

**Tennessee Valley Authority
Regional Energy Resource Council
June 16-17, 2015
Meeting Minutes**

The Tennessee Valley Authority (TVA) Regional Energy Resource Council (RERC or Council) convened for the eighth meeting of its first term at 1:06 p.m. EDT on Tuesday, June 16, 2015, at TVA's Knoxville Office Complex, 400 W. Summit Hill Dr., Knoxville, Tennessee 37902.

Council members attending:

Dus Rogers, Chair	Lance Brown	Anne Davis
Rodney Goodman	Wes Kelley	Pete Mattheis
Len Peters	Joe Satterfield	Jack Simmons
Lloyd Webb	Susan Williams	

Designated Federal Officer: Dr. Joseph Hoagland
Facilitator: Jo Anne Lavender

Appendix A identifies the TVA staff, members of the public who provided oral or written comments, and others who attended the meeting.

Appendix B is the agenda for the meeting.

Appendix C contains the consensus advice provided by the Council.

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

The majority of the meeting was devoted to presentations by TVA staff about the Integrated Resource Plan (IRP), including summaries of the comments received on the draft document and the IRP findings and recommendations. The Council adopted advice recommending that the TVA Board of Directors approve the IRP.

1. TVA Update, IRP Project Status Update

Dr. Joe Hoagland, TVA's Vice President, Stakeholder Relations, and DFO for the Council, provided an update on Watts Bar Unit 2 construction, TVA's decision to retire the last unit at Widows Creek Fossil Plant, the status of Boone Dam repairs and reservoir impacts, and the recent IRP roundtable with the U.S. Senators representing Tennessee. (Slide 14)

Dr. Hoagland also provided an update on the status of the IRP project. (Slide 15) Following completion of the environmental review, study recommendations, and final report, the Board is expected to act in August 2015.

2. IRP Public Comment Summary

Chuck Nicholson, TVA NEPA Compliance Specialist, gave an overview of the comments received on the draft IRP and environmental review. All public meetings are complete. Public comments on the drafts are grouped around several topics. (Slide 18) TVA has received approximately 200 comments from more than 2,400 individuals and organizations. (Slides 19-21) A large number of these were form comments (e.g., standardized postcards). TVA has grouped the comments into approximately 125 unique comment statements and will be publishing responses to these comments in the final environmental review. (Slide 21) Gary Brinkworth, TVA's IRP Project Manager, noted that TVA also will be adding a high-level summary of comment themes, along with TVA responses, to the final IRP document.

3. IRP Comment Responses

Mr. Brinkworth discussed several key themes that emerged in the comments on the draft IRP and previewed TVA's anticipated responses. (Slides 23-29) With respect to treating energy efficiency (EE) as a resource (Slide 27), Len Peters asked how many comments regarding the design parameters gave specific recommendations on parametric values (i.e., something beyond a criticism). Mr. Brinkworth responded that, although the bulk of the comments expressed only a criticism of TVA's methodology, a handful of comments did give more specific comments and suggestions.

Mr. Brinkworth also summarized the key changes to the IRP report and the environmental review in transitioning those documents from draft to final. (Slides 30-31)

4. IRP Findings and Recommendations

Scott Self, TVA's Vice President, Enterprise Planning, presented the IRP findings and recommendations. First, Mr. Self summarized the objectives of the IRP recommendation and the IRP study objectives. (Slides 33-34) He then provided a summary of key findings of the IRP study. (Slide 35) Susan Williams asked whether the IRP complies with the Clean Power Plan, especially if Watts Bar Unit 2 cannot be counted. Mr. Self said that TVA did not model the draft Clean Power Plan, which has a state-by-state approach. However, from a system perspective, the IRP recommendations put TVA in a good position, although there will be compliance challenges in particular states. Wes Kelley noted the 8GW difference between the 2014 numbers and the 2033 numbers and asked how much of that gap is made up with generating resources versus EE. Tom Rice responded that the 8GW reflects load growth and that TVA did not separate out EE in this fashion. Len Peters noted that all of the 2033 numbers are the same, but if TVA were to maximize renewables, it would need additional back-up resources. He asked whether the variable capacity factor of certain resources has been built into the analysis. Mr. Self said that it was considered. Mr. Brinkworth further said that TVA considered this issue by using a net dependable capacity factor in which variable resources were not given full capacity credit in the model, but TVA did not directly tie the back-up capacity to these resources.

