



Heirloom

Leveraging the natural power of limestone to remove billions of tons of CO₂ using the world's most cost-effective Direct Air Capture technology

How does Heirloom define high quality carbon removal?

 Additional

 Scalable

 Safe

 Verifiable

 Permanent

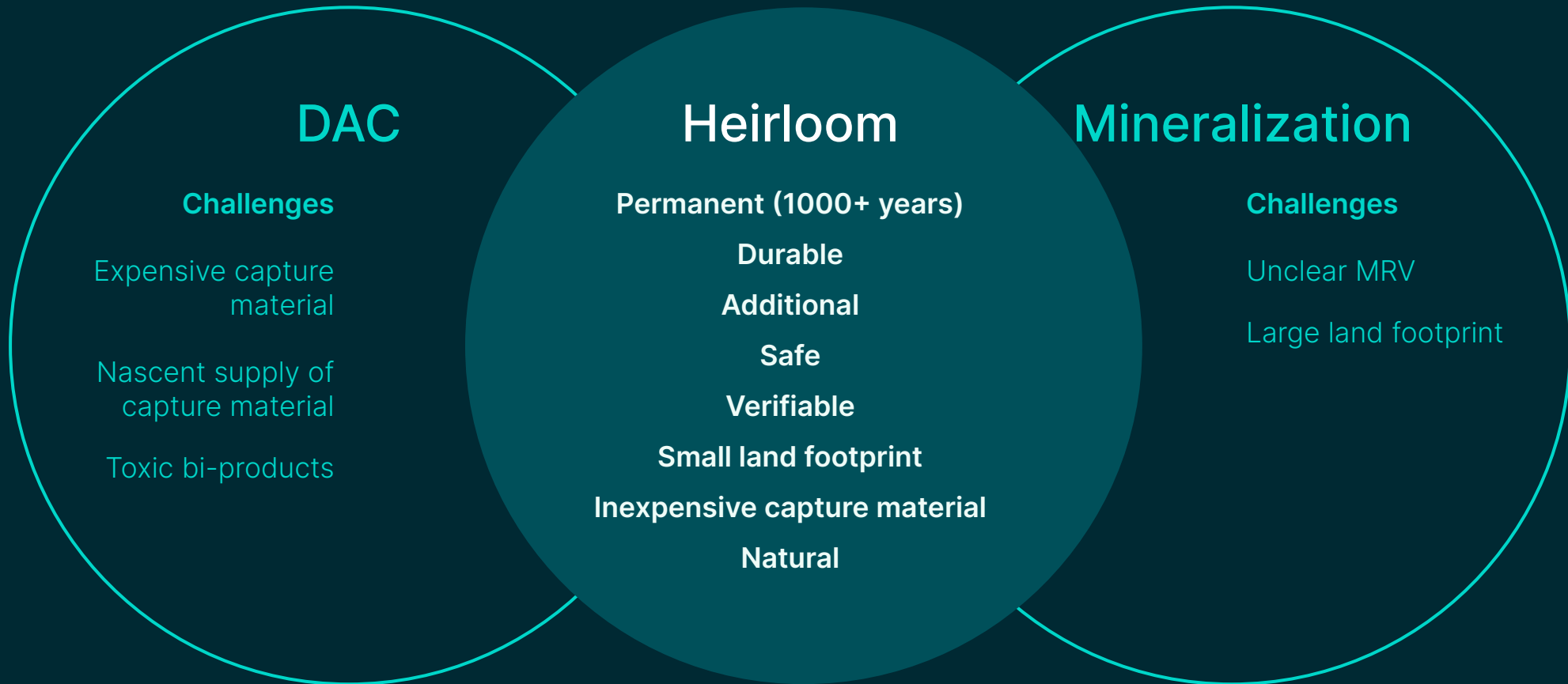
 Durable

 Net-Negative

 Community-Centered

A unique, hybridized approach

By combining **Direct Air Capture** and **Carbon Mineralization**, Heirloom harnesses the best of both approaches



