Maryland has offered a residential demand response program for years, Knotts said TVA is conducting a small residential pilot in Knoxville with KUB. It is just a few hundred thermostats, and they are testing if it works in all seasons on a residential level.
- Lloyd Webb said TVA does a good job working with industrial customers. He said demand response provides critical capacity to the system, and it is important to look at five or 10 years down the road and how the capacity will be worked in. Knotts said TVA thinks of demand response as a resource, and it is integrated into operational procedures and power supply planning.

### **8. TVA Electric Vehicle Programs (Presentation can be found at [www.tva.gov/serc](http://www.tva.gov/serc)) — Ray Knotts, Senior Manager, Energy Services and Programs**

Ray Knotts said TVA is often asked why it wants to be involved with electric vehicles (EVs). The answer is that: the value proposition is really clear for TVA, its communities and drivers. TVA estimates that by 2028, there will be about 200,000 EVs in the region. That number of vehicles is about half a percentage of energy growth for TVA, and the grid is ready to handle that. There are environmental benefits, with 200,000 EVs saving about 1 million metric tons of CO<sub>2</sub> per year. It would save about \$120 million that would have been sent outside the Valley, and consumers save at least \$200 million on fuel per year.

TVA is working to eliminate four barriers: charging infrastructure availability, EV availability and offerings, innovative and supportive policies, and consumer awareness. Related to rates, the

first thing TVA needed to do was set up a regulatory environment that allowed for the resale of electricity for electric vehicle charging. In the Tennessee Valley, only LPCs can resell electricity. TVA changed its regulatory policy so EV charging is not considered a violation of the resale of electricity. It created a flat wholesale rate that incorporates the demand charge into an all-energy charge. Then, the LPC can set the retail rate.

TVA has worked heavily on consumer awareness and has created a consumer-friendly website ([www.energyright/EV](http://www.energyright/EV)), a video series, social media and community charging campaigns. TVA is partnering with local power companies and regional state agencies to develop the foundational charging network with fast charging stations along interstates and major highways at least every 50 miles. TVA and states provide 80% of the funding, and the LPCs provide 20%. The LPCs own the fast chargers for five years. To date, the system has been very successful. As of April 2023, 112 LPCs have expressed interest in program, and 60 sites have been contracted or completed with 51 LPCs and six states. The network is expected to be completed by 2026.

## QUESTIONS/ANSWERS

- In response to a question from Mike Butler about why TVA does not follow the rate structure adopted a few years ago so TVA has continued investment in the grid, Mike Hynes, TVA's Director of Rate Design and Administration, said TVA has tried to eliminate the demand charge requirement. TVA did studies to determine costs, and converted that into a kilowatt per hour charge, which the consumer understands. The charge incorporates costs and allows for investment in the grid.
- Asked by Erin Gill if the Fast Charge Network is locked in with the larger networks, Knotts said TVA ensures all of the chargers are on the broad database that apps use.
- Jonathan Levenshus asked about the cost share and whether any of the funding is coming from the National Electric Vehicle Infrastructure (NEVI) Formula Program. Knotts said the cost share is split between VW settlement dollars that are state dollars and TVA dollars. There are not NEVI dollars yet, but TVA is working with states on that.
- Alexa Voytek said TDEC is using VW settlement funding, so it was before NEVI. It came out with Fast Charge before NEVI was even contemplated. It is very similar. They have talked about NEVI coming in and complementing what Fast Charge has done. So, it is almost like a Phase 2 that will be built. Levenshus asked if LPCs can apply for NEVI dollars, and Knotts said TVA is helping coordinate so there isn't duplication.
- Asked by Dan Miller if the current plan for charging stations will offer enough chargers as the number of EVs increases, Knotts said not at the moment. He said TVA helped start the foundational network, and then a third-party will come in to complete the network. He also noted that 80% of charging occurs at home, not at charging stations.
- Erin Gill asked how renters in multi-family buildings will be able to use chargers. Knotts said the industry expects that, at some point, codes and standards will change to accommodate that. It is not TVA's role. Over time, chargers may be installed as rental properties are constructed. He said renters can ask for a 220-plug. Voytek said TDEC is considering this now.

