TENNESSEE VALLEY AUTHORITY

IRP Modeling Identifies Solutions to Meet Future Demand

Providing energy that keeps the lights on for more than 10 million people across the Tennessee Valley region involves a tremendous amount of planning.

Resource planning helps identify least-cost solutions to meet customer demand over the long term.

With input from stakeholders and the public, TVA currently is working on its 2025 Integrated Resource Plan (IRP), a comprehensive plan that will shape TVA's energy system through 2050. Between IRP cycles, which is typically every four to five years, TVA annually updates plans based on current forecasts and risk assessments.

So, what does the resource planning process entail?

It begins with forecasting future customer demand for electricity under normal weather conditions. This helps identify the relationship between trends in electricity demand and long-term drivers such as economic activity, population changes and climate trends.

The forecast includes estimates of summer and winter peak demand and the hourly pattern of energy use for the next 20-plus years.

The process also considers the additional generating capacity TVA must have, called planning reserves, to meet peak demand in circumstances such as extreme weather or unplanned generating unit outages.

The capacity and energy required for TVA to meet both future customer demand plus planning reserves is compared to existing resources to determine how much new generation is needed in the future.

Next, the set of resource options to be considered is identified. Modeling helps identify the mix of resources that will enable TVA to meet future power demand in a reliable and cost-effective way.

TVA uses an industry-standard model to consider energy needs, resource options, and regulatory and operational requirements to solve for the optimal solution. The IRP evaluates 30 potential resource portfolios that include forecasted annual resource additions, expected energy output, and financial and operating data.

The planning direction established by the IRP will guide what power-generation resources and approximately how much of these resources will be used to power homes or businesses in the region for years to come.

How IRP Modeling Works