





# Ameren Missouri
# Integrated Resource Plan

Sept. 26, 2023



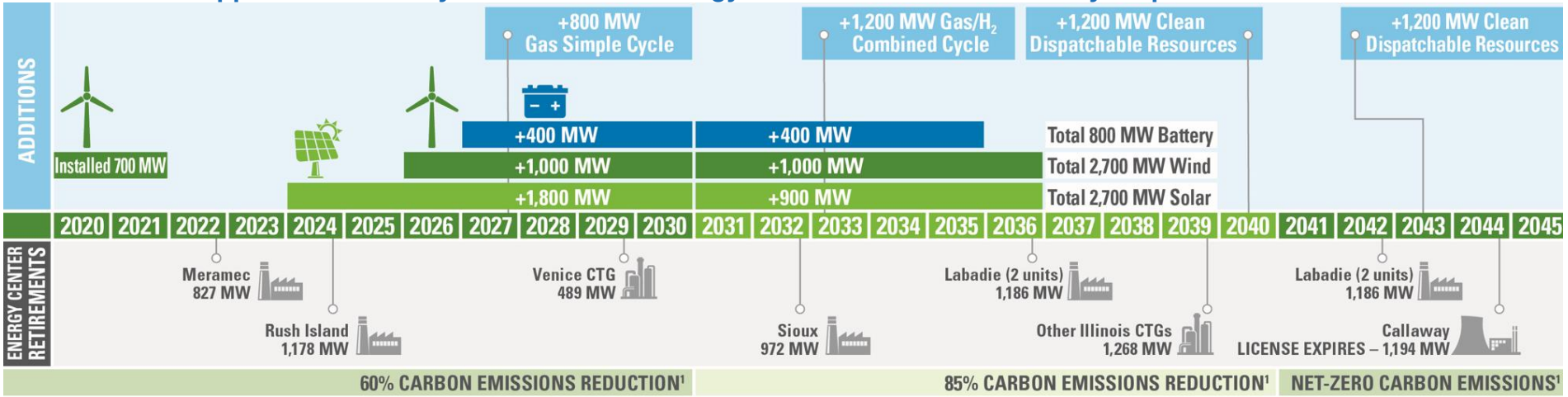


# Forward-Looking Statements

Statements in this presentation not based on historical facts are considered "forward-looking" and, accordingly, involve risks and uncertainties that could cause actual results to differ materially from those discussed. Although such forward-looking statements have been made in good faith and are based on reasonable assumptions, there is no assurance that the expected results will be achieved. These statements include (without limitation) statements as to future expectations, beliefs, plans, projections, targets, estimates, strategies, objectives, events, conditions, and financial performance. In connection with the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995, Ameren and Ameren Missouri is providing this cautionary statement to identify important factors that could cause actual results to differ materially from those anticipated. In addition to factors discussed in this presentation, Ameren's and Ameren Missouri's Annual Report on Form 10-K for the year ended December 31, 2022 and its other reports filed with the SEC under the Securities Exchange Act of 1934, as amended, contain a list of factors and a discussion of risks that could cause actual results to differ materially from management expectations suggested in such "forward-looking" statements. All "forward-looking" statements included in this presentation are based upon information presently available, and Ameren and Ameren Missouri, except to the extent required by the federal securities laws, undertakes no obligation to update or revise publicly any "forward-looking" statements to reflect new information or current events.

# Missouri Integrated Resource Plan filed with MoPSC Sept. 2023

## Least-cost approach to reliably meet customer energy needs in an environmentally responsible manner




- **Carbon emissions[1]:** Targets substantial reductions; 60% by 2030, 85% by 2040 and net-zero by 2045
- **Coal:** All energy centers retired by 2042; Rush Island[2] advanced from 2025 to 2024, Sioux extended from 2030 to 2032
- **Renewables:** Add 2,800 MW by 2030; incremental 1,900 MW by 2036, investment opportunity of $5.3B and $4.1B, respectively
- **Natural gas:** Add 800 MW by 2027; incremental 1,200[3] MW by 2033, investment opportunity of $0.8B and $1.7B, respectively
- **Battery storage:** Add 400 MW by 2030; incremental 400 MW by 2035, investment opportunity of $0.6B and $0.7B, respectively
- **Clean dispatchable:** Add 1,200 MW by 2040; incremental 1,200 MW by 2043
- **Customer programs:** Continues robust, cost-effective energy efficiency and demand response programs
- **IRP goals:** Achievement dependent on variety of factors including cost-effective advancements in innovative clean energy technologies and constructive federal and state energy and economic policies

[1] Reductions as of end of period indicated and based off 2005 levels. Ameren's goals include both Scope 1 and 2 emissions, including other greenhouse gas emissions of methane, nitrous oxide and sulfur hexafluoride. [2] Final timing of Rush Island retirement is dependent on a revised order from the U.S. District Court for the Eastern District of Missouri. [3] Planned transition to hydrogen or hydrogen blend with carbon capture or offset by 2040.

