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# 2024 IRP Working Group

Meeting 7: January 29-30, 2024  
Nashville, TN

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# Welcome and Safety Moment

Jo Anne Lavender; IRP Facilitator  
Hunter Reed, IRP Project Manager

# Safety Moment

## EMERGENCY ACTIONS

### In case of Building Emergency

**Exit right out of the conference room doors, go down the hall and down the stairs to the lobby, and gather in the parking lot**

### In case of Severe Weather

**Exit right out of the conference room doors, go down the hall and down the stairs to the basement**



# Agenda – January 29, 2024

Topic	Time (CT)	Presenter(s)	Notes
Lunch	11:00-12:00		
Welcome	12:00-12:15	Jo Anne Lavender; Hunter Reed	Welcome, safety moment, agenda review
Portfolio Results Review	12:15-1:30	Hunter Reed; Preeth Srinivasaraghavan; Shane Downey; Scott Jones; Roger Pierce	Review all core case results, by Scenario
Break	1:30-1:45		
Portfolio Results Review (cont.)	1:45-3:00		
Break	3:00-3:15		
Overall Portfolio Result Comparisons and Metrics	3:15-4:15	Hunter Reed; Scott Jones	Review metric performance for all portfolios
Portfolio Results Discussion	4:15-4:45	Jo Anne Lavender	
Wrap-up	4:45-5:00	Jo Anne Lavender	
Off-site dinner	6:00-8:00		

# TVA's 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 possible futures.

A programmatic Environmental Impact Statement (EIS) accompanies the IRP to address 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 10 million residents of the Tennessee Valley.



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# Key Integrated Resource Plan (IRP) Dates

The 2024 IRP study approach is intended to enable stakeholder involvement and ensure transparency

Spring 2023 – Publication of Notice of Intent (NOI) and public scoping initiation

Summer 2023 – IRP Working Group commences

Fall 2023 – Public scoping report published

Fall/Winter 2023 – Modeling and environmental study

Developing scenario forecasts

Running model cases

Spring 2024 – Publish Draft IRP and EIS, public comment period begins

Spring/Summer 2024 – Respond to Draft comments and develop Final documents

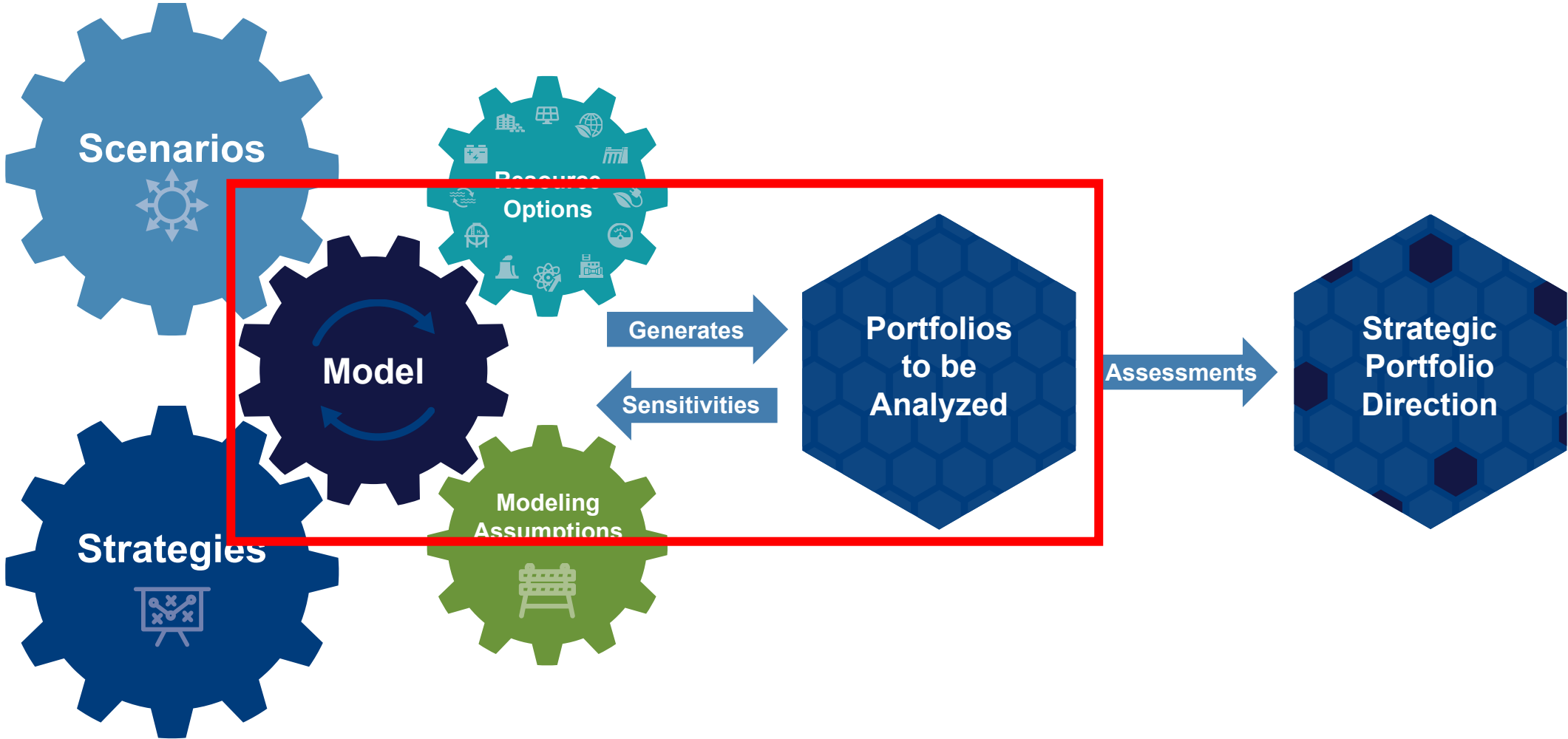
Summer 2024 – Publication and TVA Board adoption of Final IRP and EIS

