



# Southern Company and Hydrogen

As a leader in research and development (R&D), Southern Company believes hydrogen technology is promising and provides a powerful opportunity to potentially deliver a sustainable future that provides clean, safe, reliable and affordable energy to customers and communities, in addition to abundant economic development and growth. Over the past five years, Southern Company has invested approximately \$16 million of its R&D budget in hydrogen projects.

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

In 2022, Georgia Power Company, 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.



### Integrated Hydrogen Microgrid

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.



## Hydrogen for Our Customers

To better serve customers, we are researching the production of hydrogen via electricity, nuclear energy and natural gas, and combining generation with carbon capture and storage. We understand the many potential end-uses of hydrogen for customers, including for transportation 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.

Southern Company and Southern Company Gas subsidiaries are part of two regional hydrogen "hub" projects seeking funding to grow the hydrogen economy and meet these needs.

### Southeast Hydrogen Hub

Southern Company is part of a coalition of five major utilities pursuing federal funding for the formation of a green hydrogen network, [the Southeast Hydrogen Hub](#), spanning the six states.




### Midwest Alliance for Clean Hydrogen (MachH2)


Nicor Gas is a participant in a [multi-state alliance](#) of public and private entities pursuing federal funding to grow the Midwest regional hydrogen value chain and deliver positive climate and community impact.

**Midwest Alliance For Clean HYDROGEN**


**The Midwest is an ideal fit for a regional hydrogen hub.**




Unparalleled supply of clean energy



Skilled workforce



Strong existing infrastructure



Hydrogen demand

#MachH2

## 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.

<h3>HyBlend Initiative</h3> <p><a href="#">DOE initiative</a> to address technical barriers to blending hydrogen in natural gas infrastructure and study the lifecycle emissions of hydrogen blends</p>	<h3>Low-Carbon Resources Initiative</h3> <p><a href="#">EPRI and GTI Energy initiative</a> to accelerate development and demonstration of low-and zero-carbon energy technologies</p>	<h3>Food/Organic Waste Demonstration</h3> <p><a href="#">DOE-funded collaborative</a> project between Southern Company Gas, Electro-Active Technologies and T2M Global to advance a technology for production of clean hydrogen from waste</p>
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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](#)