
Draft 2025 Integrated Resource Plan (IRP)

October / November / December 2024

About Today's Meeting

A recording of this presentation and copy of these slides will be available on the TVA IRP website: www.tva.gov/IRP.

To view prior IRP Public Webinar recordings and materials, please visit the TVA IRP website, Public Meetings page; previous webinar topics have included:

- Public Scoping
- IRP Process Overview
- Scenarios and Strategies (original five scenarios and five strategies)
- Scenario Updates and Resource Assumptions

There will be an opportunity for questions at the end of the presentation using either the Q&A functionality of the Teams webinar or by submitting questions to IRP@tva.gov with the subject line "Public Webinar Q&A".

Today's Agenda

TVA's mission and the role of the IRP

IRP Overview and Key Inputs

Draft 2025 IRP Results

Panel Q&A

How to Provide Your Comments

Draft 2025 IRP Overview and Key Inputs

Candy Kelly, Sr. Manager, Resource Strategy

TVA's Mission

Energy



Provide affordable electric power throughout the Valley Region

Environment



Act as a steward of the Valley's natural resources

Economic Development



Serve as a catalyst for sustainable economic development

2025 Integrated Resource Plan

The IRP is a study of how TVA could meet customer demand for electricity between now and 2050 across a variety of futures.

A programmatic Environmental Impact Statement (EIS) accompanies the IRP to evaluate its environmental effects.

An updated IRP is needed to:

- Proactively establish a strong planning foundation for the 2030s and beyond
- Inform TVA's next long-range financial plan

The IRP provides strategic direction on how TVA will continue to provide low-cost, reliable, and increasingly cleaner electricity to the residents and businesses across the Valley region.

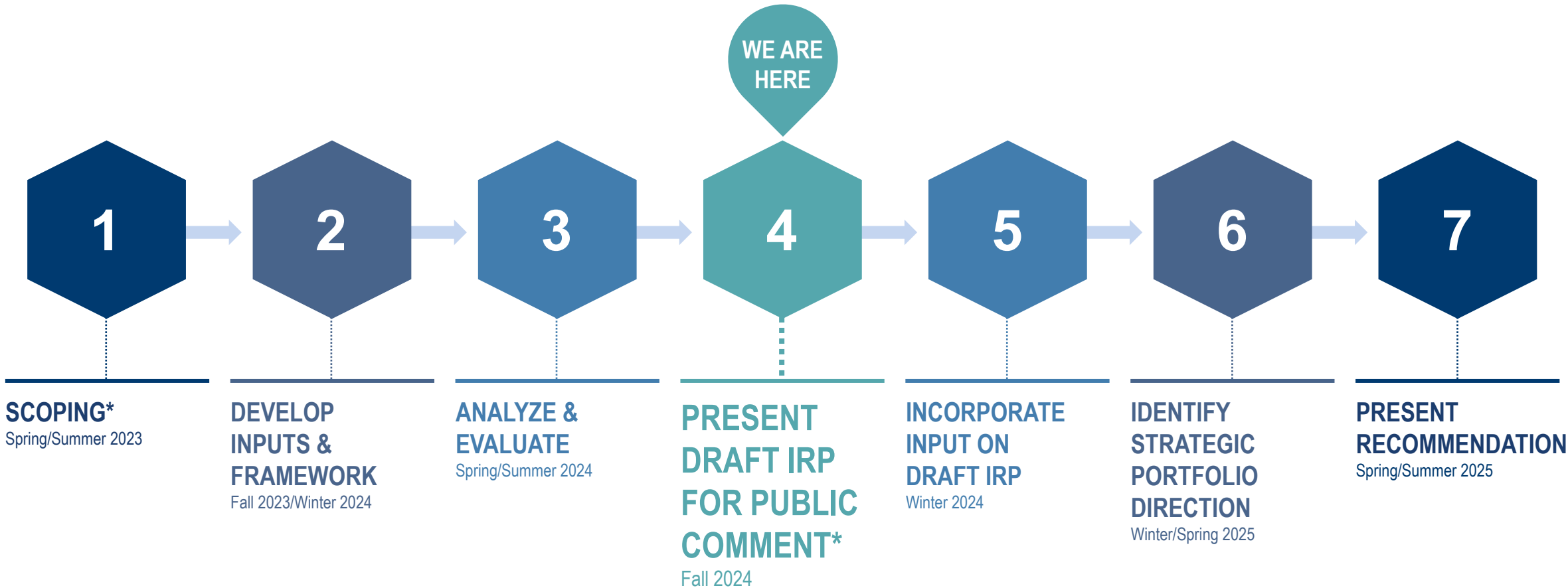


Planning is Grounded in Least-Cost Principles

In integrated resource planning, TVA applies fundamental least-cost planning principles:

