

**DRAFT**  
**Tennessee Valley Authority**  
**Integrated Resource Plan Stakeholder Review Group**  
**Working Session**

**MEETING MINUTES**

**June 29, 2010**  
**Murfreesboro, Tennessee**

Members Present:

Randy McAdams, Facilitator, Scott Madden  
Dana Christensen, Oak Ridge National Laboratories  
Ryan Gooch, State of Tennessee  
Louise Gorenflo, Sierra Club  
Hank List, Commonwealth of Kentucky  
David McKinney, Tennessee Wildlife Resource Agency  
David Reister, Environmental Stakeholder  
Jack Simmons, Tennessee Valley Public Power Association  
Stephen Smith, Southern Alliance for Clean Energy  
Lloyd Webb, Tennessee Valley Industrial Committee  
Deb Woolley, Tennessee Chamber of Commerce and Industry

Members Absent:

Lance Brown, Partnership for Affordable Clean Energy  
Richard Holland, Packaging Corporation of America  
George Kitchens, Joe Wheeler Electric Membership Corporation  
Jan Simek, University of Tennessee  
Patrick Sullivan, Office of Governor Haley Barbour

Guests:

Brian Paddock, Sierra Club  
Sam Gomberg, Southern Alliance for Clean Energy  
Tom Midyett, Tennessee Paper Council  
Josh Veazey, Partnership for Affordable Clean Energy

TVA:

Bob Balzar, Gary Brinkworth, Larry Cole, Ed Colston, Russell Dotson, B.J. Gatten, Jill Glenn, Randy Johnson, Alisha Mulkey, John Myers, Chuck Nicholson, Greg Signer, Van Wardlaw, Janet Watts, Beth Yetter, Steve Gilbert (ScottMadden)

- I. Randy McAdams, ScottMadden, opened the meeting by welcoming the Stakeholder Review Group (SRG) and thanking them for their continued participation in the IRP process. Randy introduced Josh Veazey (PACE) who was sitting in for Lance Brown.

The intent of today's agenda is to provide the SRG an overview of TVA's fossil fleet and evaluation process for decisions pertaining to unit lay-ups, a review of the

IRP scorecard and evaluation metrics, and the framework for interpreting model results. There will be no confidential slides shown at this working session. Randy noted that there is a large amount of time allotted to open discussion. All input and requested items from SRG members will be captured.

Randy reminded members of the SRG purpose which is to provide TVA with in-depth discussions, serve as a source of information as a professional review group, build efficiency into the study process, and validate the various steps of the IRP process. Today's meeting is a working session. Randy also reminded the SRG that there are two other meeting types: workshops which are meant to provide in-depth information on specific topics and must be voted on by a majority of the SRG members and also public comment sessions.

Randy reminded the SRG of the six fundamental steps of the IRP process: scope, develop inputs and framework, analyze and evaluate the initial results (the current status), incorporate input, and identify a preferred plan. Randy also stated that the IRP draft document and associated EIS are still planned to be released in September.

Van Wardlaw welcomed the SRG and thanked the SRG for their continued involvement in the IRP process. Their input is greatly appreciated.

- II. Janet Watts, General Manager, Fossil Fleet Strategy. The presentation started with a picture showing an overview of TVA's fossil fleet in terms of locations, megawatts of generation based on nameplate capacity, and clean air controls for NO<sub>x</sub> and SO<sub>2</sub>. Janet reminded the SRG that clean air controls are not small pieces of equipment and involve a lot of labor and time for construction. She brought pictures of air control equipment to show SRG members. With clean air controls that are already in place, TVA has reduced its air pollutants from coal plants by 85% overall.

The merit assessment and ranking process of coal plants involves nine evaluations:

1. Operating cost
2. Equivalent forced outage rate
3. Transmission impact
4. Remaining clean air capital
5. Fixed O&M and yearly capital
6. Future ash handling costs
7. Fuel flexibility
8. Required capital improvements
9. CO<sub>2</sub> intensity

These factors are pulled together in order to complete an evaluation and rank each coal unit.

Questions/Comments received during the presentation:

- Request to go over boilers and/or SCRs associated with each plant as well as the heat rates for each plant by boiler (suggested to provide in spreadsheet format).
- What drove decisions for which units are controlled: non-attainment issues, distance from urban areas?
- Has TVA filed SIPs, filed permits?

- Do we apply the 30 billion debt cap to merit assessment/evaluation?
- Any current commitments in strategy for when emission controls will be placed on units without the controls?
- Concerns of thermal discharge and FGD discharge to rivers and impact on biological health
- Comments on type of coal used at different plants and if this is implemented into the IRP modeling
- Enactment of the Clean Water Act may affect mining in Tennessee
- Do fossil lay-ups include/consider potential conversion of plant?

