



Regional Energy Resource Council

January 31, 2025

5th Meeting – Term 6

Welcome!

The Meeting will
begin at
10:00 AM Eastern

Welcome

RERC Live and Virtual Meeting

- **This is the second meeting of the 6th term of the RERC.**
- **We welcome members of the public attending and who are in listen & view only mode.** Written comments are always welcomed (tva.com/rerc).
- **RERC Members who are attending are able to mute and unmute their own line.** RERC Members will use the **raise hand function** to be recognized for questions or comments.

Introductions

RERC Term 6* Members

Jan Berry

Citizens Climate Education

Marquita Bradshaw

Sowing Justice

Ron Bunch

Bowling Green Chamber of
Commerce

Monte Cooper

Jackson Energy Authority

Erin Gill, RERC Chair

Knoxville Utilities Board

Rebecca Goodman

Commonwealth of Kentucky

Rodney Goodman

Habitat for Humanity

Chassen Haynes

Ford Motor Company

Chrissy Heard

State of Mississippi

Chelsea Jenkins

Commonwealth of Virginia

Candy Johnson

Urban League of Greater
Chattanooga

Sen. Steve Livingston

State of Alabama

Pete Mattheis

Tennessee Valley Industrial
Committee

Dan Miller

Oak Ridge National Laboratory

Doug Peters

Tennessee Valley
Public Power Association

Boyd Pettit

State of Georgia

Erik Schmidt

City of Chattanooga

Patricia Sims

Drake State Community &
Technical College

Alexa Voytek

State of Tennessee

Julie Woosley

State of North Carolina

*Aug 1, 2023 – July 28, 2025

Agenda

Regional Energy Resource Council (RERC) Meeting January 31, 10:00 am ET Webinar

10:00 am ET	Welcome – Designated Federal Officer Melanie Farrell & RERC Chair Erin Gill Introductions, Agenda
10:10	Integrated Resource Plan (IRP) Process Update
10:20	Recap of Draft IRP Public Comment Period
10:45	IRP Sensitivities
11:05	Break
11:10	Forming the IRP Recommendations
11:30	Public Listening Session
3:30	Adjourn RERC Meeting

Integrated Resource Plan (IRP) Update

Regional Energy Resource Council (RERC)
January 31, 2025

IRP Update Agenda

IRP Process Update

IRP Open House and Public Comment Period Updates

IRP Sensitivities

Forming the IRP Recommendations

Next Steps and Discussion

IRP Process Update

Candy Kelly; Sr. Manager, Resource Strategy

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.



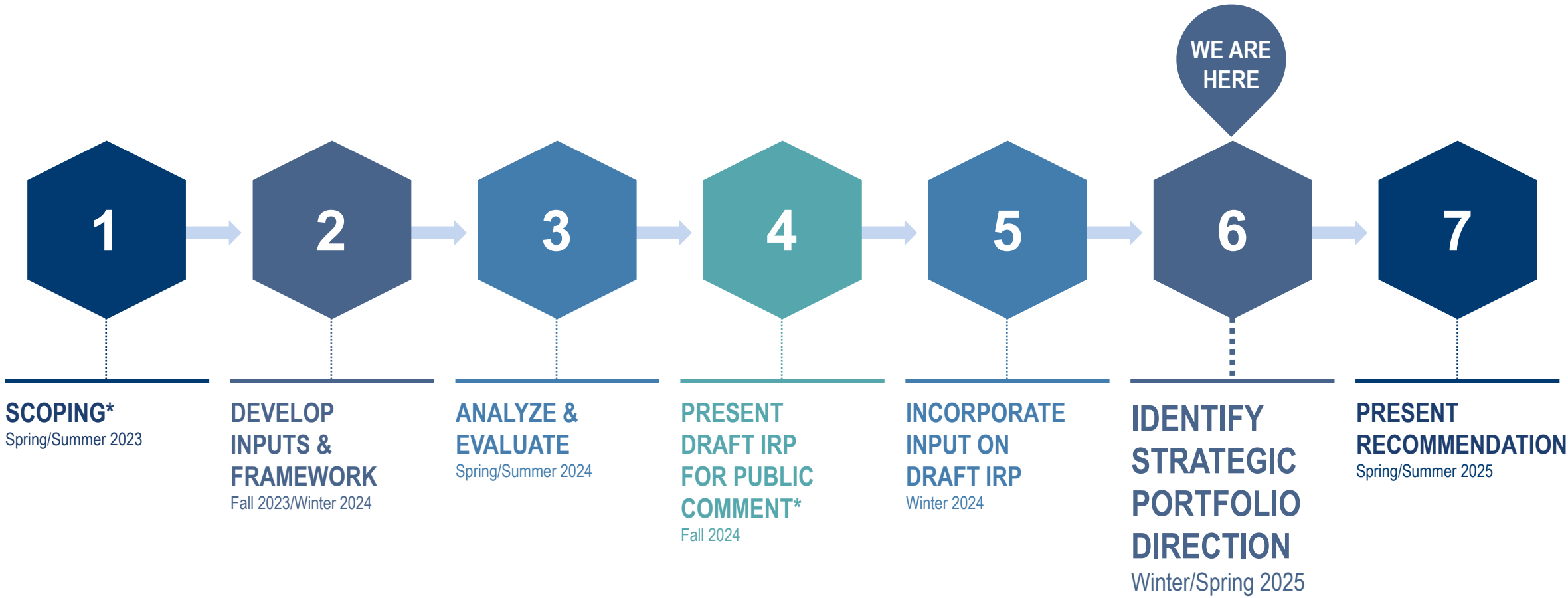
Planning is Grounded in Least-cost Principles