# Missouri IRP Preferred Plans

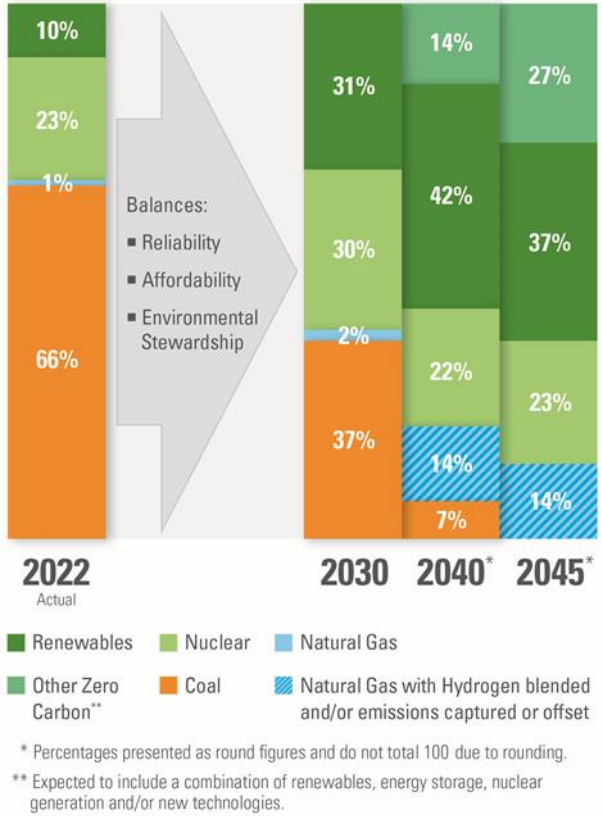
| Key Actions | 2022 IRP[3] | 2023 IRP[3] | Specifics |
|---|---|---|---|
| Carbon Emission Reduction[1] | 60% by 2030<br>85% by 2040<br>Net Zero by 2045 | No change | • Includes both Scope 1 and 2 emissions, including other greenhouse gas emissions of methane, nitrous oxide and sulfur hexafluoride |
| Coal Retirements[2] | 3,000 MW by 2030<br>3,000 MW by 2035<br>5,400 MW by 2042 | 2,000 MW by 2030<br>No change<br>No change | • Includes Meramec retirement in 2022<br>• Rush Island retirement accelerated from 2025 to 2024[2]<br>• Sioux retirement extended from 2030 to 2032 |
| Renewable Additions | 2,800 MW by 2030<br>4,300 MW by 2035<br>4,700 MW by 2040 | No change<br>4,700 MW by 2036 | • $5.3B investment opportunity by 2030; previously $4.3B<br>• $4.1B incremental investment opportunity by 2036; previously $3.2B by 2040 |
| Natural Gas Retirement | 500 MW by 2030<br>1,800 MW by 2040 | No change | • Venice CTG retirement in 2029<br>• Other remaining CTGs located in Illinois retired by 2040 |
| Natural Gas Additions | 1,200 MW by 2031 | 800 MW by 2027<br>2,000 MW by 2033 | • $0.8B investment opportunity by 2027 in simple cycle energy center<br>• $1.7B incremental investment opportunity by 2033 in combined-cycle energy center; planned transition to hydrogen or hydrogen blend with carbon capture or offset by 2040; previously $1.7B by 2031 |
| Battery Storage Additions | 400 MW by 2035<br>800 MW by 2040 | 400 MW by 2030<br>800 MW by 2035 | • $0.6B investment opportunity by 2030<br>• $0.7B incremental investment opportunity by 2035; previously $650M by 2040 |
| Nuclear | 1,200 MW extended | No change | • Expect to seek an extension of operating license beyond 2044 |
| Clean Dispatchable Additions | 1,200 MW by 2043 | 1,200 MW by 2040<br>2,400 MW by 2043 | • New technologies critical to achieving our net-zero goal |

[1] Reductions as of end of period indicated and based off 2005 levels. [2] Final timing of Rush Island retirement is dependent on a revised order from the U.S. District Court for the Eastern District of Missouri.
[3] MW cumulative for each category.

