

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

**MEETING MINUTES**

**October 22 & 23, 2009  
Chattanooga, Tennessee**

Day One: October 22, 2009

Members (or alternate) present:

Steve Adams, Tennessee Valley Public Power Association  
Lance Brown, Partnership for Affordable Clean Energy  
Dana Christenson, Oak Ridge National Laboratories  
Ryan Gooch, State of Tennessee  
Louise Gorenflo, Sierra Club  
Richard Holland, Packaging Corporation of America  
Henry List, Commonwealth of Kentucky  
David McKinney, Tennessee Wildlife Resource Agency  
Tom Midyett, Tennessee Paper Council  
David Reister, Environmental Stakeholder  
Stephen Smith, Southern Alliance for Clean Energy  
Lloyd Webb, Tennessee Valley Industrial Committee  
Deborah Woolley, Tennessee Chamber of Commerce and Industry  
Ron Holcomb, TVPPA

Members absent:

Dr. Jan Simek, University of Tennessee  
Dr. Jerry Paul, Howard Baker Jr. Center for Public Policy

TVA:

Joe Hoagland, Randy Johnson, Alisha Mulkey, Chuck Nicholson, Beth Creel, Barb Martocci, James Hall, Tommy Thompson, Carrie Meade, Beth Keel, Trudi Pullin, Betty Dyer, Gary Brinkworth, Daryl Williams, Jack Bailey, Melissa Stone, John Linder, Forrest Forster

- I. Joe Hoagland welcomed all to the meeting and reiterated that the issues being discussed within the IRP scope are especially prevalent given all the current developments in the legislative arena. Randy McAdams of Scott Madden, Inc. has been appointed as the facilitator moving forward. Steve Gilbert and Jason Davis, also with Scott Madden, will assist with action items and questions/comments from the group.
- II. Randy McAdams reviewed the operating protocol and charter for SRG. Additionally, clarification was given around the 3 types of meetings for the SRG:
  - Working session - closed to the public as originally voted on by the group; attended by stakeholder members and one additional person invited by stakeholder.

- Workshops - to provide more in-depth information on specific topics to those members who are interested; a free exchange of information with less presentation material is expected.
- Public Comment/Listening session - to receive input from public on specific topics; likely will be hosted after working sessions.

In addition to these meetings, TVA will host two additional types of meetings – open to the public – to continue public involvement in the IRP process.

- Public meetings/briefing – a same day report out of SRG working session but at a very high level. This will allow public updates on the IRP status; SRG members can participate but are not required to attend. The format will typically include presentation material followed by a Q&A session. One or 2 TVA reps will be responsible for speaking and answering questions.
- Quarterly update – These will be presented as a strategic overview of the project status. The SRG may want to report-out to their constituents on their own.

Action items from last meeting, with current status:

1. Assess feasibility of surveying TVA's customers - *in process*
2. What has the national experience been with TOU rates? And with rates that promote EE? - *in process*
3. Complete study to evaluate running Allen on gas vs. coal - *in process*
4. Develop schedule that outlines future SRG meetings - complete - *will discuss today*
5. Schedule an additional deep dive on energy efficiency - *complete workshop scheduled for December*
6. Share the state energy plans within the service territory with the SRG - complete - *state energy plans are posted to the share point website*

### III. Overview of supply side resources

Gary Brinkworth – presentation

Today's objective is to enable understanding of TVA's approach for evaluating and screening supply source technologies. The IRP Summary Process includes: strategies, scenarios, uncertainties (focus for today and tomorrow), results, evaluation criteria, and capacity expansion plan. Capacity planning is typically about seeking the least cost option to close the gap between projected firm requirements and existing firm supply, consistent with reliability requirements. The gap can be filled through either: demand-side resources or supply-side resources.

Variables that are key to operating cost projections include:

- Unit operating efficiency or heat rate conversion efficiency of fuel into power
- Fuel and variable operating costs
- Commitment/dispatch constraints

Resources are generally classified according to duty cycle. There are many technologies to consider - cost, application, and maturity vary widely. Geography and proximity to supply source are also major factors.

Cost estimates include: determining required plant size and number of units, estimate capital costs, and utilize a variety of data sources. Performance estimates include: estimating performance characteristics, in addition to capital costs: heat rate and power output, fixed and variable O&M, emission rates, availability, and operational characteristics.

#### IV. Fossil

James Hall – presentation

Described the characteristics of different types of fossil plants - when determining best estimate of cost, account for technological, environmental, and siting factors.

TVA has had experience in co-generation and has looked at many different types.

Discussed cautions when comparing capital cost data – TVA estimates have improved over the years given our experience.

#### LUNCH BREAK

#### V. Nuclear

Jack Bailey - presentation

Discussed characteristics of nuclear plants: provider of baseload generation, low operating costs, no air emissions and reliability; however, nuclear capital costs can be expensive. Different estimates largely reflect different quotation methods

To figure out how we do better at estimating future costs, TVA would get licensing before construction is started, standardize the plant, and have engineering done prior to construction start.

#### VI. Renewable and alternatives

Daryl Williams - presentation

A press release went out today that TVA has signed an agreement for wind purchases: 200 MW – from the Ashley wind farm in McIntosh County, ND and 250 MW from Hurricane Lake Energy Center in Roberts County, SD. The wind energy supply will be delivered to TVA beginning in 2012 if all applicable environmental requirements are met and firm transmission paths to TVA are secured.

The characteristics of several renewable options were reviewed including technology maturity, costs, environmental impacts, and capacity. Though renewables have a role in the supply portfolio for TVA, it must still be considered the availability of these resources and costs comparisons to other supply options.

