



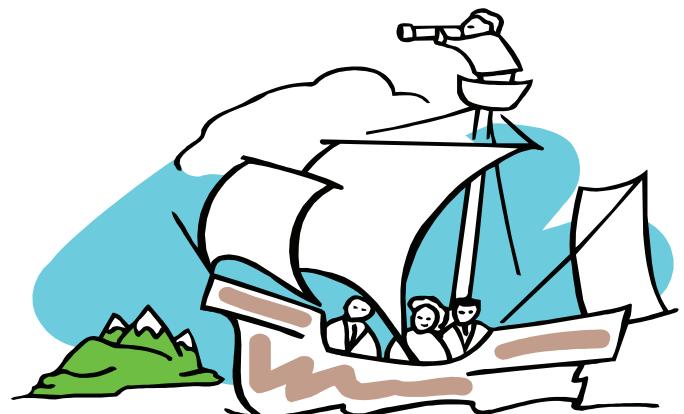
**2015 Integrated Resource Plan  
Public Scoping Meeting  
October 24, 2013**

- ◆ Overview of Resource Planning
- ◆ The Integrated Resource Planning Process
  - How We Do It
  - Why It's Important
  - How the Results Are Used
- ◆ The Schedule for the 2015 IRP Study
- ◆ A Brief Overview of the Environmental Impact Assessment Method
- ◆ Opportunities for Public & Stakeholder Involvement
- ◆ Open Q&A

# What is Public Scoping?

- ◆ TVA periodically updates its power generation strategy. The first step is to understand the environment we're planning in. We call this scoping.
- ◆ We ask the general public, our customers, and our partners and regulators about their concerns regarding the sources we use to generate power, how we manage demand and how we deliver power
- ◆ With this information we develop candidate resource plans that are evaluated for viability and environmental impact.

The public scoping period began on October 21<sup>st</sup> and will end on November 22<sup>nd</sup>



# Resource Planning Is About Solving Puzzles



**By asking a lot of questions, like ...**

How much energy will our customers use in the future?

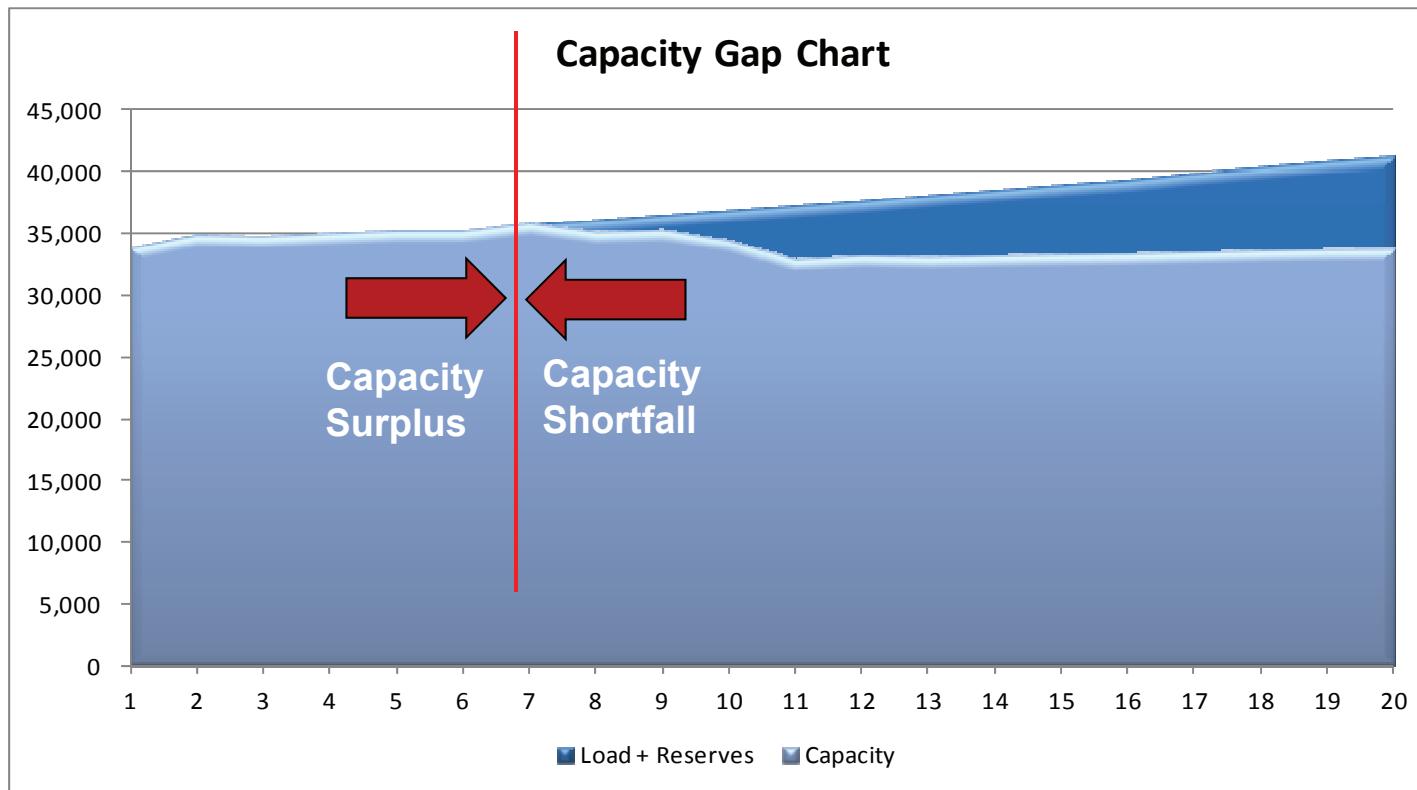
What alternatives do we have to meet our resource needs?