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



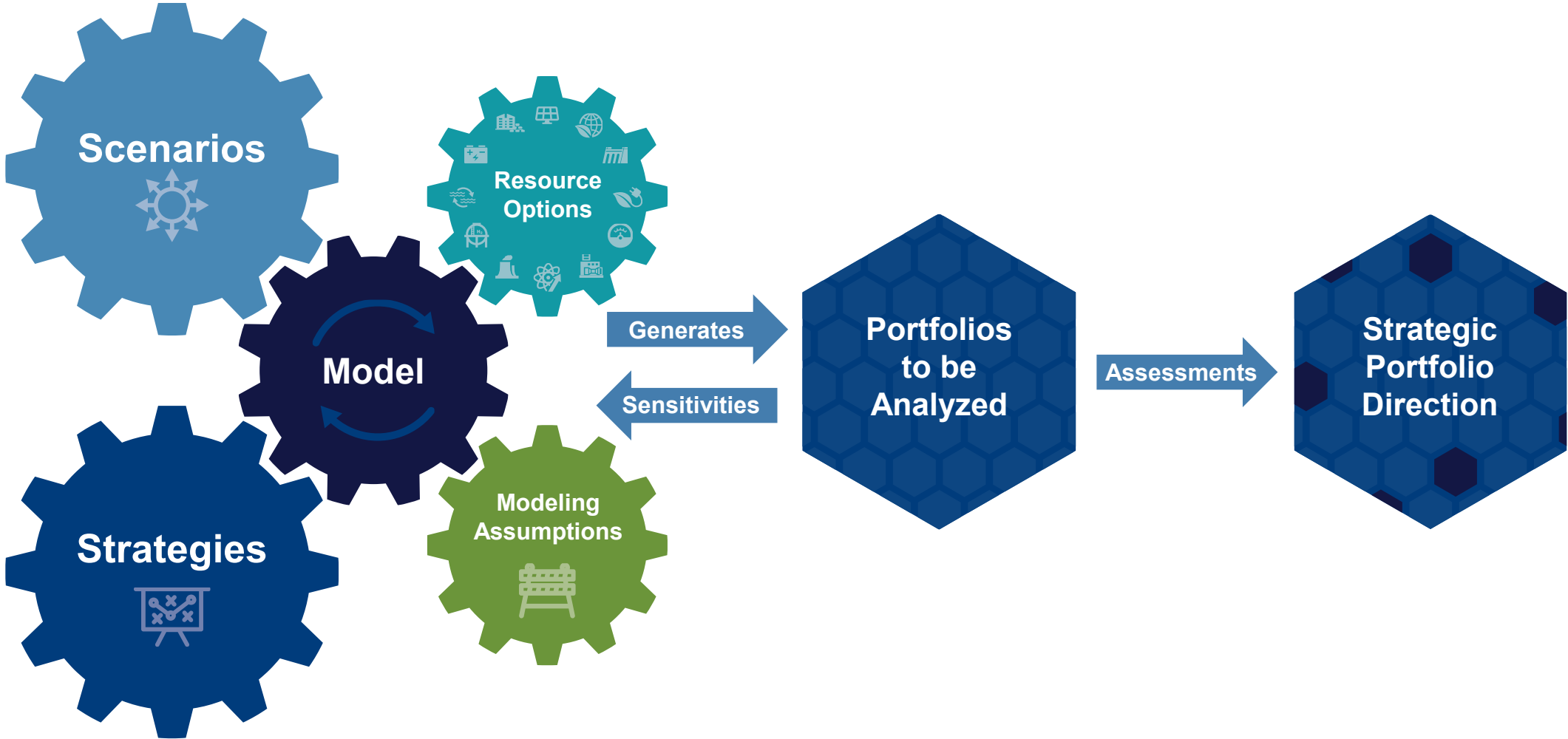
*In alignment with the Energy Policy Act of 1992

IRP Timeline



*Opportunity for public feedback during 45-day scoping and 75-day draft IRP and EIS public comment periods.

How the Integrated Resource Planning Process Works



Stakeholder feedback is a key component in the development of all model inputs.

