

Regional Energy Resource Council Minutes May 2-3, 2017

Tennessee Valley Authority Regional Energy Resource Council May 2-3, 2017 Meeting Minutes

The Tennessee Valley Authority (TVA) Regional Energy Resource Council (RERC or Council) convened for the fourth meeting of its second term at 8:30 a.m. EDT on Tuesday, May 2, 2017, at the Holiday Inn Downtown Knoxville, 525 Henley Street, Knoxville, Tennessee 37902.

Council members attending:

Wayne Davis, Chair	Anne Davis (Day 1)	Doug Lawyer
Bob Martineau (Day 2)	Pete Mattheis	Alice Perry
Rodney Goodman	Jack Simmons (Day 1)	Stephen Smith
Lloyd Webb	Susan Williams	

Designated Federal Officer: Dr. Joseph Hoagland

Facilitator: Joe Ann Lavender

Appendix A identifies the TVA staff, members of the public, and others who attended the meeting.

Appendix B is the agenda for the meeting.

Copies of the presentations given at the meeting can be found at <http://tva.gov/lerc>.

1. Welcome

Dr. Hoagland, TVA Vice President (Enterprise Relations and Innovations), welcomed Dr. Wayne Davis, the new Chair of the Council. Dr. Davis, in turn, introduced the three new Council members: Mr. Pablo Diaz (Executive Director of the Grenada Economic Development District; Mr. Jeremy Nails (President and CEO, Morgan County Development Association); and Mr. Doug Lawyer (Vice President of Economic Development, Knoxville Chamber of Commerce).

2. Safety Moment, Overview of Agenda, Meeting Protocols

Ms. Lavender, Facilitator, covered these items in her presentation (see Slides 6-8).

3. FACA/RERC Orientation

Khurshid Mehta, Senior Attorney, TVA Office of the General Counsel, provided an overview of the Federal Advisory Committee Act, and the key provisions of the RERC Charter (Slides 10-13).

4. DFO Briefing

Dr. Hoagland provided updates to the Council on several items:

- TVA finalized its last Integrated Resource Plan (IRP) in 2015. The policies of the new administration do not directly impact the direction provided by the 2015 IRP since that direction was grounded on the mandate in the TVA Act to provide power at rates as low as feasible. Retirements of coal plants as announced earlier by TVA are still on track. TVA plans to follow the direction of the 2015 IRP while continuing to monitor the development of regulations and policies by the new administration.
- There is a significant customer demand for renewables that helps customers establish brand equity and meet their sustainability goals.
- While the economy has recovered from the time of the recent recession, TVA's load continues to be flat or declining as a result of efficiency standards coming into effect and increased efficiency in commercial and industrial processes and facilities. As a result, TVA is unlikely to build large scale power plants in the foreseeable future.
- TVA plans to begin work on the next IRP in FY 2019.
- TVA has two stakeholder groups who are helping to provide input to TVA. The TVA Distributed Generation Information Exchange (DGIX) and Energy Efficiency Information Exchange (EEIX) groups each have a diversity of membership. The EEIX group has been working diligently on making EE programs more effective for low income residents. The DGIX group has been tasked to not only consider the impact of DER technologies, but also to assist LPCs and end-use customers make their DER decisions.
- TVA submitted an application for building Small Modular Reactors (SMRs) at the Clinch River facility. At this juncture, the costs appear high and there is no certified design. The need for power that would be generated by the SMRs is an

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open issue. Any final decision will have to go through the TVA Board approval process.

- The Paradise Combined Cycle Plant started commercial operation on April 2, 2017. Unit 3 (coal-fired unit) will continue to stay in operation.
- The Allen Combined Cycle Plant (ACCP) is expected to commence operation during the first part of next calendar year. TVA has installed five wells to obtain cooling water for the ACCP. These wells are permitted by the Shelby County Health Department.
- Generation at the ACCP facility will be supplemented with a 1-MW solar installation.
- At this time, TVA does not see a need for energy from the Clean Line Project. Commercial customers are interested in renewables, but the interest pertains to solar (more than wind) and to renewables generated within the Valley.
- There are five positions on the TVA Board that are expected to be filled under the new administration.

