2025 Integrated Resource Plan
Frequently Asked Questions
Fall 2024

Background: Below are frequently asked questions related to the draft Integrated Resource Plan (IRP) and draft Environmental Impact Statement (EIS. The draft documents were released on Sept. 23, 2024. Questions and answers from public webinars, starting with the July 2024 webinar, also are included. This document will be updated and expanded throughout the IRP process.

Sections:

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).

What is the status of the project?
TVA published the draft 2025 Integrated Resource Plan and the accompanying draft Environmental Impact Statement on Sept. 23, 2024. Public input is vital as TVA plans the energy system of the future. TVA encourages stakeholders and the public to review the draft IRP and EIS and provide input during the public comment period, which runs through Dec. 11, 2024. To provide information on what's in the documents and to give the public the opportunity to ask questions, TVA will hold two webinars and 10 in-person meetings across the region between Oct. 28 and Dec. 5. *Details on how to get involved and provide input are available in the Stakeholder and Public Involvement section below.*

Why is TVA doing the 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?
When TVA learned in spring 2024 that the Environmental Protection Agency was very close to releasing its final Greenhouse Gas Rule, TVA paused the IRP publication to allow for additional analysis that incorporates the finalized rule into the IRP. The draft IRP is more robust as a result. This timing change allowed for further review and continued engagement with the IRP Working Group, a diverse group of stakeholders who meet regularly to provide comprehensive feedback 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 has received comments during quarterly TVA Board listening sessions, at RERC meetings and informational IRP webinars.

The draft IRP and EIS published on Sept. 23, 2024, and TVA wants to hear from residents and communities around the region. TVA is holding two webinars and 10 in-person meetings across the region during the public comment period, which runs through Dec. 11, 2024.

What are the dates, times and locations for the webinars and open houses?
Below is the schedule for the webinars and open houses. The in-person meetings will take place at 6 p.m. in the time zone specific to that location, with the presentation beginning at 6:15 p.m. Please note that open houses originally scheduled for Oct. 21 in Murphy, NC, and Oct. 22 in Bristol, VA, have been rescheduled for December due to the impacts of Hurricane Helene. Location addresses and other details are available on the IRP Public Meetings

webpage.

- Public webinar – Oct. 30, 2024, 6 p.m. Central time
- Public webinar – Nov. 22, 2024, 11 a.m., Central time
- Public open house – Oct. 28, 6 p.m., Southeast Community Center in Antioch, TN
- Public open house – Nov. 4, 6 p.m., East Tennessee Economic Council (UT Outreach Center, Large Meeting Room) in Oak Ridge, TN
- Public open house – Nov. 7, 6 p.m., The Bruce Center (Ballrooms 1-2)in Hopkinsville, KY
- Public open house – Nov. 12, 6 p.m., Calhoun Community College (Math Science Computer (MSC) Building, Room 1133) in Huntsville, AL
- Public open house – Nov. 13, 6 p.m., The Gathering Starkville in Starkville, MS
- Public open house – Nov. 14, 6 p.m., MoSH: Museum of Science & History (Deep-End Theater) in Memphis, TN
- Public open house – Nov. 20, 6 p.m., Rossville Middle School (School Gym) in Rossville, GA
- Public open house – Nov. 21, 6 p.m., Kingdom Center in Chattanooga, TN
- Public open house – Dec. 3, 6 p.m., Tri-County Community College (Crisp Building, Enloe Multipurpose Room) in Murphy, NC
- Public open house – Dec. 5, 6 p.m., Virginia High School in Bristol, VA

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 the public webinars and Open Houses to learn more.

How can the public respond to the IRP and EIS?
We encourage the public to review the draft 2025 Integrated Resource Plan and accompanying draft Environmental Impact Statement and share your comments by Dec. 11. Comments may be submitted online, emailed to IRP@tva.gov with the subject line "Draft 2025 IRP Comments" and submitted on a comment form at an in-person Open House. Comments also may be mailed to Kelly Baxter, NEPA Project Manager, Tennessee Valley Authority, 400 W. Summit Hill Drive, WT 11B, Knoxville, TN 37902.

