CHAPTER 2

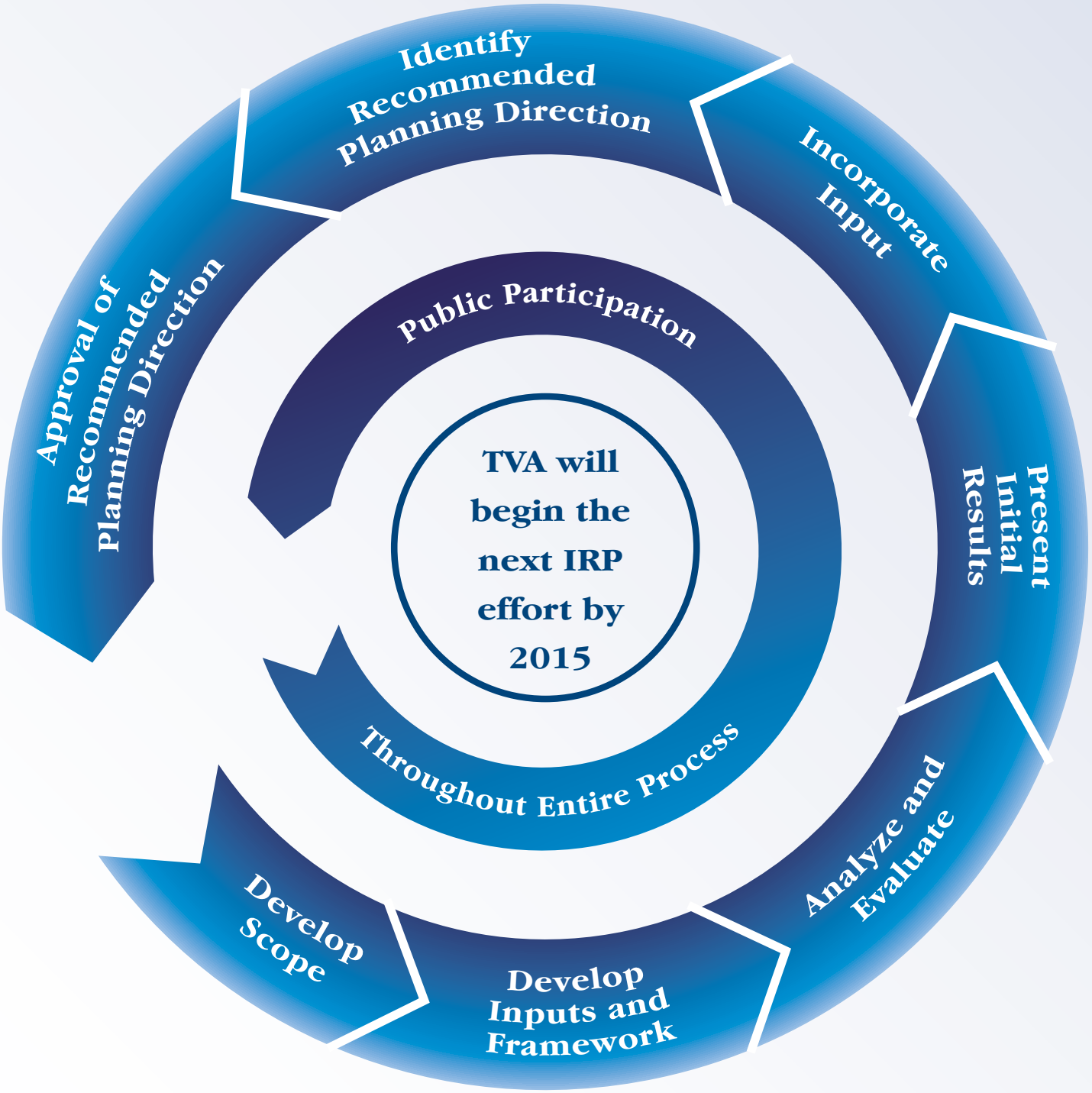
TVA was created to be a model of benefits of integrated resource management. To fulfill its mission requires a delicate balance of energy, environmental and economic development.

Water spills over the Fort Loudon Dam in Loudon County, Tennessee.