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# Portfolio Results Review

Hunter Reed; IRP Project Manager  
Preeth Srinivasaraghavan; Specialist III, Resource Strategy  
Roger Pierce; Sr. Specialist, Resource Strategy  
Shane Downey; Sr. Specialist, Resource Strategy  
Scott Jones; Sr. Specialist, Resource Strategy

# How the Integrated Resource Planning Process Works



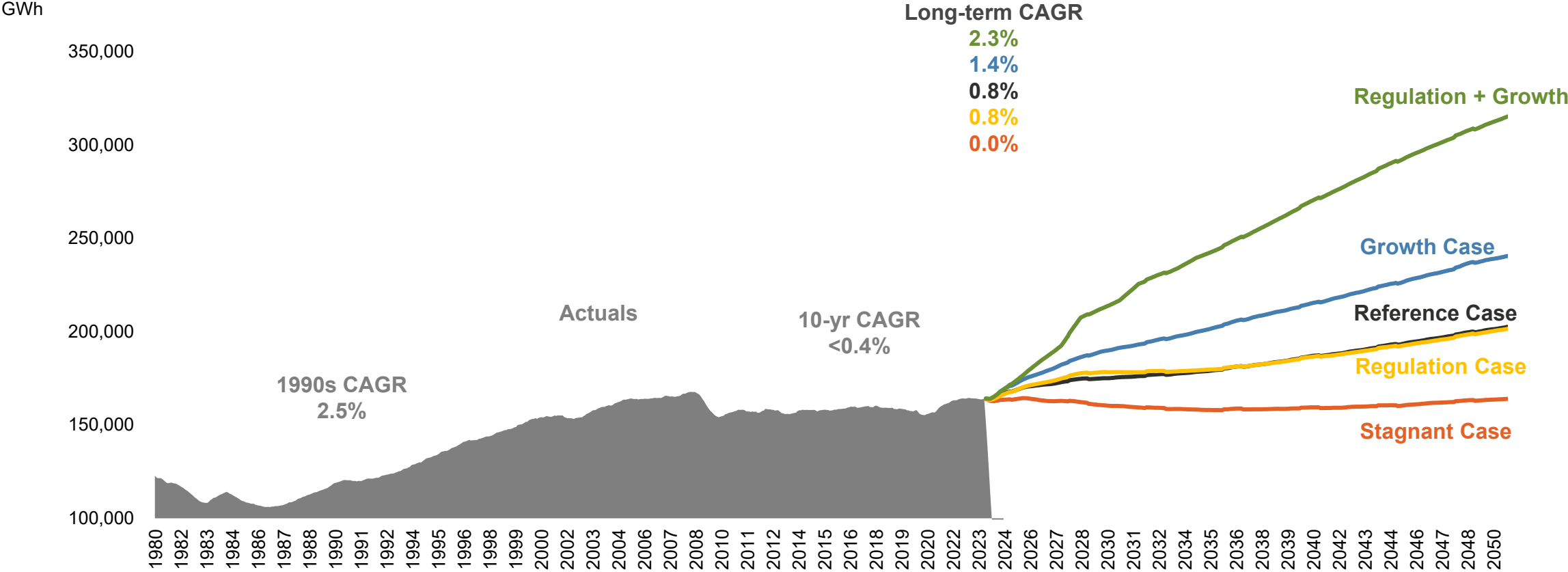
*Stakeholder feedback is a key component in the development of all model inputs.*



