Tennessee Valley Authority
Regional Energy Resource Council
May 13, 2014
Meeting Minutes

The Tennessee Valley Authority (TVA) Regional Energy Resource Council (RERC or Council) convened for the third meeting of its first term at 9:01 a.m. CDT on Tuesday, May 13, 2014, in the Capitol I room at the Nashville Airport Marriott, 600 Marriott Drive, Nashville, Tennessee.

Council members attending:

Dus Rogers, Chair	Jillian Boxler	Chris Champion
Anne Davis	Wayne Davis	Catherine Glover
Rodney Goodman	Dave Hrabosky	Wes Kelley
Bob Martineau	Len Peters	Joe Satterfield
Jack Simmons	Stephen Smith	Don van der Vaart
Lloyd Webb	Susan Williams	

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

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

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

The majority of the meeting was devoted to presentations by TVA staff about the current status of the Integrated Resource Plan (IRP). Council members asked clarifying questions about and offered individual suggestions on certain components of the planning process. No formal consensus advice was provided by the Council at this meeting.

1. **Designated Federal Officer's Report**
   Joe Hoagland summarized the purpose of the meeting as providing an update to the Council about two of the data inputs into the IRP planning process—strategies and scorecards—and seeking individualized input from the Council members about the breadth and content of those inputs. He summarized the relationship between the IRP and individual asset decisions, emphasizing that the goal of integrated resource planning is least-regret decision-making. He also reminded the Council of the composition of the membership of the IRP working group.

   Dr. Hoagland reported two highlights from the May 8, 2014, meeting of the TVA Board of Directors. In response to the Council's recent advice that TVA should open the Board's committee meetings to the public, Dr. Hoagland reported that Director Richard Howorth, chair of the Board's External Relations Committee, emphasized the value of the input the Board receives from the RERC, the IRP working group, the Regional Resource Stewardship Council, and other sources; expressed appreciation for comments regarding transparency of the decision-making process; and stated the Board's intent to continue being transparent in its

decision-making and to seek out opportunities to enhance that goal. Dr. Hoagland further reported that there was discussion at the Board meeting about solar, coal, and renewables and noted that this discussion reflects a national theme that plays into the IRP process and will inform TVA's future plans.

2. **2015 IRP Project Update: Strategies**
Gary Brinkworth, Senior Program Manager, IRP, updated the Council on the strategies under consideration in the IRP update. (See presentation.) Mr. Brinkworth first reviewed the purpose of resource planning, the IRP project schedule, the opportunities for RERC input, and a high-level summary of the various data inputs into the resource planning model (slides 11-15). He explained the difference between scenarios and strategies and provided a recap of the scenarios shared with the Council at its January 2014 meeting (slides 16-17).

Mr. Brinkworth described the process for building strategies and shared the ten design parameters that were selected for strategy development (slides 18-20). With respect to the transmission grid improvements parameter, he clarified that the improvements contemplated are those undertaken for economic purposes, not for system reliability. With respect to the new coal parameter, Don van der Vaart suggested that "conventional" coal (i.e., without carbon capture and sequestration (CCS) technology) should be an option, and Dr. Peters expressed skepticism about the technological viability and availability of CCS. In response to a question from Dr. Smith, Dr. Hoagland stated that small modular reactors would be considered in the IRP, but TVA is still viewing them as an R&D project. Mr. Brinkworth clarified that energy efficiency and demand reduction would be broken apart for their consideration in each strategy, and several members expressed that this separation is appropriate because their impact on load is different. Jack Simmons commented that there is no industry-accepted method for modeling energy efficiency, making it difficult to capture end-use customer behavior.