Council Comments and Discussion on the TVA Update

- Lloyd Webb stated that development of the next IRP will need greater engagement with all LPCs (not just 2 or 3 LPCs). In fact, engagement through the IPR process may be insufficient. Along these lines, Jack Simmons indicated that the LPCs have to step up and help decide the future direction; and that it is the responsibility of TVPPA and the LPCs to bring everyone to the forefront.
- Dr. Smith asked for an update on two issues: (1) interaction with TDEC on coal ash; and (2) Watts Bar 2. On coal ash, Dr. Hoagland responded by stating that TVA is working with TDEC on each individual plant to close and cap the ash ponds at each site. Regarding Watts Bar 2, the unit experienced condenser failure and turbine issues. Unit 2 is in cold shutdown mode with plans to return the unit to service in summer. Watts Bar 1 is down for refueling outage.
- Lloyd Webb asked whether any decision to buy power from Clean Line will be vetted with this group. He stated that the portrayal of the Clean Line project in the media (as to the project's cost and reliability) has not been proper. Dr. Hoagland responded that this group would get notices and information of any

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decision regarding Clean Line. At this point, however, TVA has no plans to buy power from the Clean Line project.

- Anne Davis asked whether closure in place can be implemented consistent with protection of ground water. She stated that neither TDEC or EPA has agreed that closure in place is the best option when there has been contamination of groundwater. Dr. Hoagland responded that the EIS provides broad overview of the impacts, but contemplates that each site-specific strategy will be developed separately.

5. TVA and the Changing Marketplace

- Al Berrong, TVA's Director of Director, Enterprise Forecasting & Analytics, gave a presentation about the unique challenges posed by the changing marketplace. His presentation also covered planning for the public power system, load forecast and portfolio changes, and the 2015 IRP Update (Slides 18-41).

Council Comments and Discussion

- Dr. Smith indicated that the story about "load growth" (or the lack of it) is a good story. It is good for the environment and good for the people.
- Lloyd Webb stated that the sad part of this tale is that, as load drops, TVA has to make up the money it spent on generating sites, resulting in people paying more for less. It is unfair to low income people who have to bear the brunt of these changes.
- Dr. Smith raised the question: "If TVA is not undertaking Energy Scale Solar, what would happen if the companies go behind the meter dropping TVA's load further?" Dr. Hoagland responded that TVA needs to meet the needs of companies that desire energy from renewable resources, but at the same time be fair to the ones that will not participate.

6. Distributed Energy Resources

Dr. Hoagland presented TVA's strategy for the development of distributed energy resources (Slides 42 - 48).

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- Old paradigm of power generation and delivery is beginning to change significantly.
- TVA has taken a billion dollars out of the business to maintain low rates.
- TVA has created a Distributed Energy Resources (DER) organization, led by Jay Stowe.

Council Comments and Discussion

- Dr. Smith asked how TVA is dealing with the trend for large cities. For example, Atlanta recently passed a resolution that it will go 100 percent renewable by a date certain in the future. Dr. Hoagland responded that TVA is working with all the big cities and we should be seeing things start to take off. Dr. Hoagland also indicated that urban areas provide a number of opportunities for load growth through electrification, which reduces the carbon footprint.
- Lloyd Webb stated that Georgia Power has had a strong push for solar over the last 10 years. While Atlanta, as the load center, has pledged to go 100 percent renewable, the generation to satisfy this load might not be in Atlanta.
- Dr. Hoagland stated that there is a misconception among the public as to what is meant by “going 100 percent renewable.” It does not mean that renewable power is available 100 percent of the time. In his view, we need to synchronize the public perception with reliability.

7. Where we are Headed: An Integrated Grid

A video, “EPRI Integrated Energy Network” was played for the benefit of the Council.

8. TVA’s Research Direction

Gary Brinkworth, Director, Technology Innovation, gave a presentation on the subject of TVA’s future research direction. His presentation covered the changing customer landscape, making the transition from desegregated power system to one that is resilient and connected, research and development (R&D) roadmap objective, TVA’s roadmap challenges, grid modernization, grid edge engagement, cyber security, potential technology game changers, and partnership and engagement (Slides 53 - 100). Mr. Brinkworth started the discussion by focusing the Council’s attention on the following advice questions:

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- i. Given TVA's mission and challenges, what is missing from TVA's R&D roadmap?
- ii. Who should TVA partner with to conduct and implement the research?
- iii. What should TVA's role be in the R&D space?