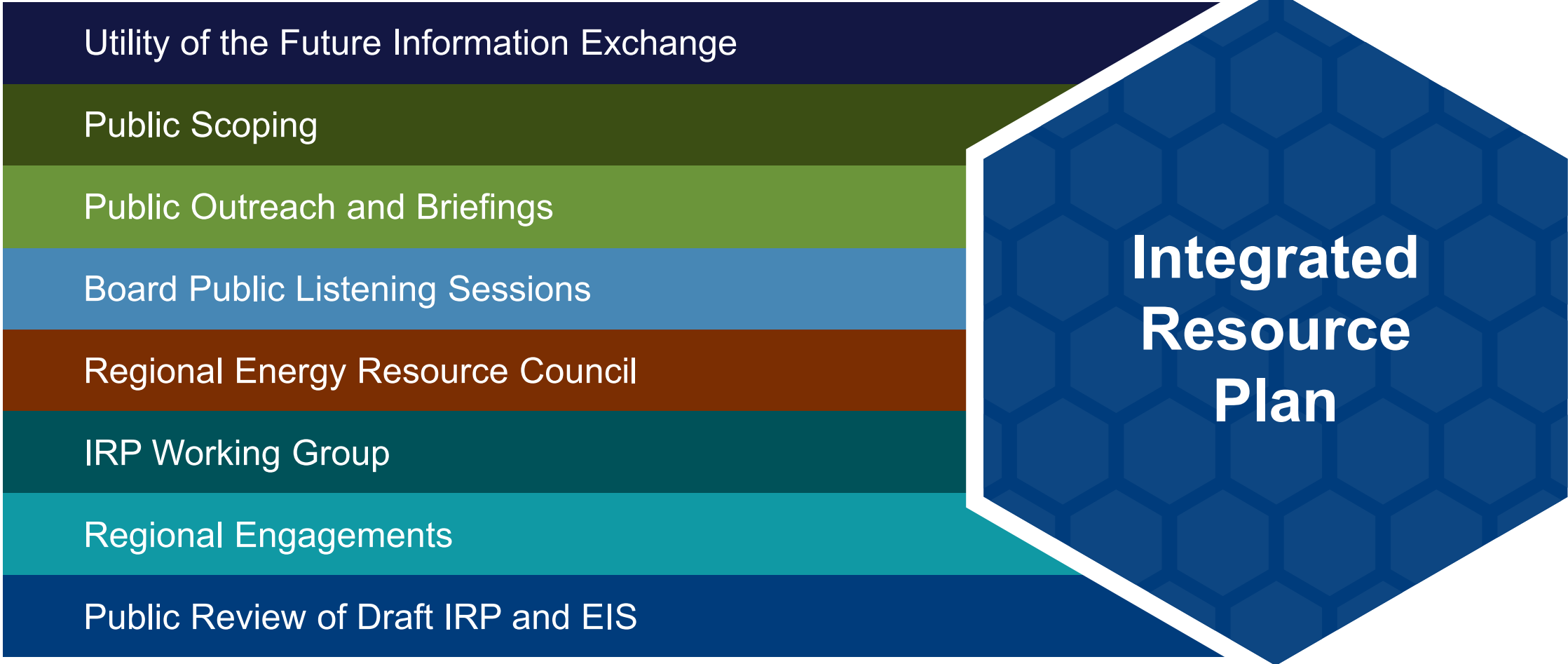
<p>Low Cost</p> 	<p>Risk Informed</p> 	<p>Environmentally Responsible</p> 
<p>Reliable and Resilient</p> 	<p>Diverse</p> 	<p>Flexible</p> 