How it works

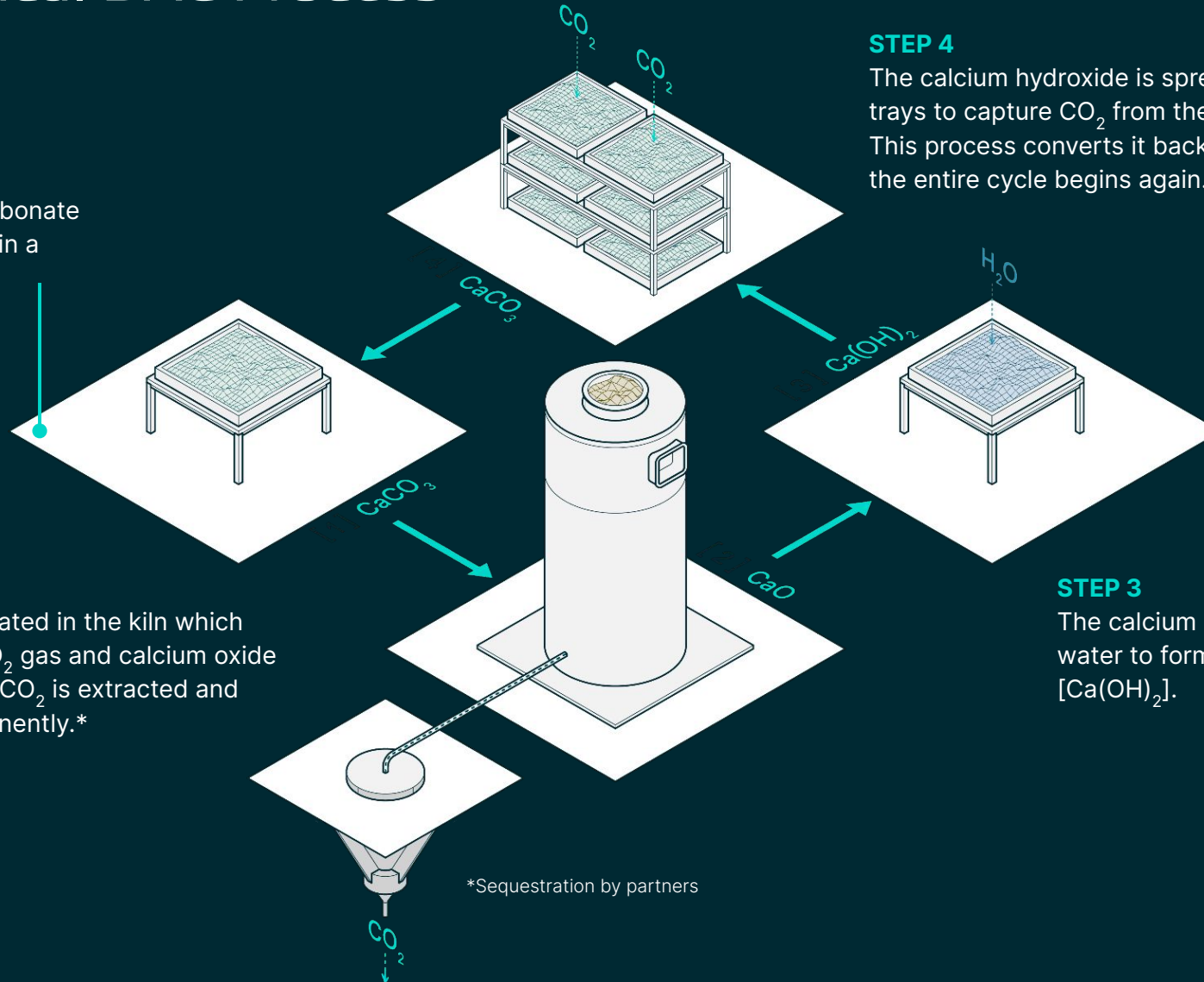
Our process uses limestone to pull CO₂ from the atmosphere at low-cost



Heirloom's cyclical DAC Process

STEP 1

Heirloom takes crushed calcium carbonate [CaCO₃] or limestone and places it in a renewable-powered electric kiln.



STEP 2

The limestone is heated in the kiln which separates it into CO₂ gas and calcium oxide [CaO] powder. The CO₂ is extracted and sequestered permanently.*

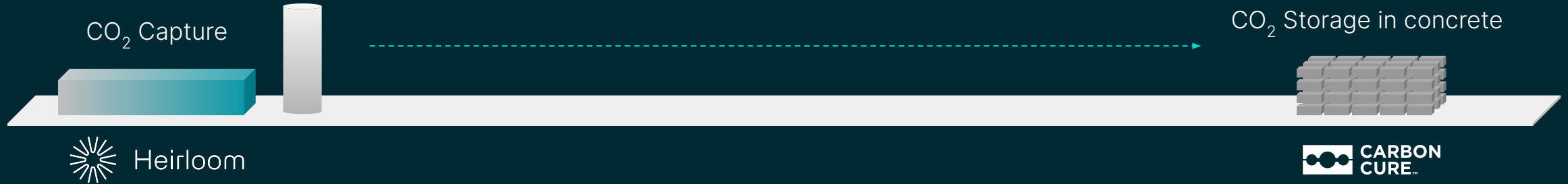
STEP 3

The calcium oxide is hydrated with water to form calcium hydroxide [Ca(OH)₂].

