



Note: Due to a technical malfunction, this webinar was not recorded. This slide deck was presented during the webinar, and the FAQ document on tva.com/irp contains many of the questions posed during the session.

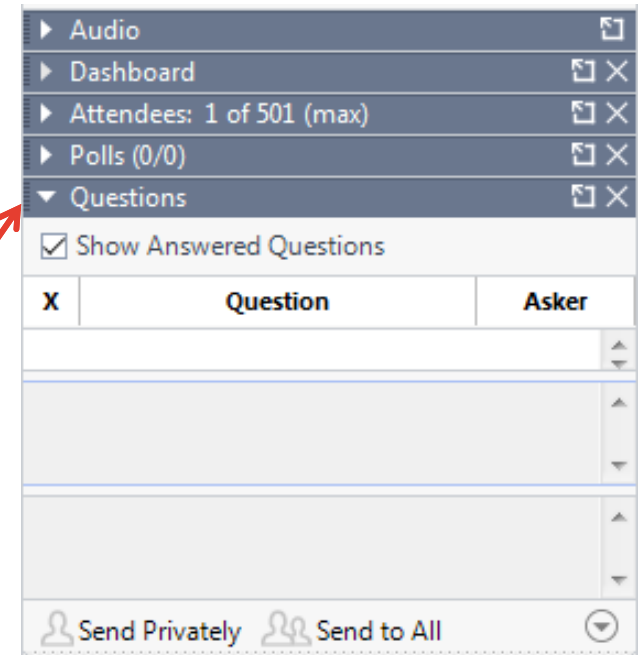
2019 INTEGRATED RESOURCE PLAN

Quarterly Public Update Webinar
May 15, 2018



About Today's Meeting

- This a Webinar Meeting.
- **Attendees** are in listen-only mode.
- Questions **will be accepted during the webinar**; please use the question box to submit your questions.
- This session is being recorded and will be available on the TVA 2019 IRP website.
- 2019 IRP website: www.tva.com/irp



Webinar Agenda

- **Webinar Kick Off and Logistics**
- **Welcome and Meeting Purpose**
- **About the 2019 Integrated Resource Planning Study and Where we are with the study project**
- **Overview of NEPA Process and Environmental Impact Statement and overview of Public Scoping Comments Received**
- **Clarifying Questions from Audience**
- **Closing Remarks**



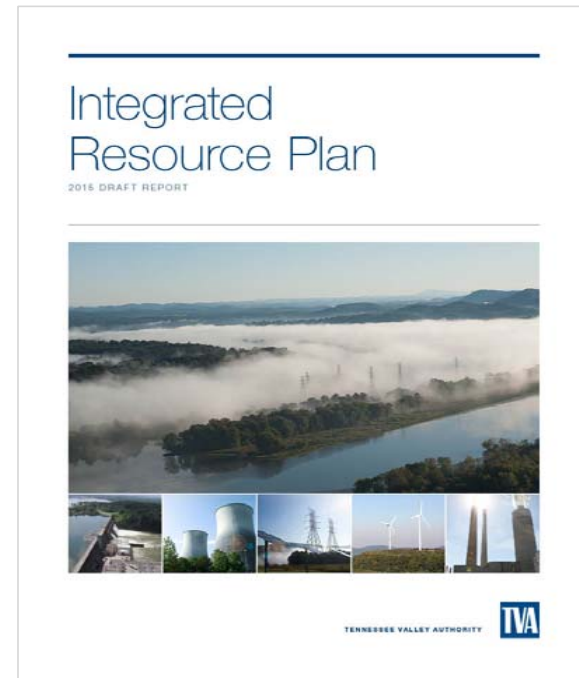
Welcome & Meeting Purpose

Laura Campbell
Vice President, TVA Enterprise Planning

TVA's Integrated Resource Plan

The IRP is a study of how TVA could meet customer demands across a variety of future environments

A programmatic Environmental Impact Statement (EIS) accompanies the IRP to analyze the impacts associated with an updated IRP to the Valley.