IRP Timeline

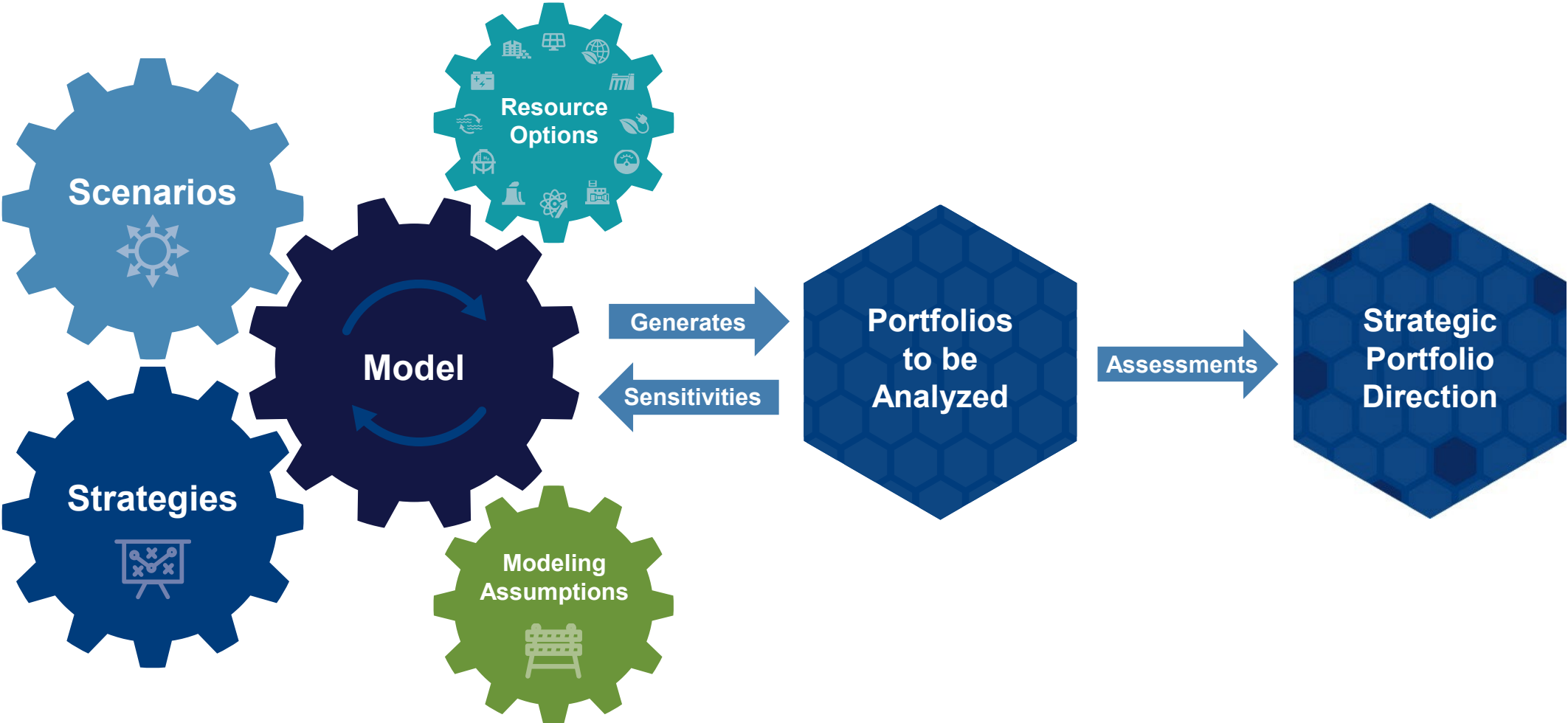


**Opportunity for public feedback during 45-day scoping and 60-day draft IRP and EIS public comment periods.*

Stakeholder and Public Input



How the Integrated Resource Planning Process Works



Resource Planning for Future Capacity Needs

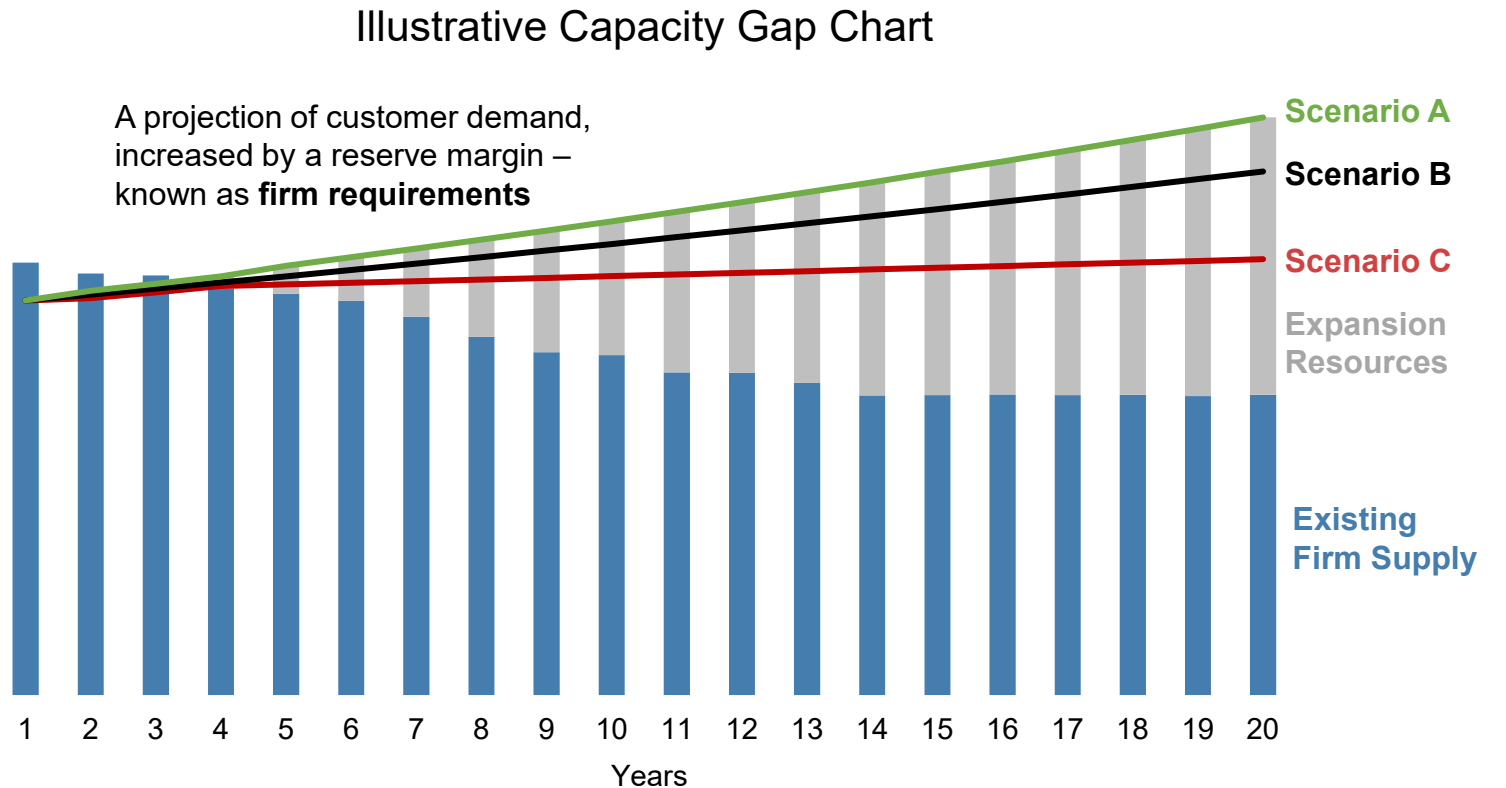
Recommended path provides low cost, reliability, diversity, and flexibility.