## **9. Demand Response (DR), Electric Vehicles (EVs) & Rates** (Presentation can be found at [www.tva.gov/merc](http://www.tva.gov/merc)) — **Mike Hynes, Director, Rate Design and Administration**

Mike Hynes said when TVA considers rate actions, it considers its relevance to the TVA mission – energy, environment and economic development. TVA sells to 153 LPCs, and they resell on a retail basis, and it also serves 60 directly served customers. In order to not create a competitive advantage, TVA tries to equalize its rates from a TVA and distributor perspective.

Hynes described TVA's history with EVs and demand response, explaining that in 2018, TVA introduced a series of pilot rates to residential and commercial customers for charging purposes. In October 2021, TVA introduced a wholesale rate that LPCs could opt into and offer to their customers. In addition to that, LPCs became less concerned with the risk associated with the charging of the EVs and asked TVA to allow them to sell to the EVs using the standard rates, and TVA agreed to do that. All of that has significant implications to capacity, energy, transmission and distribution. It's all related, and TVA is trying to find the best possible way to provide solutions to its customers to electrify the transportation industry.

Hynes reviewed the rate setting process, explaining that TVA has a four-step process for determining rates. The process includes determining the cost to provide the service, perform a cost-of-service study to determine the consumers using the service, target revenues to be recovered from customers, and then it gets wrapped up in rate design. TVA uses the guiding principles to inform its wholesale and retail rate changes, including that rates must cover costs, track cost of service, send pricing signals so the system is put together in the most economical fashion, is stable, balances precision with simplicity, and is competitive and affordable. Hynes said TVA refers to its pricing principles when considering whether to adopt, modify or reject the PURPA standards.

**10. PURPA / IJJA “Shall Consider” Standards** (Presentation can be found at [www.tva.gov/lerc](http://www.tva.gov/lerc)) — **Christopher Chandler, Senior Counsel, TVA**

Congress enacted the Public Utility Regulatory Policies Act of 1978 (PURPA) in an effort to address energy issues facing the country at the time. From time to time, Congress will update PURPA “Shall Consider” standards. TVA is required to consider PURPA standards on its own behalf as a non-regulated utility and also as the state regulatory authority that sets rates for LPCs. Agencies are required to formally decide whether to adopt PURPA standards as written, adopt a modified version or decline the standard.

In 2021, Congress included two new “Shall Consider” standards related to demand response and electric vehicle charging programs. TVA commenced the process in the fall of 2022 with a notice published in the Federal Register. The first step has been a public comment period, which closed on March 31, 2023. TVA engaged with wholesale customers and, customer organizations and maintained a website. The comments will form part of the record. The process must be completed by Nov. 15, 2023. Its final determinations will be reviewed by the Board and will be published in the Federal Register.

The presentation Chandler gave relayed the views of the staff working group. At the time of the presentation, the positions had not been vetted through senior TVA management or the Board of Directors, so the staff's recommendations are subject to change.

Regarding the proposed standard for demand response practices, the intent is to promote the use of demand response programs and rate recovery for promoting demand response. In the public comments TVA received (and there was not a high volume), there was a heavy focus on TVA's existing Demand Response Program, which is fairly extensive. Second, there was an emphasis among the commenters on collaboration over imposing prescriptive requirements. TVA implements demand response by contracts, and there is a view that this implementation works. There is not an appetite for TVA to impose a set of regulatory requirements that all of its customers would be required to follow. The theme of the comments is around collaboration.

Chandler said TVA staff's recommendation is to adopt a modified version of the demand response standard that would acknowledge the collaborative approach, which offers a great deal of flexibility among TVA's directly served customers and wholesale customers. It also gives TVA the ability to design programs and products to meet ongoing system needs.

### **QUESTIONS/ANSWERS**

- Erin Gill asked, when you think about advertising and lock-in rate, is it an inclusive term that includes payment for capacity received, or is that covered under a separate regulatory statute? Chandler said that is not covered separately. The terminology of the statute includes both. When asked if TVA has chosen to create the per megawatt hour price structure, Chandler said yes, because in the view of the people working on the project, it is best to take an expansive view of what could be covered and make adjustments accordingly. It is written with low rates in mind, and TVA does demand response a little differently.