Mr. Self discussed the IRP study ranges and signposts that will guide TVA in making specific decisions while implementing the IRP directional recommendation. (Slide 36) He then summarized the IRP recommendations for the target power supply mix, broken down by resource. (Slides 37-47) With respect to retired coal (Slide 38), Dr. Peters asked whether any coal units were being retired before the end of their useful life. Mr. Self responded that TVA has been making capital investments along the way, and those are not fully depreciated. The IRP's consideration of these plants is not an exercise on book value, and TVA did consider the condition of the asset. Dr. Peters followed up by asking whether TVA will be stranding any assets that go into ratepayer costs (i.e., that would have rate impacts). Mr. Self said that retirements can affect net income but not cash flow, and they do not trigger a rate action.

With respect to EE (Slide 42), Dr. Peters asked about the estimated program cost to get the first gigawatt of EE versus the next two or three gigawatts. Mr. Self noted that TVA used blocks of EE in its modeling concept. While he was not sure of the cost of block 1 versus blocks 2 or 3, he noted that the model would pick blocks until another resource is cheaper; in reality, the model will continue to pick EE until its costs exceed avoided fuel costs. Wes Kelley noted that demand response costs are paid every time, while EE costs are front-loaded.

5. RERC Feedback on IRP Recommendations

The Council members provided the following feedback on the IRP recommendations.

- Pete Mattheis said the IRP has been a thorough effort, with TVA putting a sufficient amount of resources into its development. He appreciates TVA's effort to involve stakeholders. The IRP process is a work in progress, and what's important is whether TVA is making progress. Mr. Mattheis said TVA is doing so. Including EE as a selectable resource is a big step forward. TVA must continue to focus on low cost and reliability. The goal of the IRP should be to avoid surprises and to provide flexibility.
- Anne Davis said that she appreciates the hard work in the IRP process by TVA staff and stakeholders. She expressed surprise and disappointment that EE and renewables were eliminated from the IRP recommendation despite similar costs and the best environmental outcomes. With respect to EE, the planning factor adjustment should be removed because it doesn't adequately characterize EE as a resource and isn't how others within the industry are approaching it. Others are assigning EE a risk credit. The sensitivity analyses show that the model would select more EE in the base case if the planning factor adjustment were removed. However, TVA has reduced the low end of the target range by 600MW based on uncertainties that should have already been taken into account. While TVA suggests that EE may increase power rates, bills may actually go down. Although much concern has been expressed about disproportionate impacts on low income populations, TVA has failed to talk about changing the residential rate structure to incentivize EE. With respect to wind resources, Ms. Davis noted that TVA lowered the target range for HVDC wind, which is inconsistent with the sensitivity analyses.
- Jack Simmons said the IRP has had a good stakeholder involvement process, and the plan has diversity of resources. The IRP reflects that TVA is in a good position in terms of assets that have long construction lead times, so TVA has time to carefully consider all options and can approach implementation in a measured and managed way. As TVA makes asset decisions, then-current conditions must be considered to determine the latest load growth predictions. As staff recommends the IRP, they should make clear that, although the plan shows a larger contribution of EE and renewables, that doesn't mean there's an immediate need to flood the market with those resources, unless they are least cost. The IRP represents an envelope of possibilities, and TVA should make future decisions based on the cost of the assets and resources.
- Lloyd Webb said the IRP process has met its study objectives and the statutory objectives, including least cost planning principles. One area where more work is necessary in future IRPs is how back-up generation for renewables is reflected. Mr. Webb is not confident that the full cost impact of back-up generation has been factored in. He said stakeholder involvement has been great, and the process resulted in a meaningful recommendation that reflects that involvement.
- Lance Brown noted the difference in TVA's approach within just a few years, which shows how much the industry is changing. He is pleased with TVA's attempt to balance the portfolio and mix fuel sources. Residents and businesses seek reliability and affordability, and the identified mix will provide that. The decline in coal resources is expected, as is the increased use of gas resources. Mr. Brown is pleased to see utility-scale solar is considered, as he thinks that is the best path for TVA. The strategy of using EE in a flexible way is good, but he is concerned about local power companies' ability to capture large amounts of EE.
- Joe Satterfield said the involvement of local power companies and other stakeholders in the IRP development has been good, and TVA is incorporating the comments made. With respect to EE, he was glad to hear that TVA will be working closely with local power

companies to refine delivery mechanisms. There are so many factors that influence resource planning, and the number of factors is increasing as technology improves and regulations emerge. TVA should view the IRP as a work in progress and monitor it as things change.