Utility Marketplace is Changing Rapidly

An updated Integrated Resource Plan is needed:

- Proactively plan for the future
- Inform next long-range financial plan
- How might TVA continue to:
 - Provide low-cost, reliable electricity
 - Support environmental stewardship
 - Spur economic development



About the 2019 IRP and Project Update

Brian Child
Enterprise Planning

Integrated Resource Planning

- Collaboration with stakeholders to envision the generation needs of the future
- Based on least-cost planning foundation
- Provides foundation for developing long-range financial plans
- Considers a number of potential futures to help predict changes in the marketplace



The IRP functions like a compass, not a GPS

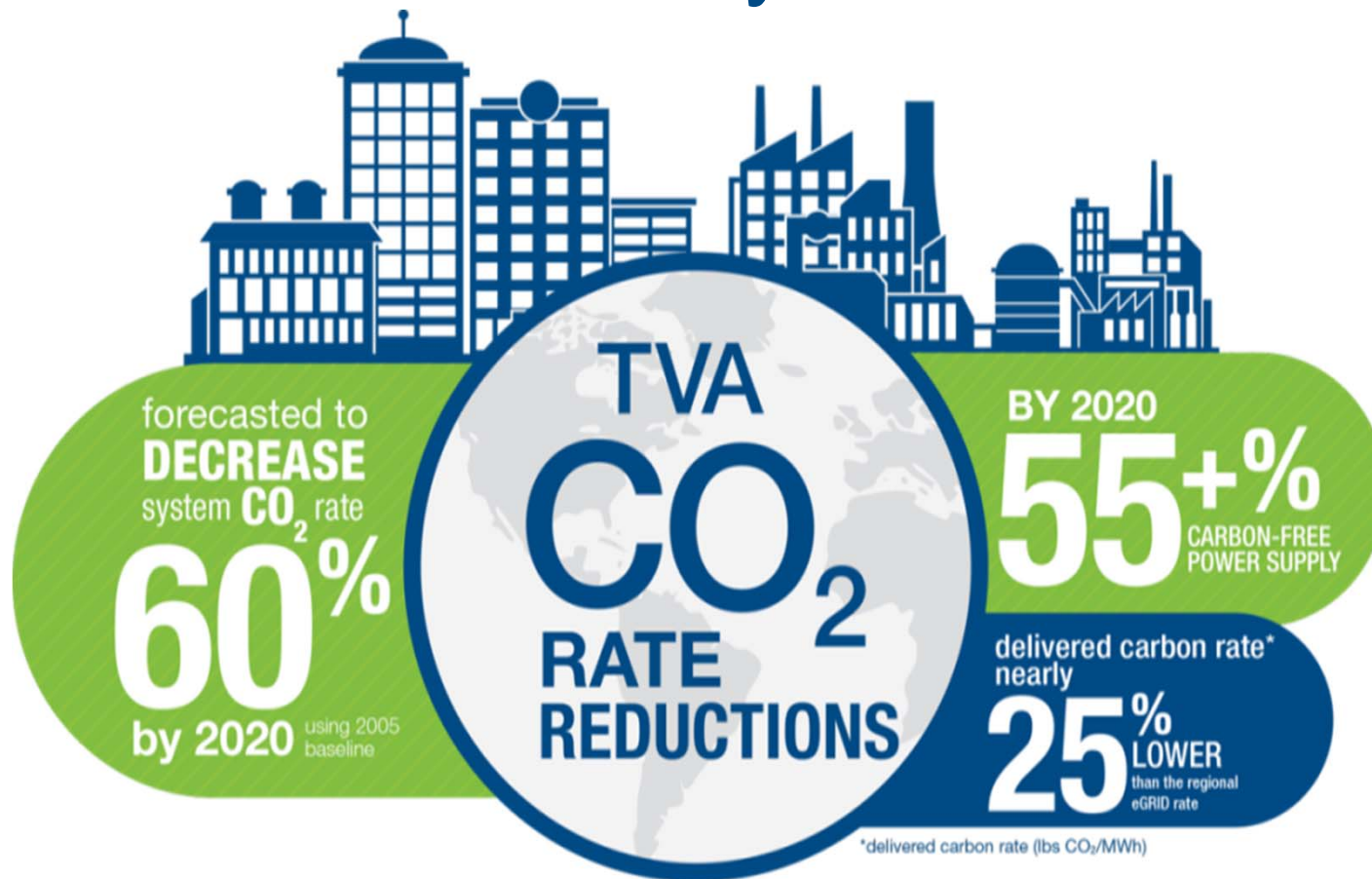
Our Current Portfolio



Hydro	Nuclear	Renewables	EEDR	Gas	Coal
4,200 MW conventional	7,800 MW	1,200 MW wind	1,300 MW avoided capacity	5,800 MW CT and diesels	8,400 MW
1,600 MW pumped storage		130 MW utility-scale solar		8,100 MW CC	
		250 MW programmatic solar/biomass			