#### VII. Comparison of Capital Costs and Screening Inputs

Gary Brinkworth - presentation

***Confidential and restrictive information - not to be included in notes***

#### VIII. Modeling Process for Resource Planning

Gary Brinkworth - presentation

Explained the parameters for inputs/outputs to the planning process, e.g. model takes all data and comes up with an optimized capacity plan. Resource options are supply side, demand side and purchased power agreements.

The modeling process also includes constraints and reliability requirements (e.g. reserve margin). NERC says we must survive a contingency; TVA continually evaluates what that value is.

The model looks at every possible combination of short falls over study period. Early model test runs are being completed now, with some preliminary results expected in Feb 2010.

Day Two: October 23, 2009

Attendees :

Tom Midyett, Henry List, Stephen Smith, Louise Gorenflo, Ron Holcomb, David McKinney, Deborah Woolley, David Reister, Steve Adams, Ryan Gooch, Lloyd Webb

TVA:

Joe Hoagland, Randy Johnson, James Linder, Forrest Forster, Alisha Mulkey, Tommy Thompson, Melissa Stone, Beth Creel, Beth Keel, Chuck Nicholson, Bob Millard, Janet Jentilet, Juan Gonzales, Gary Brinkworth, John Myers, Greg Signer, Steve Lomax, Andrew Kosnaski

Scott Madden:

Randy McAdams, Steve Gilbert, Jason Davis

I. Brief overview of today's agenda by Randy McAdams

At the end of day we will have a wrap-up all discussions, finalize future meeting calendar, and review action items.

**NOTE:** TVA will have a summary of action items from the meeting for the group's review by early to mid-week.

II. Planning inputs

Gary Brinkworth - presentation

Today's objective is to enable understanding of TVA's approach for projecting uncertain variables and inputs to the model. The IRP Summary Process includes: strategies, scenarios, uncertainties, results, evaluation criteria, and capacity expansion plan.

Uncertainties are factors that may impact the cost or performance of TVA's energy resources. The stakeholder group reviewed this list of uncertainties at the August 18<sup>th</sup> meeting. Today's presentation will focus on the planning assumptions. TVA utilizes recent TVA experience and internal expertise, historical and empirical data, industry research and analysis, contract negotiations, and input from government agencies, stakeholders, and external orgs in projecting planning inputs.

Presentations will focus on the following uncertainties: load forecast, commodity prices, environmental outlook, and financial parameters.

III. Load Forecast

Bob Millard – presentation

Load forecasts for the IRP effort are parallel to TVA's long range planning needs.

Forecasts are based on statistical and economic modeling techniques based on several drivers, including economic forecast, price of natural gas, appliance saturation and efficiencies, price of electricity, direct served customer info, and weather assumptions.

Staff creates high and low forecasts to determine system energy and peak load expectations. TVA's varying customer sector's energy forecast has different drivers. The impact of the recession and expected recovery are factored into the forecast.

IV. Regulatory Outlook

John Myers - presentation

The environmental outlook identifies the range of environmental issues and provides planning targets for their form, severity and timing. It influences other planning processes within TVA and is used for identifying risks.

Information is gathered from various internal and external sources in developing the environmental outlook. It tracks regulatory, legislative, judicial, and policy objectives that shape future environmental requirements on operations; establishes cross-functional teams around air, climate change, clean energy, water and waste; and engages with external organizations, government agencies, and stakeholders to remain current. Reviewed key developments in each of the media areas, noting that all issues in the regulatory outlook are factored into modeling.

## V. Commodity Price Forecasts

Janet Jentilet - presentation

The TVA methodology for commodity price forecasts is to develop forecasts for the region for three commodities - gas, coal, and electricity. The price forecast represent the expected market price for that commodity; dependent on origin and point of delivery. Inputs include: environmental outlook, economic outlook, demand for energy, capacity expansion, and load forecasts. Models are continuously updated. TVA accounts for short and long-term conditions on forecasts with the short term being recent market trends, and the long term being structural and economic views of the market.

Two slides are TVA restricted and confidential - **No notes taken on these slides**

LUNCH BREAK

## VI. Financial Parameters

Juan Gonzales - presentation

For the methodology, Inflation (turn constant dollar values to nominal) TVA uses IHS Global Insight and Interest rates (used as guide in the TVA long term financing rate) TVA uses Moody's Economy.com. The results create a current state and base outlook. The expectation is as the economy recovers, inflation, and interest rates rise and then reflect long-term equilibrium trends.

LUNCH BREAK

Concluding Tasks:

- Summary of meeting's Action Items will be distributed to the SRG next Tuesday. Comments should be sent back to Randy Johnson
- Randy will redistribute actions from Sept workshop, including the raw data, for SRG comments
- Calendar (proposed thru Feb 2010)
  - Nov 16 - Public briefing - overview of power planning (Chatt)
  - Dec 10/11 - workshop – EE/DR workshop (Nashville). Hold 11<sup>th</sup> in case agenda warrants a second day. The proposed agenda will be sent ASAP for comments back from the SRG
  - Dec 17 - working session - supply side screening results, strategies/constraints, evaluation metrics. Location will likely be Knoxville.
  - Feb 17-18, 2010 - working session - preliminary results (Chatt)
- SRG discussed holding own public briefing sessions after the scheduled meetings. Group concurred that a public session would be valuable, but it would be preferable to hold these as listening sessions rather than having to respond to

questions and/or comments. Group decided to hold a session concurrent with TVA's briefing on November 16. Tom, David, Ryan, Louise, and possibly Stephen will attend. Larger group may consider a teleconference before and after the session to further discuss the event.

- Joe will have a briefing today with the press at 3 pm EDT after SRG meeting concludes. He will give background of the IRP, discuss the role of the SRG, and give press information about resources available - website, etc.