- Wes Kelley said TVA should be praised for its accomplishments in driving down CO₂ in advance of the Clean Power Plan, and he hopes TVA gets the credit it deserves. Although the IRP reflects new gas resources, the call for no new baseload generation is a significant outcome. TVA did not fall back on maintaining the status quo but instead thoughtfully approached the issue. Mr. Kelley said EE may create upper pressure on rates, and while it's helpful to some customers and avoids TVA investment, it may not be an all-encompassing solution. We must avoid potential negative financial impacts of EE (e.g., not recovering costs, inappropriately shifting costs). TVA should continue to work with local power companies on the value of solar and consider establishing a quality contractor network for solar.
- Rodney Goodman said being able to fit his area of concern into the big picture of the IRP has been good. For the families his organization works with, \$10-12 on their monthly bill is a huge difference. EE plays a big role. Families may have low rates, but if their heat is escaping, they still pay higher bills. Implementing EE comes with challenges, and Mr. Goodman is grateful that TVA is willing to look at these challenges. However, it will take more participants beyond TVA. Pay-as-you-go metering would give people a chance to monitor their energy usage.
- Susan Williams said she is pleased with the diverse portfolio and very pleased with the move toward cleaner energy. She is glad to see no new coal forecasted and no new nuclear unless in the form of small modular reactors (SMRs). However, she noted that TVA shouldn't rush to be among the first to implement SMRs. Regarding wind resources, she was disappointed to see that HVDC wind doesn't come in until the end of the planning period. Clean Line's cost is very competitive, and she would like to see it used sooner.
- Len Peters said overall the recommendations are very good. TVA has done a good job of treating the IRP as a compass and not a GPS. The industry is in a state of transition right now; the Clean Power Plan will drive changes in electricity use and dispatching. Flexibility right now is very important, and the IRP has done a very good job of trying to achieve that. Dr. Peters said he likes the consideration of affordability, which is crucial for residential and industrial ratepayers and is absolutely necessary for jobs in the region. It would be difficult but beneficial to look at variability of affordability across the region. Ultimately, the price of natural gas will determine what TVA does over the next 5-10 years.
- Dus Rogers said he appreciated the multiple opportunities to provide meaningful input and engage in dialogue. In terms industrial development and manufacturing, reliable power is an important factor. Competitive electricity prices are one of the strongest advantages in recruitment and retention of industry in the Valley. TVA needs to be in the best quartile for cost. The IRP will enable TVA to be competitive. Mr. Rogers explained that his area has a high poverty level and that TVA needs to understand the impact of high rates on residents. The IRP is sensitive to that. The decision to retire Widows Creek Fossil Units 7 and 8 was a disappointment. Mr. Rogers hopes that TVA will look for economic development opportunities in that area. The IRP process was successful and met its objectives. It provides a diversified portfolio and represents a good effort.

Mr. Rogers said that he provided the draft IRP recommendations to all Council members who were not present at the meeting. Clifford Stockton provided comments for Mr. Rogers to

read to the rest of the Council. Mr. Stockton said that he recognizes that TVA's EE programs have been targeted to moderate to higher income homes, commercial businesses, and industrial customers. For apartment building owners who provide homes for lower income residents, there are no incentives to make improvements. It is incumbent on TVA to develop programs to serve the needs of these underserved populations.

6. Council Discussion on Draft Advice

Dus Rogers distributed a draft advice statement to the Council for its consideration. The Council offered the following initial thoughts on the substance and form of the draft advice.