Chandler said the EV standard covers a wider range of program aspects than the demand response standard does, and many aspects of the EV standard are focused on the customer-based aspects of EV programs and EV development. The small number of comments TVA received emphasized respecting local control and the fact that a one-size-fits-all approach won't work, given the number and diversity of local power companies. There are 112 LPCs that are interested. Especially among companies in the EV sector, there was a strong theme around energy-only rates being critical to the success of EV deployment.

TVA staff's recommendation will be to adopt a modified version of the standard that builds on the work TVA already does to promote EV deployment but acknowledges that TVA and the LPCs have different roles to play in the EV ecosystem. It wants to adopt a standard that balances the fact that LPCs find themselves in different situations. TVA is going to continue to promote EVs, but it prefers to take a collaborative approach. It wants to apply consumer choice to this standard. Playing a role as a catalyst is probably a better fit for TVA.

### **QUESTIONS/ANSWERS**

- Lloyd Webb asked if a pilot program with a charging station has a rate they have to keep as they supply power? Knotts said TVA is not regulating consumer price, and neither is the LPC. They have the autonomy to set the price. They need to pay the wholesale rate that the LPC charges, and they can put on the margin they see fit. He said to ensure Fast Charge Network chargers are well-maintained, TVA has built operation and maintenance contracts into its program.
- Erin Gill asked if the PURPA standard defines affordable and equitable? Chandler said it does not. He said that is something that TVA has spent time talking about as a team and one of the things TVA needs to square with the requirements of the TVA Act.

## **11. Public Comment Period**

Members of the public are invited to speak at RERC meetings. TVA asks that people register to speak, and comments can be made virtually or in person.

Nancy Muse, from Florence, Alabama, offered public comments. She expressed concern about TVA's use of nuclear power, citing, in particular, concerns about nuclear waste and how it is stored. She also stated concerns about how TVA handles notifications, noting that the public has a right to know what small modular reactor (SMR) development entails. She said she believes the nuclear industry omits points from its marketing, and expressed concerns that the nuclear fuel cycle is not carbon free, that SMRs are not as safe or affordable as the industry

implies, and that communities will be impacted by potential SMRs built nearby. She encouraged TVA to make the Nuclear Regulatory Commission (NRC) hydrology study at the Clinch River Nuclear Site easily available to assure the ratepayers that this is a suitable geological site for a nuclear facility. She also encouraged TVA to consider renewable energy programs, some of which she says were discontinued and should be reinstated, like the TVA Generation Partners program with rooftop solar.

## **12. Advice Statement**

RERC Chair Erin Gill and TVA staff drafted a preliminary advice statement. The Council discussed the draft, made tweaks, then voted on the Advice Statement below. The Advice Statement passed by majority vote, with one dissenting viewpoint, which is included with the statement.

## **13. Closing Comments**

Althea Jones, Designated Federal Officer Alternate, thanked the RERC on behalf of TVA and its Board of Directors for its dialogue and engagement. She noted that TVA takes Advice Statements seriously and appreciates everyone's participation. She said it was the last meeting of 5<sup>th</sup> term. The 6<sup>th</sup> term will begin August 1. A joint meeting will be held with the Regional Resource Stewardship Council on Sept. 26-27, 2023, to provide an Advice Statement on Valley Vision 2035.

**Regional Energy Resource Council**  
**Advice Statement**  
**April 19, 2023**

The Regional Energy Resource Council (RERC) supports TVA's judicious and methodical step-by-step processes to evaluate, manage and de-risk nuclear projects and programs, with a pervasive focus on safety. Transparent, objective evaluation at all stages of the pipeline will be critical to good decision-making. The RERC emphasizes that the New Nuclear program works alongside TVA's other Transformative Innovation Initiatives, including decarbonization and electrification. TVA's nuclear strategies will need flexibility and adaptability to respond to the evolving context (internally and externally) in which it is deployed, while continuing to remain in alignment with TVA's Mission.