Are there strategic considerations that will limit the alternatives we can consider?

How do we find the best solution?  
Which plan (portfolio) do we select?

# IV A Resource Planning Addresses Future Capacity Needs

Resource planning tries to optimize the mix of future capacity.



Projections of capacity needs are filled by the most cost-effective resource.



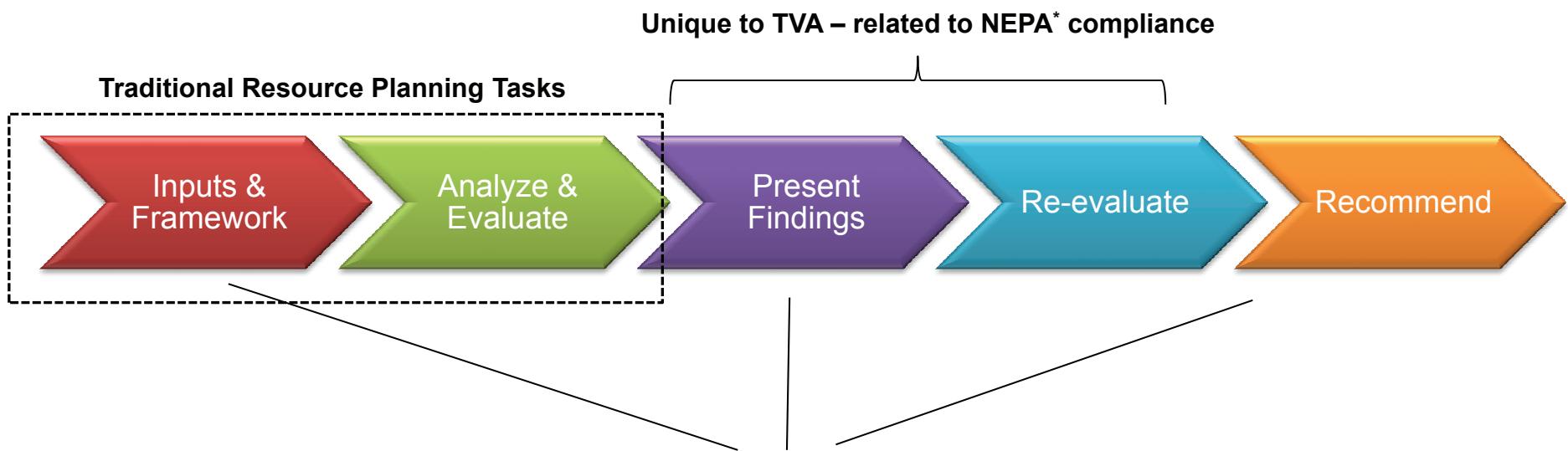
- ◆ Project customer demand for electricity in the future
- ◆ Define the resources currently available to meet customer demand and how that will change in the future
- ◆ Compare future customer demand with existing resources
- ◆ Identify all resources (supply- and demand-side) that will be considered to meet future need
- ◆ Test different resource combinations (portfolios) to evaluate performance
- ◆ Select the preferred combination of resources

- ◆ Resource Planning produces a kind of road map for TVA. This road map will guide decision-makers and support TVA's overall mission:
  - Low cost reliable power
  - Environmental stewardship
  - Economic development
- ◆ This road map outlines changes that, if implemented, will impact the cost and the environmental effects of producing that power
- ◆ So it's important for customers to be aware of the direction we are headed and the current thinking about how we plan to get there.



# IRP Process Flowchart

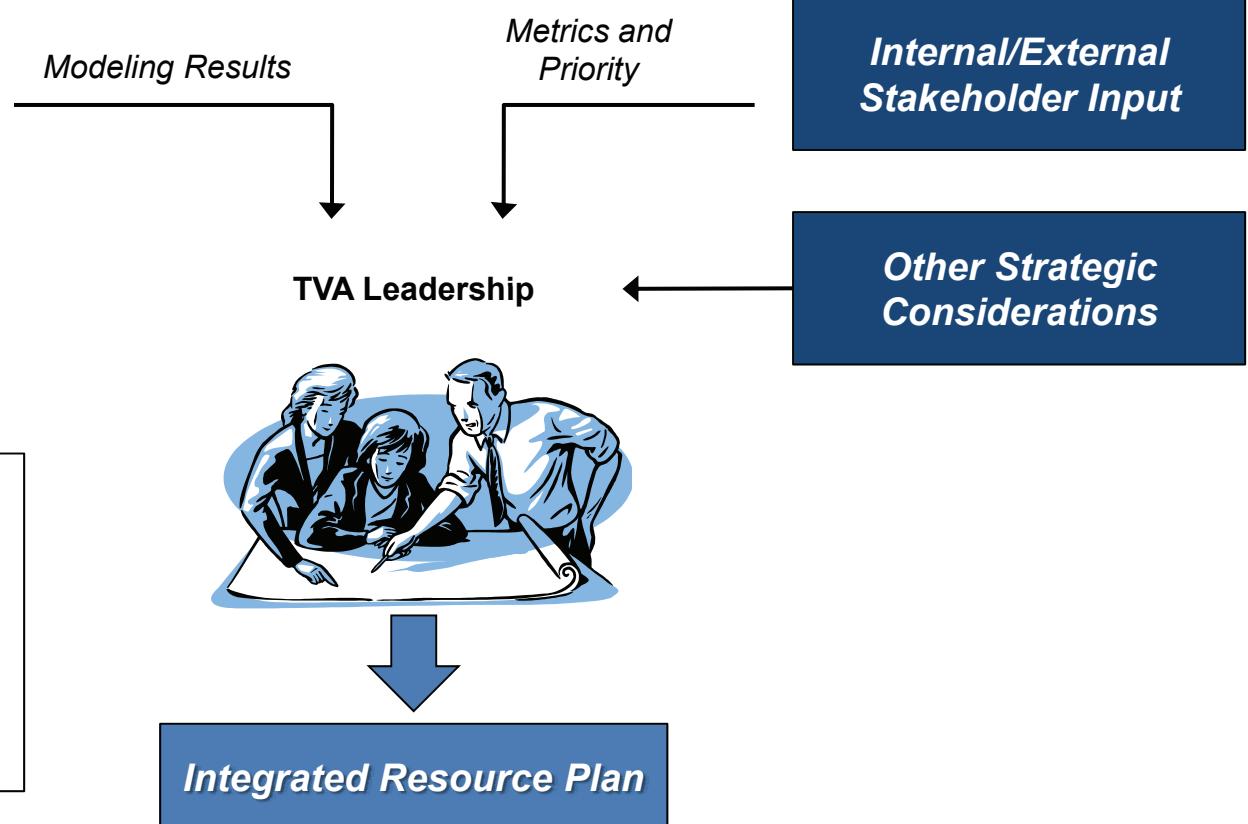
An IRP is a special form of resource planning that seeks to optimize supply-side and demand-side contributions to make up a least cost plan.