- Lloyd Webb suggested adding statements about the plan meeting statutory requirements and being consistent with the study's objectives and about the significant work done by the IRP working group.
- Wes Kelley pointed out some redundancies and suggested inclusion of the emissions reductions TVA has already achieved, TVA's general environmental stewardship mission, and a statement regarding continued work with local power companies to continue implementing programs to achieve the goals identified in the IRP.
- Jack Simmons suggested the use of "clean" to describe TVA's resources rather than "cleaner," as "cleaner" is subjective and TVA is in compliance with environmental laws.
- Len Peters suggested dividing the advice statement more clearly into a preamble section and the advice. He also suggested emphasizing that participation in the IRP isn't the only role of the RERC.
- Anne Davis said she appreciates the work TVA has done to refine EE and wind modeling and suggested that the advice statement should encourage TVA to continue to do so as new information arises; the assumptions and modeling should continue to be reviewed on an ongoing basis. Wes Kelley noted that the IRP recommendations talk about how breakthrough technologies can change the landscape, which would require TVA to be watching and assessing the market.
- Susan Williams noted that the beginning bullets are descriptors, while the last few are the actual recommendations. She suggested dividing the advice statement into a few paragraphs—this is who we are, this is what we did, this is what we recommend.
- Lloyd Webb questioned the need to restate the IRP's recommendations. Mr. Kelley noted that it would be more important to state where the Council might diverge from the recommendations or to underline things that are particularly impactful.
- Dr. Peters suggested that the advice should commend the Board for establishing the RERC and enabling it to be an additional filter that has strengthened the IRP. Mr. Kelley noted that RERC provided the ability for many constituencies to have their voices heard, particularly state-level voices.

TVA staff took an action item to revise the draft advice statement based on the Council's initial feedback and provide a new draft for further discussion the following day.

The RERC adjourned for the evening at 4:35 p.m. EDT and reconvened on Tuesday, April 21, 2015, at 8:30 a.m. EDT.

7. Public Comment Session

One member of the public offered comments:

- Chris Ann Lunghino, an organizer with the Sierra Club's Beyond Coal Campaign, thanked the Council for the work it does to help TVA manage energy resources. She said the IRP process has been extremely positive. One area for improvement is that the IRP should call for more solar and wind sooner during the planning period. Sierra Club

has sent a letter to TVA urging the Board to expand the scope and speed with which TVA is moving away from coal. The IRP's recommendations take steps in the right direction, but TVA is not taking a leadership role. Sierra Club encourages the TVA Board to act sooner by, for example, taking advantage of the Clean Line HVDC project if the costs play out. The TVA Board should also specifically acknowledge that it will look for and pursue breakthrough technologies, including storage technologies.

8. Council Discussion on Draft Advice

Council member Jason Keith provided a statement that Dus Rogers read to the group. Dr. Keith said that he likes the diversification reflected in the IRP. Based on the fluctuation in energy costs in the last two years, this is a necessity. He likes the approach highlighted in the summary of different scenarios with high/low levels to get a comprehensive picture. Dr. Keith said we should all do what we can to improve EE, especially in transmission. Enhanced use of EE could result in significant savings to customers and TVA and result in less dependence on foreign sources. This IRP is better than the 2011 IRP, which reflects TVA's efforts toward continuous improvement.

TVA staff distributed a revised draft advice statement for Council discussion, and the Council edited that draft advice statement to formulate its final advice. The key area of further discussion and refinement was centered on the Council's implementation guidance. In particular, the Council focused on properly phrasing its advice that TVA should continue to make refinements to its planning direction as new information arises and that TVA should work with partners to investigate additional approaches in EE and distributed resources.

Susan Williams moved to approve the Council's advice statement. Lloyd Webb seconded the motion. Chair Dus Rogers called for a vote, and the Council unanimously approved the advice statement reflected in Appendix C. Mr. Rogers will present the Council's advice to the TVA Board when it considers the IRP, which is anticipated to be in August.

9. Closing Remarks

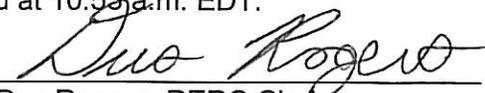
Gary Brinkworth reminded the Council of the schedule for completing the final IRP and associated environmental review. (Slide 63)

Dr. Hoagland briefly touched on possible future RERC discussion topics, including EE implementation and focus on low income populations. (Slide 65) Wes Kelley asked for a briefing of the Council on the value of solar as that work is done.

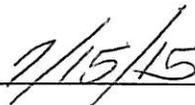
Dr. Hoagland thanked the Council members for their service on the first term of the RERC. The second term of Council will begin on August 1, 2015. We anticipate the first meeting of the new term occurring in late fall/winter.

The meeting adjourned at 10:53 a.m. EDT.