Resource planning is about optimizing the mix of future capacity.

Projections of new capacity needed are filled by the most cost-effective resources.

Multiple scenarios will be explored, reflecting different levels of forecasted demand.

Multiple strategies will be explored, resulting in different resource mixes to evaluate in each scenario.



IRP Scenarios and Strategies

SCENARIOS



Reference (without Greenhouse Gas Rule)

Represents TVA's current forecast that reflects moderate population, employment, and industrial growth, weather-normal trends, growing electric vehicle use, and increasing efficiencies



Higher Growth Economy

Reflects a technology-driven increase in U.S. productivity growth that stimulates the national and regional economies, resulting in substantially higher demand for electricity



Stagnant Economy

Reflects rising debt and inflation that stifle consumer demand and business investment, resulting in weaker than expected economic growth and essentially flat electricity demand



Net-zero Regulation

Reflects the impact of the May 2023 draft Greenhouse Gas Rule that targets significant reductions in electric utility CO₂ emissions beginning in 2030 and potential future utility regulations striving for net-zero by 2050



Net-zero Regulation Plus Growth

Reflects the impact of the May 2023 draft Greenhouse Gas Rule and potential future utility regulations, along with substantial advancements in clean energy technologies, that spur economic growth and extensive electrification



Reference (with Greenhouse Gas Rule)

Reflects TVA's current forecast and incorporates the impact of the Greenhouse Gas Rule finalized in May 2024 that targets significant reductions in electric utility CO₂ emissions beginning in 2030

STRATEGIES



Baseline Utility Planning

Represents TVA's current outlook based on least-cost planning, incorporating existing programs and a planning reserve margin target. This reserve margin target applies in all strategies



Carbon-free Innovation Focus

Emphasizes and promotes emerging, firm and dispatchable carbon-free technologies through innovation, continued research and development, and strategic partnerships



Carbon-free Commercial Ready Focus

Emphasizes proven carbon-free technologies like wind, solar, and storage, at both utility-scale and through customer partnerships, along with strategic transmission investment



Distributed and Demand-side Focus

Emphasizes existing and potentially expanded customer partnerships and programmatic solutions to reduce reliance on central station generation and promote virtual power plants



Resiliency Focus






Emphasizes smaller units and the promotion of storage, along with strategic transmission investment, to drive wider geographic resource distribution and additional resiliency across the system

IRP Utilizes a Rigorous Analytical Process

6 SCENARIOS

x 5 STRATEGIES

30 PORTFOLIOS

- Reference (without GHG Rule) 
- Higher Growth Economy 
- Stagnant Economy 
- Net-zero Regulation 
- Net-zero Regulation + Growth 
- Reference (with GHG Rule) 

-  A Baseline Utility Planning
-  B Carbon-free Innovation Focus
-  C Carbon-free Commercial Ready Focus
-  D Distributed and Demand-side Focus
-  E Resiliency Focus

Stakeholder feedback and public comments informed the development of scenarios and strategies that combine to form 30 unique portfolios.



IRP Resource Options



- Advanced pressurized water reactor
- Light water small modular reactor
- Gen IV small modular reactor



- Hydro uprates



- Supercritical pulverized coal
- Supercritical pulverized coal w/carbon capture



- Combined cycle
- Combined cycle w/ carbon capture
- Combustion turbine
- Aeroderivative
- Reciprocating engine
- Hydrogen blending
- Combined heat and power



- Utility scale solar
- Distributed solar
- Midwest wind
- Southeast high-hub wind
- High Voltage Direct Current wind



- Pumped storage
- Lithium-ion battery
- Advanced chemistry battery
- Distributed storage



- Energy efficiency
- Demand response

Draft 2025 IRP Results


Hunter Reed, IRP Project Manager

Draft IRP Results Suggest by 2035...


Between now and 2035
9 to 26 GW
Incremental firm capacity needs




3 to 20 GW
Solar nameplate additions



4 to 19 GW
Natural gas, hydrogen, and CCS additions



1 to 4 GW
EE and DR additions



In all scenarios, TVA will continue to provide **AFFORDABLE, RELIABLE, RESILIENT,** and increasingly **CLEANER** energy for the region for decades to come.


Up to **6** GW
Storage nameplate additions




Up to **4** GW
Wind nameplate additions



Up to **1** GW
Nuclear additions



Projected
75 to 90%
Reductions in CO₂ intensity from 2005 baseline



Power supply mix ranges, summarized in gigawatts (GW), vary based on energy demand, market conditions, policy and regulations, and technology advancements.

Draft IRP Key Themes Are...

New capacity is needed in all scenarios to replace retiring and expiring capacity, support economic growth, and enable further electrification of the economy.



Firm, dispatchable technologies are needed to ensure system reliability throughout the year.



Solar expansion plays an increasingly substantial role, providing economic, carbon-free energy.



Gas expansion serves broad system needs, with the potential for emerging carbon capture and hydrogen options to enable deeper decarbonization.



Energy efficiency deployment reduces energy needs, particularly between now and 2035, and demand response programs grow with the system and the use of smart technologies.