III. Review of IRP Scorecard & Evaluation Metrics – Gary Brinkworth. Gary began with a reminder of how the scenarios and strategies interact with each other to create 35 different resource portfolios. The purpose of the IRP scorecard is to take the details of the portfolios and present them in a way that facilitates discussion of trade-offs between crucial aspects such as cost, reliability, risk, environmental stewardship, technology innovation, etc. The purpose of the scorecard is not to produce a definite answer but is instead intended to facilitate in choosing a strategy that is positioned the most ideally and performs the best when all the indicators are applied within the different worlds.

The scorecard is designed with two halves: ranking metrics and strategic indicators. The scorecard will be used to help executives and the Board to make an informed choice in choosing a long-term power supply strategy. After the scenarios and strategies are intersected to produce 35 20-year resource plans, the ranking metrics are applied as the initial step in the scorecard process and are composed of cost and risk metrics. The ranking metrics are intended to score the plans numerically and prioritize the strategies. The cost is evaluated using a stochastic model (Monte Carlo analysis). Each portfolio is run through 72 iterations of stochastic analysis. Cost metric is weighted at 65% while the risk metric is weighted at 35%. Once calculated, these are translated into a score out of 100 using Kepner Tregoe Analysis, a problem solving and decision making process.

The second step of the scorecard process is to apply the strategic indicators, which represent TVA's mission statement. The strategic indicators are meant to help provide a more complete picture of how a portfolio performs by applying environmental, economic, and technology innovation indicators. Strategic indicators will be applied to the top portfolios within the top performing strategy.

Once the draft IRP has been released, some further analysis will probably be done based on feedback from the public in terms of sensitivity runs and refreshing runs with updated assumptions.

A traditional IRP usually only assesses low cost and reliable power. TVA is applying the strategic indicators in order to assess environmental, economic, and technological impacts. Also, the Natural Resource Plan will help emphasize the environmental impacts even further.

Questions/Comments received during the presentation:

- How is an accident like Chernobyl or the possibility of coal being banned in the future implemented into the analysis?
- How is TVA's debt cap implemented into the analysis?

- Are thermal discharge and pollutant levels in water included in the environmental indicator?
- In economic indicator, are you evaluating by different sectors?
- Does the technology innovation indicator include research and development?

IV. Modeling Results Framework – Gary Brinkworth. An overview of how the modeling process works as well as an introduction to the format of viewing modeling results was included in the presentation in order to prepare the SRG for the July working sessions. Gary gave an overview of how inputs are developed and put into the model. Two models are used to complete the modeling: a capacity expansion model and a financial analysis model.

For the capacity expansion model, a total energy forecast is developed to produce a peak energy forecast. Commodity price forecasts, renewable portfolios, demand side energy efficiency/demand response portfolios, and resource options which include typical generation options as well as purchased power agreements are loaded into the model. Then, modeling constraints are added in. These constraints include limitations as to when a model can choose certain generation options due to lead time for construction and permitting. This capacity expansion model is used to find the optimum combination of resources to meet the projected load requirements while minimizing present value revenue requirements (PVRR) and total revenue requirements. Other constraints include dispatch limitations, capacity limits, fuel issues, and transmission limitations.

Once the capacity expansion model is completed, the outputs of this model are translated into the financial analysis model. The financial model uses the outputs from the capacity expansion model in order to compute production costs.

In the July working sessions, three types of charts will be shown to help understand the modeling process:

(1) Capacity gap: will implement the load forecast and adjust for interruptibles and model inputs. Firm requirements are loaded in and then the model optimizes for the best resource mix.

(2) Expansion plan: will be separate charts by each scenario with all five strategies on the graphs. This graphic will show expansion in increments of five years by type of generation option.

(3) Energy mix: will show how energy supply is divided between the years throughout a strategy.

It was suggested that the colors between these three different chart types are kept consistent.

V. Wrap-Up – Randy McAdams thanked everyone for their input on the scorecard and metrics. The action items that were captured will be added to the tracking sheet and addressed accordingly. In July, preliminary results will be presented which will include: populated scorecards, the charts described above, and more on the modeling process. Randy McAdams introduced Bob Balzar, the newly appointed vice president of EE/DR. Balzar comes from Seattle City Light, where he served as director of conservation resources since 2007.

Alisha Mulkey and Ed Colston reminded the SRG that a web-based survey was completed last year as part of the IRP scoping process. At the request of the SRG

for a more representative survey of all valley residents, a phone survey has been designed which went out in the field on June 30, 2010 and is scheduled to be completed by August 12, 2010. The survey will take place Monday through Saturday from 5pm-9pm and will be distributed evenly throughout the Valley.

Suggestions/Comments:

- Was requested to provide more information on the Utility Environmental Benchmarking Forum
- Was requested to learn more about risk management and how TVA is applying lessons learned
- Was requested to provide a schedule of the path/role intended for SRG after release of IRP draft

As a reminder, the next scheduled working sessions are July 20-21 in Chattanooga. Once the location is decided, the SRG will be informed. Also, there is a working session on August 12 which will be held at the Chattanooga.

The meeting was adjourned.