Will my input have an impact?
TVA and the IRP Working Group are incorporating considerations from public input. 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. The 2025 IRP Working Group members are:

- Dr. Kendra Abkowitz (TN) – City of Nashville
- Mike Butler (TN) – Tennessee Wildlife Federation
- Dr. Don Colliver (KY) – University of Kentucky
- Odell Frye (Valley) – Associated Valley Industries
- Lindsay Hanna (TN) – Nature Conservancy
- Shane Homan (MS) – Community Development Foundation
- Gil Hough (TN) – Tennessee Solar Energy Industries Association
- Mark Iverson (KY) – Bowling Green Municipal Utilities
- Wes Kelley (AL) – Huntsville Utilities
- Mike Knotts (TN) – Tennessee Electric Cooperative Association
- Dr. Teja Kuruganti (TN) – Oak Ridge National Laboratory
- Melissa Lapsa (TN) – Department of Energy – Energy Efficiency
- Kim Lewis (AL) – PROJECTXYZ, Inc.
- Pete Mattheis (Valley) – Tennessee Valley Industrial Committee
- Susan Hadley Maynor (TN) – Greater Memphis Chamber
- Doug Peters (Valley) – Tennessee Valley Public Power Association
- Cortney Piper (TN) – Tennessee Advanced Energy Business Council
- Jim Powell (National) – White House Climate Policy Office
- David Rogers (NC) – Sierra Club
- Tim Smith (MS) – Tippah Electric Power Association
- Brian Solsbee (TN) – Tennessee Municipal Electric Power Association
- Landon Stevens (National) – Clear Path
- Kenya Stump (KY) – State of Kentucky
- Dr. Jennifer Tribble (TN) – Tennessee Department of Environment and Conservation

Each organization also has the opportunity for an alternate to attend the Working Group meetings.

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 results and metrics from all scenarios reflected in a balanced manner. The scenarios are:

- Reference (without Greenhouse Gas Rule)
- Higher Growth Economy
- Stagnant Economy
- Net-zero Regulation
- Net-zero 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 (May 2024).

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 Net-zero 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.

What strategies have been used in the modeling?
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.

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 lowest 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?
Based on least-cost planning principles and with input from the IRP Working Group, TVA developed a set of metrics 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.

Initial results from the draft IRP

What do the draft IRP results suggest?
The draft IRP results suggest that between now and 2035, TVA will need to add 9 to 26 gigawatts of new capacity to meet the region's energy demand. For reference, 1 gigawatt supplies roughly enough energy to power more than 585,000 average homes.
The IRP analyzes potential ways the resource portfolio might evolve between now and 2050, and insights gained from evaluating the entire planning horizon inform strategic portfolio direction between now and 2035.

Why will the capacity needs increase by that much?
There is a need for new capacity in all scenarios to replace retiring and expiring capacity, support economic growth, and enable further electrification of the economy. The power supply mix ranges vary based on energy demand, market conditions, policy and regulations, and technology advancements.

Does the initial modeling for the draft IRP offer specific ranges for power generation resources?
Yes. The ranges include:

- 3 to 20 gigawatts of solar nameplate additions
- 4 to 19 gigawatts of natural gas, hydrogen, and carbon capture and storage additions
- 1 to 4 gigawatts of energy efficiency and demand response additions
- Up to 6 gigawatts of storage nameplate additions
- Up to 4 gigawatts of wind nameplate additions
- Up to 1 gigawatt of nuclear additions

Do the draft IRP results indicate there would be a reduction in carbon emissions?
Yes. The results indicate that TVA would see a projected 75% to 90% reduction in carbon intensity by 2035 from its 2005 baseline.

Key themes based on draft IRP results

Are there key themes based on the initial IRP analysis?
Yes. Key themes include:

- New capacity is needed in all scenarios to replace retiring and expiring capacity, support economic growth, and enable further electrification of the economy.
- Firm, dispatchable technologies are needed to ensure system reliability throughout the year.
- Solar expansion plays an increasingly substantial role, providing economic, carbon-free energy.
- Gas expansion serves broad system needs, with the potential for emerging carbon capture and hydrogen options to enable deeper decarbonization.
- Energy efficiency deployment reduces energy needs, particularly between now and 2035, and demand response programs grow with the system and the use of

smart technologies.

- Storage expansion accelerates, driven by evolving battery technologies and the potential for additional pumped storage.
- Wind additions have the potential to add more diversity and carbon-free energy to the resource mix.
- New nuclear technologies, with continued advancements, can also support load growth and deeper decarbonization.

Strategy performance

How did TVA evaluate the performance of the 30 portfolios?
Working with the IRP Working Group, TVA developed a set of metrics to assess the performance of the portfolios. The metrics, which reflect least-cost planning principles, are grouped into four categories – low cost, risk informed, environmentally responsible, and diverse, reliable, and flexible.

