
Integrated Resource Plan (IRP) Update

Public Educational Webinar
February 27, 2025

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
- Draft IRP Rollout

There will be an opportunity for questions at the end of the presentation using the Q&A functionality of the Teams webinar.

IRP Public Webinar Agenda

IRP Process and Schedule Update

IRP Stakeholder Engagement

Final Modeling Updates

Preliminary IRP Recommendations

Q&A

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.



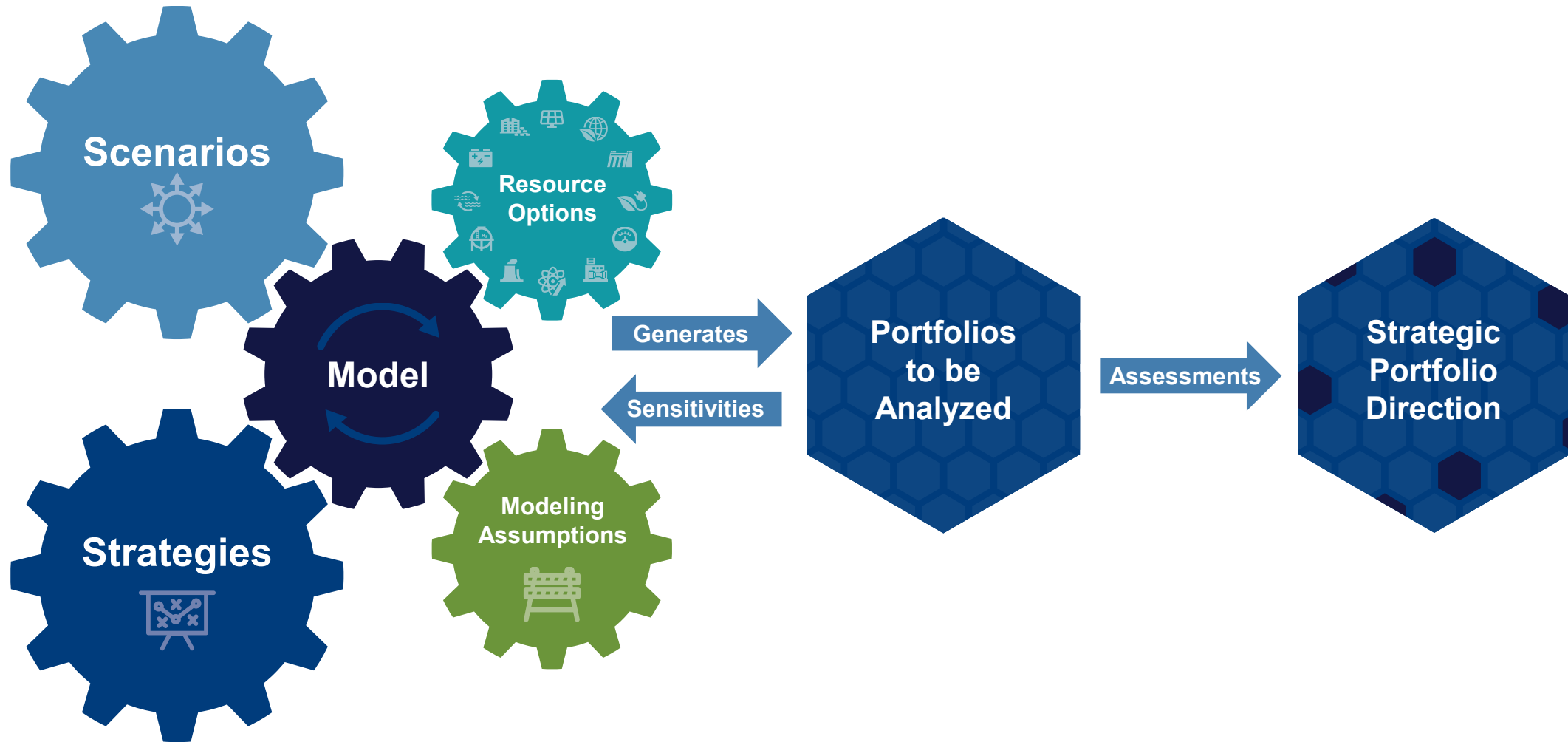
Planning is Grounded in Least-cost Principles