Resource Planning for Future Capacity Needs

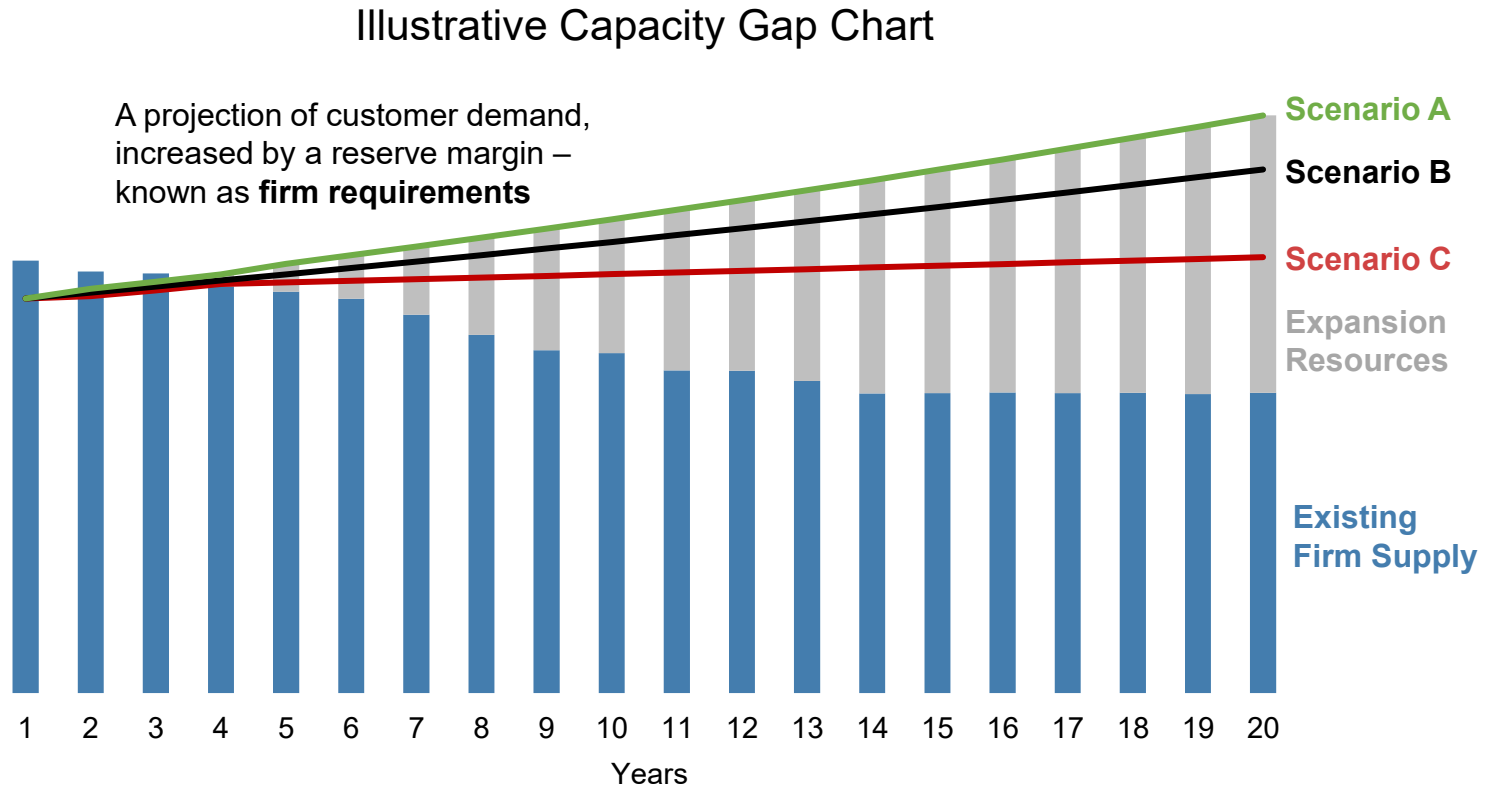
Recommended path provides low cost, reliability, diversity, and flexibility.

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 Open House and Public Comment Period Updates

Althea Jones; Director, Public & Community Engagement
Kelly Baxter; NEPA Project Manager

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 Middle 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 began on September 23, 2024, and ended on December 11, 2024

2025 Draft IRP Public Comment Period Stakeholder Engagement

As a critical component of the 2025 Draft IRP stakeholder engagement strategy, TVA conducted 10 open houses and two virtual webinars during the public comment period (September 23 – December 11, 2024).

Open house engagements:

- Approximately 595 members of the public attended the open houses and virtual webinars
- Over 375 questions were discussed during the sessions
- Open houses were held in all seven states of the TVA service territory
- 32% increase in public participation over the 2019 IRP

Members of the IRP core team also engaged across the valley via district meetings, federal advisory committee meetings (Regional Energy Resource Council and Regional Resource Stewardship Council), local power company board meetings, customer association meetings, community and civic meetings, utility conferences, and local elected officials and federal engagements.

2025 Draft IRP Open House Engagement Themes

Requests

- Remain focused on reliability and resiliency
- Balance low rates with higher demand
- Stay true to the mission
- Do not compromise fundamentals for serving as an innovative leader
- Serve stakeholders in the absence of shareholders
- Prioritize local support and/or opposition to actions/projects

Concerns

- Generation capacity
- Transmission capacity
- Commercial load growth trumping impacts to residential rate payers
- Sacrificing firm power to meet regulations
- Safety and environmental impacts of gas
- Risk factors related to technological maturation, implementation and maintenance
- Inability to meet net-zero by 2050 aspiration
- Implications for disadvantaged/ environmental justice communities

Questions

- Clarity on assumption details
- Broad nature of ranges (quilt chart)
- Understanding around risk factors
- Administration/regulation shift impacts
- Current transmission infrastructure's ability to deliver more generation
- Why not a net-zero by 2050 strategy
- Why not more nuclear
- Why not more renewables
- Understanding of sensitivities and next steps
- Understanding of carbon capture and sequestration

Draft 2025 IRP Public Comments Received

Almost 2,500 total comments were submitted on the Draft IRP and EIS

- About 900 comments were submitted through the online portal, at least 300 of these have "form-letter" language encouraging the use of clean energy generation sources
- In total, about 1,900 email and online submittals containing "form" letters – all are pro-renewables and urge TVA toward decarbonization (76 percent)
 - Included in this total were a large number (400+) of comments regarding TVA's Illinois coal mineral rights, which is outside of the scope of the IRP
- Non-form submittals account for about 600 comments (24 percent)
 - About 70 discrete emails and letters were submitted
 - Several letters are from agencies, a government representative, and about 20 NGOs and other organizations

Draft 2025 IRP Comment Key Themes

Key themes:

- Support for more clean energy generation; calls for decarbonization
- For/against certain resource technologies (e.g., nuclear, gas, coal, renewables)
- Economic – benefits or costs of programs; ratepayer focus; rebates or incentives
- Power infrastructure – reliability, decentralization, use existing infrastructure, storage, and concerns about high demand data centers
- Environmental resources – concerns about climate change, extreme weather, the environment, wildlife, and pollution

Topics addressed by the comments were mostly focused on decarbonization and renewables focus (67% non-form letter comments), with the next largest focus on environmental resources (43%).