# 2024 IRP Scenarios

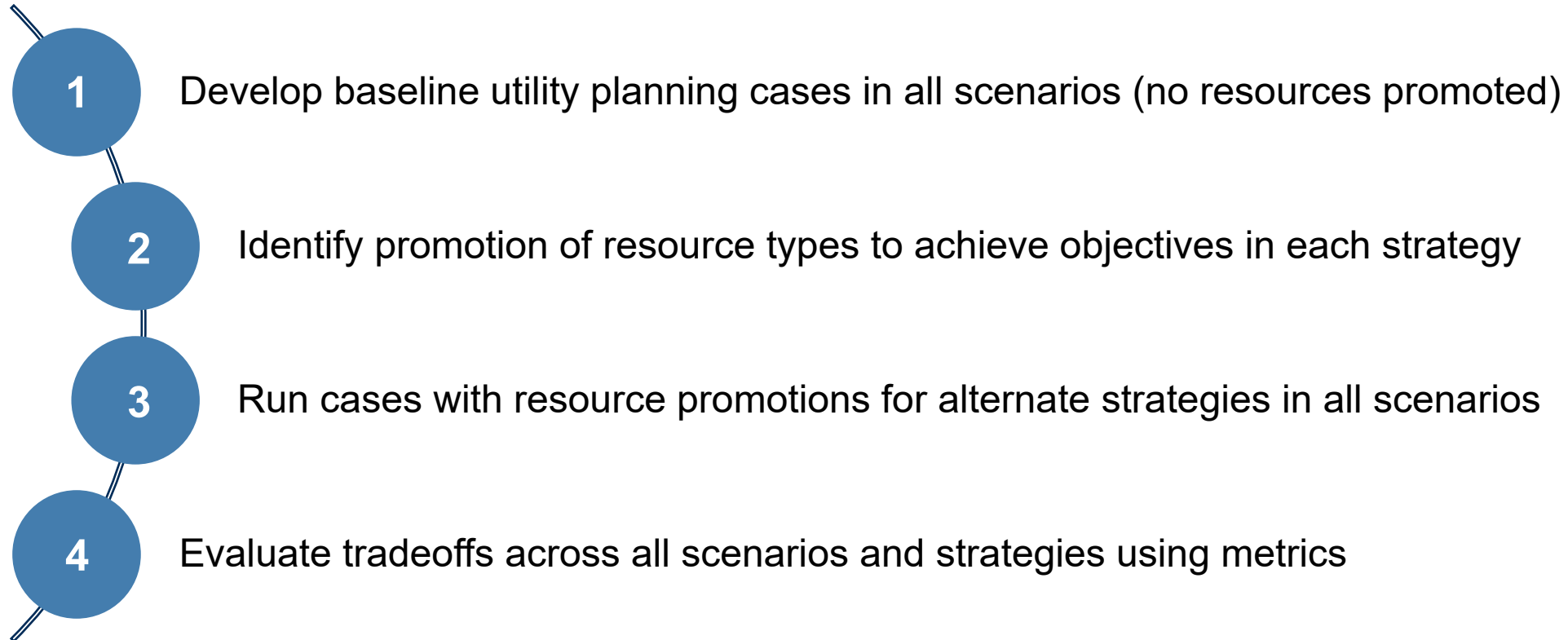
1	<b>REFERENCE CASE</b> Represents TVA's current forecast that reflects employment, population and industrial growth, weather-normal trends, growing electric vehicle use, and increasing efficiencies.
2	<b>HIGHER GROWTH ECONOMY</b> Reflects a technology-driven increase in U.S. productivity growth that stimulates the national and regional economies, resulting in substantially higher demand for electricity.
3	<b>STAGNANT ECONOMY</b> Reflects rising debt and inflation that stifle consumer demand and business investment, resulting in weaker than expected economic growth and essentially flat electricity demand.
4	<b>CARBON REGULATION</b> Reflects the impact of proposed greenhouse gas rules targeting significant reductions in electric utility CO <sub>2</sub> emissions beginning in 2030 and potential future regulations striving for net zero by 2050.
5	<b>CARBON REGULATION PLUS GROWTH</b> Reflects the impact of proposed and potential future regulations along with substantial advancements in clean energy technologies, spurring economic growth and extensive electrification.