Council Comments and Discussion

- Pete Mattheis stated that R&D was baked into the TVA Act when all TVA funding was from appropriations. It is different now as ratepayers would be making the investments in R&D.
- Anne Davis asked whether TVA was doing surveys with respect to customer needs for power. Mr. Brinkworth answered in the affirmative.
- Lloyd Webb indicated that he struggles with what "resiliency" means since different groups look at resiliency in different ways.
- Jack Simmons stated that TVA is doing a good job integrating the work done by LPCs, but TVA should not push things down to the LPCs. The focus should be on how to engage the LPCs. There is a need for bulk power and distributed energy resource councils.
- Dr. Davis asked how TVA determines the amount to spend on R&D. Dr. Hoagland responded that utilities typically spend 0.5 - 1.0% of revenue on R&D. TVA spends approximately \$20 million on R&D, with more than half of this amount given to the Electric Power Research Institute (EPRI).
- Jack Simmons stated that "fiber" has now become an operational excellence piece. It would be worth spending extra money on fiber as this will provide connectivity to LPCs.
- Dr. Smith indicated that he would like aspects of beneficial electrification to be fleshed out. He would also like to see TVA work with LPCs to create incentives for use of electric cars. Further, he encouraged TVA to look at battery storage.
- Dr. Smith asked if we have looked at the costs to a residential customer who wants to totally detach from the grid. Mr. Brinkworth and Dr. Hoagland answered that TVA is looking into the issue of stand-by charges.

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- Dr. Davis asked whether TVA has looked into the stacking concept, i.e., at what level is it most efficient to store energy? Mr. Brinkworth responded that TVA is looking into this. The answer would be different if TVA started the analysis from scratch rather than with an infrastructure already in place.
- Lloyd Webb stated that TVA has excess generation capacity; therefore, spending more (even on storage) would increase rates for all.
- Susan Williamson stated that TVA needs to be aware of the changing dynamic of customer wants and be prepared for a changing environment.
- Dr. Smith indicated that retiring coal capacity would make space for renewables.
- Dr. Smith asked if TVA has attempted to quantify the level of EV penetration that will create an impact in the Valley. Mr. Brinkworth answered that it takes approximately 250,000 cars to change the load shape. The current level of use is at 4,000 cars. Pete Mattheis indicated that the same kind of analysis has been done for industrial customers.
- In the discussion on microgrids, Dr. Smith asked if there was any area in the Valley that can island on and off the grid at will. Gary answered that there were a handful of microgrids, but they are connected to the main grid. Dr. Davis stated that microgrids work better if you start from ground zero. There was some discussion about the proposed Cherokee Farm project with a general recognition that the project is unlikely to ever become a “true” microgrid.
- In the discussion on advanced nuclear technology, Dr. Smith stated that TVA must be cautious about venturing into SMRs. Dr. Hoagland responded that TVA would not be willing to implement SMRs on a “test” basis unless fully funded with no risk to ratepayers. So far, on the application process, TVA has split the cost 50/50 with DOE.

Discussion of Strategic Questions

The discussion focused on the three questions raised by Mr. Brinkworth at the beginning of his presentation. While the lack of a quorum prevented the Council from providing formal advice on this matter to the TVA Board, the Council’s discussion of the three strategic questions is captured below.

What's missing from TVA's R&D Roadmap?

- Lloyd Webb stated that TVA must recognize opportunities for commercialization of R&D developed by TVA.
- Dr. Davis indicated that not enough research was being done to know what is missing. Change may come too fast and may be disruptive.
- Susan Williams stated that TVA is not responding fast enough. Discussions at TVA typically focus on a 30-year horizon, but things are changing a lot quicker.
- Dr. Hoagland indicated the dilemma of following New York and California that have implemented customer-centered solutions, but their electric rates are much higher.
- Dr. Davis reiterated that more research is necessary. Attitudes change with generations and it may be that what people really want is reliable power.
- Bob Martineau stated that people sometimes make irrational choices that may relegate rates to a secondary role. As an example, people thought, at Southwest Airlines inception, that the company would not survive but now has become a model for other airlines.
- Dr. Smith stated that the 154-LPC system is outdated and that there should be some consolidation among LPCs. It is an interesting question as to what should be TVA's role in making such a market transformation.
- Lloyd Webb encouraged benchmarking, urging TVA to continuously scan the technology space and ensure that efforts are value-added.