Approximately 42 percent of TVA's capacity is emission-free

TVA's Carbon Story



Goals for an Optimal Resource Plan

Low Cost

Risk Informed

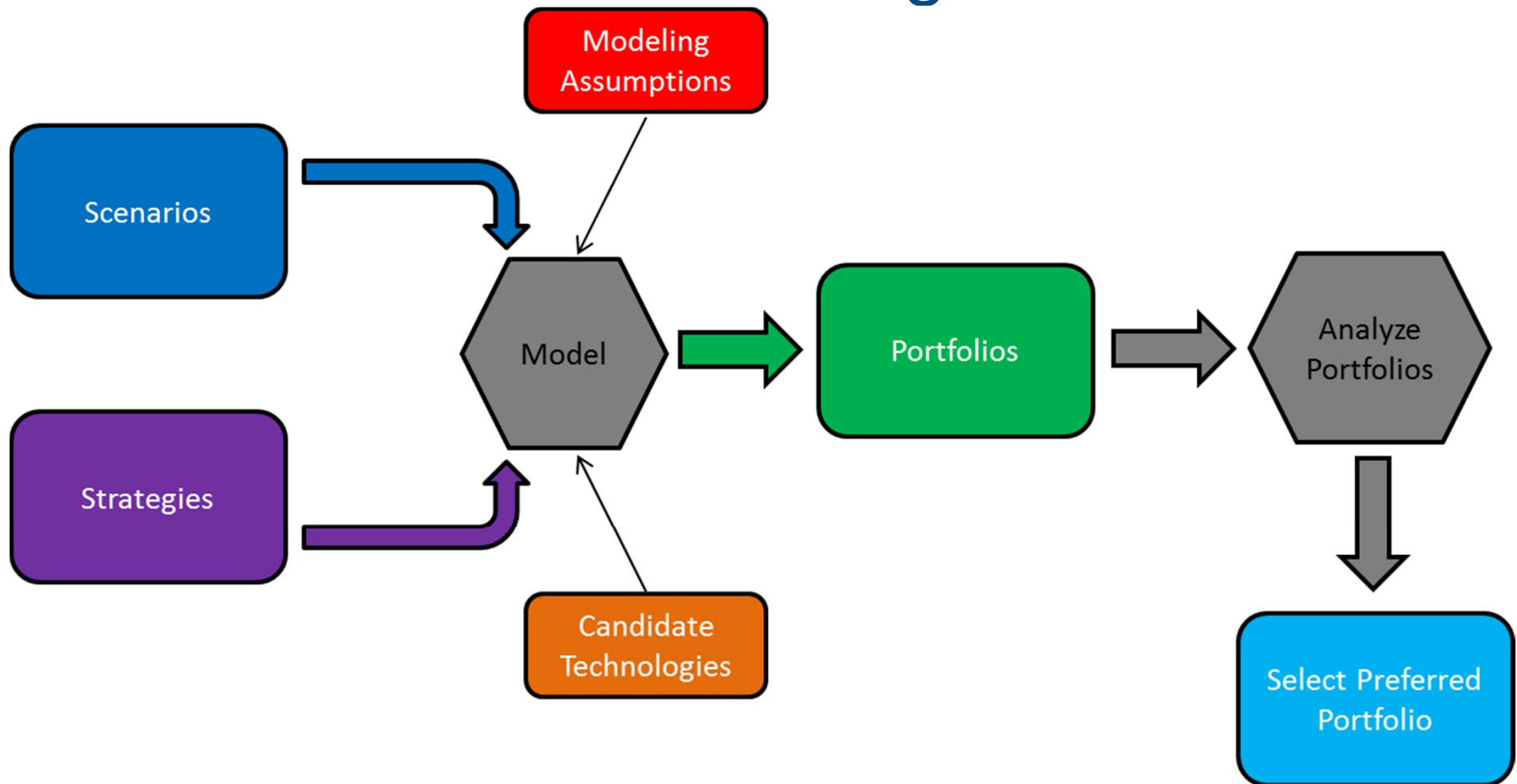
Environmentally
Responsible

Reliable

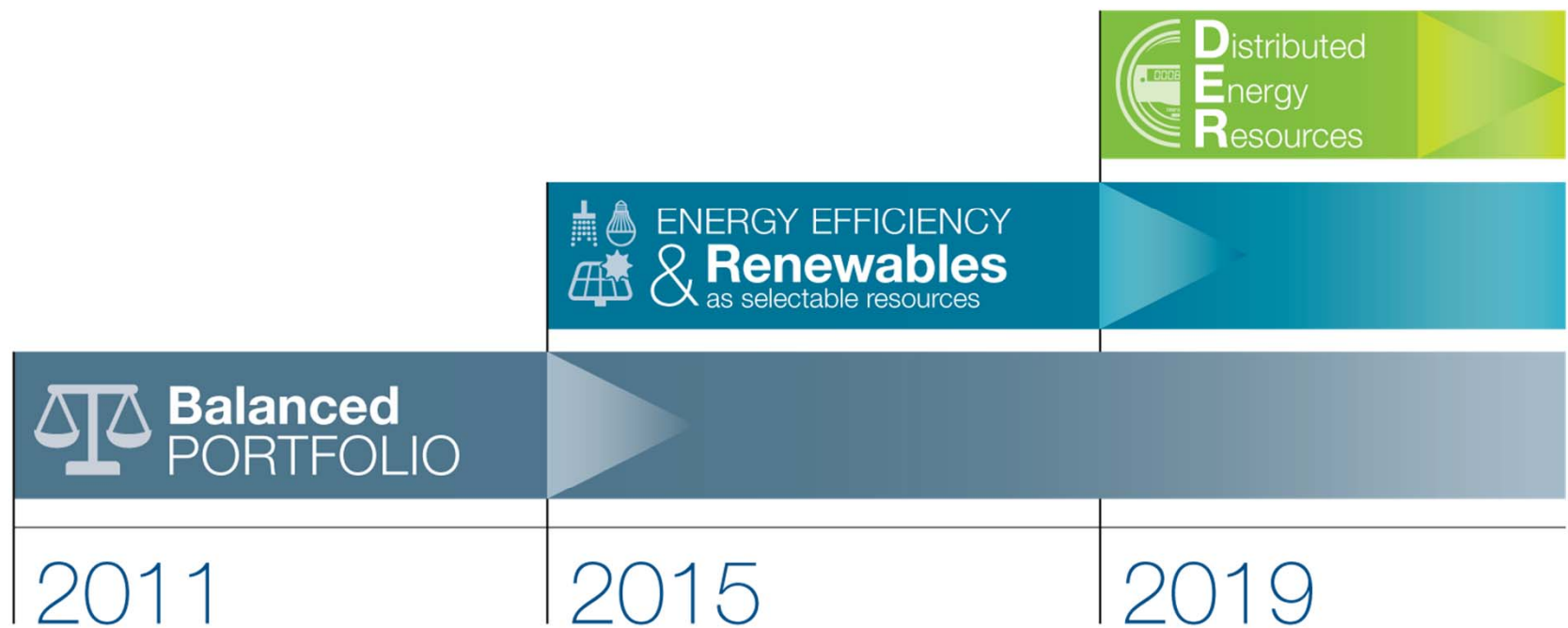
Diverse

Flexible

How the Resource Planning Process Works