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



*In alignment with the Energy Policy Act of 1992

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

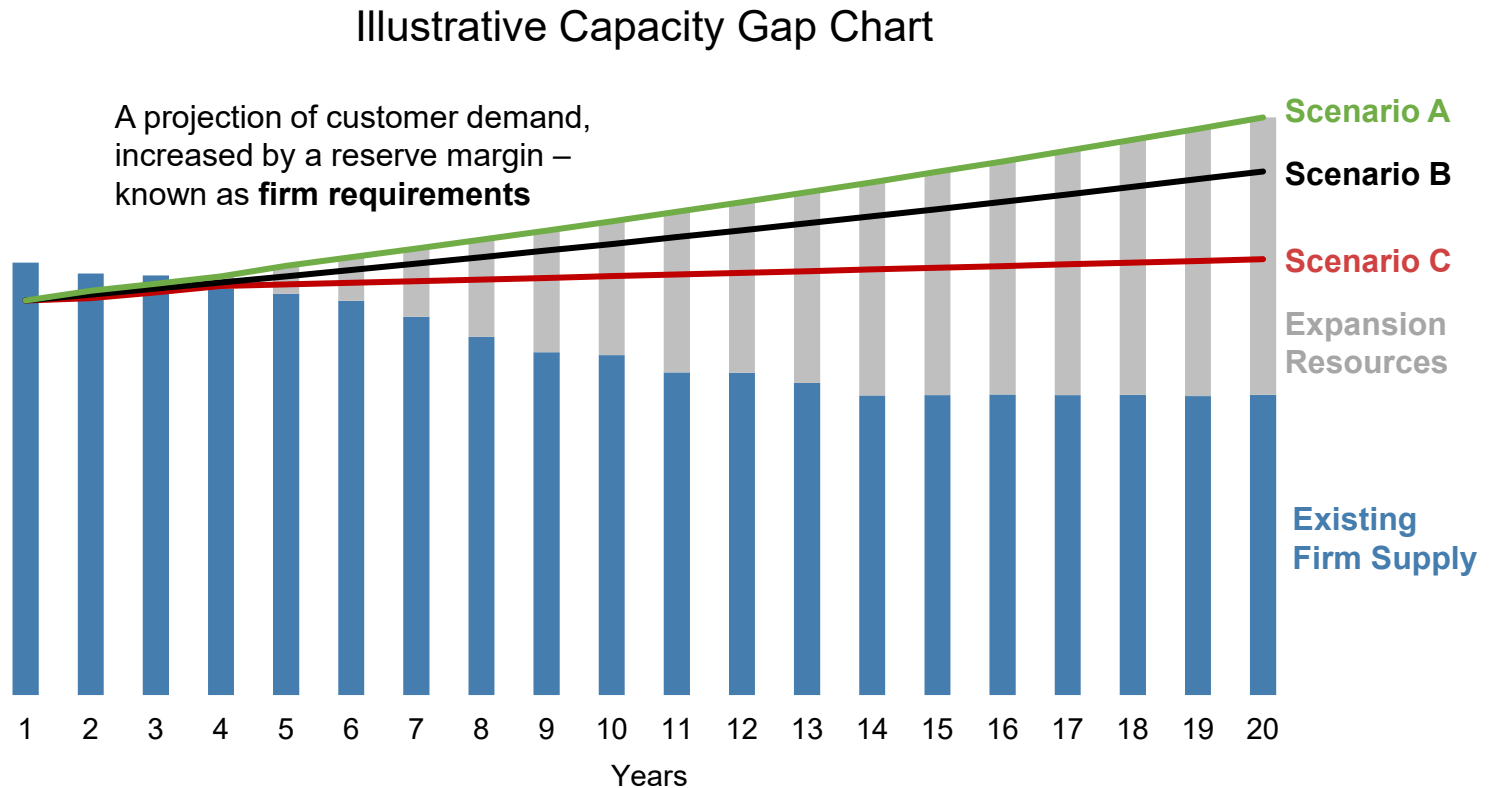
Recommended path provides low cost, reliability, diversity, and flexibility.