STEP 4

The calcium hydroxide is spread onto stacked trays to capture CO₂ from the air for 3 days. This process converts it back to limestone, and the entire cycle begins again.


We are storing our CO₂ in concrete, where it stays for centuries



REUTERS®

Concrete traps CO₂ soaked from air in climate-friendly test

By Peter Henderson



The Washington Post

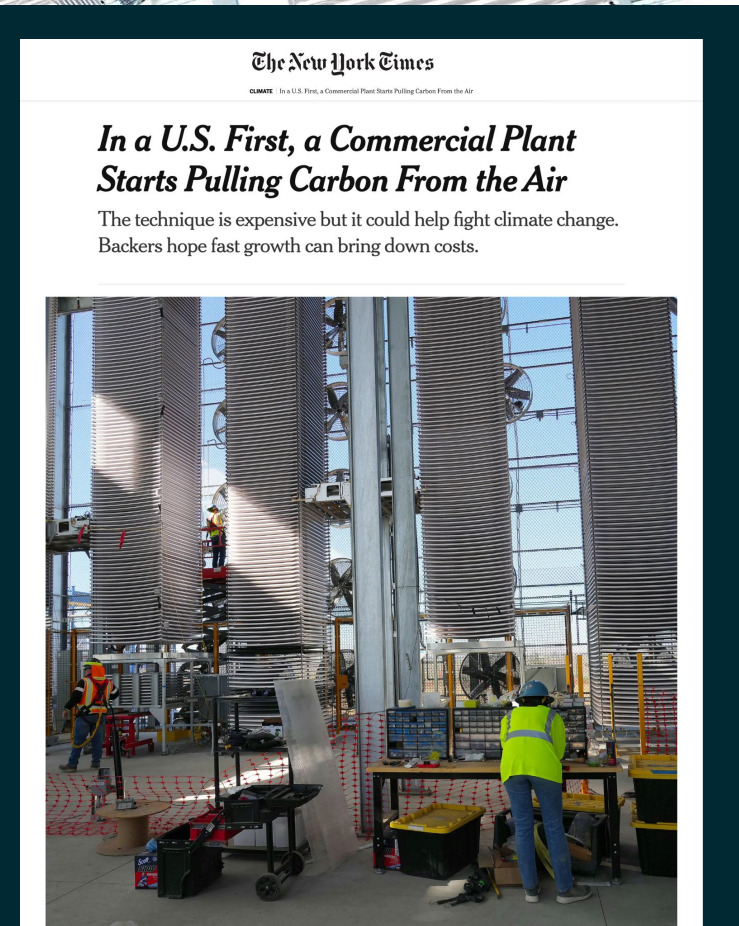
Why someday we may be storing carbon in sidewalks

MARKETPLACE®

New carbon capture methods offer hopeful outlook for addressing climate change

Tracy, California

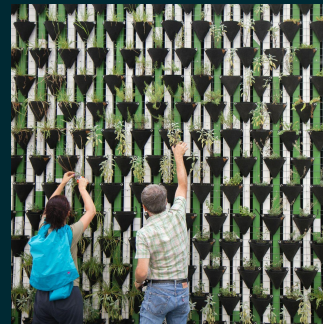
America's first commercial DAC facility is removing carbon as we speak



A carbon capture plant in Tracy, Calif. Jim Wilson/The New York Times

Heirloom's High Road for Responsible Carbon Removal

Heirloom will not enable fossil fuel expansion. Measurement, Reporting, and Verification (MRV)



Well-paid jobs, with the floor of prevailing wage
Co-create community benefits plans

Tracy, California

Operationalizing our values



Powered by 100% **renewable, net-new, in-grid** energy

September 2023: Heirloom signs the largest carbon removal deal to date with Microsoft

THE WALL STREET JOURNAL

CLIMATE & ENVIRONMENT

Microsoft Will Use Carbon-Absorbing Rocks to Meet Climate Goals

Deal with Heirloom Carbon is one of largest ever purchases of carbon-removal credits

By Amrith Ramkumar [Follow](#)
Sept. 7, 2023 5:30 am ET



Equipment holding trays of limestone is part of a carbon-removal process developed by Heirloom Carbon. PHOTO: NATHAN FRANDINO/REUTERS

Most of the world's [efforts to remove carbon](#) from the atmosphere use [giant, vacuum-like devices](#) that suck in air and isolate the carbon. [Microsoft MSFT 1.86%](#) is funding a new approach that uses crushed-up limestone to achieve the same result.