INTEGRATED Resource Plan 2019



2019 IRP Focus Areas

- Distributed Energy Resources
- System flexibility
- Portfolio diversity



IRP is a public process – stakeholder engagement is important

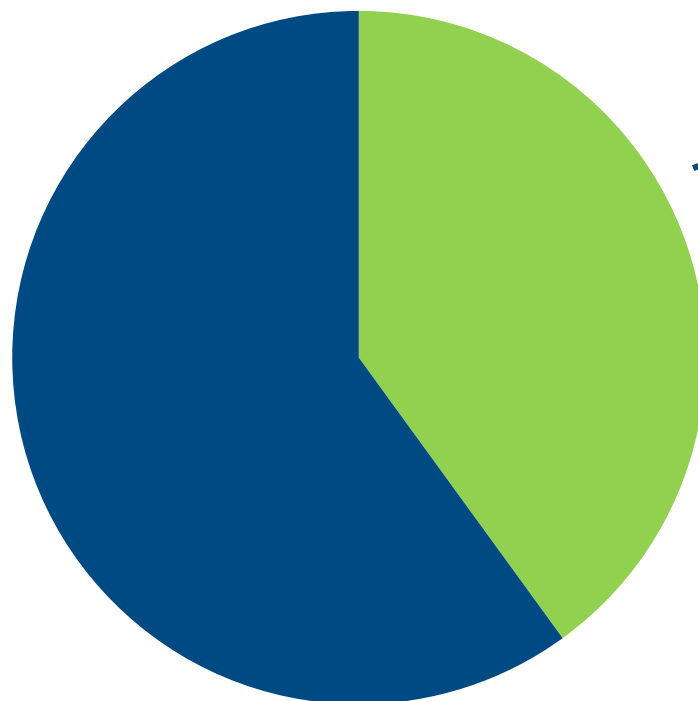
- IRP Working Group
- Regional Energy Resource Council
- Public meetings, webinars, listening sessions