What were the key takeaways from evaluating strategy performance?
Key takeaways from that evaluation include:

- Strategy A that applies baseline utility planning is the lowest cost strategy overall, but it has less reduction in CO_2 intensity than the alternative strategies.
- While Strategy B is the most expensive strategy, as it requires upfront investments in clean energy technology innovation, it achieves similar levels of decarbonization as Strategy C over the long term and reduces regulatory and financial risk.
- Strategy C that promotes carbon-free commercial ready technologies is second lowest in cost, achieves the fastest near-term reductions in CO_2 intensity, and reduces regulatory and financial risk.
- Strategies D and E, which promote distributed/demand-side options and options that enhance resiliency, generally rank in the middle across the metric categories.
- All strategies include timeline, technological, transmission, and/or market depth uncertainty and execution risks, which are amplified by load growth and regulatory impacts.
- Maintaining sufficient system flexibility to meet dynamic changes in load will require balancing renewable and dispatchable resource additions over time, especially in growth scenarios.

Observations in the draft EIS

Can you describe the purpose of the draft EIS?
The draft EIS broadly analyzes and identifies the relative impacts of the five strategies on the natural and human environment. The five strategies are the basis for the alternatives discussed in the EIS. Baseline Utility Planning is the No Action Alternative, and the remaining four strategies are the Action Alternatives. The EIS informs TVA's decisionmakers and meets the environmental review requirements of the National Environmental Policy Act (NEPA).

Were environmentally preferable alternatives identified, as required by NEPA?
Yes. The environmentally preferable alternatives are Strategies B and C, which emphasize carbon-free resources and achieve similar CO_2 emissions reductions over the planning horizon. These strategies have tradeoffs across other environmental metrics, with higher water consumption in Strategy B and higher land use in Strategy C.

What are the observations from the draft EIS?
Highlights of draft EIS observations include:

- **Air quality:** Long-term reductions in air emissions of all types with expected coal retirements
- **Climate and greenhouse gases:** Long-term reductions in carbon emissions and intensity
- **Water resources:** Reductions in water use from 2025 to 2050, except in Scenario 5, which has the most nuclear expansion
- **Land resources:** Increases in land use primarily driven by solar expansion
- **Solid and hazardous waste:** Coal combustion residuals production drops to zero by 2035

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. The Net-zero Regulation scenarios reflect the draft GHG rule, which also included regulations that may be adopted in the future related to existing gas plants, and consider potential future regulations designed to achieve net- zero emissions by 2050. 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 capability 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 provides 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, provides insight on how the various strategies evaluated drive continued reductions in carbon emissions. IRP metrics assess tradeoffs, such as between cost and environmental performance. Also, TVA plans to conduct a

sensitivity analysis based on TVA's net-zero aspirations.

IRP enhancements

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

How have weather risks been incorporated?
All scenarios incorporate weather trends and their impact on electricity demand. The IRP also includes 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 was 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.

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

How is TVA enhancing communication of the IRP to stakeholders and the public?
TVA has streamlined the IRP report and updated 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 will 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 includes corresponding data tables. An expanded list of resource cost and characteristic assumptions also is be included. To supplement the portfolio results included in the IRP report, TVA has provided corresponding data tables on the IRP website.

What happens next?

What happens now that the draft IRP and EIS have been 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.

Questions and answers from webinar on July 25, 2024

**Answers provided below may reflect adjustments for clarity or conciseness, compared to the answer provided during the live Q&A. Where more substantial additions have been made, these are noted in italics.*

JULY2024-Q1
How have energy efficiency programs in the Inflation Reduction Act (IRA) been incorporated into load forecasts? Are they present in all scenarios?
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. One of the primary inputs into the load forecast are the projected changes to average appliance stock efficiencies through time. The average appliance stock efficiency is influenced by appliance efficiency standards, incentive or rebate programs (such as the IRA), technological advancement, and consumer adoption of above-code appliances. As the stock efficiency increases, these impacts will naturally lower demand. The rate of change in appliance efficiency is adjusted in each scenario based on the narrative, accounting for assumed consumer adoption and regulatory drivers. Additional impacts from TVA programs are factored into the supply side of the planning process.