Mr. Brinkworth shared a list of eight candidate planning strategies and provided additional detail concerning the five strategies selected for analysis in the IRP (slides 21-24). Dr. Peters expressed concern about whether the "embracing renewables" strategy is realistic and sufficiently well-defined. Mr. Brinkworth and Dr. Hoagland explained that the renewables strategy is useful in providing a "stress test" in the IRP analysis. In addition, a fuller analysis of this strategy would provide quantitative results which have been lacking to a large degree with respect to the renewables approach desired by some stakeholders. Dr. Smith said that, to its credit, TVA is modeling renewables at a level it has not done before and that TVA understands the intermittency issue. He expressed that the IRP should consider renewables with the latest factual data inputs and let the model decide the outcome. In response to a question from Joe Satterfield, Mr. Brinkworth clarified that the renewable energy targets in this strategy include TVA's hydro plants and that the current percentage of TVA renewables is approximately 16%. Wes Kelley asked whether this strategy would end the discussion about completing Bellefonte, and Mr. Brinkworth responded that it would, as the strategy constraints would not permit any new nuclear additions beyond the current portfolio. Mr. Brinkworth further clarified that planned retirements and current fleet strategy are built into the IRP strategies.

Mr. Kelley questioned how the IRP's focus on costs relates to TVA's rates. Mr. Brinkworth responded that cost is only one input into the complex rate-making model and that rate-making goes beyond the scope of the IRP. Lloyd Webb suggested as a future meeting topic a presentation on the legal constraints under the TVA Act associated with rate-making; he expressed particular interest in understanding the "smoothing" of rates vs. the requirement to recover costs.

3. **Public Comment Period:** No members of the public provided comments.

4. **2015 IRP Project Update: Scorecard**
   Mr. Brinkworth updated the Council on the standardized metrics that will be used to compare the strategies across multiple scenarios. (See presentation.) He discussed the importance of having effective metrics that align with TVA's strategic imperatives and communicate the results of complex modeling and analyses in an accessible manner. TVA has benchmarked the evaluation criteria used in similar analyses by peer utilities.

   Mr. Brinkworth explained the concept of a scorecard and shared examples from the 2011 IRP. The color-coding of the scorecards reflects relative position. The 2011 IRP used "Harvey balls" to reflect environmental stewardship analytics. The IRP working group has recommended against the use of Harvey balls in the 2015 IRP update, and the team is considering other options to reflect those analytics. Dave Hrabosky, Mr. Simmons, and Mr. Webb commented on the visuals of the scorecards. Mr. Brinkworth discussed the proposed scorecard categories (slides 38-39) and explained that the goal of the categories and underlying metrics is to differentiate between various portfolios. Effective scorecards can serve to stimulate discussions about priorities and trade-offs in selecting the preferred resource plan.

5. **Council Discussion**
   Several Council members commented on the impact of natural gas prices and availability:
   - Len Peters stated that the single biggest risk to and driver of the IRP is the price of natural gas. He expressed concern about relying on EIA estimates and about being able to develop meaningful strategies if natural gas price estimates are not correct.
   - Lloyd Webb asked how natural gas prices are factored into the IRP analysis. Mr. Brinkworth responded that TVA looks at various drivers to create the IRP's natural gas forecast, including price, sustainability, and supply. The IRP's stochastic analysis tests the gas price. Mr. Webb stated that natural gas prices are a critical factor in determining future resources and asked TVA to share more information with the Council about how gas prices are playing out in the IRP analysis.
   - Don van der Vaart stated that there is value in having baseload generating fuel diversity to provide an option to handle natural gas price fluctuations.
   - Stephen Smith expressed that there is interplay between gas and renewables that should be captured in the analysis. Renewables can help hedge against high natural gas prices by coupling a large solar facility with a gas plant and coordinating their dispatch priority.
   - Susan Williams shared that a recent study on supply infrastructure indicated that a large natural gas supply should keep prices low. Mr. Webb expressed concern that, despite a large supply, transportation may still be tight; pipeline capacity is an issue. Dr. Peters

said there are too many moving parts to assume that supply will keep prices stable, including transportation/distribution issues and exports.