2019 IRP Working Group Sectors

Valley At Large:

- Energy and Environmental organizations
- DER / research/ academia
- State Government
- Economic Development
- Community / Sustainability interests



Customer Representatives:

- Local Power Companies
- Customer Trade Organizations
- Industrial customers

20 Members

Current Focus: Develop Inputs & Framework

Scenarios

Outside TVA's Control

- Describe potential outcomes of factors (uncertainties) outside of TVA's control
- Represent possible conditions and are not predictions of the future
- Include uncertainties that could significantly impact operations, such as:
 - Load forecasts
 - Commodity prices
 - Environmental regulations
- Lends insight to riskiness of portfolio choices

Strategies

Within TVA's Control

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

A well-designed strategy will perform well in many possible scenarios

2015 IRP Scenarios

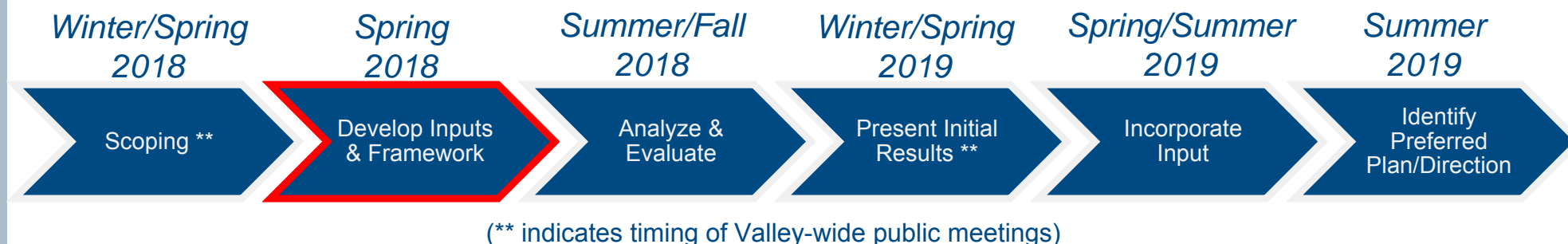
Scenarios	Description
Current Outlook	Current outlook for the future TVA is using for resource planning studies
Stagnant Economy	Stagnant economy results in flat to negative growth, delaying the need for new generation
Growth Economy	Rapid economic growth translates into higher than forecasted energy sales and resource expansion
De-Carbonized Future	Increasing climate-driven effects create strong federal push to curb GHG emissions: new legislation caps and penalizes CO2 emissions from the utility industry and incentivizes non-emitting technologies
Distributed Marketplace	Customers' awareness of growing competitive energy markets and the rapid advance in energy technologies produce unexpected high penetration rates in distributed generation and energy efficiency

2015 IRP Strategies

Strategies	Description
“Traditional” Least Cost Planning	<ul style="list-style-type: none"> All resource options available for selection; traditional utility “least cost optimization” case
Meet an Emission Target	<ul style="list-style-type: none"> Resources selected to create lower emitting portfolio instead of focusing only on a traditional least cost approach This lower emissions plan will be based on an emission rate target or level using CO2 as the emissions metric (the target will be set as a reduction from current emissions forecast) Additional existing unit retirements may be included in the plan.
Lean on the Market	<ul style="list-style-type: none"> Most new capacity needs are met using market resources and/or third-party assets acquired through PPA or other bilateral arrangements TVA makes a minimal investment in owned assets (deployment of EEDR to meet resource needs will continue)
Doing More EEDR	<ul style="list-style-type: none"> In order to establish TVA as a regional energy efficiency leader, a majority of capacity needs are met by setting an annual energy target for EEDR (e.g., minimum contribution of 1% of sales) Renewable energy and gas are secondary options with no coal or nuclear additions permitted
Embracing Renewables	<ul style="list-style-type: none"> In order to establish TVA as a regional renewable leader, a majority of new capacity needs are met by setting immediate and long-term renewable energy targets (e.g., 20% by 2020 and 35% by 2040), including hydroelectric energy A utility-scale approach is targeted initially with growing transition to distributed generation as the dominant renewable resource type by 2024 EEDR and gas are secondary options with no coal or nuclear additions permitted