JULY2024-Q2
Would you explain why the solar resource assumes tracker systems only, which have a higher operations and maintenance (O&M) cost, and not a mix of tracker and fixed-tilt?
For utility scale solar, the IRP is only including single-axis tracking. Although there is a higher

O&M cost associated with that technology, these units have a higher capacity factor, or amount of expected generation. The vast majority of request for proposal responses reflect single-axis tracking as the more economical solution for utility scale solar. Also, in the IRP, TVA is including assumptions around adoption of distributed solar, which is assumed to be fixed-axis, since that is most typical for rooftop and smaller scale installations.

JULY2024-Q3

How does TVA intend to mitigate the risks associated with its decision-making process, which some argue is increasingly insulated from public input?

TVA is executing a robust stakeholder engagement approach for the IRP. When specific actions are later evaluated to implement the IRP, TVA will follow a similarly robust process to understand the system-level and site-specific impacts and program considerations associated with those actions. For the IRP and for subsequent asset decisions, TVA follows the requirements of the National Environmental Policy Act (NEPA). For major generation projects, this includes issuing notices when project reviews begin, conducting public scoping, issuing draft NEPA documents for public review and comment, holding public meetings, appropriately incorporating input, and, ultimately responding to comments in the final NEPA document. This process creates an opportunity for significant public and stakeholder input into developing the strategic direction of the IRP, as well as specific asset decisions beyond the IRP.

JULY2024-Q4

How will TVA incorporate feedback during the public comment period?

Public comments and feedback received during the process help inform and improve TVA's IRP. We will review and respond to the comments that are provided during the public comment period on the draft IRP and Environmental Impact Statement (EIS). We will respond directly to comments in the final EIS.

TVA and the IRP Working Group considered public comments during scoping when framing the draft IRP analysis, particularly as scenarios and strategies and the set of resource options to consider were developed. Public comments received during the draft IRP and EIS comment period will be reviewed and considered as the IRP analysis is finalized. They will help inform the sensitivity analyses that will be performed to answer additional questions.

JULY2024-Q5

How will TVA ensure that the new IRP models environmental justice and addresses the concerns of communities burdened by emissions from its existing coal plants? Will TVA include environmental justice metrics as part of IRP?

All IRP scenarios in the IRP reflect that TVA intends to retire all of its remaining coal assets by 2035. Official retirement dates have been established for the Cumberland and Kingston plants, and the IRP scenarios assume the retirement of the Gallatin and Shawnee plants by 2035. Broadly speaking, environmental justice (EJ) factors most into site-specific asset decisions, given its locational aspects.

While the IRP is not site-specific, EJ considerations help guide TVA's public outreach strategies

for the IRP. Additionally, the draft IRP and EIS will provide directional insight into potential impacts to communities with EJ concerns. For example, the average system cost metric is directionally indicative of overall trends in customer bills, and metrics related to emissions are directionally indicative of air and water quality trends in the region. Site-specific aspects of actions that are later proposed to implement the IRP will be addressed in tiered environmental reviews that will further explore EJ considerations.

JULY2024-Q6

What are some of the recommendations and/or changes to the IRP that have come out of the scoping comments or the IRP Working Group?

One recent change requested from the IRP Working Group was around the Inflation Reduction Act, the IRA. The initial approach modeled a phase-out for investment tax credits (ITCs) in the 2040s that were estimated at a more conservative level of about 30%. At the suggestion of the IRP Working Group to consider modeling it at 40%, TVA took another look and determined that it would be appropriate to model it at 40%. (Scenario 5 ITC level is 50%). Another significant change TVA made was based on a Regional Energy Resource Council (RERC) interaction related to the nomenclature of the reference case scenarios. There is now a reference case that denotes it is with the Environmental Protection Agency's final Greenhouse Gas Rule and a reference case that denotes it is without the Greenhouse Gas Rule.

TVA and the IRP Working Group also considered public comments during scoping when framing the draft IRP analysis, particularly as scenarios and strategies and the set of resource options to consider were developed. For example, the IRP includes strategies that emphasize carbon-free resources, distributed resources, and resiliency, which reflect some of the themes from scoping comments. Also, while all resource types have annual limits, the annual capability to add renewables has been increased in the current IRP, in part in response to public comments.

JULY2024-Q7

What percentage of solar is TVA?

TVA utilizes a diverse fleet of resources to meet the region's energy needs. At the end of FY 2023, we had about 4% of annual generation that was a combination of wind and solar. Today, TVA has about 1,000 megawatts of solar in operation. TVA has already signed contracts for the development of an additional nearly 3,000 megawatts of solar scheduled to come online over the next several years. We expect to expand that further over the coming decade. Currently, TVA generation is over 50% carbon-free, when also accounting for our hydro and nuclear assets.