Storage expansion accelerates, driven by evolving battery technologies and the potential for additional pumped storage.



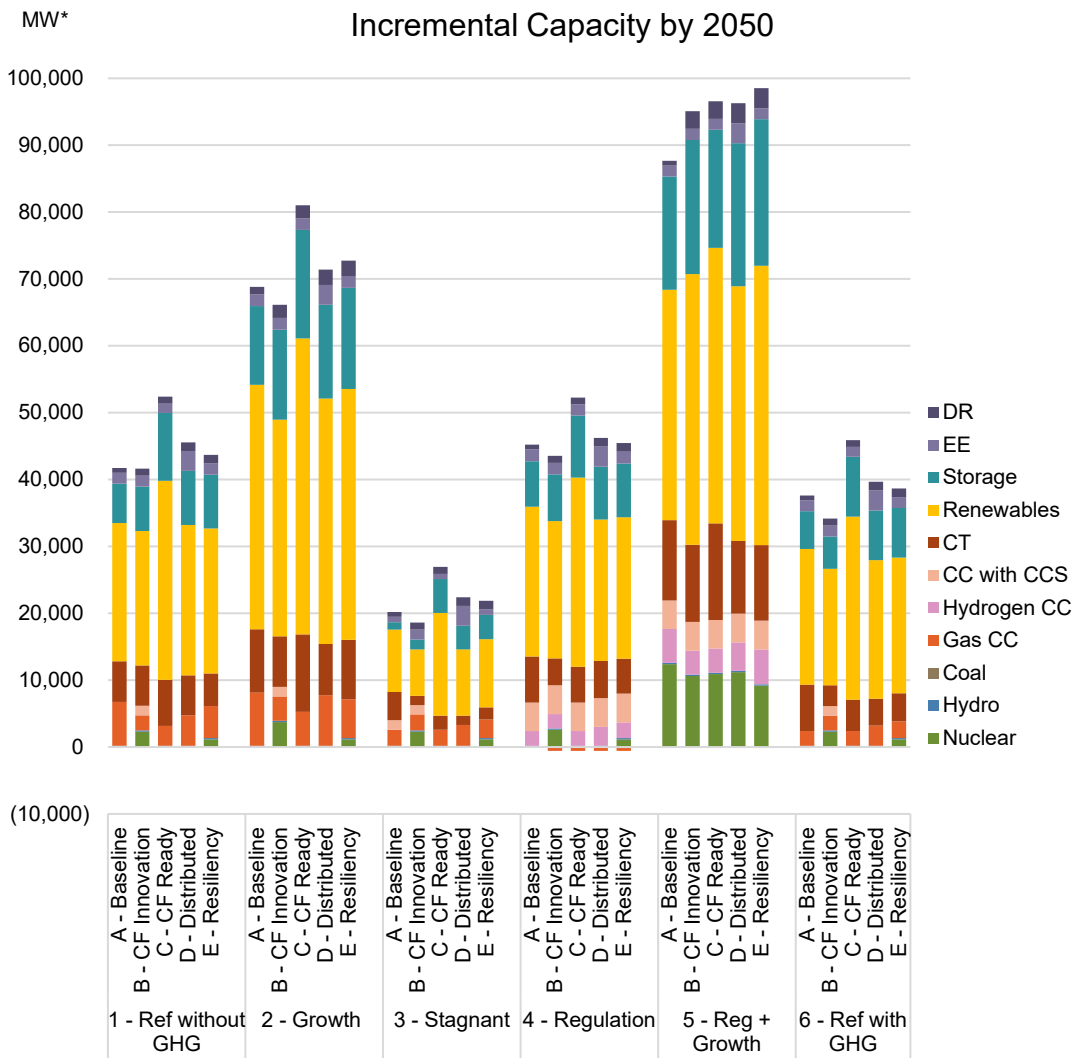
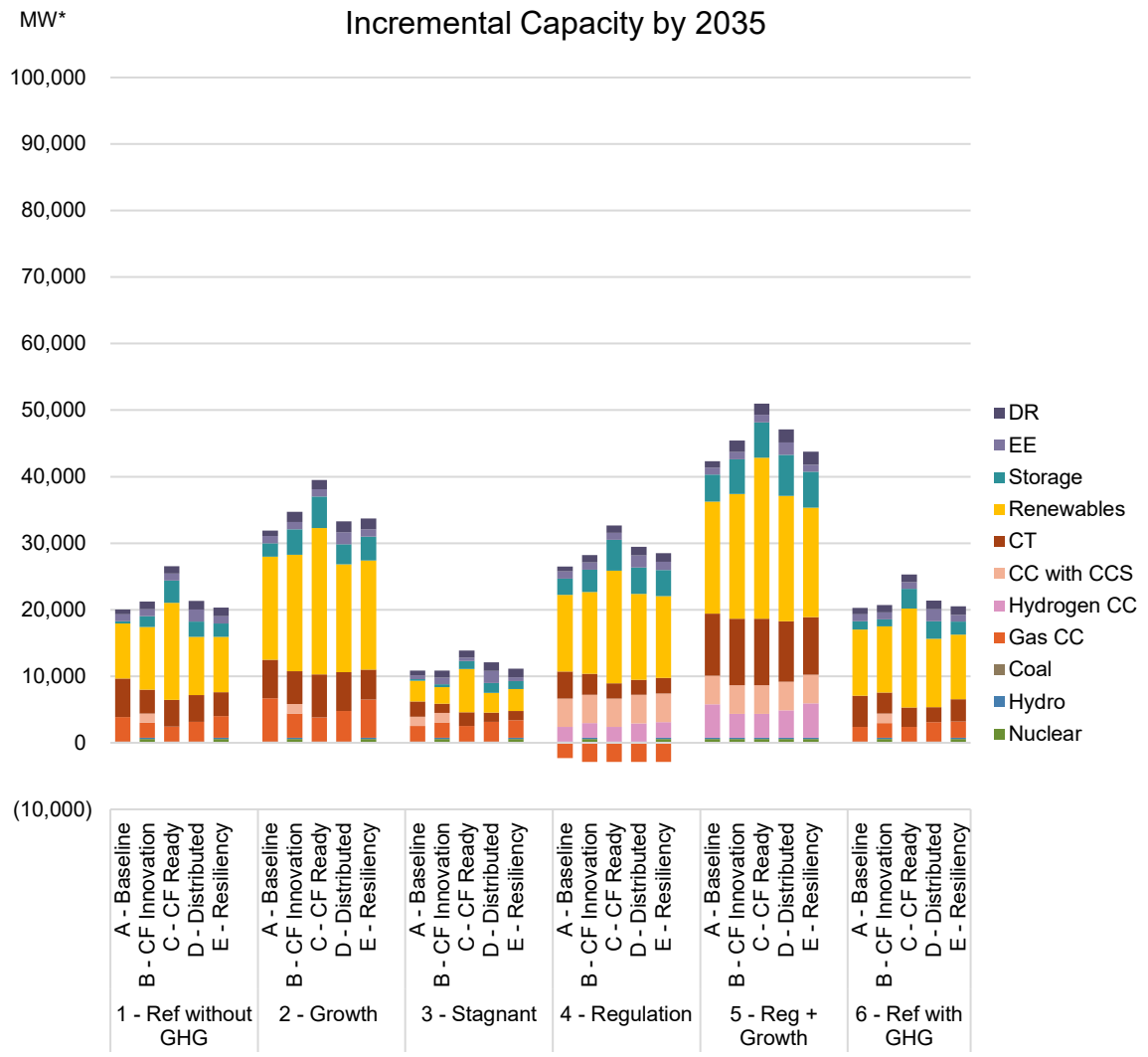
Wind additions have the potential to add more diversity and carbon-free energy to the resource mix.