Who should TVA partner with?

- Pete Mattheis stated that we must include vendors and consumers, i.e., end users (beyond the LPCs) that use the product.
- Lloyd Webb encouraged TVA to look for high potential pilot projects.
- Doug Lawyer encouraged bringing "industry" into the partnership.

What should be TVA's role in the R&D space?

- Dr. Davis recognized that TVA cannot become a research organization. It must, therefore, play all four roles: catalyst, advisor, partner, and provider.
- Lloyd Webb stated that the risk in being a “catalyst” is that it could propel TVA into being a research organization. It would be better for TVA to be a “precursor” rather than a “catalyst.”
- Dr. Smith stated that public power can play an important role but we must figure out the “partner” and “provider” spaces. TVA should move aggressively into spaces that provide partnership opportunities and have the potential to become profit centers, e.g., EPB's (Chattanooga) integration of fiber with the energy system. TVA should further explore opportunities for partnering with LPCs in supplementing the “fiber” network.

9. **Public Comment Session**

No members of the public offered comments.

Dr. Davis and Dr. Hoagland thanked members for their input and for a great discussion on TVA's R&D mission. Dr. Hoagland informed the Council that the RERC Charter was reviewed by the TVA Board for a third 2-year term; and that TVA has requested the respective Governors that the same members be retained. The meeting adjourned at 11:30 a.m. EDT.

Minutes approved:



Dr. Wayne Davis, Council Chair

Date: June 27, 2017

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Appendix A Non-Council Meeting Attendees

TVA Staff			
Al Berrong	Gary Brinkworth	Christy Cagle-Brooks	Jessica Coleman
Joe Hoagland	Jo Ann Lavender	Kelly Love	Khurshid Mehta
John Myers	Barbie Perdue	Michael Scaf	Liz Upchurch
Kevin Wren			

Members of the Public In Attendance
Tyler Whetstone - Knoxville News Sentinel

Other
Jennifer Torregiano, TVA Office of the Inspector General
Cody Hudson, TVA Police
Tony McGinnis - TVA Police
Amber Wiseman, TVA Police

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Appendix B Meeting Agenda

Regional Energy Resource Council

May 2-3, 2017

Meeting Location: Holiday Inn Downtown Knoxville / World's Fair Site, Tennessee Ballroom

525 Henley Street, Knoxville, TN 37902

Day 1 May 2, 2017 Holiday Inn Downtown, Knoxville, TN Tennessee Ballroom	
<i>all times are EDT</i>	
7:30	Breakfast for RERC Members
8:30	Welcome - Designated Federal Officer (DFO) / Dr. Joe Hoagland Welcome and New RERC Members - RERC Chair / Dr. Wayne Davis
8:40	Introductions - Council Members, Facilitator, Jo Anne Lavender
8:50	FACA Overview
8:55	Meeting Purpose
9:00	DFO Briefing: RERC and TVA Update
9:10	TVA and the Changing Marketplace
9:50	Where we are headed: An Integrated Grid
10:00	TVA's Research and Development Mission
10:30	Break

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10:45	TVA's Research and Development Mission
11:45	Conclude Meeting
11:45	Lunch for RERC Members

Day 2 May 3, 2017 Holiday Inn Downtown, Knoxville, TN Tennessee Ballroom	
7:30	Breakfast for RERC Members
	<i>(Public to sign up to comment by 8:45 AM)</i>
8:30	Welcome - Dr. Wayne Davis, Chairman Recap Day 1 - Jo Anne Lavender
9:00 - 10:00	Public Comment Period
10:00 - 10:15	Break
10:15 - 11:00	How we meet the Road Map: R&D Projects/Partnerships
11:00 - 11:50	RERC Discussion and Advice - Research and Development
11:50	Wrap Up and Next Steps
12:00	Adjourn and Lunch for RERC Members