JULY2024-Q8

What is the estimated release date for the draft IRP and what is the targeted timeline for the public review of the IRP?

We are hoping to release the draft IRP later this year, but no sooner than the fall. The timeline for public review would begin as soon as the draft is released. We would have at least 60 days of public review.

TVA is planning to release the draft 2025 IRP in late September.

JULY2024-Q9
Should TVA pause major generation projects outlined in the 2019 IRP until the new IRP reflecting current legislative changes is finalized?
TVA's IRP does not outline major asset decisions; rather it points us in a strategic portfolio direction. When a specific asset decision is evaluated, TVA conducts a robust review process, including collecting stakeholder input to equip TVA leadership and the Board to ultimately make a decision. These evaluations will incorporate risks associated with potential pending or future regulation that are factored into decisions. The modeling and thought process that went into the 2019 IRP still serves TVA well with regard to strategic portfolio direction. Here are examples of strategic directions signaled from the 2019 IRP:

- Exiting coal by 2035,
- Adding solar and storage as it is economic to do so and as customer demand increases,
- Analyzing the future potential for energy efficiency and demand response through an energy programs potential study,
- Evaluating the role that emerging technologies can play in the system of the future – technologies such as SMRs, advanced nuclear, advanced storage, new pumped storage, advanced chemistry batteries, and new demand side programs and policies,
- Ensuring maintained reliability with dispatchable resources such as gas-fired assets and using that as an enabling technology to bring more solar and other intermittent resources onto the system.

All of that still holds, and the 2019 IRP study serves TVA well moving in that direction until the next IRP is finalized.

JULY2024-Q10
How will TVA incorporate public feedback, particularly from discussions like the People's Voice on TVA's Energy Plan hearing, into its upcoming Integrated Resource Plan?
TVA encourages everyone to participate in the open public comment period, where we will make sure that your feedback is considered. Responses to all comments will be included in the EIS. During that period, be sure to provide comments through that formal process.

TVA encourages public feedback throughout the development of the IRP, beginning with the public scoping period. TVA's Federal Advisory Committee, the Regional Energy Resource Council (RERC), has also met periodically throughout the process and has included a public listening session. Once the draft IRP is released, there will be 60-day public comment period during which TVA will host a series of open houses around the seven-state region and additional virtual engagements. Comments received during this period will all be reviewed and responded to and will ultimately help inform the final IRP.

JULY2024-Q11
Did you consider representing dispatchable customer-sited resources such as demand response and behind-the-meter batteries participating in a program as a selectable resource

in the IRP modeling?
Yes. In IRP modeling, TVA is including both customer-sited batteries and demand response that are dispatchable at a system level. For demand response, there are a number of programs that are available for selection at residential, commercial, industrial and local power company levels. These programs are modeled in different tiers that offer increasing amounts of capacity at increasing costs. For distributed batteries and other distributed generation, TVA utilizes an NREL-based model that estimates adoption of a distributed resource, which varies in each scenario/strategy combination. The IRP looks at how distributed and demand-side resources work together with the system as a whole and the relative benefits and tradeoffs. IRP results and recommendations will inform future program development.

JULY2024-Q12
Why are there no climate change scenarios in any of the IRP charts?
We intend to do a sensitivity that will look at the change in load due to more extreme weather and climate change adaptation.

In developing load forecasts for all the scenarios, TVA uses a weather normalization process that accounts for regional trends that show warming trends in summer and winter. Additionally, the planning reserve margin accounts for variations in weather and captures changes in weather volatility over time, such as during Winter Storm Elliott in December 2022.

JULY2024-Q13
Did you perform any scenarios in which local power companies are granted higher levels of load flexibility (self-generation)?
The IRP does not address specific program design, which comes later. The local power company flexibility option is part of the contract signed with local power companies and is also out of the scope of the IRP. The IRP explores strategies that provide incentives to increase distributed generation adoption, which is a proxy for TVA paying more to encourage individuals, businesses or local power companies to adopt more distributed generation. For example, Strategy D, Distributed and Demand-side Focus, incorporates the highest levels of distributed solar. This strategy helps identify the impacts to the overall portfolio if TVA were, in the future, to encourage more distributed solar through existing or new programs.