New nuclear technologies, with continued advancements, can also support load growth and deeper decarbonization.

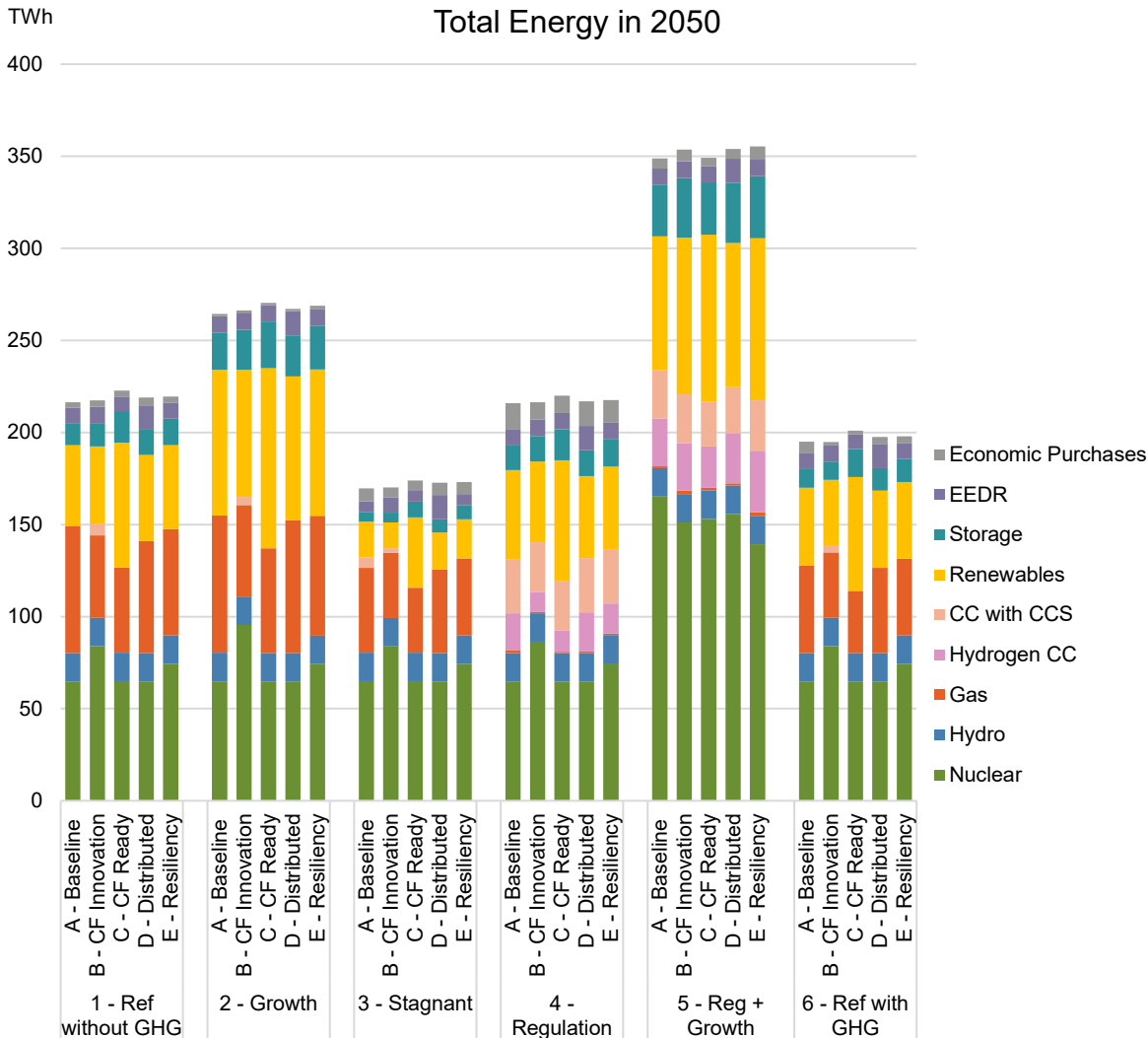