The tech company said Thursday it agreed to buy credits from startup Heirloom Carbon for the removal of up to 315,000 metric tons of carbon dioxide over 10 years. That would amount to a purchase commitment of at least \$200 million based on market prices and would offset the equivalent of the annual emissions of around 70,000 gasoline-powered cars.

The deal will help Microsoft neutralize its carbon emissions and is one of the largest ever purchases of [carbon-removal credits](#).

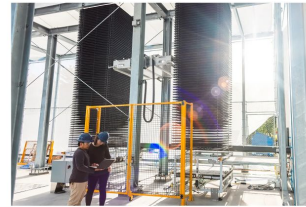
It also shows how carbon removal is quickly [becoming a major industry](#) even as the technologies are still developing. Business leaders such as Microsoft and JPMorgan Chase and governments are funding a range of approaches, including

The Verge

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Microsoft is the first customer for the Biden administration's carbon removal hubs



Microsoft struck a deal with the startup Heirloom, which is building one of the first hubs for CO₂-sucking industrial plants in the US.

By Justice Geline, a science reporter covering the environment, climate, and energy with a decade of experience. She is also the host of the Fall or High Water podcast.
Sep 7, 2023, 2:03 PM PDT | [15 Comments](#) / [15 Sites](#)

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Microsoft is helping to fund one of the US's first hubs for pulling planet-heating carbon dioxide out of the air. It struck a deal with California-based startup Heirloom, which says it will capture up to [315,000 metric tons](#) of CO₂ for Microsoft over the next decade or so.

The partnership fits into Microsoft's climate goal of becoming carbon negative by 2030, meaning it plans to remove more carbon dioxide from the atmosphere than it emits as pollution. The company has made other deals with startups breaking ground on new industrial facilities that filter CO₂ out of the air, called direct air capture (DAC) plants. Now, it's also involved in the Biden administration's push to build big hubs for DAC plants across the US.

The partnership fits into Microsoft's climate goal of becoming carbon negative by 2030

Heirloom says it will capture CO₂ for Microsoft at two new commercial facilities in the US, including one it plans to build in Louisiana after being selected for up to \$600 million in funding from the Department of Energy (DOE). The Louisiana project, called Cypress, was one of two locations the DOE picked to fund the first hubs for DAC plants in the US.

The emerging technology is still prohibitively expensive, and clustering the plants in hubs is supposed to cut down costs since they'll be able to share infrastructure like pipelines to move captured greenhouse gases and underground wells to store them. The Bipartisan Infrastructure Law passed in 2021 includes [\\$3.5 billion](#) to develop at least four DAC hubs across the US.

Related

- Controversial carbon removal technology just got \$1.2 billion from the Biden administration
- In a first, climate tech companies say they trapped atmospheric CO₂ in concrete
- Microsoft's dirty supply chain is holding back its climate ambitions

In Louisiana, Heirloom is partnering with another DAC company called [Climeworks](#), which has already captured CO₂ for Microsoft at its facility in Iceland. Microsoft also inked a similar deal in March with [CarbonCapture](#), another California-based startup developing technology to take CO₂ out of the atmosphere.

BUSINESS NEWS

JUST GASSING

Microsoft is paying \$20 million to carbon-capture 0.25% of its annual CO₂ emissions

Microsoft agreed to purchase up to 315,000 metric tons of CO₂ removal over a decade with Heirloom, a carbon capture startup

By Ananya Bhattacharya | Published September 8, 2023



Baby steps toward a lofty climate goal. Photo: Rami Amichay (Reuters)

Microsoft announced a deal yesterday (Sep. 7) to purchase up to 315,000 metric tons of carbon dioxide removal over the next ten years. The deal is a bet not only on carbon capture, a polarizing technology, but also on Heirloom, a California startup that captures CO₂ directly from the air.

