

# The Wire *China*

NEWS AND ANALYSIS

## Energy Storage Reaches New Heights in China

A well-connected U.S. firm is using China as a proving ground for its technology that aims to store renewable energy.

BY KATRINA NORTHROP — DECEMBER 31, 2023

COMPANIES

ENERGY

TECHNOLOGY



Energy Vault's 'Gravity Energy Storage System (GESS)' under construction in Rudong, China, as of September 2023. *Credit: [Energy Vault](https://www.energyvault.com/project-cn-rudong/)*  
(<https://www.energyvault.com/project-cn-rudong/>)

In early November, Energy Vault, a California-based energy storage firm, announced an expansion in China with five new projects deploying the company's improbable technology: lifting 50,000 pound blocks high in the air to store energy.

That system, a type of what's called 'gravity storage,' is one of many nascent technologies seeking to remedy renewable power's big drawback: its intermittency. As more wind and solar power is used to power the grid, there is an increasing need globally for green methods to store energy during cloudy, windless days.



**Robert Piconi and other Energy Vault team members ring the New York Stock Exchange opening bell in celebration of its NYSE listing, February 14, 2022. Credit: @NYSE via X**  
*(<https://twitter.com/NYSE/status/1493299388927594497/photo/2>)*  
*formerly known as Twitter*

China has become a testing ground for Energy Vault (<https://www.energyvault.com/>), which was founded in 2017 and listed on the New York Stock Exchange last year. The company, now valued at \$345 million, brokered an initial licensing agreement (<https://www.businesswire.com/news/home/20220201005530/en/Energy-Vault-Atlas-Renewable-and-China-Tianying-Announce-100-Million-Transaction-With-Further-Upsized-Pipe-Licensing-and-Royalty-Agreement-and-Initial-100MWh-Project-to-Drive-Decarbonization-in->

China) in 2022 with China Tianying —, a Shenzhen-listed Chinese waste management firm, to deploy Energy Vault's gravity storage system in Jiangsu province.

The two companies have since agreed (<https://www.businesswire.com/news/home/20231106358821/en/Energy-Vault-Announces-Five-Additional-EV%E2%84%A2-Gravity-Energy-Storage-System-Deployments-in-China>) to develop six further projects across six Chinese provinces. In total, these projects will store 3.26 gigawatt-hours — which would be enough energy to power over three hundred American homes for an entire year.

Energy Vault's rapid growth in China is a rare example of a cutting edge U.S. firm betting on the Chinese market against the backdrop of escalating U.S.-China technological competition. "If you think about our mission around decarbonisation, and in addressing that problem globally, it's hard to think about that... unless you're really addressing it in those largest markets [like] China," Robert Piconi

(<https://investors.energyvault.com/governance/board-of-directors/default.aspx>), Energy Vault's chief executive officer, tells *The Wire*.

**Despite what's happening at a geopolitical level, we've focused on doing what's right for the environment and two companies commercially.**

— Robert Piconi

(<https://investors.energyvault.com/governance/board-of-directors/default.aspx>), Energy Vault's chief executive officer, tells *The Wire*

"Despite what's happening at a geopolitical level, we've focused on doing what's right for the environment and two companies commercially. There's no government influence involved in either case" he adds.

A closer look at Energy Vault's partners, however, suggests the company has benefited from helpful political connections in both the U.S. and China — albeit the kind that caused few qualms when the two countries were on better terms.

Gravity storage isn't a new concept. Pumped hydropower — where water is pushed to a higher reservoir, then released to a lower reservoir when energy is needed, spinning a turbine in the process — has been used for decades. But it is difficult to construct in cities or near where electricity is used.

### Energy Vault: Gravity Energy Storage



**A video from Energy Vault providing an overview of their gravity storage technology. Credit: *Energy Vault* ([https://www.thewirechina.com/?p=39823&preview=1&\\_ppp=055431f40a](https://www.thewirechina.com/?p=39823&preview=1&_ppp=055431f40a))**

By contrast, Energy Vault's system is flexible in terms of location. Externally, it looks like a boxy, 40-story highrise; inside, a set of elevators move blocks, which each weigh more than ten pickup trucks and are constructed out of soil and waste material. During periods of excess energy production, renewables power the lifting of the blocks, which stay elevated until energy is required; at that point the elevator system lowers the blocks, releasing enough energy to turn large motors.

Energy Vault had originally planned to start deploying its technology only in the U.S. and Europe. But after one of its investors introduced the company to Neil Bush (<https://bushchinafoundation.org/project/neil->



bush/), former President George W. Bush's brother, it began discussing an entry strategy for China.