JULY2024-Q14
As part of least-cost planning, you emphasized that utilities can't prefer one resource over another. If it is necessary to assess the climate impacts of each strategy, how can a resource be neutral? Doesn't a commitment to a sustainable future compel us to not be neutral about fossil fuels?
Section 113 of the Energy Policy Act requires TVA to implement a least-cost planning program that considers the full range of existing and incremental supply-side and demand-side resources. The evaluation of resources must not give preference to one resource over another, and it considers all direct and quantifiable costs and operating characteristics. The IRP compares baseline utility planning with alternative strategies that emphasize certain resources to understand the tradeoffs across metrics that evaluate cost, environmental, and

operational impacts. In the EIS, we will include a greenhouse gas life cycle analysis which captures upstream, ongoing operational, and downstream greenhouse gas emissions associated with each portfolio and will characterize those emissions through a social cost. The collective insights from the analysis will inform the strategic portfolio direction of the IRP.

TVA applies six least-cost planning principles in resource planning – low cost, risk informed, environmentally responsible, reliable and resilient, diverse, and flexible. Providing affordable, reliable, resilient, and increasingly cleaner energy over the long term requires a diverse mix of resources.

JULY2024-Q15

Is battery cost assumption also based on the National Renewable Energy Lab (NREL) Annual Technology Baseline (ATB)? And is it for a degrading battery?

Yes. TVA's battery cost assumptions are based on NREL's ATB. We utilize the moderate case across most scenarios, with the exception of Scenario 5 (Carbon Regulation Plus Growth), which uses the advanced case. The NREL ATB does not include the impacts of tax credits or inflation, so those are incorporated on top of the NREL ATB base cost as well as estimated transmission costs typically associated with connecting battery resources. In IRP modeling, TVA assumes that degradation is addressed as part of annual fixed operations and maintenance (O&M) costs.

JULY2024-Q16

How will the 2025 IRP affect proposed projects such as New Caledonia, Allen and Cheatham? With regard to projects that have recently been approved or are proposed, only the Cumberland combined cycle project and the Kingston energy complex project are hard-wired in as existing resources (in the sense that the IRP starts with those assumptions in mind).

Proposed or potential actions such as Allen, New Caledonia and Cheatham County are competed against other resources in the IRP modeling. They are not hard-wired in as existing resources, since there is no official decision on them.

TVA has continued to take action to support the strategic portfolio direction from the 2019 IRP. Those actions include continuing to evaluate, and potentially execute on, projects within the bounds of the 2019 IRP that will ensure TVA continues to provide the Valley region with affordable, reliable, resilient and increasingly cleaner energy. Future asset evaluations, decisions and projects will be informed by the direction outlined in the 2025 IRP.

JULY2024-Q17

Are you incorporating the Energy Infrastructure Reinvestment program?

TVA is reflecting the impacts of the Inflation Reduction Act (IRA) in the cost of resources. The Energy Infrastructure Reinvestment program is a loan program. The IRP looks largely at resource types and timing, not necessarily the financing mechanism.

JULY2024-Q18

How do you incorporate the standing goal of TVA to install 10 gigawatts of solar by 2035 with the IRP?

We have an aspiration of adding the solar to our system and it is within our least-cost planning principles, so we are constantly monitoring the cost of solar assets and how we can add them to our portfolio within a least-cost manner.

Stemming from the strategic direction in the 2019 IRP, TVA developed a strategy to add approximately 10 gigawatts (GW) of solar to the system by 2035. Annually, TVA has contracted for additional solar capacity (about 3.6 GW to date) and is also pursuing TVA-owned solar projects at two sites (about 0.3 GW to date). Draft results from the 2025 IRP are continuing to signal solar expansion, and the final results and recommendation will further inform TVA's solar strategy.

JULY2024-Q19

How does TVA justify potentially delaying the IRP until 2025, and what steps is it taking to ensure the delay is not politically motivated?

When TVA learned in spring 2024 that the Environmental Protection Agency was very close to releasing its final Greenhouse Gas Rule, TVA paused the IRP publication to allow for additional analysis that incorporates the finalized rule into the IRP. The draft IRP is more robust as a result. This timing change allowed 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. *The draft IRP being released in late September 2024 includes the additional analysis.*

JULY2024-Q20

How are local power companies included in the IRP process?