Wes Kelley asked what TVA's reserve capacity margin is, and Mr. Brinkworth responded that it is 15%. Mr. Kelley noted that utilities must pay a premium cost to maintain capacity margins that are hardly ever used. He asked whether TVA will choose a particular power source to meet the margin requirement and whether the IRP modeling takes into account transmission constraints during maximum capacity periods. Mr. Brinkworth responded that the model chooses the least-cost alternative to provide reserve capacity margin and that the model does take into account transmission constraints.

Dave Hrabosky asked how TVA controls for the statutory debt cap in the IRP analysis. Mr. Brinkworth responded that TVA does not want to impose any more constraints than necessary to get to the least-cost planning alternative. As a result, the debt cap is not imposed on the front-end of the analysis; rather, after the analytics are completed, any portfolio that would cause the debt cap to be exceeded is discarded. Mr. Kelley asked how the debt cap impact could be fully assessed without a fuller consideration of rate-setting. Mr. Brinkworth responded that the model does include information about rates at a macro level and clarified that the IRP analysis uses a debt coverage ratio to assess impact to the debt cap.

Dus Rogers asked whether the IRP framework considers the amount already invested in Bellefonte. Mr. Brinkworth responded that it does not consider the sunk fixed costs of the existing fleet; it considers incremental future costs. Mr. Rogers asked how alternative financing arrangements were reflected in the analysis, and Mr. Brinkworth responded that such arrangements are considered in the debt coverage ratio calculation.

Dr. van der Vaart asked whether TVA's assessment includes both costs required to be spent on environmental compliance and costs spent on environmental stewardship. Dr. Hoagland responded that both are assessed and explained the challenge of balancing rates versus environmental stewardship.

Anne Davis and Dr. Smith requested additional clarity on how the Board will handle the Council's recommendation for public Board committee meetings. Dr. Hoagland responded that the External Relations Committee received the advice developed by the Council in January, and the Board members are continuing to evaluate it in context of their broader goal of enhanced transparency of decision-making.

Dr. Smith asked about the timing of the decision on the Allen fossil plant. Dr. Hoagland indicated he would follow up with that information and would provide the Council an opportunity for input into the decision-making process.

Mr. Hrabosky asked when the next deliverable will be developed by the Council. Dr. Hoagland responded that the next deliverable will be feedback on the Draft IRP results at the October meeting of the Council.

6. The next meeting of the Council will be held October 15-16, 2014, in Knoxville, Tennessee.

The meeting adjourned at 1:22 p.m. CDT.

Minutes Approved: Dus Rogers **Date:** 6/3/14

Dus Rogers, RERC Chair

Appendix A
Non-Council Meeting Attendees

TVA Staff			
Gary Brinkworth	Cathy Coffey	Hunter Hydas	Beth Keel
Kelly Love	John Myers	Liz Upchurch	

Members of the Public	
Nathan Moore	

Others	
Ross Cook – TVA Security	Seth Sullivan – Audio-visual support

Appendix B
Meeting Agenda

Regional Energy Resource Council

May 13, 2014

Nashville Airport Marriott
600 Marriott Drive, Nashville, TN 37214

Tuesday, May 13 *(Times are CDT)*	
8:30	**Continental Breakfast** - *Capitol One Room, Marriott Hotel*
9:00	**Welcome** - *Joe Hoagland, Designated Federal Officer; Dus Rogers, Chair; Jo Anne Lavender, Facilitator* **Introductions & New Member Recognition** - *Rogers* **Safety Moment** - *Hoagland*
9:15	**Meeting Purpose & Recap of January 2014 Meeting** - *Hoagland*
9:30	**IRP Update: Strategies** - *Gary Brinkworth, Sr. Program Manager IRP*
10:30	**Break**
10:45	**Public Comment Period**
11:45	**Lunch**
12:45	**IRP Update: Scorecard** - *Brinkworth*
2:00	**Break**
2:15	**Council Discussion** - *Lavender*
3:00	**Wrap up & Adjourn** - *Hoagland/Rogers*