Public Comments by Topic (non-form letter submittals)

Category	Total*	% Non-form	% Total	Includes
Decarbonization/ Renewables	399	67%	44%	Focus on any type of renewable; calls for decarbonization; against fossil fuels
Fossil Fuel Focus	40	7%	4%	Calls for focus on oil, gas, or coal
Economic	168	28%	19%	Benefits or costs of programs; rebates or incentives; ratepayer focus; jobs
Power Infrastructure	146	25%	16%	Reliability of power, decentralization, use of current or abandoned infrastructure, storage, public-private partnerships
Environmental Resources	254	43%	28%	Impacts to climate change or environment or species; storms; "save the planet"; pollution
Human Resources	112	19%	12%	EJ, cultural, visual, human health, land use
Metrics	52	9%	6%	Requests for data or evidence to be given or kept in the future, transparency, modeling
Technology	34	6%	4%	High energy demand concerns or needs for AI/data centers; cyber security; EV
Position	44	7%	5%	explicitly pro- or anti- energy source, strategy
Regulation	45	8%	5%	Political pressure; policy change; democratic process; regulations; candidate; nationwide interests
Other	184	31%	21%	Lake levels, support, TVA lead, privatize TVA, future focus, anti-lithium, research, misinformation, etc.

Draft 2025 IRP Commenter Demographics

Demographics:

- The largest portion of respondents were from Tennessee (748, 30%). Illinois made up the 2nd largest group, due to the Illinois Coal form letters* (453, 18%). California, Alabama, and New York provided the 3rd, 4th, and 5th largest state respondents, respectively (CA – 151, 6%; AL – 112, 5%; NY – 60, 3%).
- There were 297 respondents from unknown locations (12%). Remaining states constituted less than 2% of respondents (1-49 respondents). Additionally, there were 3 international respondents (<1%). None were received from Idaho, North Dakota, or Wyoming.

Affiliations:

- 31% of respondents identified as self, citizen, homeowner, or ratepayer
- 19% of respondents identified as non-profit or activism organizations (55, including Nature Conservancy, Sierra Club)
- 14% of respondents identified as an energy business, consulting, or engineering and design
- 10% of respondents identified as religious organizations
- 6% of respondents identified as union or labor groups
- 5% of respondents identified as governance (15, including EPA, Tennessee Department of Environment and Conservation, Virginia Department of Environmental Quality, City of Chattanooga, City of Nashville, City of Germantown)
- Other groups included academia, agriculture, outdoors, community groups, healthcare, and technology.

*If the Illinois coal form letter were removed from the totals, there would only be 35 Illinois respondents

IRP Public Comment Processing

How does TVA address these comments?

- Every comment submission is reviewed, and comment concepts are sorted into common themes
- These common themes are further grouped into topics and subtopics
- In the final EIS, these commonalities are refined into a comment summary/comment statement
- Comment resolution involves collaboration with subject matter experts across TVA
- The final EIS will include comment summaries and TVA's responses to the comment statements
- The final EIS will also include the names of all the commenters
- All of the individual comments in their entirety will be included as an attachment on the IRP webpage

How does TVA use these comments?

- TVA uses public comments to refine the analyses in the final IRP and EIS including development of sensitivities and IRP recommendations for how TVA plans to meet future power demand.

IRP Sensitivities

Hunter Reed; IRP Project Manager

Analysis Tools within the IRP

Scenarios

Describe potential outcomes due to a combination of factors outside TVA's control

Strategies

Test various business options within TVA's control

Stochastics

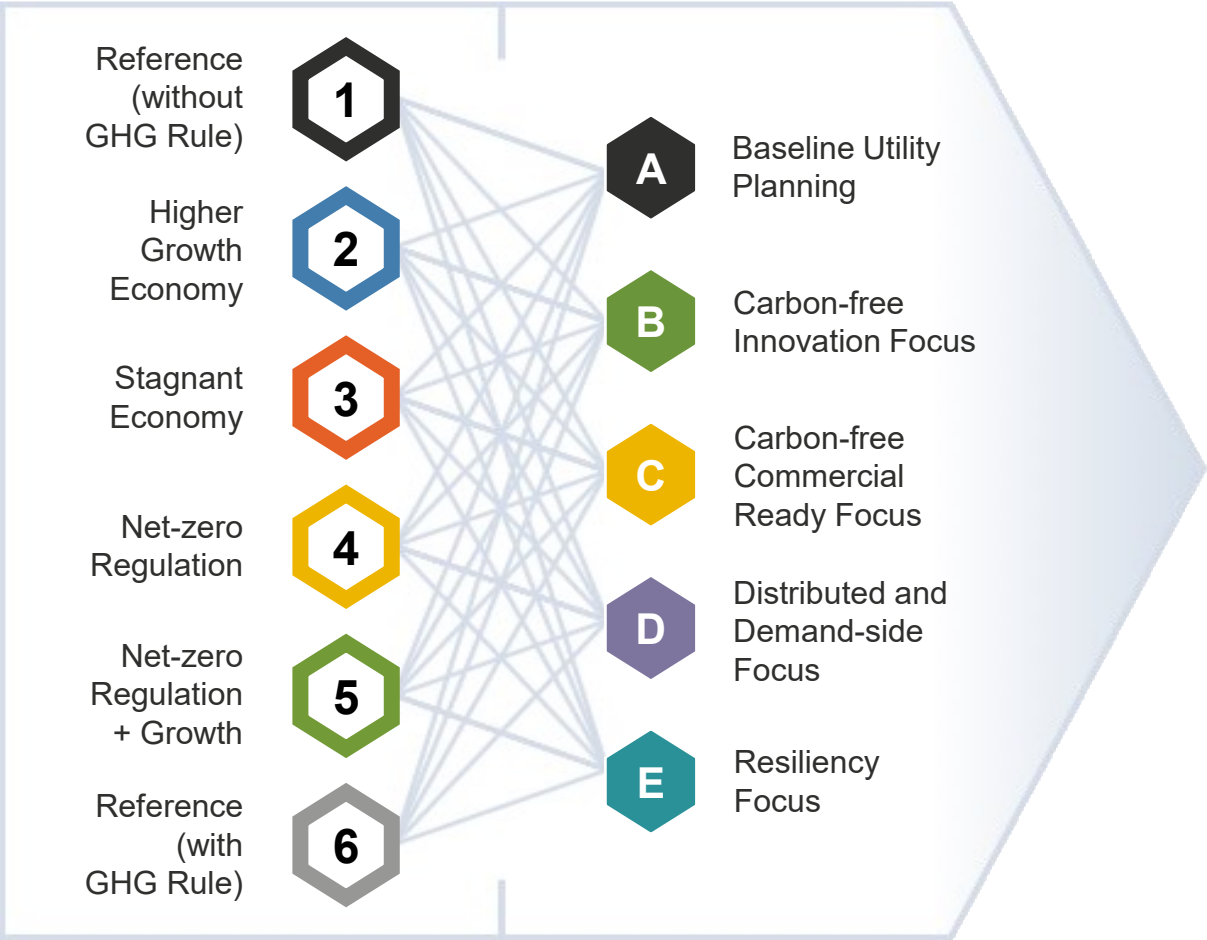
Evaluate risk of uncertainties around key planning assumptions within each portfolio