Bush set up Atlas Renewable —, a Texas-based subsidiary of China Tianying, in January 2022 as a vehicle for the Chinese company to broker deals with international firms. The next month, Energy Vault announced a \$50 million licensing agreement with Atlas, which would allow China Tianying to use its technology in China; Atlas also invested an additional \$50 million in Energy Vault.



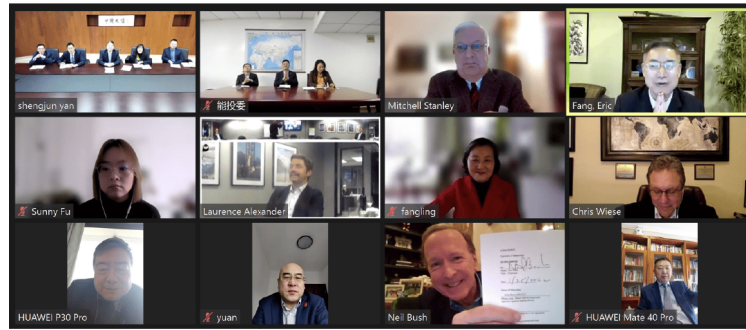
“The Bush family, historically, through both George H. W. and George W., had attempted to establish good relations with China,” says Piconi. “So they have history there. Neil Bush has continued a little bit of that legacy.”

Neil Bush is the founder of the George H. W. Bush Foundation for U.S.-China Relations (<https://bushchinafoundation.org/>) and the co-chairman of CIIC Group, a real estate firm in Beijing. He was also non-executive

chairman of SingHaiyi Group (<https://www.singhaiyi.com/>), a Singapore-based property firm owned by Gordon Tang and Huaidan Chen, a Chinese billionaire couple who, through a holding company, donated (<https://theintercept.com/2016/08/03/chinese-couple-million-dollar-donation-jeb-bush-super-pac/>) over a million dollars to Jeb Bush's presidential campaign in 2015. In 2012, Bush went viral (<https://www.npr.org/sections/thetwo-way/2012/08/29/160258678/with-photo-and-a-joke-neil-bush-becomes-internet-sensation-in-china>) on Chinese social media app Weibo when he posted a picture of himself in Communist official garb with the caption, "I'm thinking of joining the CCP. What do you think of my accessories?"

China Tianying, the parent of Bush's Atlas and Energy Vault's partner, also has political links. Its chairman, Yan Shengjun, is a member of Jiangsu Province's Chinese People's Political Consultative Conference (CPPCC), a political advisory committee, according to company filings (<https://www.cnty.cn/uploads/files/202304/249bb23f02358c8267f5e98184f08502.pdf>) Yan owns 21 percent of the company, according to data from WireScreen (<http://www.wirescreen.ai>).

In 2018, he was selected (<https://www.cnty.cn/uploads/files/202304/249bb23f02358c8267f5e98184f08502.pdf>) for the Ten Thousand Talents program, a Chinese government recruitment program which has attracted scrutiny from the U.S. Department of Justice due to concerns about intellectual property theft and espionage. China Tianying was previously called China Kejian, and was run by Wang Dong, one of the two men at the center of the Chinese program (<https://www.thewirechina.com/2023/02/13/the-balloon-scientist-and-his-financier-china-balloon-program/>) which sent a spy balloon over the U.S. last year.



**The online signing ceremony for the agreement between Energy Vault and Atlas Renewable, January 30, 2022.**

***Credit: China Tianying***

***([https://www.cnty.cn/en/category\\_440/1867.html](https://www.cnty.cn/en/category_440/1867.html))***

Energy Vault declined to comment on Yan's state ties, and Piconi says he's confident that its licensing deal with Atlas Renewable protects his firm's intellectual property, and that Atlas Renewable's investment in Energy Vault means that the firms' incentives are aligned.

Mitchell Stanley (<https://www.linkedin.com/in/mitchell-stanley-33a87b8/>), Atlas Renewable's president, adds that its technology is not so complex. "Basically you have the raising and lowering of very heavy blocks. It is perhaps not putting a man on the moon," he says.

In response to questions about Yan's ties to state organizations, Stanley says, "There has to be a line...The fact is that if you are running a big company in China you are going to be a part of certain organizations. There are so many things we have to be concerned about with China. I don't think this [the Energy Vault partnership] is really one of them."

China Tianying did not respond to requests for comment.