TVA's IRP process includes three public input and comment periods in addition to ongoing engagement with key stakeholder groups.

\* NEPA = National Environmental Policy Act

Planning Strategies	Scenarios					
	Current Situation	#1	#2	#3	#4	#5
Planning Strategy A						
Planning Strategy B						
Planning Strategy C						
Planning Strategy D						
Planning Strategy E						



# **TVA “Scenarios and Strategies” Established the Framework**

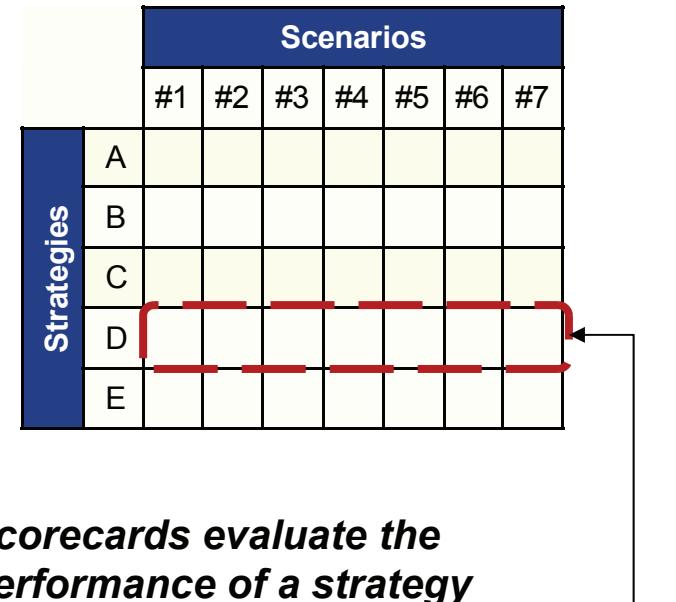
## **Scenarios**

- ◆ Describe potential outcomes of factors (uncertainties) outside of TVA’s control
- ◆ Represent possible conditions and are not predictions of the future
- ◆ Include uncertainties that are volatile and could significantly impact operations such as:
  - Commodity prices
  - Environmental regulations

## **Planning Strategies**

- ◆ Test various business options within TVA’s control
- ◆ Defined by a combination of resource assumptions such as:
  - EEDR portfolio
  - Nuclear expansion
  - Energy storage
- ◆ Consider multiple viewpoints
  - Public scoping period comments
  - Assumptions that would have the greatest impact on TVA long-term

- ◆ Metrics can be used to facilitate a discussion/debate about trade-offs when selecting the best plan.
- ◆ At TVA, we use a scorecard approach to packaging the metrics, so that stakeholders and decision-makers can be fully engaged in the identification of what makes a resource plan “preferred”
- ◆ IRP scorecards were developed to reflect components of TVA’s mission and strategic principles