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 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

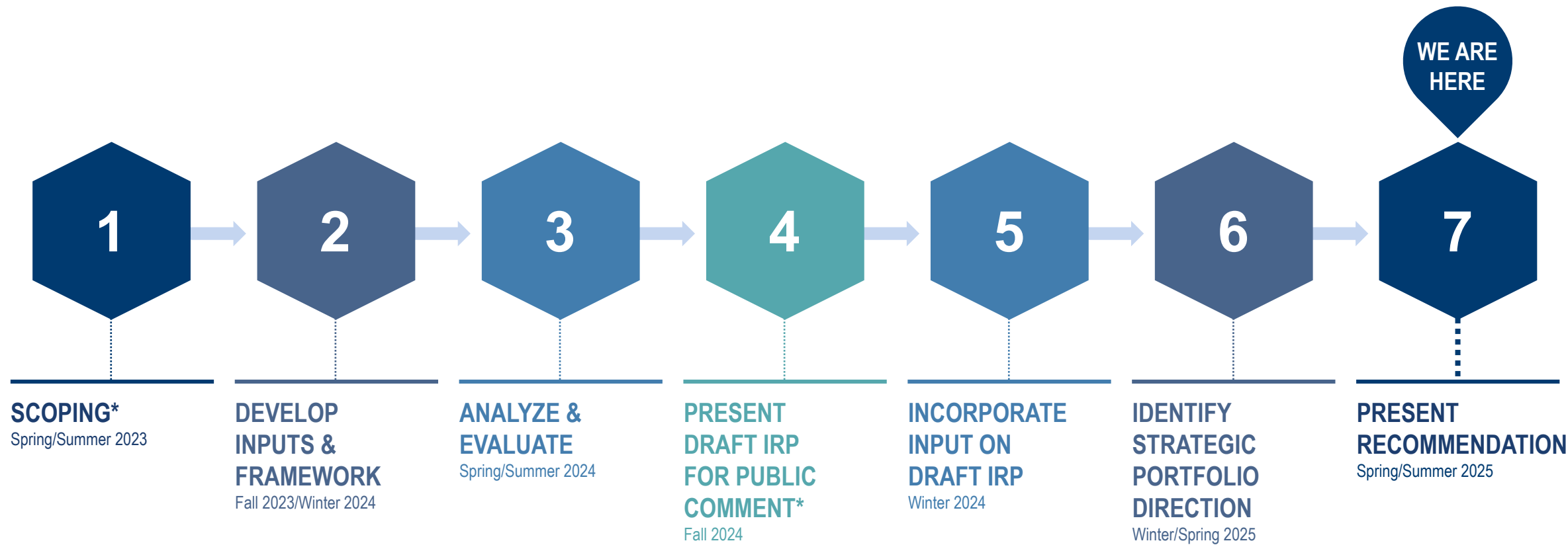
Emphasizes existing and potentially expanded customer partnerships and programmatic solutions to reduce reliance on central station generation and promote virtual power plants



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 Timeline



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

IRP Stakeholder Engagement

Kelly Baxter; IRP NEPA Project Manager

Stakeholder and Public Involvement

Utility of the Future Information Exchange



20 Stakeholder Reps



44 IRP Comments

Public Scoping



2 Public Webinars



115 Participants

Public Outreach and Briefings



4 Public Updates



333 Participants

Board Public Listening Sessions



6 Listening Sessions



27 IRP Comments

Regional Energy Resource Council



20 Stakeholder Reps



6 IRP Discussions

IRP Working Group



24 Stakeholder Reps



24 Working Meetings

Regional Engagements



5 Regions



840 Touchpoints

Public Review of Draft IRP and EIS



12 Open Houses



2,500 Comments

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

Draft 2025 IRP Public Comments Received

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

- In total, about 1,900 email and online submittals containing “form” letters – most are pro-renewables and urge TVA toward decarbonization (76 percent)
- Non-form submittals account for about 600 comments (24 percent)
 - Over 500 were submitted through the online portal and about 70 emails and letters were submitted

Key comment 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

Final Modeling Updates

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

- Reference (without GHG Rule) 1
- Higher Growth Economy 2
- Stagnant Economy 3
- Net-zero Regulation 4
- Net-zero Regulation + Growth 5
- Reference (with GHG Rule) 6