Minutes Approved:


Dus Rogers, RERC Chair

Date:


7/15/15

Appendix A
Non-Council Meeting Attendees

TVA Staff			
Teresa Ashworth	Brenda Brickhouse	Gary Brinkworth	Cathy Coffey
Sonja Greene	Joe Hoagland	Hunter Hydas	Beth Keel
Cheryl Kosmidis	Jo Anne Lavender	Kelly Love	John Myers
Chuck Nicholson	Tom Rice	Scott Self	Greg Signer
Liz Upchurch			

Members of the Public Who Made Oral Statements
Chris Ann Lunghino

Other
Jessica Monroe, Betty Spence – TVA Office of the Inspector General

**Appendix B
Meeting Agenda**

Regional Energy Resource Council

June 16-17, 2015

**West Tower Auditorium, TVA
400 W. Summit Hill Drive, Knoxville, TN 37902**

June 16, 2015	
Noon	Lunch
1:00	Welcome - Dus Rogers, Joe Hoagland/ DFO; Jo Anne Lavender, Facilitator Introduction of Council Members – Lavender
1:10	Safety Moment Lavender
1:15	Meeting Purpose Hoagland
1:20	Overview of Agenda Lavender
1:25	Recap April 20-21, 2015 Meeting Lavender
1:30	TVA Update Hoagland
1:40	IRP Status Gary Brinkworth, SR Program Manager
2:00	Break
2:15	IRP Public Comments Summary Chuck Nicholson, <i>NEPA Compliance Specialist</i>
2:30	IRP Comments Response Brinkworth
2:45	Preview the Final IRP/SEIS Reports Brinkworth
3:05	IRP Findings and Recommendations Scott Self <i>Vice President, Enterprise Planning</i>
3:25	Break
3:40	Feedback on Recommendations Council/ Lavender
4:40	Summary of the Day Lavender
4:45	Closing Comments & Adjourn Day 1 Hoagland and Rogers

June 17, 2015	
7:30 - 8:45	Accept Public Requests to Comment
8:30	Welcome, Review of Day 1, Day 2 Agenda Lavender
8:45	Public Listening Session Lavender
9:45	Break
10:00	IRP Advice/ Resolution to TVA Board Lavender
11:00	Break

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11:15	IRP Next Steps Brinkworth
11:30	Appreciation and RERC Future Meetings Hoagland
11:45	Summary, Adjourn Hoagland and Rogers
12:00	Lunch

Appendix C Council Advice

Regional Energy Resource Council Advice to the TVA Board on the 2015 IRP Unanimously Approved by the RERC on June 17, 2015

The Regional Energy Resource Council (RERC) was established by TVA to obtain advice and views from the public on the development and management of energy resources in the Tennessee Valley region. The RERC comprises a diverse group of stakeholders representing environmental, governmental, industrial, business, consumer, educational, and community leadership interests.

TVA has completed an Integrated Resource Plan (IRP) to guide identification of resources to meet the energy needs of the Tennessee Valley region over the next 20 years. As part of its mission, the RERC has participated in the development of the 2015 IRP. Throughout the process, the RERC has given guidance to TVA staff on the development of the study and the resulting planning recommendation.

The RERC affirms that:

1. The IRP identifies resource solutions that allow TVA to continue to provide reliable, low-cost power to its electric customers, meeting the objectives outlined at the beginning of the study and adhering to the statutory requirement for least-cost planning.
2. The IRP provides TVA a flexible framework to manage resource choices in a dynamic regulatory and economic environment by providing guideline ranges and sensitivities for the primary components of the IRP.
3. The IRP uses innovative modeling practices to include energy efficiency and renewable resources as selectable energy resources. Further, the IRP recommends increased use of energy efficiency and renewable resources in concert with conventional generating resources in a diverse portfolio.
4. TVA has made significant strides in improving its environmental profile and reducing CO₂ emissions and, based on IRP recommendations, will continue to do so.
5. The process used to develop the IRP was comprehensive and involved multiple opportunities for public review and comment. The RERC recognizes the significant effort of the IRP Working Group in the development of the recommendation, and we commend the TVA Board on the creation of the RERC as a forum dedicated to providing advice on key energy issues.

Council Advice:

The RERC recommends that the TVA Board approve the 2015 IRP, and use the IRP as a guide to deliver reliable, low-cost power to electric customers in the Tennessee Valley. The RERC provides the following guidance around implementation of the IRP:

1. TVA should consider all of the analyses in the IRP and continue to refine input assumptions based on relevant data, knowledge about technology advances, and changing market conditions.
2. TVA should work closely with Local Power Companies as energy efficiency efforts and distribution-level resources are implemented.
3. TVA and appropriate partners should investigate additional approaches in energy efficiencies and distributed resources, considering those who cannot afford the necessary investments and recognizing fairness and equity for all rate payers.