The once-endangered Snail Darter, native to rivers of the Tennessee Valley, is now thriving due in large part to the conservation efforts of TVA.

Enthusiasts enjoy white-water rafting down the Ocoee River in Polk County, Tennessee.

The IRP Process



2 IRP Process

The IRP process to develop the Recommended Planning Direction was extensive. More than two years were dedicated to discuss needs, wants, advantages, challenges, constraints, trade-offs and compromises required to develop a plan of this magnitude. A wide range of stakeholders were involved in this process, representing the general public, distributors of TVA power, industry groups, academia and research professionals and TVA leadership.

This IRP represents a significant investment by TVA to understand the needs of the people it serves and how to address those needs in a cost-effective, reliable manner. TVA believes in this process and has committed to begin the next IRP effort by 2015.

To fully appreciate the scope of TVA's IRP process, the road to producing the final IRP must be understood. TVA's IRP process consisted of the following seven distinct steps:

1. Develop scope
2. Develop inputs and framework
3. Analyze and evaluate
4. Present initial results
5. Incorporate input
6. Identify Recommended Planning Direction
7. Approval of Recommended Planning Direction

Public participation was included in each step of the process and is explained in more detail in Chapter 3 – Public Participation. The process for steps two through six are described in more detail in Chapter 6 – Resource Plan Development and Analysis. Step seven, approval of Recommended Planning Direction, is described in Chapter 8 – Final Study Results and Recommended Planning Direction.

2.1 Develop Scope

In June 2009, TVA began a public scoping period. Public scoping comments addressed a wide range of issues, including the nature of the integrated resource planning process, preferences for various types of power generation, increased energy efficiency and demand response (EEDR) and the environmental impacts of TVA's power generation. The comments received helped TVA identify issues that were important to the public.

2.2 Develop Inputs and Framework

When faced with a challenge like planning the power system for the next 20 years, a "no-regrets" decision-making framework is generally the best approach. A "no-regrets" framework is one in which decision makers utilize the best possible information available to them. This allows them to weigh the likelihood and consequence of the risks and challenges that could surface so that decisions have a high likelihood of being sound in many possible states of the world. In order to facilitate a "no-regrets" decision-making framework, TVA employed a scenario planning approach in the development of this IRP.

Scenario planning provides an understanding of how near-term and future decisions would change under different conditions. This allows for impacts on different courses of action to be effectively analyzed. These actions are then assessed to determine their performance in each and every scenario as well as their relative performance in all scenarios.

Future decisions that produce similar results across different conditions may imply that these decisions provide more predictable outcomes, whereas decisions that result in major differences are less predictable and therefore more "risky."

TVA began this process in collaboration with the Stakeholder Review Group (SRG) and developed a set of resource planning strategies that would be analyzed within the framework of this IRP.

These resource strategies represent decisions that TVA has control over (e.g., asset additions, idling coal-fired capacity, integration of more flexible resource options), whereas the scenarios, which are described in more detail below, represent aspects that TVA has no control over (e.g., more stringent regulations, fuel prices, construction costs).

Different mixes of resource options (i.e., supply-side generating technologies and demand-side programs) formed the framework for distinct resource planning strategies and were designed to allow for flexible resource selection over the intended duration of the IRP planning horizon. Significant expert input was incorporated to ensure the feasibility of the elements of each planning strategy.

Strategies represent future business decisions that TVA can make and has full control over.

Scenarios represent future conditions that TVA cannot control.

A portfolio is the intersection of a strategy and a scenario and represents a multiyear resource plan detailing how TVA intends to meet future load growth.

To facilitate a "no-regrets" analysis of the strategies developed above, TVA developed a series of scenarios to analyze the various outcomes of the resource planning strategies.

These scenarios differed from each other in several key areas, such as projected customer demand, future economic conditions, fuel prices, regulatory frameworks and numerous other key drivers. Like the strategies, these scenarios were also developed in collaboration with the SRG.

The goal of defining scenarios was to identify sets of potential events, forecasts and other important drivers that TVA cannot directly control, but that would have a direct impact on TVA's ability to achieve the goals of this IRP.