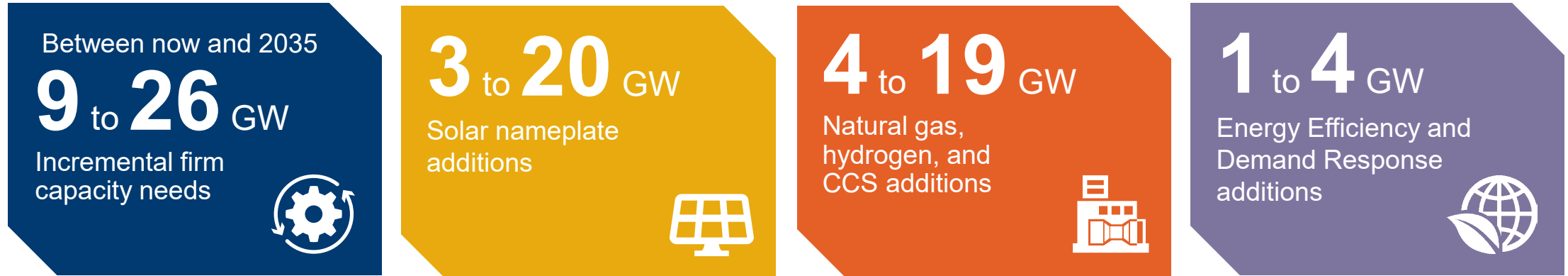
- A Baseline Utility Planning
- B Carbon-free Innovation Focus
- C Carbon-free Commercial Ready Focus
- D Distributed and Demand-side Focus
- E Resiliency Focus

30 PORTFOLIOS

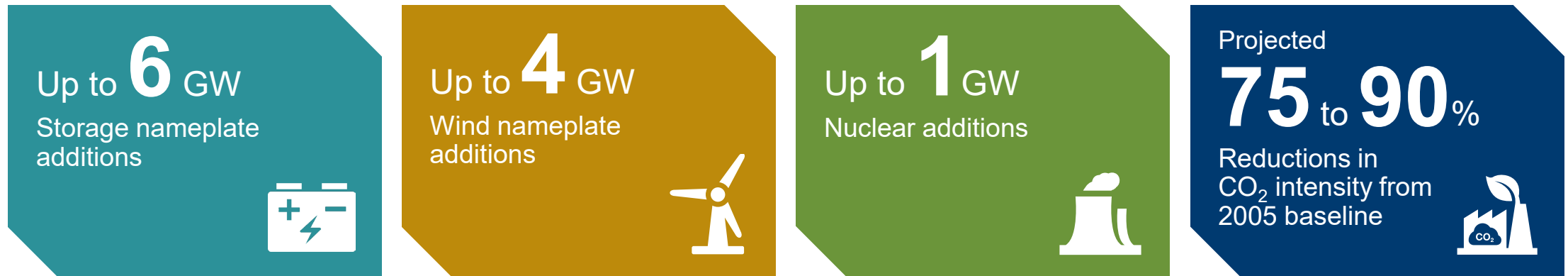
Stakeholder feedback and public comments informed the development of scenarios and strategies that combine to form 30 unique, core portfolios.



Draft IRP Results Suggest by 2035...



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



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 (+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

