2025 Integrated Resource Plan
Frequently Asked Questions
July 2024

Background: Below are frequently asked questions related to the draft Integrated Resource Plan (IRP) and draft Environmental Impact Statement (EIS). This document will be updated and expanded throughout the IRP process.

Sections:

- General IRP information
- Stakeholder and public involvement
- Details related to long-term planning
- The IRP process
- IRP considerations
- IRP enhancements
- What happens next?

General IRP information

What is the Integrated Resource Plan?
The Integrated Resource Plan, or IRP, is a comprehensive study that evaluates the region's future power needs, the resource options available for meeting that demand and the potential economic, environmental and operating impacts of these options. It serves as a compass, providing strategic direction for how TVA can continue to provide affordable, reliable, resilient and increasingly cleaner power for decades to come. Stakeholders play an important role in the IRP process. They work closely with TVA to review the planning information, and TVA shapes the analysis and outcomes based on their feedback.

What is the Environmental Impact Statement (EIS)?
The IRP study includes an environmental review called an Environmental Impact Statement (EIS), which evaluates the potential impacts associated with the IRP. The EIS assesses broad regionwide impacts on resources, including air quality, climate and greenhouse gases, water resources, land resources, and solid and hazardous waste. The EIS informs TVA's decisionmakers and meets TVA's requirements under the National Environmental Policy Act (NEPA).

Why is TVA doing its next IRP now?
Since completion of the last IRP in 2019, TVA has monitored key planning signposts – or market signals – related to changing market conditions, evolving regulations and technological advancements. TVA initiated the 2025 IRP based on movement in the key signposts. The

region's population and industry are growing and energy demand is increasing. Policies and regulations are changing. Industrial companies are electrifying their operations. And new, cleaner technologies are emerging, which could help TVA continue to provide affordable, reliable, resilient and increasingly cleaner power.

Why is the IRP important?
The planning direction established by the IRP will guide what power-generation resources and approximately how much of these resources will be needed to power homes and businesses across the Tennessee Valley region for years to come.

TVA initially announced plans to release the draft IRP and EIS in spring 2024. Why did TVA pause the release?
This timing change allows for additional analysis, review and continued engagement with the IRP Working Group, a diverse group of stakeholders who meet regularly to provide comprehensive feedback on the IRP. Further, this allows time for the potential evaluation of additional strategies, scenarios or sensitivities that may be appropriate to consider in this dynamic environment, such as those related to the Environmental Protection Agency's recently finalized Greenhouse Gas Rule. TVA and the Working Group continue to move forward on the IRP.

How is the IRP process conducted?
TVA uses an integrated, least-cost planning framework that considers multiple scenarios for the future and alternative business strategies to analyze how potential generating resource portfolios would perform under different external conditions. Stakeholder input plays a vital role in the IRP process, which is conducted in a transparent, inclusive manner to provide numerous opportunities for public education and participation.

How does resource planning work?
Electric utility resource planning is a collaborative and iterative process designed to identify the appropriate mix of resources to continue providing affordable, reliable, resilient and increasingly cleaner energy to customers. Key steps in the process include:

- Estimating future customer demand for electricity and capacity needs
- Comparing capacity needs to existing resources to determine gaps
- Identifying new resource options to be considered for filling the gaps
- Testing different resource combinations to evaluate performance
- Developing recommendations for the strategic portfolio direction

Stakeholder and public involvement

When did the IRP process start?
The IRP process began when TVA published a Notice of Intent in the Federal Register in May 2023. That initiated a 45-day public scoping comment period, during which time TVA gathered public input that helped frame the IRP effort.

How is TVA involving stakeholders?
Before the IRP began, TVA led a Utility of the Future Information Exchange to provide a forum for a diverse set of stakeholders to discuss the IRP process and broad issues they believed should be considered in the upcoming IRP. TVA established and meets regularly with the IRP Working Group, a diverse group of stakeholders. The Regional Energy Resource Council (RERC), a federal advisory committee that provides formal advice to the TVA Board of Directors, also is engaged in the process.

Can you say more about the Utility of the Future Information Exchange?
The effort was facilitated by Future 500, a non-profit third party, and included 20 members representing a diverse mix of stakeholder interests from across the region. They discussed opportunities to enhance TVA's IRP process and explored several topics in depth, including distributed energy resources and distribution, generation and transmission considerations in an evolving system, community impacts, and the IRP modeling approach. The report summarizing the group's findings can be found on TVA's IRP website.

How can the general public participate?
Public participation is vital. In addition to public input during the scoping period, TVA encourages public involvement during quarterly TVA Board listening sessions, at RERC meetings and informational IRP webinars. As of mid-July 2024, TVA has held five public webinars. When the draft IRP and EIS are published, TVA will hold webinars and in-person meetings across the region during the public comment period.

Where can I find more information about the IRP?
TVA encourages stakeholders and the public to review materials on TVA's IRP website and to take advantage of opportunities such as public webinars, where process updates are provided and people have a chance to ask questions.