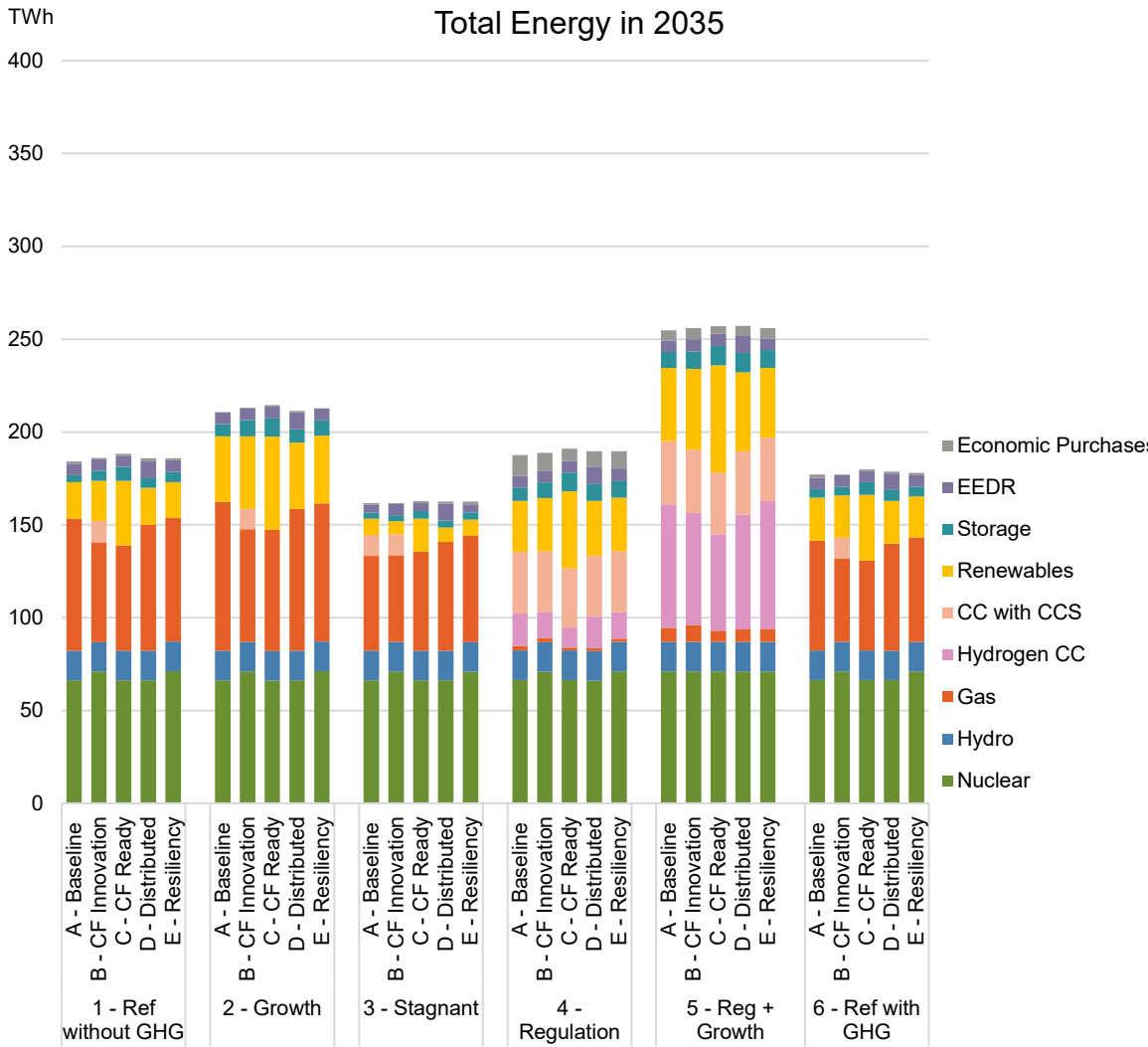


Incremental Capacity Plans



* MW summer net dependable capacity, except for renewables and storage that are shown in nameplate.