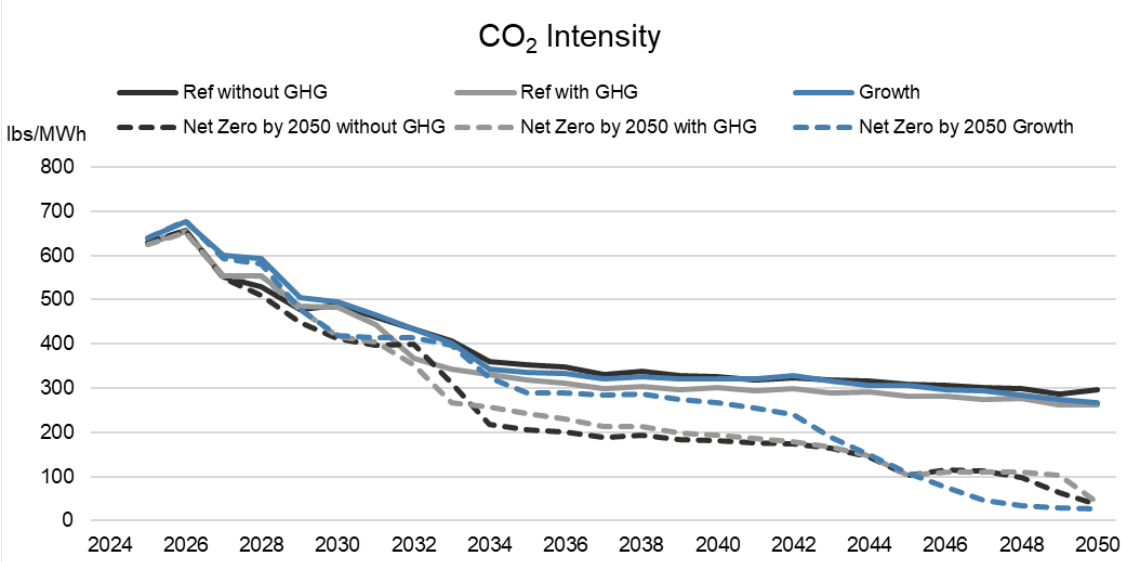
Natural Gas Commodity Prices

- Higher/lower natural gas prices

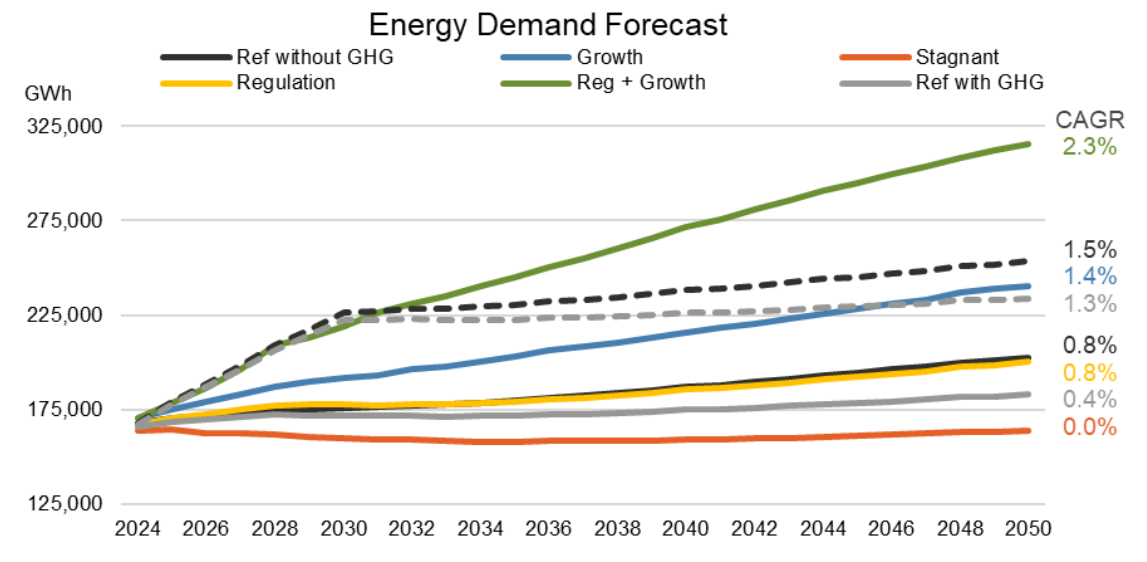
Each sensitivity was run off Reference cases (1A and 6A) unless noted

Sensitivities Push the Boundaries of IRP Analysis...

Net-zero trajectory cases evaluate impacts of achieving net-zero carbon emissions without regulatory drivers.