TVA's industry-leading position in exploring New Nuclear energy is a benefit not only to the grid but also to Valley economic development. This leading position demands humility and pragmatism to mitigate risk at every turn, and to explain how and why success will require time and iterative learning.

In addition to the listed Decision Gate Criteria (slide 31 of meeting presentation, see appendix), early considerations should include:

- Natural Resource needs (i.e. water use), risks (i.e. private interest offtakes, future drinking water needs), and impacts (i.e. thermal pollution)
- Operational and fuel waste management
- Regulatory uncertainty, including permitting and licensing
- Alignment with contemporary resource planning and load forecasts
- Integration with rapidly evolving technology for ancillary systems

The RERC appreciates TVA's emphasis on workforce development to support nuclear deployment. Intentional, proactive leadership is needed to develop adequate career pipelines for students and workers across the Valley.

TVA is not yet achieving the communication impact that will be necessary to secure broad public support for the bold energy and nuclear transition that is underway. These projects will move at the speed of trust. Messaging to help people build trust of both the technology and the institution will be critical. In order to reach a more general audience (beyond specific stakeholders), new and more creative and diverse strategies (ie podcasts, targeted marketing) are needed that are much more compatible with popular culture.

Presenting nuclear programs effectively will require plain-language explanations about the What, How, and Why behind these plans. Particular topics to hit early and often include:

- Safety
- Rate Impacts
- Benefits to Valley: Reduced carbon pollution, grid reliability, energy affordability, regional resilience, workforce opportunities

The RERC recognizes that there are Valley stakeholder groups that have concerns about New Nuclear. Early engagement with stakeholders and the public (both site-specific and regional) can address concerns, create additional ambassadors and inform long-term messaging and engagement strategies. Different stakeholder groups will likely require target messaging (i.e.

industrial customers will want to know impacts on affordability, reliability, and cost competitiveness, making sure the risk of unexpected cost escalations is mitigated).

**Minority Opinion:** Jonathan Levenshus, Sierra Club Representative

*The Sierra Club opposes the licensing, construction and operation of new nuclear plants, pending the resolution of various issues associated with the generation of nuclear energy. Therefore, the Sierra Club is issuing the following Dissenting Opinion to the Regional Energy Resource Council (“Council”) Advice Statement, adopted on April 19, 2023.*

The Sierra Club supports TVA’s efforts in exploring new technology pathways to deliver clean energy solutions and reduce greenhouse gas emissions and appreciates TVA’s systematic approach for evaluating its New Nuclear Program.

Assessing technology options, cost impacts on ratepayers and customers, safety protocols, environmental impacts (i.e. water use and temperature and waste storage), regulatory review timelines (i.e. licensing and permitting), alignment with resource planning, workforce and economic development concerns, supply chain procedures, and decommissioning should be among the most important considerations for TVA as it moves through the early phases of the project.

The Sierra Club agrees with the Council’s advice that the New Nuclear Program should not “supplant or detract” from any of TVA’s other Transformative Innovation Initiatives, particularly those of which are focused on rapid decarbonization and electrification of the Tennessee Valley.

The Sierra Club also agrees with the Council’s advice that TVA proactively engage interested stakeholders to consider the various needs and interests of the public, mitigate conflicts, and foster connections and trust. Clear, transparent and consistent communication is essential to the success of any TVA project, but particularly one as significant as the New Nuclear Program. Developing new tactics for communicating the possible risks and benefits of the New Nuclear Program with the public should be prioritized.

Finally, the Sierra Club agrees with the Council’s general advice that TVA continue to strategically focus attention and resources on projects that reduce carbon emissions, make the power grid more reliable, build community resilience, cut the cost of energy for consumers and customers, protect the environment, and help drive local and regional economic development.







