GE Vernova-led, DOE-funded engineering study highlights how EGR technology can reduce costs of carbon capture at a gas-fired power station

- Utilizing an Exhaust Gas Recirculation (EGR) system within a carbon capture system can lead to more than 6% savings
- The DOE-funded study evaluated integrating the James M. Barry Unit 6 natural gas combined-cycle (NGCC) power plant with Linde's Gen 2 carbon capture solution based on BASF's OASE® blue gas treatment technology
- Study shows significant potential benefits of capturing 95% of carbon dioxide (CO2) through the use of EGR, while additional gas turbine upgrades could maintain the power plant's existing output

ATLANTA, GA (October 15, 2024) - GE Vernova Inc (NYSE: GEV) today announced the U.S. Department of Energy's (DOE) Office of Fossil Energy and Carbon Management released the official findings of the GE Vernova-led front-end engineering design (FEED) study, "Retrofittable Advanced Combined-Cycle Integration for Flexible Decarbonized Generation."

The study evaluated retrofitting Southern Company subsidiary Alabama Power's James M. Barry Electric Generating Plant, located in Bucks, Alabama, with technology capable of capturing up to 95% of the plant's CO_2 emissions. It demonstrated that the integration of GE Vernova's Exhaust Gas Recirculation (EGR) system could lead to a reduction of more than 6% of the total cost of the carbon capture facility, as compared to installing carbon capture without the EGR system.

The GE Vernova-led study was completed in collaboration with Southern Company, Linde, BASF, and Kiewit, and explored the benefits of close integration between a

natural gas combined-cycle (NGCC) plant and a carbon capture system.

GE Vernova's measures and technologies explored in the study included the use of NGCC steam in the carbon capture system facility, potential gas turbine upgrades, installing NGCC and carbon capture control systems, and employing GE Vernova's EGR system, which reintroduces part of the exhaust gas back into the gas turbine inlet.

The study's integrated approach helped reduce the size and costs of the carbon capture system by halving the number of absorber towers, improving the efficiency and flexibility of the plant, and potentially increasing its power output.

"GE Vernova is grateful for the Department of Energy's support of this study, the first of its kind to explore EGR technology applied in a gas power carbon capture plant" said **Jeremee Wetherby, GE Vernova Carbon Solutions Leader**. "We developed a holistic approach considering various integration measures building on our long history and expertise in power plant engineering, operation, upgrades and controls. Carbon capture is a crucial pathway to lowering carbon emissions from power generation to near-zero levels, and we are pleased with the benefits projected by the study – which naturally can vary from site to site but represent a valuable indicator of the possibilities at similar sites."

The study demonstrated that the effects of adding a carbon capture system to an NGCC power plant could be reduced through a series of integration measures, including the EGR system. GE Vernova has developed EGR systems for two decades, initially for nitrogen oxide (NO_x) control and part-load efficiency benefits. In addition to this study, GE Vernova has demonstrated the commercial readiness of F- and H-class combustors operating with EGR at GE Vernova's test facility in Greenville, South Carolina.

This study recognized the potential of an EGR system to deliver the following benefits as compared to a non-EGR system:

- Large reduction of carbon capture facility footprint and cost of absorber
- Lower operating costs due to reduced amine degradation

- Less energy-intensive separation due to higher concentration of CO_2 in flue gas directed to the carbon capture system
- More steam turbine power output because of lower steam consumption

The collaboration with Southern Company, Linde, BASF, and Kiewit was crucial for the success of this study, which showed that GE Vernova's integration techniques can help reduce plant capital costs, energy consumption, and operating expenses.

"Southern Company is pleased this desktop engineering study showed that applying carbon capture for natural gas combined-cycle generation may create options and long-term value for customers in a net-zero future," said **Dr. Mark S. Berry, Southern Company Senior Vice President of Research, Environment And Sustainability**. "We congratulate GE and the other members of the FEED study team for employing unique technology approaches that could advance the future deployment of carbon capture as a clean energy solution for the customer and communities we serve."

"As a provider of CO_2 capture technology, we commend DOE's leadership in advancing gas power decarbonization technology towards a clean and reliable energy future. The results of this FEED study underpin Linde's belief that a collaborative approach between technology providers, end-users, and other stakeholders is essential in driving innovation and cost reduction in CO_2 capture. We are committed to working with DOE and other partners to help decarbonize industry," said **Dominic Cianchetti, Senior Vice President, Region Americas, Linde.**

"Kiewit Engineering Group's participation in the GE Vernova-led study underscores our dedication to advancing innovative solutions for carbon capture technology. By leveraging our engineering and construction expertise, we contributed to the integration of the Exhaust Gas Recirculation (EGR) system, achieving significant cost reductions and efficiency improvements. This study highlights the potential for retrofitting existing power plants to meet stringent carbon emission standards, a vital step towards sustainable energy," **Kevin Needham, President-Power Engineering, Kiewit Engineering Group Inc.**

With the goals of improving affordability, reliability, load flexibility, and significantly reducing carbon emissions, GE Vernova's NGCC and carbon capture integration techniques can be applied across more than 1,600 F-Class gas turbines worldwide, delivering approximately 300 gigawatts (GW) of electricity daily.