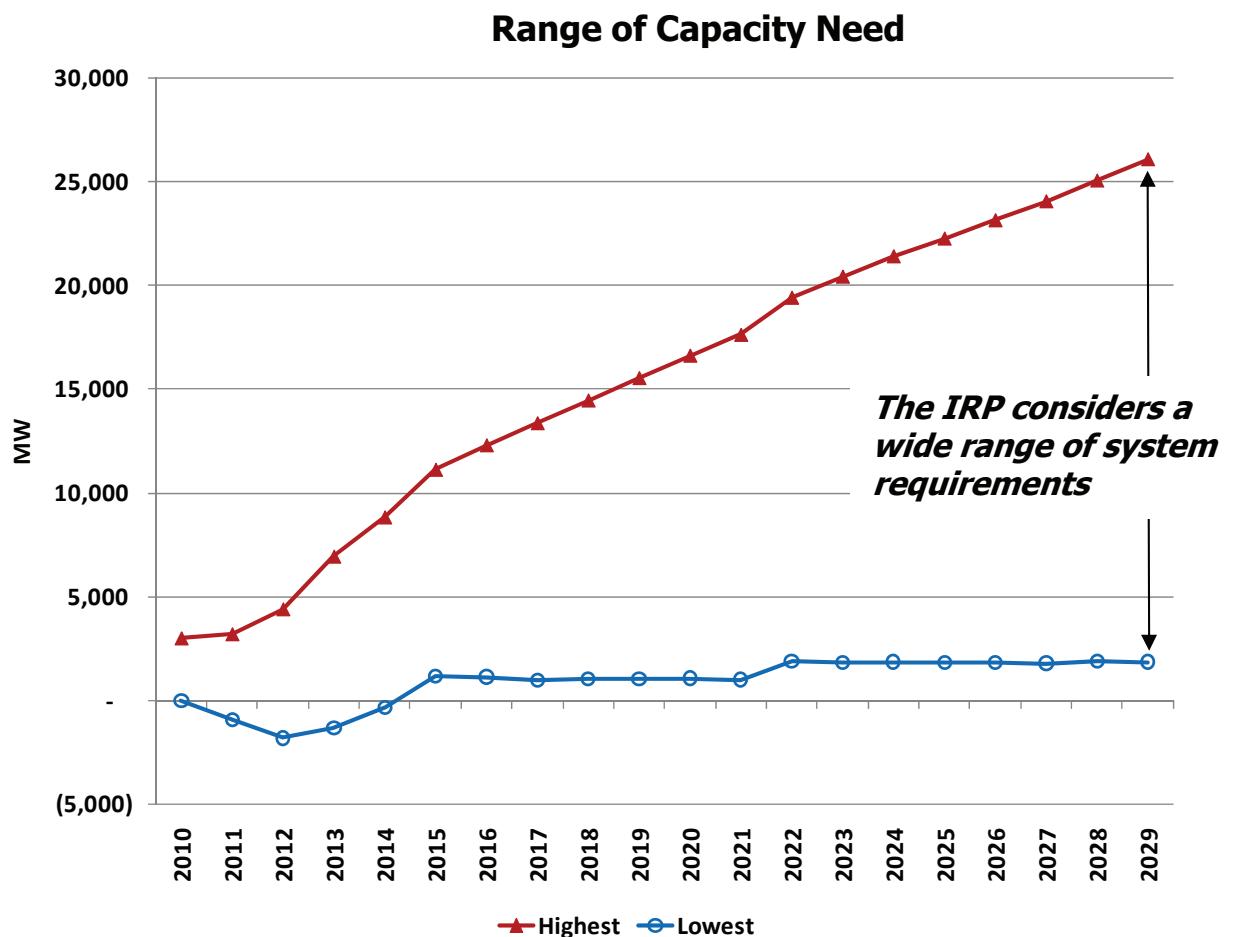
***Scorecards evaluate the performance of a strategy across many different scenarios***

**Example Scenario Scorecard**

Scenarios	Ranking Metrics					Strategic Metrics		
	Energy Supply			Environmental Stewardship				
	PVRR	Short-Term Rate Impact	PVRR Risk/Benefit	PVRR Risk	Total Plan Score	CO <sub>2</sub> Footprint	Water	Waste
1	99.00	95.13	100.00	99.53	98.36	●	●	●
2	100.00	95.58	99.40	95.30	97.85	●	●	●
3	100.00	100.00	99.81	89.37	97.56	●	●	●
4	100.00	97.40	100.00	95.37	98.36	●	●	●
5	100.00	96.43	100.00	100.00	99.19	●	●	●
6	100.00	100.00	100.00	86.69	96.97	●	●	●
7	100.00	97.24	100.00	97.03	98.70	●	●	●
8	99.84	96.66	98.35	97.93	98.50	●	●	●
<b>Total Ranking Metric Score</b>					<b>785.49</b>			

**Scenarios**

- 1 – Economy Recovers Dramatically
- 2 – Environmental Focus is a National Priority
- 3 – Prolonged Economic Malaise
- 4 – Game-Changing Technology
- 5 – Energy Independence
- 6 – Carbon Regulation Creates Economic Downturn



Scenarios consider a broad range of possible futures that include everything from strong economic growth to negative growth

## Planning Strategies

A – Limited Change in Current Resource Portfolio

B – Baseline Plan Resource Portfolio

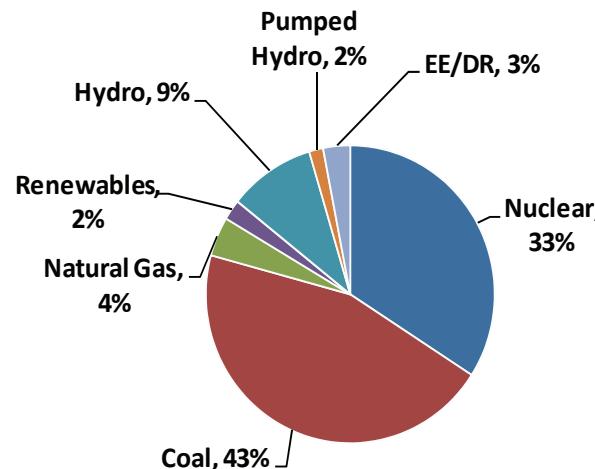
C – Diversity Focused Resource Portfolio

D – Nuclear Focused Resource Portfolio

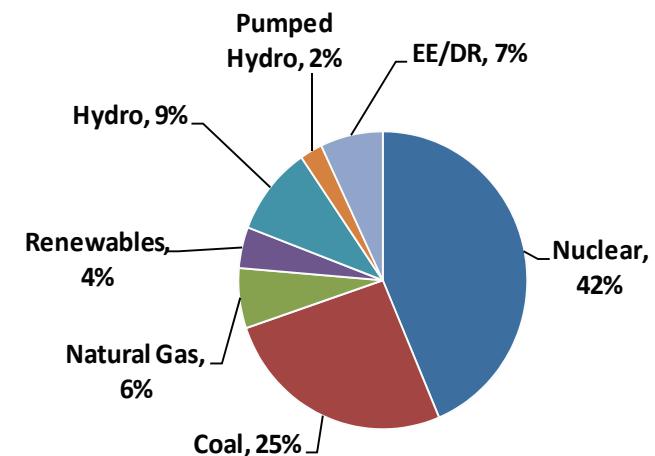
E – EEDR and Renewables Focused Resource Portfolio