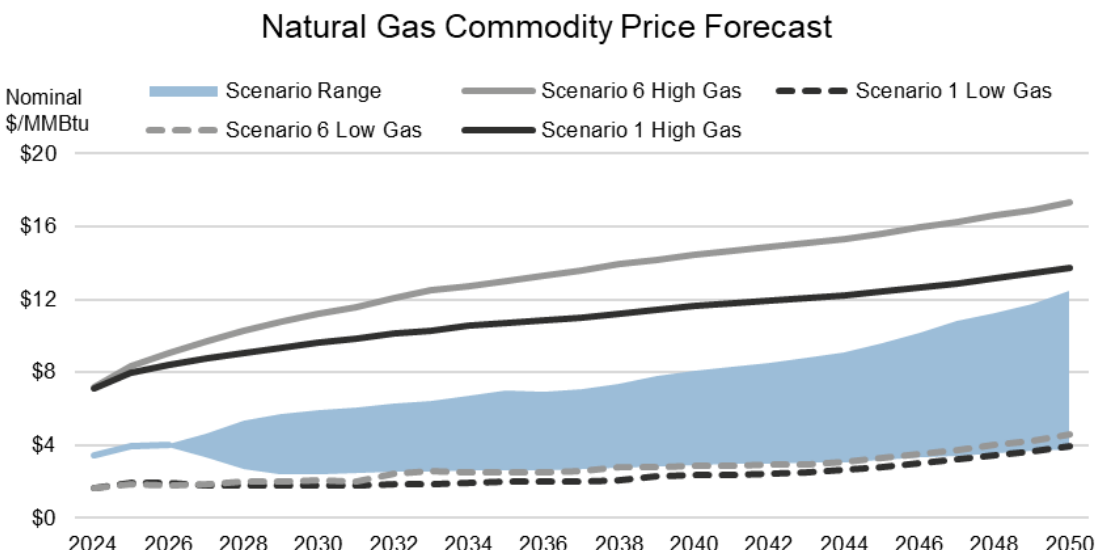
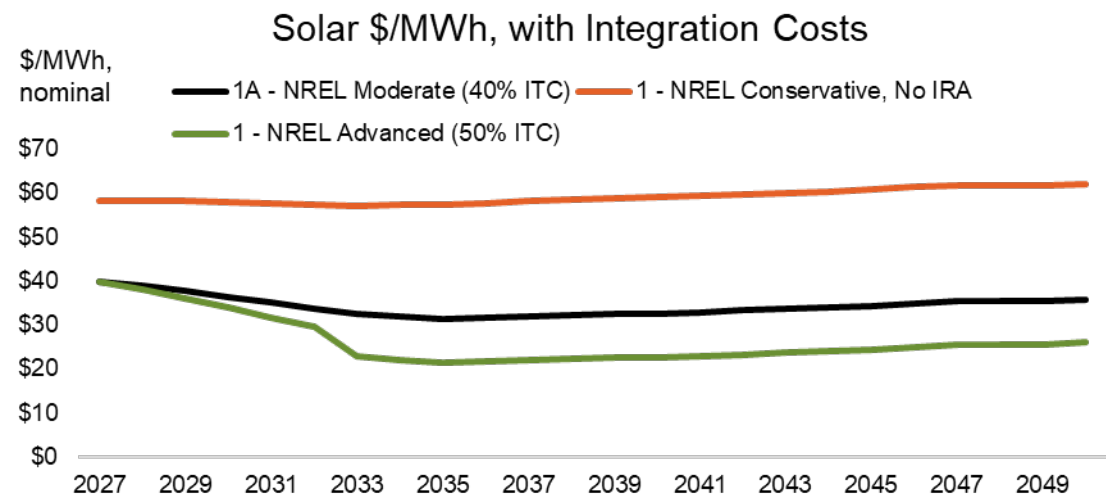
Rapid near-term industrial growth case evaluates impacts of substantial growth in data centers and other electricity-intensive industries in the near term.



Sensitivities Push the Boundaries of IRP Analysis...

Higher and lower clean energy resource cost cases explore the impacts of higher or lower costs for solar, storage, and wind resources driven by market factors or tax credit availability.

Higher and lower natural gas price cases explore the impacts of higher or lower long-term trajectories for natural gas fuel.



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 by 2035:

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

Preliminary IRP Recommendations

Hunter Reed; IRP Project Manager

Purpose and Key Components

Purpose of the IRP recommendations:

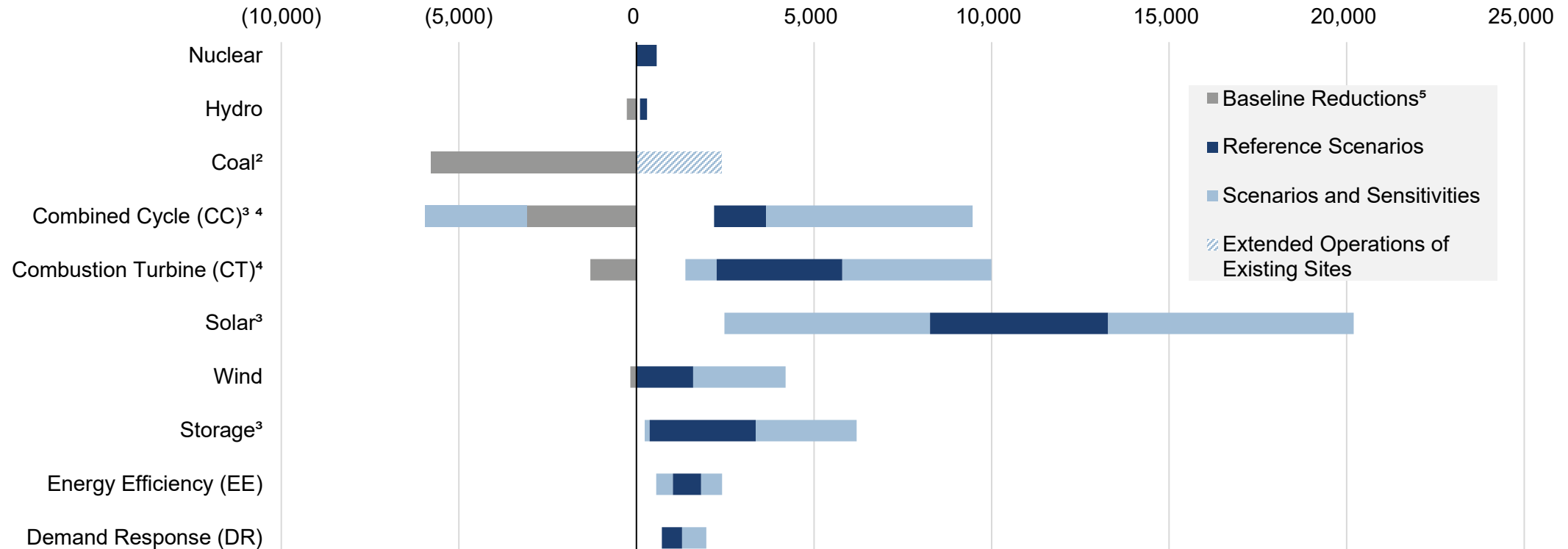
- Board-approved guidance based on least-cost planning principles
- Guardrails for future resource additions over the next 10- to 20-plus years
- Planned actions over the next five to 10 years