# Total System Load Forecast



# Strategy Design and Evaluation

The IRP will compare baseline-utility planning with alternate strategies that promote certain resource types to evaluate tradeoffs across least-cost planning principles – low cost, risk informed, environmentally responsible, reliable and resilient, diverse and flexible.



# 2024 IRP Strategies

**A** **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.

**B** **CARBON-FREE INNOVATION FOCUS**  
Emphasizes and promotes emerging, firm and dispatchable carbon-free technologies through innovation, continued research and development, and strategic partnerships.

**C** **CARBON-FREE COMMERCIAL READY FOCUS**  
Emphasizes proven renewable technologies such as wind, solar, battery and long-duration storage, at both utility-scale and through customer partnerships, along with strategic transmission investment.

**D** **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.

**E** **RESILIENCY FOCUS**  
Emphasizes smaller units and the promotion of storage, coupled with strategic transmission investment, to drive wider geographic distribution of resources and additional resiliency across the system.

# Attributes: Strategy Decision Matrix

Strategy	Distributed and Demand Side Resources					Utility Scale Resources					
	Distributed Solar	Distributed Storage	Combined Heat and Power	Energy Efficiency	Demand Response	Solar and Wind	Battery Storage	Long-duration Storage	Aero CTs and Recip Engines	New Nuclear	Hydrogen and CCS*
Baseline Utility Planning	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base
Carbon-Free Innovation Focus	Moderate	Moderate	Base	Moderate	Moderate	Moderate	Moderate	Moderate	Base	High	High
Carbon-Free Commercial Ready Focus	Moderate	Moderate	Base	Base	Moderate	High	High	High	Base	Base	Base
Distributed and Demand Side Focus	High	High	High	High	High	Base	High	Base	High	Base	Base
Resiliency Focus	Moderate	Moderate	Moderate	Base	High	Base	High	Moderate	High	Moderate	Base

\*Carbon Capture and Sequestration

# 2024 IRP Core Cases

<b>2024 IRP Core Case Matrix</b>	A. Baseline Utility Planning	B. Carbon-Free Innovation Focus	C. Carbon-Free Commercial Ready Focus	D. Distributed and Demand Side Resources Focus	E. Resiliency Focus
1. Reference Case	1A	1B	1C	1D	1E
2. Higher Growth Economy	2A	2B	2C	2D	2E
3. Stagnant Economy	3A	3B	3C	3D	3E
4. Carbon Regulation	4A	4B	4C	4D	4E
5. Carbon Regulation plus Growth	5A	5B	5C	5D	5E

# Break



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# Overall Portfolio Result Comparisons and Metrics

Hunter Reed; IRP Project Manager

Scott Jones; Sr. Specialist, Resource Strategy



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# Portfolio Results Discussion

Jo Anne Lavender; IRP Facilitator

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# Wrap-up and Day Two Preview

Jo Anne Lavender; IRP Facilitator

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# 2024 IRP Working Group

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Nashville, TN

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# Welcome

Jo Anne Lavender; IRP Facilitator

# Agenda – January 30, 2024

Topic	Time (CT)	Presenter(s)	Notes
Breakfast	8:00-8:45		
Agenda and welcome	8:45-9:00	Jo Anne Lavender	
Sensitivities Overview and Discussion	9:00-10:00	Daniel Woolley	Reminder of sensitivities purpose, review running list, and discussion
Break	10:00-10:30		
Sensitivities Survey	10:30-10:45	Daniel Woolley	IRP-WG survey to rank potential sensitivities
IRP-WG Feedback Review	10:45-11:30	Candy Kelly; Amy Edge	Review feedback received, preview future WG topics
Lunch	11:30-12:30		
Hold for Day 1 Follow-up	12:30-2:00		
Wrap-up	2:00-2:15	Jo Anne Lavender	

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# Sensitivities Overview and Discussion

Daniel Woolley; Sr. Specialist, Resource Strategy

# 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.

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# The Purpose of Sensitivity Analysis

Sensitivity analyses are performed to help answer questions meriting further evaluation

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 Case 1A - the Reference Case scenario with Baseline Utility Planning strategy, to isolate the impact of a change in one key assumption

Sensitivities will be considered, along with the balance of portfolio results, when developing the 2024 IRP recommendation



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# Next Steps

Review WG suggestions and ranking

Incorporate public comment

Determine final list of sensitivity runs to include in final IRP

# Break



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# Sensitivities Survey

Daniel Woolley; Sr. Specialist, Resource Strategy

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# IRP-WG Feedback Review

## (December 2023)

Candy Kelly; Sr. Manager, Resource Strategy  
Amy Edge; Director, External Relations

# Lunch



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# Meeting Wrap-Up

Jo Anne Lavender; IRP Facilitator