## Potential Energy Mix in 2025

### *Limited Change Example<sup>1</sup>*



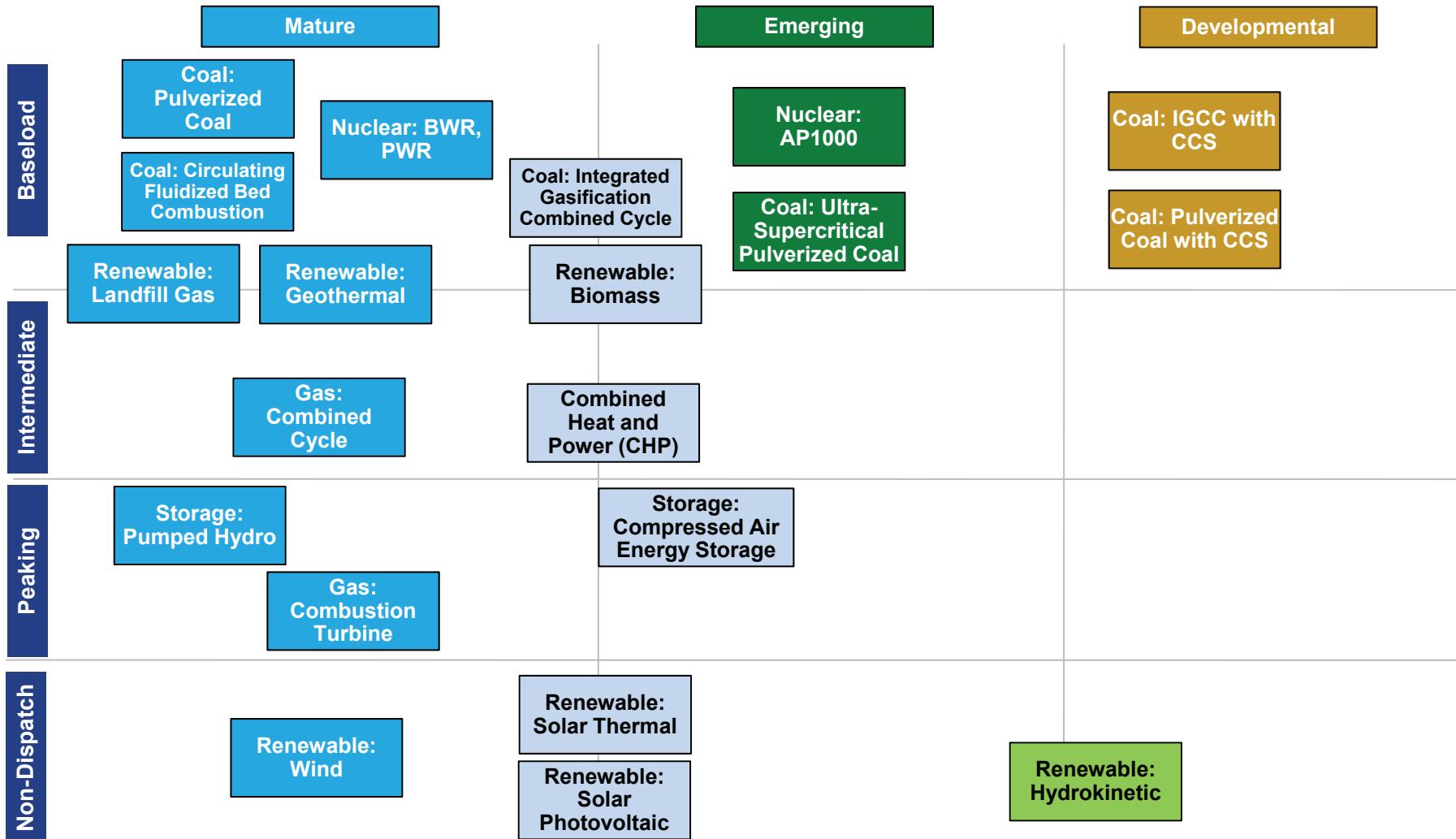
### *Significant Change Example<sup>1</sup>*



Planning strategies are diverse and consider business options that range from limited to significant changes in current resource mix

<sup>1</sup> – Percentages do not include contribution of power purchases

# A Wide Variety of Resource Options Were Included



Several portfolios of demand-side options were also included in the study

# TVA That Resulted in a Recommended Planning Direction

Component	Guideline MW Range	Window of Time	Recommendations
Energy Efficiency/ Demand Response	3,600-5,100 (11,400-14,400 GWh)	By 2020	<ul style="list-style-type: none"> <li>◆ Expand contribution of energy efficiency/demand response in the portfolio</li> </ul>
Renewable additions	1,500-2,500	By 2020	<ul style="list-style-type: none"> <li>◆ Pursue cost effective renewable energy</li> </ul>
Coal capacity idled	2,400-4,700	By 2017	<ul style="list-style-type: none"> <li>◆ Consider Increasing amount of coal capacity idled</li> </ul>
Energy storage	850	2020-2024	<ul style="list-style-type: none"> <li>◆ Add pumped storage hydro capacity</li> </ul>
Nuclear additions	1,150-5,900	2013-2029	<ul style="list-style-type: none"> <li>◆ Increase contribution of nuclear generation</li> </ul>
Coal additions	0-900	2025-2029	<ul style="list-style-type: none"> <li>◆ Preserve option of generation with carbon capture</li> </ul>
Natural gas additions	900-9,300	2012-2029	<ul style="list-style-type: none"> <li>◆ Utilize natural gas as an intermediate supply source</li> </ul>
Market purchases	1,300-4,700	2013-2029	<ul style="list-style-type: none"> <li>◆ Utilize cost effective market purchases to supplement TVA owned supply</li> </ul>