There are local power company representatives on the IRP Working Group and on our federal advisory councils – the Regional Energy Resource Council and the Regional Resource Stewardship Council. TVA staff also attends local power company Board meetings. TVA has held informational webinars for local power companies. Throughout the whole process, we are directly engaging with local power companies in a variety of ways to ensure their input is received.

JULY2024-Q21

TVA prides itself on providing low rates to customers. Is the cost of electricity a factor in your modeling?

Yes, low cost is a key element in modeling, as it is one of TVA's least-cost planning principles. IRP modeling of the baseline utility planning strategy identifies a portfolio that meets the reliability and operational requirements of the power system at the lowest system cost. Each scenario/strategy combination introduces unique considerations for the model and optimizes for least cost, allowing TVA to evaluate alternative strategies against the six least-cost planning principles (low cost, risk informed, environmentally responsible, reliable and resilient, diverse, and flexible) to inform the strategic portfolio direction. We pride ourselves on our low rates, and the IRP modeling reflects that with a focus on low cost.

JULY2024-Q22

Is TVA assuming that hydrogen blending will be available for gas units and at what levels?

IRP modeling assumes that hydrogen blending is available. It is of particular importance in Scenario 4 (Carbon Regulation) and Scenario 5 (Carbon Regulation Plus Growth). In those scenarios, the modeling incorporated the EPA's proposed greenhouse gas rules, where hydrogen was identified as a proposed best system for emission reduction. Assuming a hydrogen market were to develop, TVA assumes that our gas units that are hydrogen capable have the ability to burn hydrogen at the level required in the years specified in those regulations.

JULY2024-Q23

Will webinar comments be included in the official Environmental Impact Statement, or do we need to send them during the comment period?

While comments received during webinars are important to us, they are not official IRP comments. Please provide your comments during the formal comment period on the draft IRP and Environmental Impact Statement (EIS) to ensure that they are incorporated and addressed in the final EIS. The comment period will be publicized well in advance, and the open house times and locations will be publicized as well. That is the time period for you to submit your comments to ensure they are considered and addressed in the document.

JULY2024-Q24

If the draft IRP and EIS are released in November, does that mean the public meetings and comment period will likely be during the holidays in November and December?

At the July webinar, the exact timing of the draft IRP and EIS was still being refined, dependent upon completing the analysis of recently finalized rules. With the analysis now complete, the draft IRP and EIS are being released in late September, followed by a planned 60-day comment period which will end prior to the Thanksgiving holiday.

JULY2024-Q25

Is TVA using the Energy Information Administration's (EIA's) Capital Cost and Performance Characteristic Estimates for Utility -Scale Electric Power Generating Technologies report, or just the National Renewable Energy Lab (NREL) Annual Technology Baseline (ATB) data?

TVA is not using the EIA estimates. IRP modeling primarily uses NREL ATB estimates, with current experience with request for proposal responses influencing short-term forecasts and internal forecasts informing estimates for hydro and nuclear options where TVA has direct project knowledge and experience.

JULY2024-Q26

How are the members of the IRP Working Group selected? Is there any public involvement of selecting them, or are they appointed by TVA?

When selecting members of the IRP Working Group, the team began with the 2019 IRP Working Group list to ensure some continuity and existing expertise. Utilizing our new regional model, the team reached out to local, regional, and federal teams and requested recommendations from community groups and leaders. As discussed during the webinars, the

groups represented are as follows:

- local power companies
- directly served customers
- industry groups
- environmental and energy advocacy groups
- academia
- research institutions
- community and sustainability representatives
- business and economic development professionals
- representatives of various state offices and the White House Climate Policy Office.

JULY2024-Q27

Who are the actual folks on the IRP working Group? I could not find this on the website. How were decisions at the IRP made?

A list of the IRP Working Group members is included in the draft IRP as well as in the Stakeholder and Public Involvement section of these FAQs.

JULY2024-Q28

How will increasing water demands, allocation and drought be considered into this process? And second, how can we make sure the Mississippi River does not have the same issues with growth as the Colorado River has?

The draft EIS contains information about water supply in the TVA region in Chapter 4 – "Affected Environment," and it includes discussions on water consumption and water use associated with TVA power generation in Chapter 5 – "Anticipated Environmental Impacts." TVA closely monitors the water supply and use of the Tennessee River system and its tributaries, and there is a water withdrawal permitting process to account for water withdrawals. The U.S. Army Corps of Engineers manages the Ohio and Mississippi river system. During periods of drought or flooding, TVA coordinates closely with the Army Corps on water releases from Kentucky Reservoir into the lower Ohio/Mississippi river system.