One way to think of scenarios is as miniature models of the future. In one model, the economy might stagnate, prices drop and electricity demand remains flat. In another, strong economic recovery could pressure fuel prices, drive interest rates higher, lead to rapid recovery in electricity sales and long-term demand growth and put pressure on the cost of building generating assets. Both scenarios present dramatically different challenges to any one resource strategy.

Therefore, the key to sound resource planning is designing a strategy that performs reasonably well in all scenarios, regardless of which scenario best captures the actual state of the world in the future.

Seven scenarios were initially developed. Each resource planning strategy was tested within the seven scenarios for performance. The seven scenarios and five strategies are explained in detail in Chapter 6 – Resource Plan Development and Analysis.

2.3 Analyze and Evaluate

After the scenarios and strategies were developed, detailed analysis was undertaken for each planning strategy within each of the scenarios. This phase of the IRP employed industry standard capacity expansion planning and production cost modeling software to develop total cost estimates of each planning strategy in each scenario. Other metrics, including near-term rate impacts, risks and environmental footprint, were also developed using model outputs.

TVA analyzed the hypothetical performance on the cost, risk and environmental footprint of each strategy based on the assumption that the future unfolds in a manner that resembles the specifics of each scenario.

A total of 35 unique capacity expansion plans or "portfolios" were developed for each of the seven scenarios specific to each of the five strategies. Each portfolio represented a long-term, least-cost plan of different asset mixes (both supply- and demand-side assets) that can be deployed to meet the power needs of the region.

Each portfolio was ranked using selected metrics within the framework of a consistent, standard scorecard. Special care was also taken to note not only those portfolios that performed best overall, but also those portfolios that performed well in most states of the future (a key requirement for a "no-regrets" portfolio development). The metrics used were chosen based on their importance and centrality to TVA's mission and included measures for capturing financial (e.g., cost and risk), economical and environmental impacts.

The ranking was not intended to identify any single portfolio as "the best" in recognition of the fact that a portfolio with the highest overall score may not have performed as well as other portfolios across multiple scenarios. In other words, portfolios were analyzed for their robustness under stress across multiple scenarios, as opposed to overall performance in total. This was an important step since metrics alone could signify good performance in one or two future states of the "world," but average or poor performance in all others.

The process of a consistent analytical ranking exercise provided TVA's Board of Directors and leadership team with information that was used to help conduct evaluations of decisions pertaining to TVA's existing generation fleet and available generation options. It also facilitates TVA's ultimate adoption of a long-term resource planning strategy that will serve as a foundation for TVA's near-term business and financial plans.

2.4 Present Initial Results

For this phase of the IRP process, TVA presented the results of the Draft IRP and the associated EIS to both internal TVA management and the general public. The Draft IRP outlined alternative strategies that TVA considered, but did not include an exhaustive list of all strategies that were analyzed. However, it did include a sampling of unique strategies that represent a broad spectrum of viable options for implementation.

As in the scoping period, TVA encouraged public comments on the Draft IRP and the associated EIS. The comments received enabled TVA staff to identify public concerns and recommendations concerning the future operation of the TVA power system.

The public comment period began in October 2010 with the EPA's publication of the Notice of Availability of the Draft IRP and associated EIS in the Federal Register.

During the public comment period, TVA held five public meetings to provide information about this IRP as well as the opportunity to provide input to TVA staff.

TVA addressed all substantive comments received during the public comment period in the final IRP and the associated EIS.

2.5 Incorporate Input

The public comment period ended Nov. 15, 2010. TVA received approximately 500 comments. All comments were reviewed in detail and synthesized into key points that required a response. Comments were logged into a comment management database for tracking purposes and assigned to an appropriate subject-matter expert. An extensive inventory of responses is included in the associated EIS.

2.6 Identify Recommended Planning Direction

After review of the public comments received and additional analysis, TVA staff identified a Recommended Planning Direction to present to TVA's Board of Directors. The Recommended Planning Direction is based on a number of key criteria, as mentioned above, and is intended to serve as a guide for implementation of TVA's planning objectives.

2.7 Approval of Recommended Planning Direction

No sooner than 30 days after the Notice of Availability of the associated EIS is published in the Federal Register, the TVA Board of Directors will be asked to approve the Recommended Planning Direction. The TVA Board of Directors' decision will be described and explained in a Record of Decision.