\*Additional details about Recommended Planning Direction components are included in the 2011 IRP

# What TVA Did With the 2011 IRP Recommendations

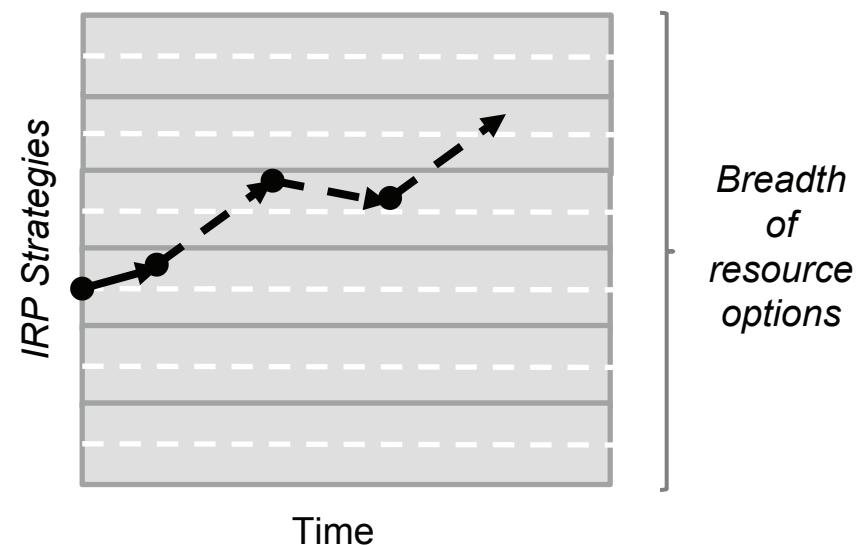
Component	Recommendations
Energy Efficiency/ Demand Response	<ul style="list-style-type: none"><li>◆ Expand contribution of energy efficiency/demand response in the portfolio</li></ul>
Renewable additions	<ul style="list-style-type: none"><li>◆ Pursue cost effective renewable energy</li></ul>
Coal capacity idled	<ul style="list-style-type: none"><li>◆ Consider Increasing amount of coal capacity idled</li></ul>
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TVA's current resource mix and long-term resource plan reflect adoption of the majority of recommendations outlined in the last IRP study

- ◆ While the recommendations from the 2011 IRP study remain valid, significant changes nationally and regionally occurred that motivated TVA to refresh the study now, such as
  - Abundant supplies of natural gas from shale deposits
  - A decline in electricity demand growth industry-wide and in the Tennessee Valley region,
  - A new schedule for completing Watts Bar Nuclear Unit 2
  - TVA's clean-air commitments to retire some less-efficient coal capacity by 2018.

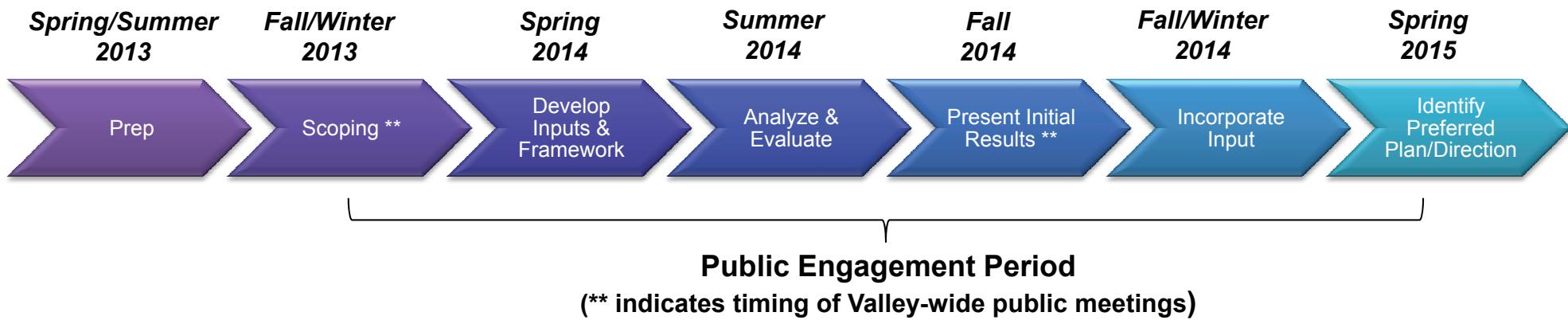
## Building a “Multi-lane Highway” of Flexibility



- ◆ TVA elected to refresh the IRP analysis about a year ahead of schedule to better position the utility to respond to future uncertainties

# IWA 2015 IRP Schedule: Major Project Phases & Milestones

The 2015 IRP Study Approach is intended to ensure transparency & enable stakeholder involvement



## Key Tasks/Milestones in this study timeline include:

- ◆ Establish stakeholder group and hold first meeting (Nov 2013)
- ◆ Complete first modeling runs (June 2014)
- ◆ Publish draft SEIS and IRP (Nov 2014)
- ◆ Complete public meetings (Jan 2015)
- ◆ Board approval and final publication of SEIS and IRP (exp Spring 2015)