JULY2024-Q29

How does your modeling fully account for the climate impacts of upstream methane leakage and its 20-year role in triggering irreversible warming feedback loops?

As a part of the Environmental Impact Statement (EIS) analysis, TVA is performing a Greenhouse Gas Life Cycle Analysis (LCA) on each of the core portfolios. TVA is partnering with the National Renewable Energy Laboratory (NREL), which is providing technical support and guidance in the development of the LCA framework and process for the IRP. The LCA will include carbon dioxide, nitrous oxide, and methane emissions (including pipeline leakage) associated with upstream, ongoing combustion, ongoing non-combustion, and downstream emissions. Finally, these emissions will be contextualized using the latest social cost of greenhouse gases.

JULY2024-Q30

Solar generation varies significantly between different TVA distributors. Does TVA have a

working group including both distributors & TVA staff working to implement best practices, and to potentially increase individual residences and businesses becoming part of community solar generation?
While there is not a formal working group that includes local power companies (LPCs) and TVA staff working to implement best practices, TVA Green Programs are offered in partnership with LPCs, which makes it easy for customers and communities to access renewable energy. TVA's Commercial Energy Solutions staff does consult with our LPCs on how to best implement the TVA Green Programs it has to offer in order to increase participation and meet the various needs of end-use customers with business, residential, and community solutions. Some examples include Partner Flexibility Generation, programs for residential and small business, and a partnership with the states to implement Solar for All across the Valley.

JULY2024-Q31
Are environmental and public safety considerations included when making recommendations – especially considering recent lithium-ion battery fires in San Diego and at a battery plant in South Korea? And when will Vonore be opening?
Batteries installed in the TVA service region will have robust safety components based on best practices learned from other utilities. These safety measures currently include safe distances, advanced battery monitoring systems, automatic fire protection systems, and first responder training and first responder response plan development. TVA's Vonore Battery Energy Storage System is expected to begin commercial operations in late 2024. TVA has met with local fire departments regarding the lithium-ion batteries and will conduct walkdowns with the fire department before commissioning the Vonore site.

JULY2024-Q32
Gas seems to be a go-to dependable in the TVA dialogue during this webinar. Does this indicate TVA will hold tight with LNG and not outwardly increase the renewables option we have?
The IRP modeling will consider all available resource options, including existing renewable and non-renewable technologies, as well as emerging technologies that stand a reasonable chance of being deployable between now and 2050. This is consistent with TVA's obligations under Section 113 of the Energy Policy Act. TVA significantly increased the annual and cumulative potential for renewable resource additions in IRP modeling.
JULY2024-Q33
How do we ensure that we do not have the energy failures and problems seen in California and Texas, for example?
TVA utilizes a robust scenario and strategy modeling framework in creating the IRP. TVA also follows least-cost planning principles, which include consideration of reliability and resiliency needs. The IRP recommendation will include a strategic portfolio direction that will provide for low-cost, reliable, resilient, and increasingly cleaner power across a number of different ways that the future could unfold. With each specific asset decision that stems from the IRP, TVA will consider system reliability and resiliency needs as well.
JULY2024-Q34
Yes... the weather change scenarios need to be within this IRP. Look at the Tennessee River

and its risk of floods and the TVA nuclear sites on this waterway. The risk of extreme temperatures needs to be in the plan. This extreme weather behavior is underway in 2024 and will continue.
Please see response above (JULY2024-Q12) where a similar question was answered during the webinar.

JULY2024-Q35
How much money did TVA spend on natural gas fuel last year? How does that compare to the amount spent on natural gas fuel in the past three years? How much did your gas costs increase due to winter storms? Are those extra costs for natural gas amortized? Over how many years?
Please refer to TVA's published SEC 10-K filing for information on historical fuel expenses.

JULY2024-Q36
What about the SMR companies that have gone bankrupt due to fraud? Are there any SMRs operating in the U.S.?
The decision to potentially build SMRs is an ongoing discussion as part of the asset strategy for TVA's future generation portfolio. TVA is following a structured, phased process for decision- making and incorporating lessons learned from other nuclear deployments. Partnerships, such as the technology collaboration with GE-Hitachi, Ontario Power Generation and Orlen Synthos Green Energy, help TVA share costs and reduce risk in development of innovative, advanced nuclear technology. While there are several SMR technologies and projects under development, there are not yet any SMRs under construction or operating in the U.S.