**Statement Vote:**

Member	Organization/Title	Yay	Nay
Alexa Voytek	State of Tennessee Representative	X	
Candy Johnson	Urban League of Greater Chattanooga, President and CEO	X	
Chrissy Heard	State of Mississippi Representative	X	
Dan Miller	Oak Ridge National Lab, Director of Innovation Crossroads	X	
Erin Gill	City of Knoxville, Chief Policy Officer	X	
Jonathan Levenshus	Sierra Club, Federal Campaign Director of Beyond Coal Retired, Previously Chairman of Tennessee Valley Industrial Committee		X
Lloyd Webb		X	
Michael Butler	Tennessee Wildlife Federation, CEO	X	
Patrice Robinson	Memphis City Council, Councilwoman	X	
Pete Mattheis	Chairman, Tennessee Valley Industrial Committee Strategic Planning Committee	X	
Rebecca Goodman	State of Kentucky Representative	X	
Rodney Goodman	Habitat for Humanity of Bowling Green, Executive Director	X	

Slide 31 RERC April 18-19, 2023 Presentation

## Criteria Assessed at Each Decision Gate

### DECISION GATE CRITERIA

-  Technology Readiness
-  Planning Readiness
-  Cost Estimates
-  Schedule Estimates
-  Partnering Status / Estimates
-  Fit Within the Enterprise

**Each Decision Gate Package contains three elements:**

- 1) Documentation: Sufficient details to support approval
- 2) Concurrence: Groups from across TVA that review and sign-off on documentation
- 3) Approver: ELT member approves the criteria package prior to recommendation for CEO



### Non-Council Meeting Attendees

<b>TVA Staff Members (In person)</b>	
Brian Adams	Scott Hunnewell (Presenter)
Rebecca Brinkley	Mike Hynes (Presenter) (Day 2)
Jennifer Brundige	Althea Jones
Chris Chandler (Presenter) (Day 2)	Ray Knotts (Presenter) (Day 2)
Bob Deacy (Presenter) (Day 1)	JoAnne Lavender
Ashley Farless	Barbie Perdue
Melanie Farrell (Day 1)	Marylee Sauder (contractor)
Bekim Haliti	Spencer Sessions (Day 2)
Stephen Harris	Chance Silvers
Rebecca Hayden (Day 1)	

<b>Stakeholders (Virtually)</b>	
Jennifer R. Bogus	Nancy Muse
Heather Kulisek	Amy Kelly (Day 1)

**Appendix B**  
**Regional Energy Resource Council Meeting Agenda**  
**April 18 & 19, 2023**  
**Drury Inn, Knoxville, Tennessee**

**Meeting – Drury Inn**  
**209 Advantage PI**  
**Knoxville, TN 37922**

**Day 1 – April 18 – Drury Inn Knoxville**

<b>8:00-8:30</b>	<b>Welcome / Call RERC Meeting to Order</b>
<b>8:30-8:45</b>	<b>Introductions and Agenda Review</b>
<b>8:45-8:55</b>	<b>FACA Briefing</b>
<b>9:55-9:20</b>	<b>DFO Briefing</b>
<b>9:20-9:30</b>	<b>Break</b>
<b>9:30-11:30</b>	<b>TVA New Nuclear Program</b>
<b>11:30-11:35</b>	<b>Adjourn Meeting for Lunch</b>
<b>11:35-12:15</b>	<b>Lunch</b>
<b>12:15-12:20</b>	<b>Begin Afternoon Session</b>
<b>12:20-1:30</b>	<b>Council Responds to Advice Questions</b>
<b>1:30</b>	<b>Adjourn</b>

**Day 2 – April 19 – Drury Inn Knoxville**

<b>7:45 – 8:00</b>	<b>Welcome and Recap</b>
<b>8:00 - 8:45</b>	<b>Nuclear Engineering Institute Presentation</b>
<b>8:45-10:15</b>	<b>PURPA "Shall Consider" Standards - Demand Response and Electric Vehicles Presentation</b>
<b>10:15-10:30</b>	<b>Break/Prepare for Public Listening Session</b>
<b>10:30-11:30</b>	<b>Public Listening Session</b>
<b>11:30-11:45</b>	<b>Break</b>
<b>11:45-1:00</b>	<b>Finalize Advice Statement</b>
<b>1:00</b>	<b>Adjourn Meeting</b>