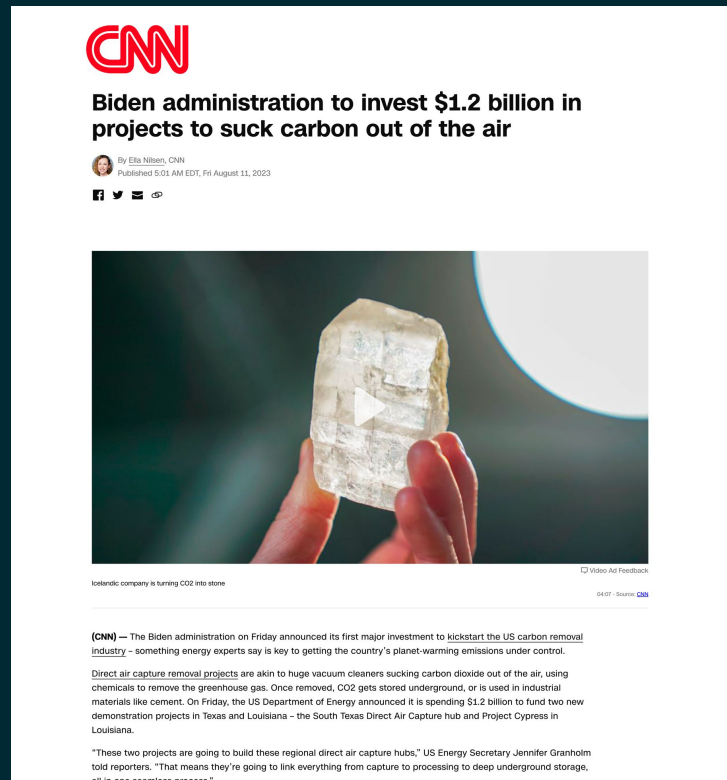
Heirloom "harnesses the natural properties of limestone" to "capture CO₂ pollution from the atmosphere and permanently store it in a range of ways, [including in concrete](#)," a press release stated. [Heirloom claims that its technology](#) accelerates limestone's natural ability to absorb CO₂ from the air "from years to days."

For Microsoft, 315,000 tons represents just a drop in the ocean when it comes to fulfilling its ambition of [becoming carbon negative by 2030](#)—at which point it hopes to remove more CO₂ from the air than it produces. (At present, Microsoft emits the equivalent of 13 million tons of CO₂ every year.) For Heirloom and the carbon capture industry at large, though, Microsoft's investment could be a game-changer.

In addition to the intangible but invaluable vote of confidence, Microsoft's multi-year investment equips Heirloom—which has the only Direct Air Capture (DAC) facility in North America—with funding and stability to "finance...our rapid scale-up, fueling exponential growth like what we've seen in the renewable energy industry," said Shashank Samala, the CEO of Heirloom.

Heirloom's DAC Hub, Project Cypress, is one of two hubs granted up to \$600 million in matching funding from the U.S. DOE


Funding of this size is a world-first and will enable us to build the world's largest DAC facility



CNN

Biden administration to invest \$1.2 billion in projects to suck carbon out of the air

By [Ela Nisen](#), CNN
Published 5:01 AM EDT, Fri August 11, 2023



Isolonic company is turning CO2 into stone

CNN — The Biden administration on Friday announced its first major investment to kickstart the US carbon removal industry — something energy experts say is key to getting the country's planet-warming emissions under control.

Direct air capture removal projects are akin to huge vacuum cleaners sucking carbon dioxide out of the air, using chemicals to remove the greenhouse gas. Once removed, CO2 gets stored underground, or is used in industrial materials like cement. On Friday, the US Department of Energy announced it is spending \$1.2 billion to fund two new demonstration projects in Texas and Louisiana — the South Texas Direct Air Capture hub and Project Cypress in Louisiana.

"These two projects are going to build these regional direct air capture hubs," US Energy Secretary Jennifer Granholm told reporters. "That means they're going to link everything from capture to processing to deep underground storage."