# Least-Cost Approach for Reliability, Affordability and the Environment

- Targets net-zero carbon emissions by 2045[1] while meeting customers' rising needs and expectations for reliable, affordable and clean energy sources
- Includes balanced mix of energy sources to support continued reliability even under extreme weather conditions
- Designed to meet customers needs in an increasing electrified future
- Provides flexibility to adjust to changes in policy and market conditions and benefit from developing clean energy technologies
- Supports customers in achieving their own clean energy targets; facilitates decarbonization and electrification of the broader economy

Sources of Energy

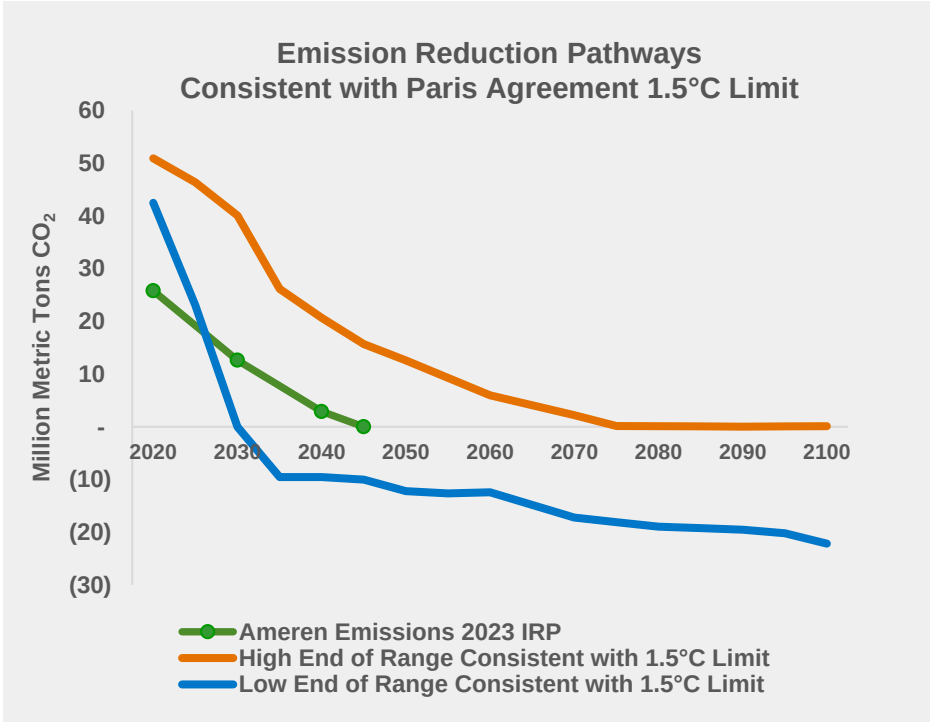



[1] Ameren's goals include both Scope 1 and 2 emissions, including other greenhouse gas emissions of methane, nitrous oxide and sulfur hexafluoride.

# Ameren's Pathway to Carbon Emission Reduction Goals

## Science based targets consistent with 1.5°C limit of the Paris Agreement

- Ameren's carbon emission reduction goals[1] **(60% by 2030, 85% by 2040, and net-zero by 2045)** are science based and consistent with the Paris Agreement goal of limiting global warming average temperature to no more than 1.5°C
- Ameren partnered with EPRI to perform extensive analysis based on 97 IPCC climate model scenarios confirming Ameren's $CO_2$ reduction pathway as consistent with the 1.5°C Paris goal[2]
- A third party has verified Ameren's greenhouse gas emissions for several years and helped Ameren expand the emissions categories and sources captured in its greenhouse gas inventory
- Industry organizations are working towards a consistent approach to third-party verification of science based targets
  - A third-party assessment determined the SBTi pathway would require Ameren to achieve a 72% absolute reduction of greenhouse gas emissions (Scope 1) by 2030 based off 2020 levels (current goals based off 2005 levels)
  - Ameren believes adoption of the SBTi pathway would result in significant reliability risks and customer bill impacts




[1] Reductions as of end of period indicated and based off 2005 levels. Ameren's goals include both Scope 1 and 2 emissions, including other greenhouse gas emissions of methane, nitrous oxide and sulfur hexafluoride. [2] EPRI's analysis of the Intergovernmental Panel on Climate Change (IPCC) scenarios, based on the IPCC Sixth Assessment Report, and the International Energy Agency Net Zero Emissions by 2050 scenario provides a scientifically-based framework for assessing Ameren's plan.

# Glossary of Terms and Docket Number

*B* – Billion

*C* – Celsius

*$CO_2$* – Carbon dioxide

*CTG* – Combustion turbine generator

*EPRI* – Electric Power Research Institute

*$H_2$* – Hydrogen gas

*IRP* – Integrated Resource Plan

*M* – Million

*MoPSC* – Missouri Public Service Commission

*MW* – Megawatt

*SBTi* – Science Based Targets Initiative

*SEC* – Securities and Exchange Commission

*Docket Number:* EO-2024-0020