Will my input have an impact?
TVA and the IRP Working Group are incorporating considerations from public input. When the draft IRP and EIS are published, the public can provide comments on the analysis and what they would like to see in the power system between now and 2050. Your comments help ensure TVA is considering what is important to the public, and they have the potential to prompt additional analysis. TVA looks forward to stakeholder and public feedback on the IRP to help shape the region's future energy system.

Can you say more about the IRP Working Group?
The IRP Working Group is comprised of individuals from local power companies, directly served customers, customer associations, academia and research, state governments, environmental non-government organizations, community stakeholders and other special interest groups. The members represent the broad perspectives of those who live and work in the Valley.

What is the Valley Pathways Study and how does it relate to the IRP?

TVA and the Baker School of Public Policy and Public Affairs at the University of Tennessee – Knoxville collaborated on a Valley Pathways Study, informed by stakeholder input. This study established a greenhouse gas (GHG) baseline for the region and looked across economic sectors such as transportation, industry, agriculture and building emissions to evaluate potential paths for achieving a competitive and clean economy by 2050. This study provides context on the role that electricity plays in achieving a net-zero economy. Insights from TVA's IRP will, in turn, inform future iterations of the Valley Pathways Study.

Details related to long-term planning

What guides TVA's approach to integrated resource planning?
TVA's integrated resource planning is grounded in fundamental least-cost principles: low cost, risk informed, environmentally responsible, reliable and resilient, diverse and flexible.

What does long-term planning entail?
Long-term planning entails considering future energy demand, evolving regulations, current power generation resources and new resource options, then determining what new power resources would work best to fill future capacity needs.

How does TVA identify the optimal mix of resources?
The IRP helps identify the optimal mix of resources to meet the region's future energy needs. As more renewable resources such as solar and wind are added to the system, firm resources that can generate power at any time also are needed to maintain system reliability and flexibility. For example, natural gas units can provide energy when renewable resources are not generating, and they can ramp up and down as solar and wind generation varies. Battery storage also can complement renewables and provide power when needed.

The IRP process

Can you describe some of the first steps in the IRP process?
TVA and the IRP Working Group spent months identifying IRP "scenarios" and "strategies" to study. The IRP process evaluates scenarios that could arise over the next few decades and what strategies TVA could use to continue to provide affordable, reliable, resilient and cleaner energy in any future condition. Identifying scenarios and strategies is a critical step in the IRP process because they serve as the basis for modeling.

What scenarios have been used in the modeling?
TVA and the IRP Working Group aligned on six unique scenarios to evaluate in the IRP analysis, with no one scenario assumed to be more likely than the others. The scenarios are:

- Reference (without Greenhouse Gas Rule)
- Higher Growth Economy
- Stagnant Economy
- Carbon Regulation

- Carbon Regulation Plus Growth
- Reference (with Greenhouse Gas Rule)

The reference cases represent TVA's current forecast for electricity demand with and without the impact of the Environmental Protection Agency's recently finalized Greenhouse Gas (GHG) Rule.

How would you summarize the scenarios?
The scenarios cover a wide range of potential electricity demand forecasts – from the Stagnant Economy case that remains flat to the Carbon Regulation Plus Growth case where electricity demand essentially doubles by 2050. Demand forecasts vary based on economic and demographic conditions, electrification of transportation and industrial processes, and other factors. The scenarios also explore the potential evolution of environmental regulations and power generation technologies that can influence demand. Before the draft IRP is published, additional analysis will be identified and included.

What strategies have been used in the modeling to date?
The strategies are:

- Baseline Utility Planning, which represents TVA's current outlook for the power system
- Carbon-Free Innovation Focus
- Carbon-Free Commercial Ready Focus
- Distributed and Demand-Side Focus
- Resiliency Focus

How would you summarize the strategies?
The strategies explore the impacts of an emphasis on carbon-free resources, distributed and demand-side resources, and system and local resiliency. Before the draft IRP is published, additional analysis may be identified.

How are power generation resource options considered?
TVA and the Working Group developed a list of power generation resource options for the IRP. The list includes mature technology options, such as nuclear, hydro, coal, gas, renewables, storage, energy efficiency and demand response technologies. The IRP also considers emerging technologies such as small modular reactors, carbon capture and sequestration, hydrogen blending and advanced chemistry batteries.

How does modeling work?
TVA uses an industry standard capacity expansion and production cost model. Based on a set of assumptions and constraints in the analysis, the model seeks to determine the optimal least-cost resource plan. The resource plan includes selected resources, selection year, expected energy output, and financial and operating data.

TVA modeled the five strategies in the six scenarios. The modeling generated 30 unique potential resource "portfolios" – the power supply mix that results from assessing a particular strategy in a particular scenario.

How has TVA evaluated the results?
TVA and the IRP Working Group developed a set of metrics, which are based on least cost planning principles, to assess the performance and key tradeoffs between the different strategies across the scenarios.