Bloomberg

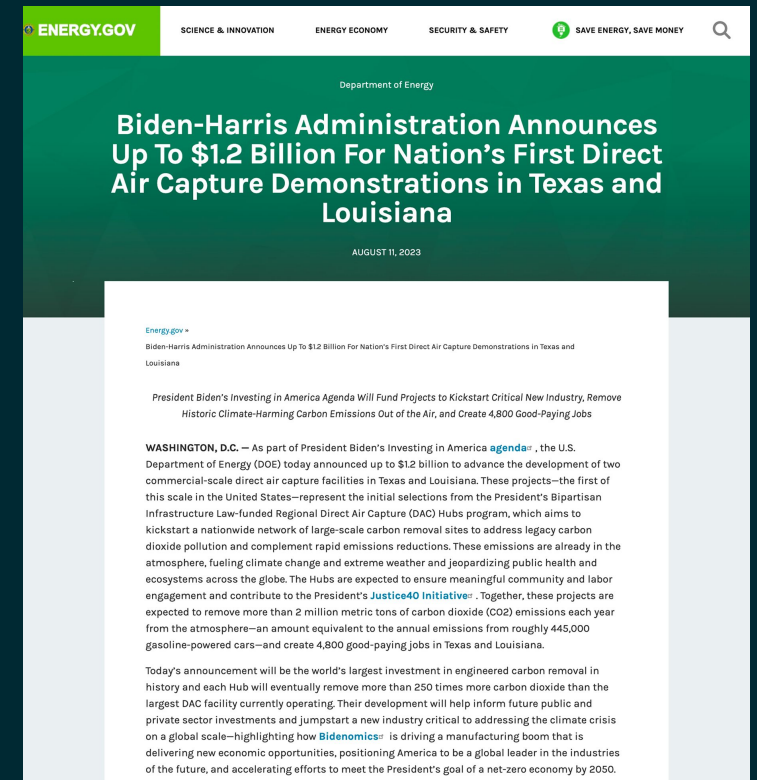
How Biden's Regional Carbon Cleanup Hubs Could Spur Innovation

The direct air capture industry will likely be crucial for addressing climate change, and new hubs in Louisiana and Texas could help unlock its potential.



A small scale model of the DAC facility at the Occidental Petroleum and 1PointFive Direct Air Capture (DAC) plant in Ector County, Texas. *Photographer: Jordan Vanderhaar/Bloomberg*

By [Brian Kahn](#)
August 13, 2023 at 4:00 AM PDT



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Department of Energy

Biden-Harris Administration Announces Up To \$1.2 Billion For Nation's First Direct Air Capture Demonstrations in Texas and Louisiana

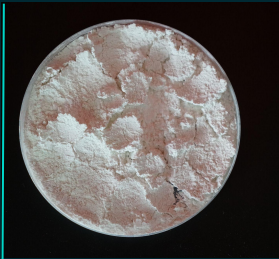
AUGUST 11, 2023

President Biden's Investing in America Agenda Will Fund Projects to Kickstart Critical New Industry, Remove Historic Climate-Harming Carbon Emissions Out of the Air, and Create 4,800 Good-Paying Jobs

WASHINGTON, D.C. — As part of President Biden's Investing in America [agenda](#), the U.S. Department of Energy (DOE) today announced up to \$1.2 billion to advance the development of two commercial-scale direct air capture facilities in Texas and Louisiana. These projects—the first of this scale in the United States—represent the initial selections from the President's Bipartisan Infrastructure Law-funded Regional Direct Air Capture (DAC) Hubs program, which aims to kickstart a nationwide network of large-scale carbon removal sites to address legacy carbon dioxide pollution and complement rapid emissions reductions. These emissions are already in the atmosphere, fueling climate change and extreme weather and jeopardizing public health and ecosystems across the globe. The Hubs are expected to ensure meaningful community and labor engagement and contribute to the President's [Justice40 Initiative](#). Together, these projects are expected to remove more than 2 million metric tons of carbon dioxide (CO2) emissions each year from the atmosphere—an amount equivalent to the annual emissions from roughly 445,000 gasoline-powered cars—and create 4,800 good-paying jobs in Texas and Louisiana.

Today's announcement will be the world's largest investment in engineered carbon removal in history and each Hub will eventually remove more than 250 times more carbon dioxide than the largest DAC facility currently operating. Their development will help inform future public and private sector investments and jumpstart a new industry critical to addressing the climate crisis on a global scale—highlighting how [Bidenomics](#) is driving a manufacturing boom that is delivering new economic opportunities, positioning America to be a global leader in the industries of the future, and accelerating efforts to meet the President's goal of a net-zero economy by 2050.

From 1 kilogram to one kiloton of CO₂ in 27 months



July '21 | 0.90 kg



Nov '21 | 600 kg



Dec '22 | 100 tons



Sept '21 | 15 kg



Mar '22 | 6 tons



Nov '23 | 1000 tons

Our Traction

Carbon removal contracts with the largest voluntary buyers in the world



Market-enablement is key to achieving net-zero emissions



California isn't on track to meet its climate change mandates — and a new analysis says it's not even close



The Price Of Durable Carbon Removal Is The Price Of Carbon

2 months ago Benjamin Schulz 16 Comments

Join us in the fight
against climate change