Sensitivities

Test a change in a key assumption for a particular portfolio to isolate its impact

IRP Utilizes a Rigorous Analytical Process

6 SCENARIOS x 5 STRATEGIES



30 PORTFOLIOS

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




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
Energy Efficiency and Demand Response 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.

The Purpose of Sensitivity Analysis

Sensitivity analyses are performed to help answer questions meriting further evaluation (“What if...?”).

Suggested sensitivities can come from TVA Staff, IRP Working Group stakeholders, or public comments.

Sensitivity analyses are run as variations from a core portfolio, typically the Reference case scenarios with Baseline Utility Planning strategy, to isolate the impact of a change in one key assumption.

Sensitivities will be included in the Final IRP and considered, along with the balance of portfolio results and the EIS, when developing the IRP recommendations.

Final IRP Sensitivity List by Focus Area

Net-zero Trajectories

- TVA net-zero by 2050 aspiration (+2A)
- Accelerated TVA net-zero (faster than 2050)

Regulatory Environment

- Regulations on existing gas plants (6A)
- Regional gas build constraints
- Coal/gas cofiring option (6A)
- Extended coal operation (1A)

Variation in Climate

- More extreme weather trends
- Increasing winter risk

Electricity Demand Changes

- Rapid near-term industrial growth
- Optimized EV charging (+5A)

Resource Costs and Availability

- Higher/lower clean energy resource costs
- Higher gas resource costs
- Increased solar and storage market depth
- Increased EE market depth

Natural Gas Commodity Prices

- Higher/lower natural gas prices

Each sensitivity was run off Reference cases (1A and 6A) unless noted

Preliminary Sensitivity Results Summary

In general, sensitivity results fall within the boundaries of the 30 core portfolios presented in the draft IRP.

Scenario 5 (Net-zero Regulation plus Growth) typically sets the high end of clean energy resource additions, providing broad coverage including the additions seen in the net-zero carbon aspiration sensitivities.

A few sensitivities expanded the bounds of the final IRP results:

- Extended coal operations
- Coal/gas cofiring option
- Increased energy efficiency market depth

BREAK

Forming the IRP Recommendations

Hunter Reed; IRP Project Manager

Purpose and Background

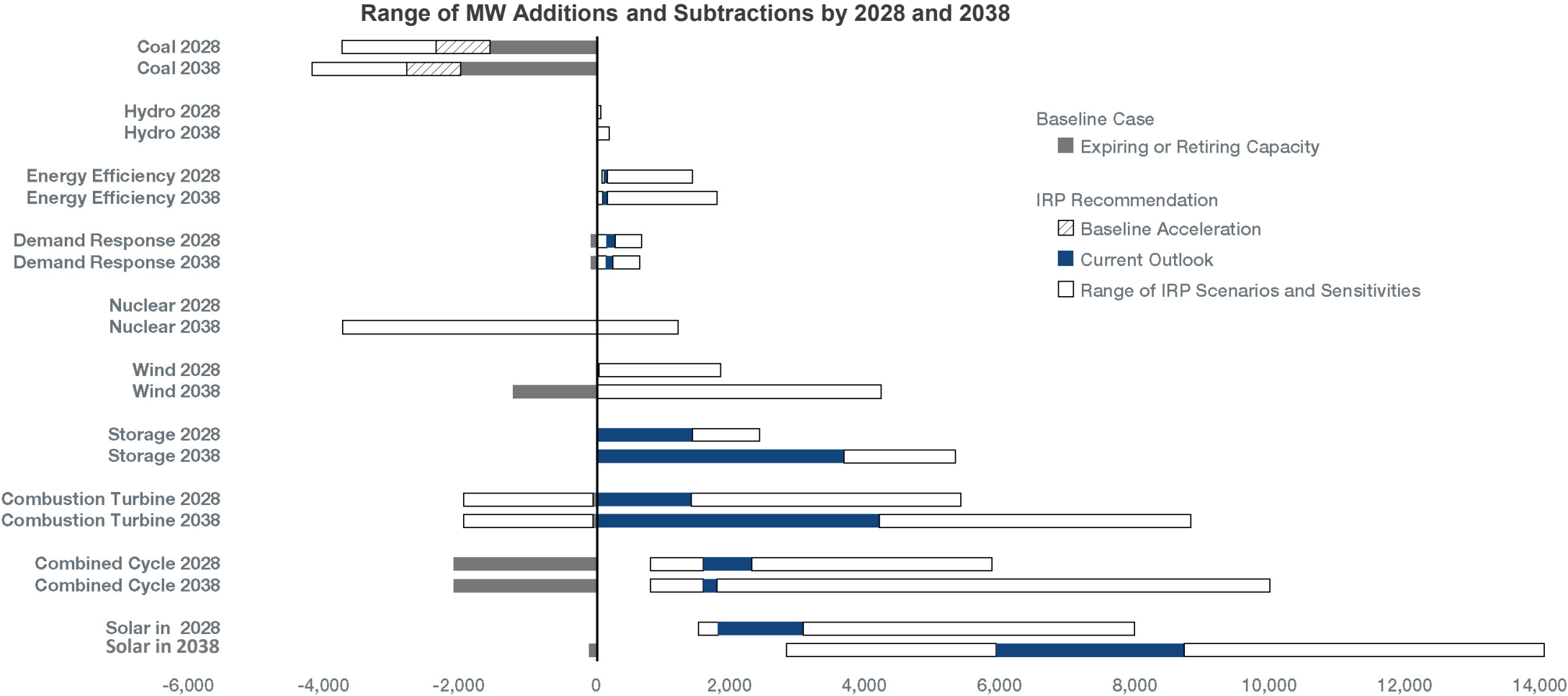
Purpose of the IRP recommendations:

- Board-approved guidance based on least-cost planning principles
- Guardrails for future resource additions over the next 10 to 20-plus years
- Planned actions over the next 5 to 10 years

Key components of 2019 IRP recommendations:

- Power supply mix ranges
- Near-term actions
- Signposts to monitor

2019 IRP Recommendation – Power Supply Mix Ranges



2019 IRP Recommendation – Near-term Actions

Renewables & Flexibility



- Add solar based on economics and to meet customer demand
- Enhance system flexibility to integrate renewables and distributed resources
- Evaluate demonstration battery storage to gain operational experience

Existing Fleet



- Pursue option for license renewal for TVA's nuclear fleet
- Evaluate engineering end-of-life dates for aging fossil units to inform long-term planning

Energy Usage



- Conduct market potential study for energy efficiency and demand response
- Collaborate with states and local stakeholders to address low-income energy efficiency
- Collaboratively deploy initiatives to stimulate the local electric vehicle market

Distribution Planning



- Support development of Distribution Resource Planning for integration into TVA's planning process

2019 IRP Recommendation – Signposts to Monitor

Portfolio shifts will be driven by changing market conditions, more stringent regulations, and technology advancements.



- Demand for electricity
- Natural gas prices
- Customer expectations
- Regulatory requirements
- Operating costs for existing units
- Solar and wind costs
- Emerging and developmental technologies

The TVA Board directed staff to monitor key signposts and initiate the next IRP no later than 2024.

Key Components of Proposed 2025 IRP Recommendations

Power supply mix ranges by resource type (by 2035 and 2050)

Strategic portfolio direction through 2035

- Overview
- Recommended actions
- Planned actions for existing and commercial ready resources
- Planned actions to advance emerging technologies
- Planned actions to enhance integrated system planning

Key signposts and planning implications

Proposed 2025 IRP Recommendations

Power supply mix ranges by resource type (by 2035 and 2050)

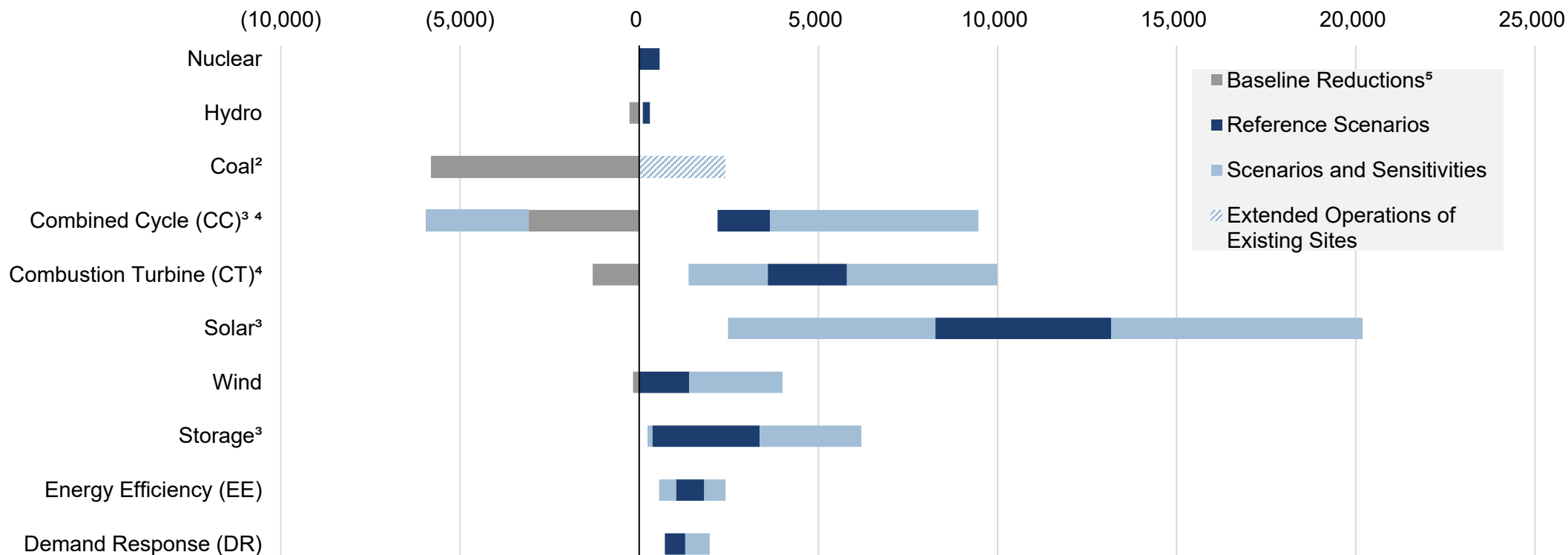
Strategic portfolio direction through 2035

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Key signposts and planning implications

Preliminary Power Supply Mix Ranges (2035)

Range of MW¹ Additions and Reductions through 2035



¹Additions are shown in summer net dependable capacity, except for solar, wind, and storage that are shown in nameplate capacity.