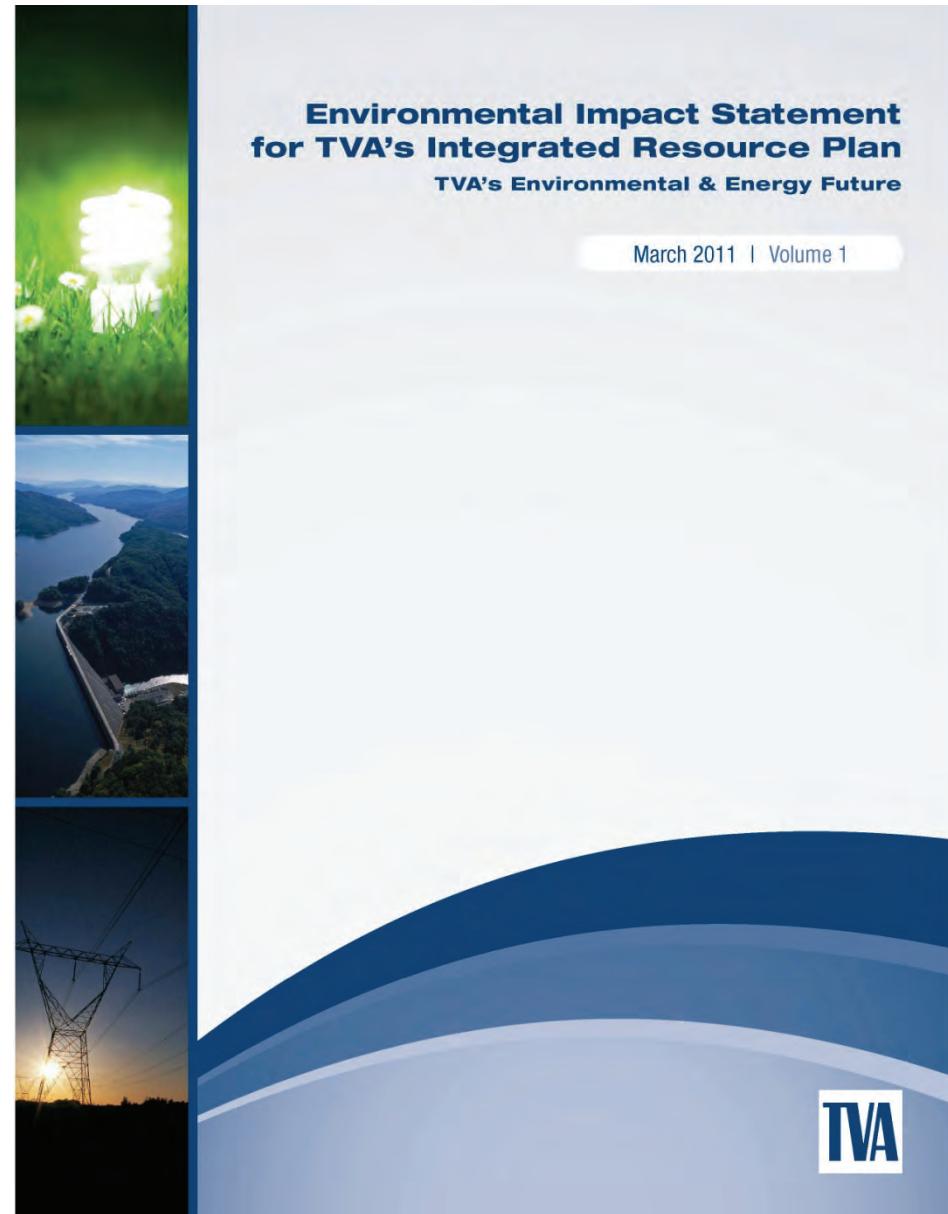
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# **Environmental Impact Assessment**

- ◆ Categorical Exclusion - for minor actions previously determined to not result in significant impacts
  - An example of this type of assessment is for routine maintenance of an existing power plant
- ◆ Environmental Assessment (EA) - less detailed assessment of actions with the potential to cause meaningful environmental impacts that are not likely to be significant
  - An example of an EA would be for the modernization of turbines at a hydro plant
- ◆ Environmental Impact Statement (EIS) - detailed assessment of major actions with the potential to cause significant environmental impacts
  - An EIS was done for the 2011 IRP Study

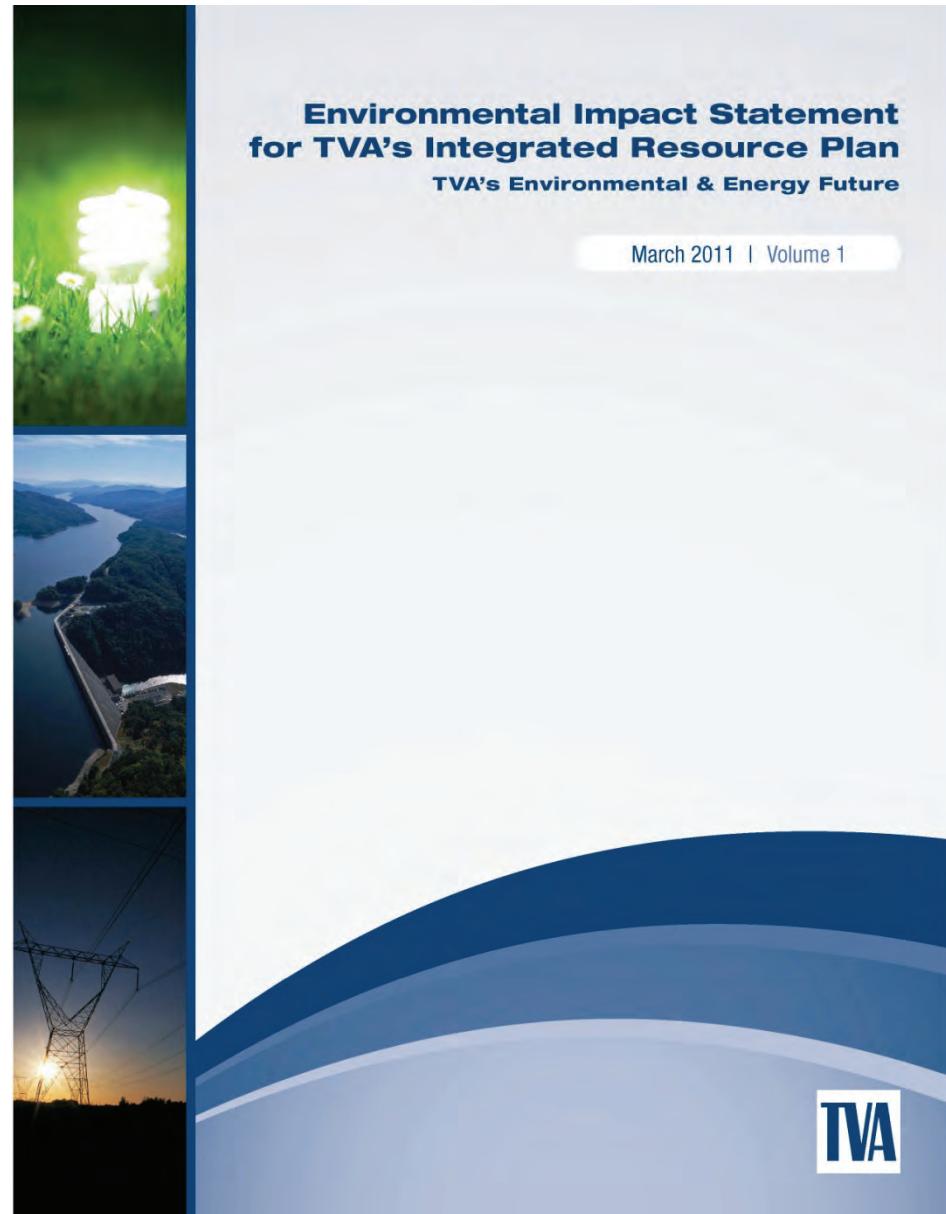
# TVA The Supplemental Environmental Impact Statement