Total Energy Mix



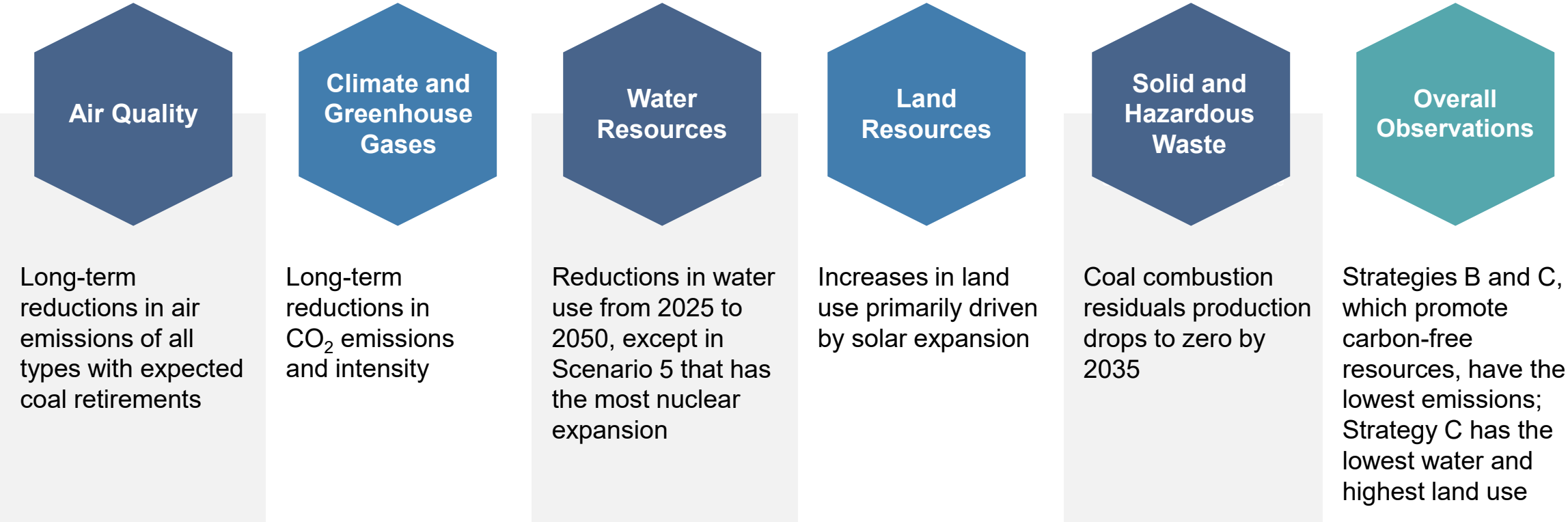
Draft Environmental Impact Statement



The draft EIS provides an overview of the IRP, discusses environmental conditions in the TVA region, and evaluates the potential environmental impacts of the IRP:

- Air quality
- Climate and greenhouse gases
- Water resources
- Land resources
- Solid and hazardous waste
- Fuel requirements
- Life cycle analysis
- Socioeconomics
- Environmental justice

Highlights of EIS Observations



Panel Q&A

TVA Panelists

Melanie Farrell – Vice President, Valley Engagement & Strategy

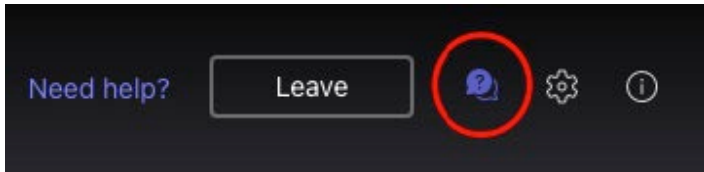
Clifton Lowry – Vice President, Enterprise Planning

Hunter Reed – IRP Project Manager, Enterprise Planning

Matthew Higdon – Sr. NEPA Specialist, NEPA Compliance

Panel Q&A

Please enter your questions in the Q&A feature of this webinar.



As a reminder, **submitted questions are not considered official comments on the 2025 Draft IRP**; please submit your official comments at www.tva.com/IRP, via email at IRP@tva.gov, or written comments can be mailed to Kelly Baxter, NEPA Project Manager, Tennessee Valley Authority, 400 W. Summit Hill Drive, WT 11B, Knoxville, TN 37902.



www.tva.com/irp

Closing / How to Submit Your Comments

Melanie Farrell; Vice President, Valley Engagement and Strategy

2025 IRP Public Open Houses



Virtual Meetings

Oct
30

After Business Hours
6:00pm Central

Nov
22

During Lunch Hour
11:00am Central

Unable to make it to a virtual or in-person meeting?

- Visit TVA's IRP website at: www.tva.com/irp for registration information.
- Taped webinars will be available as well.



In-Person Meetings at 6 PM Local Time

Oct
28

Antioch, TN
Southeast Community Center

Nov
4

Oak Ridge, TN
East Tennessee Economic Council

Nov
7

Hopkinsville, KY
The Bruce Center

Nov
12

Huntsville, AL
Calhoun Community College

Nov
13

Starkville, MS
The Gathering Starkville

Nov
14

Memphis, TN
Museum of Science & History

Nov
20

Rossville, GA
Rossville High School

Nov
21

Chattanooga, TN
Kingdom Center

Dec
3

Murphy, NC
Tri-County Community College

Dec
5

Bristol, VA
Virginia High School

Public comment period runs from September 23 through December 11, 2024