Key components of 2025 IRP recommendations:

1. Power supply mix ranges by resource type (by 2035 and 2050)
2. Strategic portfolio direction through 2035
 - Recommended actions
 - Planned actions for existing and commercial ready resources
 - Planned actions to advance emerging technologies and to enhance integrated system planning
3. Key signposts and planning implications

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.

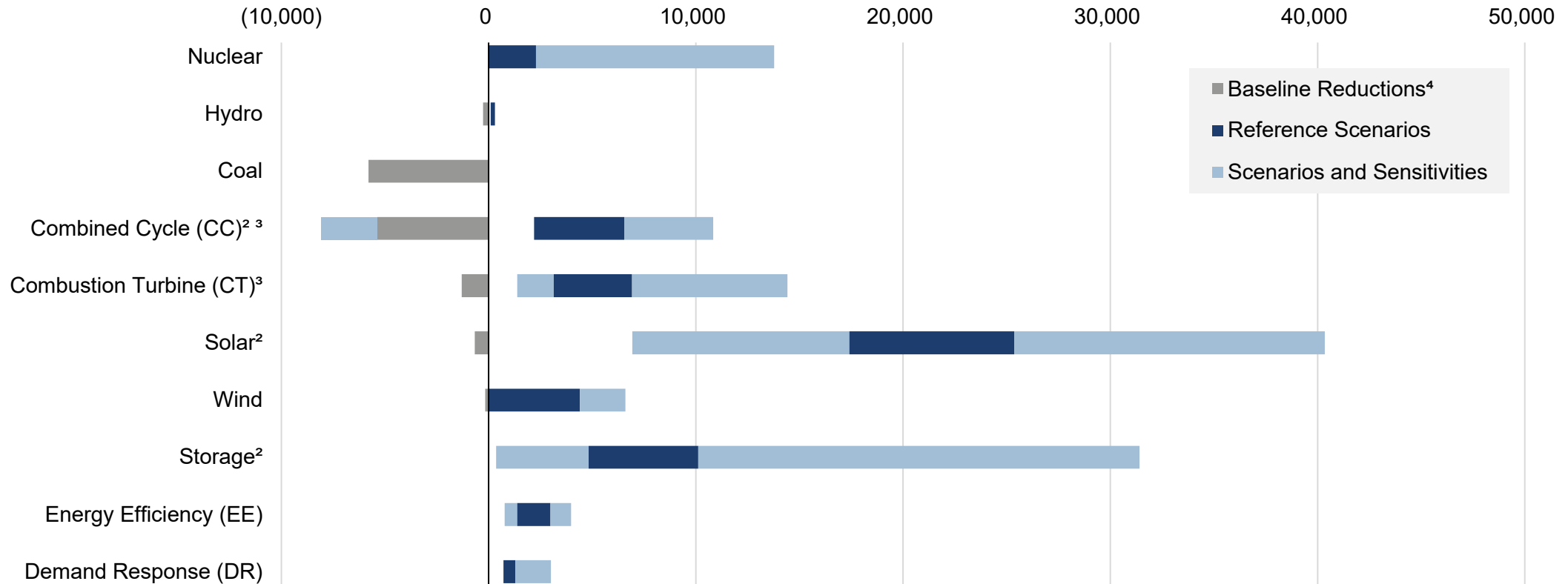
³CC, solar, and storage include utility-scale and distributed resource additions.