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Notes to editors

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This document contains forward-looking statements – that is, statements related to future events that by their nature address matters that are, to different degrees, uncertain. These forward-looking statements often address GE Vernova's expected future business and financial performance and financial condition, and the

expected performance of its products, the impact of its services and the results they may generate or produce, and often contain words such as “expect,” “anticipate,” “intend,” “plan,” “believe,” “seek,” “see,” “will,” “would,” “estimate,” “forecast,” “target,” “preliminary,” or “range.” Forward-looking statements by their nature address matters that are, to different degrees, uncertain, such as statements about planned and potential transactions, investments or projects and their expected results and the impacts of macroeconomic and market conditions and volatility on the Company’s business operations, financial results and financial position and on the global supply chain and world economy.

About GE Vernova:

GE Vernova (NYSE: GEV) is purpose-built global energy company that includes Power, Wind, and Electrification segments and is supported by its accelerator businesses. Building on over 130 years of experience tackling the world’s challenges, GE Vernova is uniquely positioned to help lead the energy transition by continuing to electrify the world while simultaneously working to decarbonize it. GE Vernova helps customers power economies and deliver electricity that is vital to health, safety, security, and improved quality of life. GE Vernova is headquartered in Cambridge, Massachusetts, U.S., with more than 75,000 employees across 100+ countries around the world. Supported by the Company’s purpose, The Energy to Change the World, GE Vernova technology helps deliver a more affordable, reliable, sustainable, and secure energy future. **GE Vernova’s Gas Power business** engineers advanced, efficient natural gas-powered technologies and services, along with decarbonization solutions that aim to help electrify a lower carbon future. It is a global leader in gas turbines and gas power plant technologies and services with the industry’s largest installed base of approximately 7,000 gas turbines.

GE Vernova’s mission is embedded in its name – it retains its legacy, “GE,” as an enduring and hard-earned badge of quality and ingenuity. “Ver” / “verde” signal Earth’s verdant and lush ecosystems. “Nova,” from the Latin “novus,” nods to a new, innovative era of lower carbon energy. Learn more: GE Vernova and LinkedIn.



About Southern Company

Southern Company (NYSE: SO) is a leading energy provider serving 9 million customers across the Southeast and beyond through its family of companies. Providing clean, safe, reliable and affordable energy with excellent service is our mission. The company has electric operating companies in three states, natural gas distribution companies in four states, a competitive generation company, a leading distributed energy company with national capabilities, a fiber optics network and telecommunications services. Through an industry-leading commitment to innovation, resilience and sustainability, we are taking action to meet customers' and communities' needs while advancing our goal of net zero greenhouse gas emissions by 2050. Our uncompromising values ensure we put the needs of those we serve at the center of everything we do and are the key to our sustained success. We are transforming energy into economic, environmental and social progress for tomorrow. Our corporate culture and hiring practices have earned the company national awards and recognition from numerous organizations, including Forbes, The Military Times, DiversityInc, Black Enterprise, J.D. Power, Fortune, Human Rights Campaign and more. To learn more, visit southerncompany.com.

About Linde

Linde is a leading global industrial gases and engineering company with 2021 sales of $31 billion (€26 billion). We live our mission of making our world more productive every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet. The company serves a variety of end markets including chemicals & energy, food & beverage, electronics, healthcare, manufacturing, metals and mining. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

For more information about the company and its products and services, please visit www.linde.com

About BASF
With more than 50 years of experience, BASF offers its customers efficient gas treating solutions for a variety of applications such as natural gas, synthesis gas, and biogas. Worldwide, these solutions have been proven and demonstrated in about 500 reference plants. BASF markets its range of gas treating technologies, the corresponding solvents and complete technical services including the digital platform OASE connect under the brand OASE® – Gas Treating Excellence by BASF.
For more information please visit: www.oase.basf.com

About Kiewit
Kiewit is one of North America's largest and most respected construction and engineering organizations. With its roots dating back to 1884, the employee-owned organization operates through a network of subsidiaries in the United States, Canada and Mexico. Kiewit offers construction and engineering services in a variety of markets including transportation; oil, gas and chemical; power; building; water/wastewater; industrial; mining; and marine. Kiewit had 2023 revenues of $17.1 billion and employs 31,100 staff and craft employees.
For more information please visit: www.kiewit.com

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