How are transmission investments addressed in the IRP?
As the IRP is not site-specific, transmission investments to support power generation are generally addressed as part of resource costs. In the near future, TVA will initiate development of an integrated transmission plan. Much like the integrated resource plan, the integrated transmission plan will incorporate input from stakeholders and the public.

IRP considerations

Has the U.S. Environmental Protection Agency's final Greenhouse Gas (GHG) Rule been considered in the IRP analysis?
Yes. TVA worked with the IRP Working Group to develop a scenario that incorporates the recently finalized GHG rule to include in the IRP analysis. TVA and the IRP Working Group used the proposed GHG Rule to inform development of the Carbon Regulation scenarios prior to the final rule being issued in May 2024, along with the potential for additional regulations in the future. TVA monitors and evaluates pending regulations, litigation and other factors that could affect planning assumptions, and it incorporates all applicable requirements into planning processes.

How is the Inflation Reduction Act being incorporated into the IRP?
The Inflation Reduction Act promotes investment in clean energy technologies. The impact of the incentives offered in the Inflation Reduction Act is reflected in the cost of the relevant resource technology options considered in the IRP. These apply in all IRP scenarios and strategies.

Does the IRP set annual limits for each resource type?
Best practice in utility planning is to consider how much of each resource type can be built in a year or over the planning horizon, so the analysis will generate executable portfolio options. The IRP analysis includes annual limits for all resource types based on recent TVA and industry experience. For example, the market capacity for solar has increased, and TVA has reflected this with solar limits that are more than double the limits used in the 2019 IRP. Gas builds also have annual limits to reflect the practical ability to build and bring new gas plants online. The draft IRP will provide the complete set of assumptions on annual resource limits used in modeling.

Will the IRP support TVA's aspiration to achieve net-zero carbon emissions by 2050?

The IRP analysis, which is grounded in least cost planning, will provide insight on how the various strategies evaluated drive continued reductions in carbon emissions. IRP metrics will assess tradeoffs, such as between cost and environmental performance. Also, sensitivity analysis can be performed to further evaluate potential trajectories.

IRP enhancements

How will the current IRP build off the 2019 IRP?
The 2019 IRP recommended near-term actions, and the 2025 IRP will speak to the progress made to date on those recommendations. Also, the 2019 IRP highlighted key signposts – or market signals – to monitor. The 2025 IRP will provide updates on those key signposts and how relevant impacts have been incorporated into current IRP planning processes.

How will weather risks be incorporated?
All scenarios will incorporate weather trends and their impact on electricity demand. The IRP will also include a discussion of increasing winter risk and efforts TVA has undertaken to evaluate and address these risks. Also, TVA and the IRP Working Group will consider additional sensitivity analysis related to weather risks.

What information is being used to develop demand-side management resource options?
In 2022, DNV (a global leader in energy program consulting) conducted a study for the TVA region to evaluate the achievable potential for energy efficiency programs that incentivize investment in making homes and businesses more energy efficient. The study also looked at the potential for demand response in the region. TVA is using insights from the study to inform current program development and energy program resource options in the IRP.

Is TVA conducting additional IRP benchmarking in this IRP?
In addition to benchmarking peer IRPs and resource costs and characteristics, TVA also is engaging industry experts at the National Renewable Energy Laboratory (NREL) to develop a best-in-class approach for greenhouse gas life cycle analysis. Results will be included in the Environmental Impact Statement.

How is TVA enhancing communication of the IRP to stakeholders and the public?
TVA is streamlining the IRP report and updating the IRP website to make information easier to find and consume. Materials such as these FAQs, fact sheets on specific IRP topics in Spanish as well as English, and social media posts are aimed at helping the public understand the complexities of the IRP. During the draft IRP and EIS public comment period, TVA plans to conduct two webinars and 10 open houses across the region (up from one webinar and six open houses in 2019) to provide additional opportunities for education and engagement in the IRP.

How will TVA make detailed IRP information available to key stakeholders and the public?

In addition to energy and peak demand forecast charts, the IRP will include corresponding data tables. An expanded list of resource cost and characteristic assumptions also will be included. To supplement the portfolio results included in the IRP report, TVA will provide corresponding data tables on the website when the draft IRP is published.

What happens next?

What will happen once the draft IRP and EIS are released?
TVA will review and evaluate public input and conduct further analysis to appropriately incorporate feedback provided during the public comment period. Public comments on the draft IRP and EIS will be addressed in the final EIS.

How will the final IRP and EIS differ from the draft IRP and EIS?
The final IRP, which will be published after public input has been incorporated, will include power supply mix ranges, recommendations for strategic portfolio direction through 2035 and information on factors that will influence portfolio direction from 2035 to 2050. The final document also will incorporate changes made based on the evaluation of comments from stakeholders and the general public. The final EIS will evaluate the final IRP recommendations to determine the environmental impacts.

What are the last steps in the process?
If the TVA Board accepts the IRP recommendations, the IRP will serve as TVA's compass for power generation decisions as well as for long-term operational and financial planning.