- ◆ Required by National Environmental Policy Act for proposed Federal agency actions, including development of plans and policies
- ◆ Purpose is to make better decisions by understanding the likely environmental impacts and involving the public in the process
- ◆ The SEIS will build on and supplement the EIS prepared for the 2011 IRP

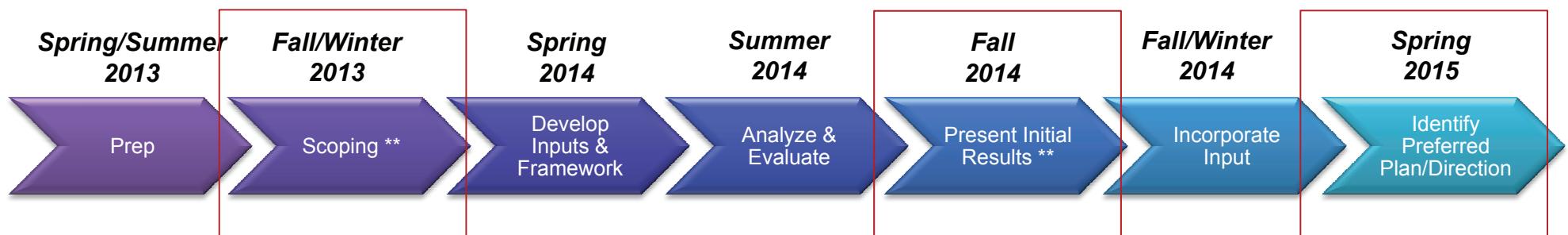


- ◆ EISs typically address impacts to a wide range of resources, including:
  - physical
  - biological
  - economic, and
  - social resources
- ◆ Because of the nature of the IRP planning process, the SEIS will focus on impacts to the following resources:
  - Air Quality
  - Greenhouse Gas Emissions and Climate Change
  - Water Resources
  - Fuel Consumption
  - Solid Waste
  - Land Requirements
  - Social and Economic Impacts

- ◆ Introduction / Purpose and Need
- ◆ Description of TVA's Resource Planning Process
- ◆ Description of TVA's Power System
- ◆ Affected Environment
- ◆ Energy Resource Options
- ◆ Alternatives / Planning Strategies
- ◆ Anticipated Environmental Impacts



- ◆ **Public scoping** – through November 22, 2013
- ◆ Preparation of draft SEIS
- ◆ **Public review** of draft SEIS for at least 45 days – Fall 2014
- ◆ Preparation of final SEIS
- ◆ **Public circulation** of final SEIS – Spring 2015
- ◆ Board action and issuance of Record of Decision – 30 days after circulation of final SEIS



## Forum for Input

- ◆ Public Scoping Meetings
- ◆ IRP Working Group
- ◆ Quarterly Public Briefings
- ◆ Draft IRP Public Comment Period
- ◆ External Web Page



**Fall 2013**

*Input will be incorporated throughout the process*

**Spring 2015**



# We Want Your Input

The screenshot shows a Windows Internet Explorer 8 window displaying the TVA Integrated Resource Plan. The address bar shows the URL <http://www.tva.gov/environment/reports/irp/index.htm>. The page header includes the TVA logo, the text "TENNESSEE VALLEY AUTHORITY", a search bar, and navigation links for Supplier Portal, TVAKids, Employees & Retirees, and Online Conn. The main content area features a title "Integrated Resource Plan" and a section titled "Speak up about TVA's Resource Portfolio". This section discusses the purpose of the IRP and the first step of scoping. To the right, there are details about "Scoping Meetings" in Knoxville and Memphis, along with links for more information and registration. At the bottom, there is a link to "Archive of previous IRP". The browser interface shows standard IE 8 controls like back, forward, and search.

## How you can comment:

- Complete a comment card tonight
- Use the online IRP comment form [www.tva.gov/irp](http://www.tva.gov/irp)
- Submit comments by November 22<sup>nd</sup>



*For information about the 2015 IRP,  
or to submit comments, go to  
[www.tva.gov/irp](http://www.tva.gov/irp)*