²Coal additions represent potential to delay existing unit retirements and/or cofire with natural gas.

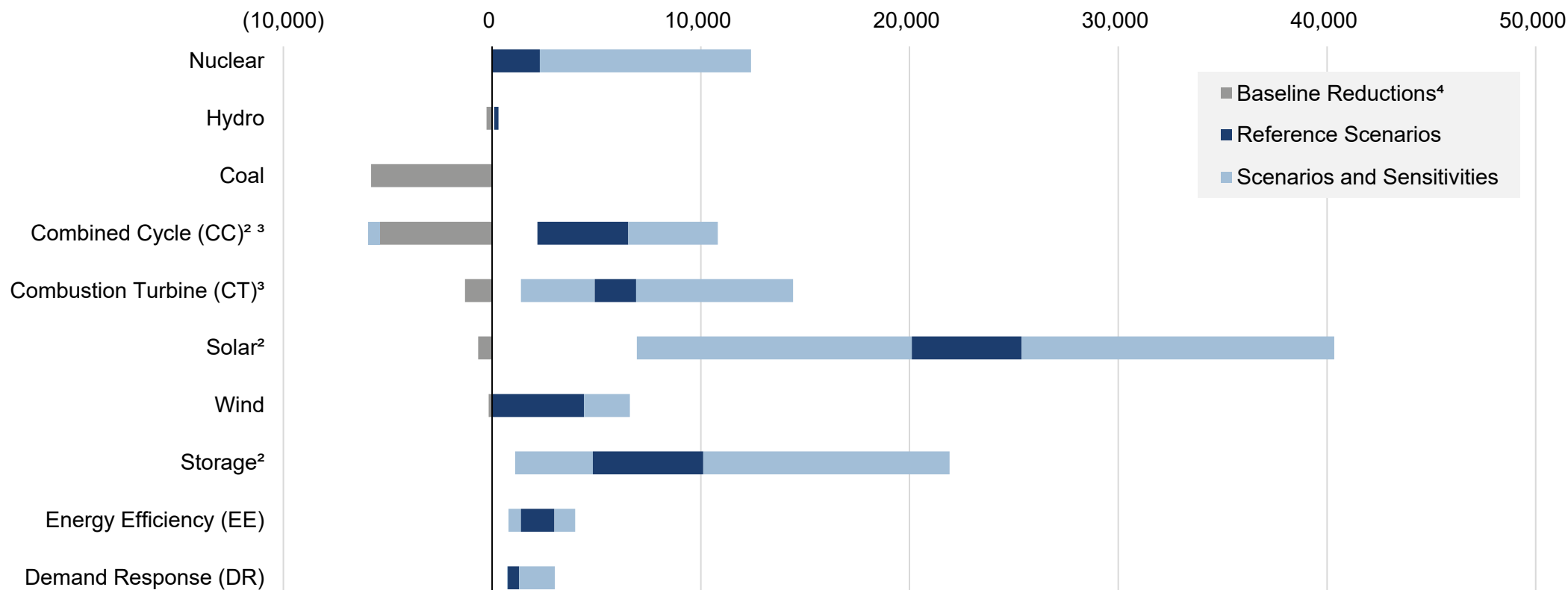
³CC, solar, and storage include utility-scale and distributed resource additions.

⁴CC additions could include carbon capture and sequestration (CCS); CC and CT additions could include alternative fuel co-firing (e.g., hydrogen).

⁵The full amount of retirements and expirations, shown as baseline reductions, are present in all 30 core portfolios.

Preliminary Power Supply Mix Ranges (2050)

Range of MW¹ Additions and Reductions through 2050



¹Additions are shown in summer net dependable capacity, except for solar, wind, and storage that are shown in nameplate capacity.

²CC, solar, and storage include utility-scale and distributed resource additions.

³CC additions could include carbon capture and sequestration (CCS); CC and CT additions could include alternative fuel co-firing (e.g., hydrogen).

⁴The full amount of retirements and expirations, shown as baseline reductions, are present in all 30 core portfolios.

Proposed 2025 IRP Recommendations

Power supply mix ranges by resource type (by 2035 and 2050)

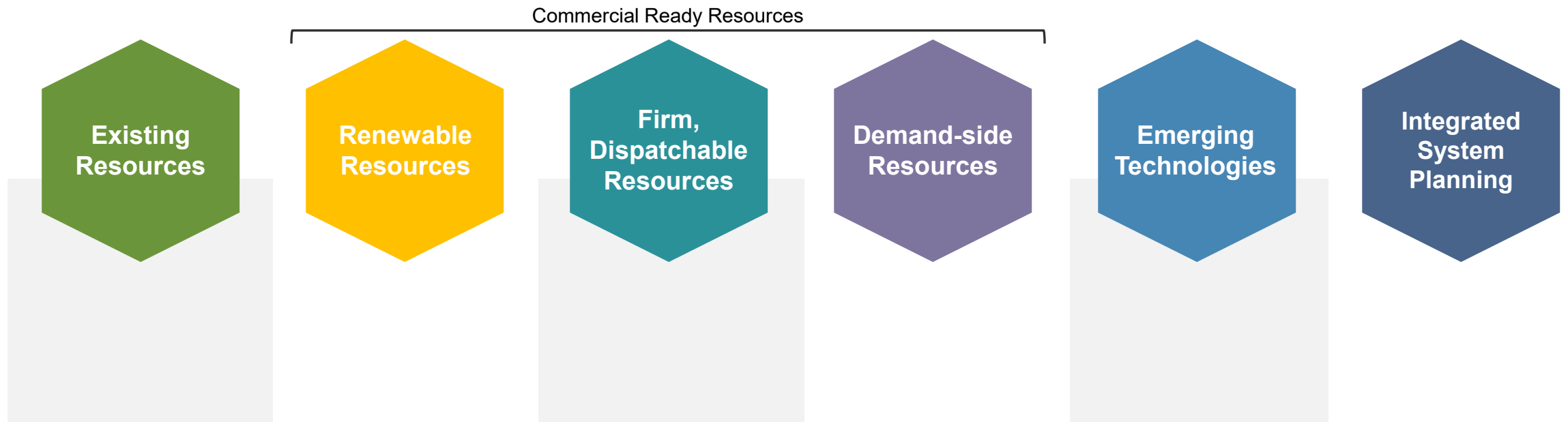
Strategic portfolio direction through 2035

- Overview
- Recommended actions
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- Planned actions to enhance integrated system planning

Key signposts and planning implications

Strategic Portfolio Direction – Recommended Actions

Recommended actions for each key focus area – similar to the near-term actions in the 2019 IRP – would follow an “elevator speech” overview in the Strategic Portfolio Direction section.



