Southern Company

September 2024

Southern Company and Hydrogen

As a leader in research and development (R&D), Southern company believes hydrogen technology can be one of many solutions to help deliver a sustainable future. Over the past five years, Southern Company has invested approximately $16 million of its R&D budget in hydrogen projects. We intend for these investments to support our mission of providing clean, safe, reliable and affordable energy to customers and further economic development and growth in our communities.

We are pursuing the following ambitious goals:

- Advance a hydrogen ecosystem to holistically serve customer needs with clean energy
- Provide a pathway for decarbonization across the entire economy
- Enhance energy resiliency
- Expand opportunities in economic development

Hydrogen for Our Business

Plant McDonough-Atkinson near Atlanta

Southern Company is evaluating a wide range of applications for hydrogen, including using hydrogen as fuel, as well as for distributed generation and long-duration energy storage. We are further researching the delivery of hydrogen for these applications, including through new or existing pipeline infrastructure.

Decarbonization through Hydrogen Blending

Georgia Power, Mitsubishi Power, and EPRI validated 20% hydrogen could be blended with natural gas to power an advanced-class natural gas turbine at Georgia Power's Plant McDonough-Atkinson in Smyrna, Georgia.

Georgia Power Hydrogen Pilot

Georgia Power Company plans to initiate a pilot demonstration creating hydrogen from water through electrolysis utilizing grid energy for use in a fuel cell microgrid and as transportation fuel.

Hydrogen as Energy Storage

Southern Company is researching how to reduce the cost of energy storage through development of reversible electrolysis and fuel cells, novel hydrogen storage technologies and underground storage.

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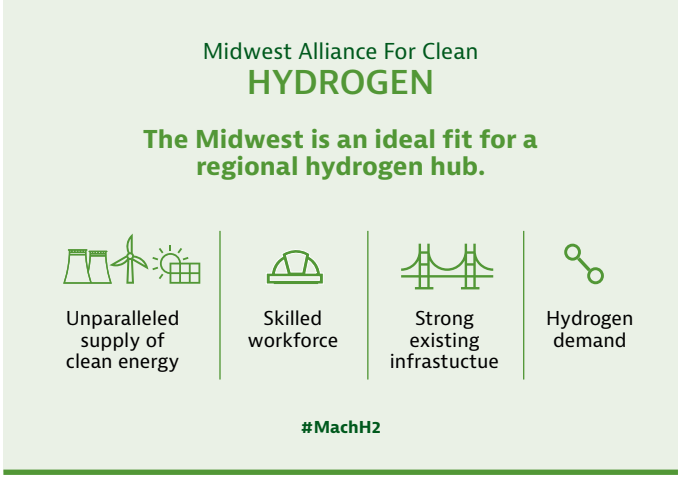
Hydrogen for Our Customers

To better serve our customers, Southern Company is researching a variety of hydrogen production pathways that could potentially be used in areas such as transportation, manufacturing and chemical and industrial applications. As part of the energy transition, we believe that a key opportunity in clean hydrogen technology (and through other energy carriers that are derived from clean hydrogen) could be to deliver decarbonization benefits for hard-to-abate sectors such as steel and cement, thus serving as a conceivable catalyst to help gradually displace carbon energy across the entire economy. We believe there are many other potential uses for hydrogen in industrial, commercial and residential applications to serve our customers in the future.



- Nicor Gas, a subsidiary of Southern Company Gas, is part of the Midwest Alliance for Clean Hydrogen (MachH2) hub which seeks to grow the hydrogen economy and meet the clean energy needs of customers in the region.
- In October 2023, MachH2 was selected by the U.S. Department of Energy's Office of Clean Energy Demonstrations to develop a Regional Clean Hydrogen Hub (H2Hub). H2Hubs will accelerate the commercial-scale deployment of clean hydrogen—helping generate clean, dispatchable power, create a new form of energy storage, and decarbonize heavy industry and transportation.

Strategic Collaboration

Southern Company conducts a highly collaborative hydrogen R&D program, engaging with a broad base of stakeholders, including the U.S. Department of Energy (DOE), national laboratories, universities, industry and communities who share our vision.

HyBlend Initiative

DOE initiative to address technical barriers to blending hydrogen in natural gas infrastructure and study the lifecycle emissions of hydrogen blends

Low-Carbon Resources Initiative

EPRI and GTI Energy initiative to accelerate development and demonstration of low-and zero-carbon energy technologies

Advancing Gas Technologies

Southern Company Gas, in collaboration with NYSEARCH and GTI-OTD is focusing on advancing technologies and solutions for the natural gas industry, including the integration and use of hydrogen

Additional information on some of our strategic collaboration partners can be found here:

AIChE Center for Hydrogen Safety
Clean Hydrogen Future Coalition
Fuel Cell and Hydrogen Energy Association
Hydrogen Council
IEA Hydrogen Technology Collaboration Program
National Fuel Cell Research Center
Open Hydrogen Initiative
NYSEARCH
Operations Technology Development