2019 IRP Schedule: Schedule & Milestones

The 2019 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 (Feb 2018)
- Initial modeling (June 2018)
- Publish draft EIS and IRP (Feb 2019)
- Complete public meetings (April 2019)
- Board approval and final publication of EIS and IRP (expected Summer 2019)



IRP Programmatic Environmental Impact Statement (EIS) and Public Scoping Summary

Ashley Pilakowski
NEPA Program

IRP Environmental Impact Statement - Purpose and Approach

- Determine environmental impacts system-wide
- Inform decision makers of potential impacts
- Provide public involvement

The Purpose of Public Scoping

Scoping is a process to help define how the IRP study will be done with help from the general public, TVA customers, organizations and agencies.



Topics included:

- An overview of the IRP Process
- Schedule for 2019 IRP study
- Overview of the environmental impact assessment method



Results

Results are used to define:

- The sources TVA will use to generate power
- How TVA will manage the demand for power
- The important environmental topics to be evaluated

2019 IRP Public Scoping: Effort and Responses

Scoping period: 2/15/2018 to 04/16/2018



Efforts

7 media outlets

2,500 scoping notices

3 meetings



Responses

120 attendees

87 scoping comments received

Major themes

Encouragement of clean energy initiatives, renewable energy, R&D on DERs

Call for special attention to environmental justice/ affected environment analyses on impacts to limited income households

General interest in energy efficiency measures and energy storage alternatives

General input on modeling, metrics/ calculations and evaluation criteria

General comments on fuel diversification options

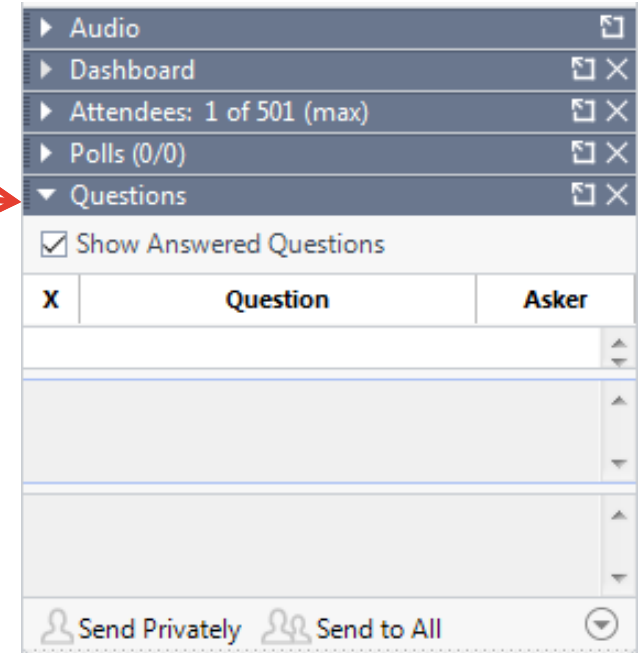


Next Steps

- TVA is compiling a report summarizing the scoping input.
- The scoping report will describe how TVA is responding to scoping input during the development of the IRP and the EIS.
- The scoping report will also describe scenarios, strategies, and energy resources being carried forward in the IRP and IRP EIS analysis.
- The scoping report is scheduled for posting to the IRP website in early July 2018.

Clarifying Questions

- Use the 'Question' area of the webinar toolbar to ask clarifying questions





Wrap Up

Brian Child
Enterprise Planning

Opportunities to Stay Involved

- Quarterly Public Update Webinars
- TVA Website www.tva.com/irp
- Make comments on the Draft IRP and Draft EIS, expected to be available in early 2019

How You Can Stay Up to Date

- Visit www.tva.com/irp for current information and content
- While there, sign up for the email list to receive updates

For more information:
www.tva.com/irp