Strategic Portfolio Direction – Planned Actions for Existing and Commercial Ready Resources

This section outlines the IRP ranges, current actions in progress, and planned actions by 2035 for existing and commercial ready resources.

Resource Type	GW by 2035	Actions in Progress	Planned Actions by 2035
Solar (example approach)	3 to 20 GW	3 GW of Green Invest, self-directed, and Partner Flexibility solar projects contracted to come online by 2028	Add cost-competitive solar through multiple avenues, supported by strategic transmission investments
Gas Combined Cycle (CC) (example approach)	2 to 9 GW	2 GW of CC capacity being added by 2028 to enable coal retirements and provide grid support (hydrogen capable)	Continue investing in the existing fleet and evaluate future CC additions and market opportunities for system reliability needs
Energy Efficiency (EE) (example approach)	1 to 2 GW	Ramping up investments in residential, commercial, and industrial EE programs using insights from the potential study	Partner with TVA customers to realize achievable and cost-competitive EE program potential, reducing power generation resource needs

Strategic Portfolio Direction – Planned Actions to Advance Emerging Technologies

Based on insights from the IRP analysis, this section provides general direction on actions to advance the potential deployment of emerging clean energy technologies by 2035 and beyond to support load growth and TVA’s net-zero aspirations by 2050.

Emerging Technology	Actions in Progress	Planned Actions through 2035
Advanced Storage (example approach)	Sponsoring promising startup companies through ORNL, Electric Power Research Institute (EPRI), and other innovation programs	Evaluate additional opportunities to enable future advanced storage deployment
Carbon Capture (example approach)	Participating in industry partnerships led by EPRI and the National Carbon Capture Center	Evaluate additional opportunities to enable future carbon capture deployment

Strategic Portfolio Direction – Planned Actions to Enhance Integrated System Planning

Based on insights from the IRP analysis, this section provides general direction on actions to enhance integrated system planning that enables the efficient evolution of the power system, including details on in-progress and proposed actions.

Planning Element	Actions in Progress	Planned Actions through 2035
Integrated Transmission Plan (example approach)	Conducting stakeholder engagement effort on integrated transmission planning, leveraging IRP analysis and recommendations	Incorporate additional elements of transmission planning into future IRPs to more fully integrate system planning

Proposed 2025 IRP Recommendations

Power supply mix ranges by resource type (by 2035 and 2050)

Strategic portfolio direction through 2035

- Overview
- Recommended actions
- Planned actions for existing and commercial ready resources
- Planned actions to advance emerging technologies
- Planned actions to enhance integrated system planning

Key signposts and planning implications

2025 IRP Key Signpost Themes

Changing Market Conditions



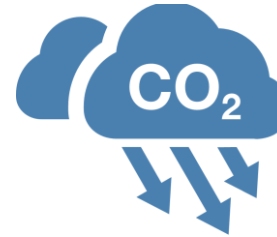
- Electricity Demand
- Natural Gas Prices
- Customer Expectations
- Solar and Storage Costs

Evolving Policy and Regulations



- Policy and Regulatory Requirements
- Regulatory Hurdles and Challenges

Technology Advancements



- Advanced Nuclear Technologies
- Advanced Storage Technologies
- Carbon Capture Technologies


Ensuring Reliability as the System Evolves




- Impacts of changing market conditions
- Pace that new resources can be brought online to replace coal plants
- Operating realities with growing mix of renewables and storage

Key Signposts, Risks, and Long-term Implications

Based on the IRP analysis, this section will provide insights to the potential planning implications of movement in key signposts.

Key Signpost		2035 Trajectory vs. Reference Scenarios	Implications to Reference Cases through 2035
	Electricity Demand (example approach)	Higher electricity demand	More firm capacity additions, likely a mix of renewables, gas, and storage
		Lower electricity demand	Less firm capacity additions, likely a mix of renewables, gas, and storage
		Note: 10% increase in 2035 electricity demand requires 4 GW increase in firm capacity need	

Key Signpost		2035 Trajectory vs. Reference Scenarios	Implications to Reference Cases through 2050
	Advanced Storage Technologies (example approach)	Faster progress in technology and adoption readiness	Increased mix of renewables and storage over the long term, likely offsetting some gas additions
		Slower progress in technology and adoption readiness	Decreased mix of renewables and storage over the long term, offset by more gas and/or emerging clean energy resources

TVA staff will monitor key signposts to inform annual planning updates and the timing of the next IRP.

Next Steps

Upcoming IRP Activities and RERC Engagements

TVA staff is currently reviewing all submitted comments and incorporating feedback, as appropriate.

IRP staff plans to meet with the RERC again in late February to provide updates on final modeling results, proposed 2025 IRP Recommendations, and seek an advice statement.

Questions & Comments

Public Listening Session

Public Comment



**You will be called by
the facilitator to
unmute**

**This is a listening
session; responses
are typically not
provided**

Next RERC Meeting

February 24 and 25

IRP Advice

Franklin, Tennessee

Adjourn