⁴CC additions could include 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.

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 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.

Strategic Portfolio Direction – Recommended Actions

Commercial Ready Resources

Existing Resources

- Invest in the low-cost, carbon-free hydro and nuclear fleets
- Pursue nuclear license extensions
- Invest in the gas fleet to maintain reliability
- Operate coal plants until replacement resources are online

Renewable Resources

- Add solar to the resource mix, providing economic carbon-free energy
- Invest in transmission upgrades that enable renewables
- Evaluate wind options to enhance renewable diversity

Firm, Dispatchable Resources

- Add firm, dispatchable gas to enable coal retirements and ensure reliability and flexibility
- Add storage for reliability and to complement renewables

Demand-side Resources

- Partner with customers to leverage achievable energy efficiency and demand response potential
- Collaborate with local power companies on the evolution of distributed resources programs

Emerging Technologies

- Continue evaluating the option to deploy advanced nuclear to support the growing U.S. energy sector
- Evaluate opportunities to enable long-duration storage and carbon capture technologies to further decarbonize

Integrated System Planning

- Incorporate additional elements of transmission planning in future IRPs
- Collaborate with local power companies to further integrate planning capabilities

Key Signpost Themes

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

Changing Market Conditions



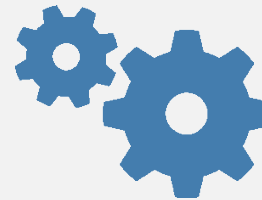
- Electricity demand
- Natural gas prices
- Customer expectations
- Solar and storage costs

Evolving Policy and Regulations



- Shifts in U.S. energy policy
- 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 meet system needs
- Operating realities with growing mix of renewables and storage

Q&A

Q&A Panelists

Clifton Lowry, Vice President, Financial Planning and Investor Relations

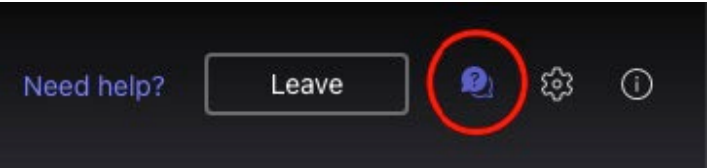
Hunter Reed, IRP Project Manager

Althea Jones, Director, Public and Community Engagement

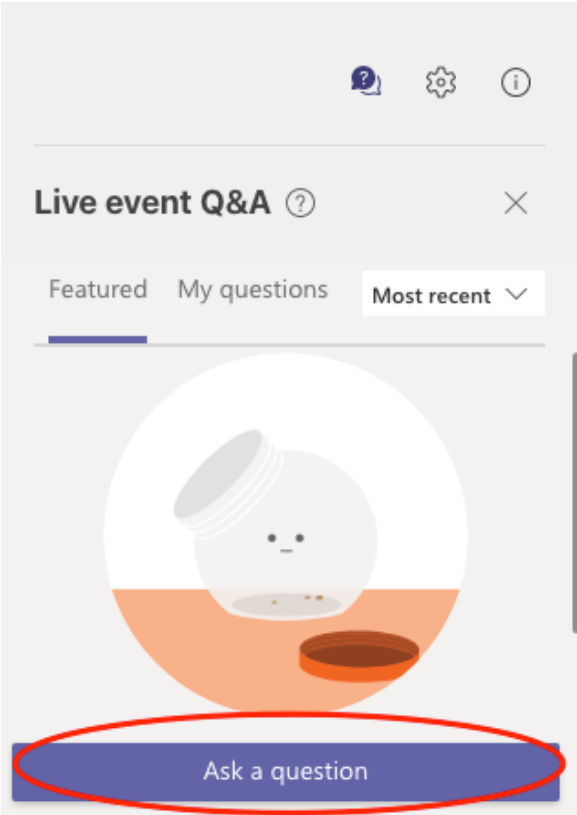
Kelly Baxter, IRP NEPA Project Manager

Q&A Operation

1. Click the Q&A button



2. Click “Ask a Question”



3. Please enter your name and organization in box 1, your question in box 2, then the arrow to submit