Energy Vault's technology has been met with skepticism: Its stock price is down 80 percent since its flotation and the company has started to develop [battery storage](https://www.energyvault.com/products/b-vault) (<https://www.energyvault.com/products/b-vault>) solutions to its products. [Oliver Schmidt](https://www.imperial.ac.uk/people/o.schmidt15) (<https://www.imperial.ac.uk/people/o.schmidt15>), a researcher at Imperial College London and the founder of the Storage Lab, a research hub for energy storage, worries that the company's structures are too complex to be cost effective.

"If someone finds a clever way to re-engineer this idea of pump storage so that you are geography independent, but your costs don't go through the roof, then you are on a winning streak," he says. "[Energy Vault] is in the right game," but he doesn't think they are en route to victory.

For Energy Vault, proving skeptics like Schmidt wrong now depends on its projects in China.

In an email to *The Wire*, the company said that “ensuring our technology is cost-competitive with other technologies is fundamental to the design, engineering and thousands of hours of R&D and testing we have conducted.” The company also said that the announcement of five new projects in China “should give people some indication of economic attractiveness”.



## The Chinese Recycling Gem

BY AARON MC NICHOLAS

A look at one of the Chinese firms spearheading the growing industry around recycling batteries.

[\(https://www.thewirechina.com/2023/12/03/the-chinese-recycling-gem-green-eco-manufacture-batteries-recycle/\)](https://www.thewirechina.com/2023/12/03/the-chinese-recycling-gem-green-eco-manufacture-batteries-recycle/).

Despite China's Covid-related shutdowns, which have twice halted construction on Energy Vault's projects, China remains an attractive place for the company because it now produces more renewable energy than any other country.

“China has a massive market, a lot of research and a lot of manufacturing capacity. It tends to create a very attractive place to test out new technology,” says [Ilaria Mazzocco](https://www.csis.org/people/ilaria-mazzocco) (<https://www.csis.org/people/ilaria-mazzocco>), a senior fellow at the Center for Strategic and International Studies (CSIS). “In the storage and battery segment in particular, they are very advanced in the R&D, so foreign companies that can tap into that can take advantage of that advanced network.”



The Chinese government has set out ambitious policy goals for energy storage, which specifically focus on emerging storage technologies, like gravity-based, compression-based, and battery systems. Over the last two years, the National Development and Reform Commission (NDRC) and the National Energy Administration published guidance aiming for the installation of 30 gigawatts, and a 30 percent cost reduction, of these new storage technologies by 2025.

“This set a clear goal for the market,” says Zhang Xiaohan, a Beijing-based project consultant at APCO Worldwide, a consultancy firm, who has been [tracking the storage market \(https://apcoworldwide.com/blog/chinas-booming-energy-storage-a-policy-driven-and-highly-concentrated-market/\)](https://apcoworldwide.com/blog/chinas-booming-energy-storage-a-policy-driven-and-highly-concentrated-market/). “After the central government policy, the local governments have been rushing to fulfill those goals,” adding that these targets have fueled an 80 percent increase in storage capacity in China since 2019.

**This is a completely new, untested, first-of-a-kind technology. In any kind of nascent technology, there will be winners, and there will be failures.**

— [Selene Law \(https://www.cleantech.com/author/selene-law/\)](https://www.cleantech.com/author/selene-law/),  
*a senior associate at Cleantech Group, an energy consultancy*

[Lithium-ion \(https://www.thewirechina.com/2022/07/17/mining-lithium-and-money/\)](https://www.thewirechina.com/2022/07/17/mining-lithium-and-money/) batteries are by far the most popular type of new storage solution in China. But because batteries are in high demand for [China’s vast electric vehicle market \(https://www.thewirechina.com/2023/06/18/byds-big-moment-byd-electric-vehicle/\)](https://www.thewirechina.com/2023/06/18/byds-big-moment-byd-electric-vehicle/), there is a search for alternatives in other sectors. Energy Vault’s projects in China are utility-scale — meaning they store energy for the state-grid.

“If you can show that one project in China is viable, then you’re likely to get more orders,” says [Selene Law \(https://www.cleantech.com/author/selene-law/\)](https://www.cleantech.com/author/selene-law/), a senior associate at Cleantech Group, an energy consultancy. “This is

a completely new, untested, first-of-a-kind technology. In any kind of nascent technology, there will be winners, and there will be failures.”

---



Katrina Northrop is a journalist based in Washington D.C. Her work has been published in *The New York Times*, *The Atlantic*, *The Providence Journal*, and *SupChina*. In 2023, Katrina won the SOPA Award for Young Journalists for a “standout and impactful body of investigative work on China’s economic influence.” [@NorthropKatrina](https://twitter.com/NorthropKatrina) (<https://twitter.com/NorthropKatrina>).