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Energy Vault (NRGV): Gravitational Pull to Zero

We are short Energy Vault Holdings, Inc. (“NRGV”, “Energy Vault”, “the Company”), a SPAC brought to market by a collection of serial failures and criminal associates who now claim to have discovered the holy grail of energy storage (i.e., “the “Vault”). We think the Vault is a ridiculous proposition, unworthy of a high school science fair, let alone the \$1.6 billion valuation by which NRGV came to market. In our view: NRGV’s scientific and economic claims about the Vault hold no grounding in reality and the Company’s order book and financial projections are not to be relied upon. NRGV’s 180-day lock-up expires in the next 3 weeks, and we think shares are going much lower. We have also submitted our research to the SEC prior to the release of this report.

Energy Vault insiders have run numerous prior ventures – including Energy Innovations, eSolar, and pquandrum Engineering – into the ground, and we see NRGV as the next in line. Moreover, Energy Vault’s Co-Founder and CTO Andrea Pendretti formerly ran Airlight, which declared bankruptcy and whose executives were indicted in February 2021 and face a criminal investigation in Switzerland for allegedly defrauding investors. Energy Vault’s CMO, Laurence Alexander, previously touted “DasCoin”, a crypto project which was criminally prosecuted and had its assets seized in Poland after being called a Ponzi scheme.

These same individuals now claim that Energy Vault has discovered the holy grail of energy storage in the form of its “Vaults”, which the Company calls “5 times cheaper than batteries, and 4 times cheaper than pumped hydro.” We think the Vault – which the Company has never managed to build on grid scale – is a commercially doomed concept. NRGV has already scrapped its first-generation “EV1” vault amid customers balking at its nonsensical design, yet we feel the Company’s new “EVx” model – for which it has provided only computer renderings – merely replaces one set of fatal failure points with another. We also find many of NRGV’s claims about its Vaults to be laughable. For example, NRGV claims: Vaults will have 97% uptime (i.e., better than wind turbines which hold 95% uptime); Vaults will be built with concrete at 50% of the industry cost; Vaults will require “minimal maintenance expenditures” as they “do not degrade over time”; and Vaults can be built in 8 to 12 months, despite the Company never having built a grid-scale Vault before.

Yet even if we were to take NRGV’s claims at face value, the Company estimates that its Vaults will cost somewhere between “a couple hundred” to \$600 per kWh, while existing solutions (i.e., hydro and battery storage) are already scalable at a fraction of these costs. To analogize, NRGV claims to have invented flying cars, yet in reality has reinvented the horse and buggy.

NRGV has supported its \$1.6 billion go-public with claims of a multi-billion dollar pipeline of “signed customer contracts”, yet we think these deals are a sham. From January 2019 to May 2022, we estimate NRGV has already reduced its claimed pipeline of “signed contracts” from over \$7 billion to less than \$500 million, a 93% reduction.

Chief among Energy Vault’s would-be future customers lies DG Fuels, which NRGV claims will provide up to \$737 million in revenues through a Vault supporting DG’s Sustainable Aviation Fuel (“SAF”) project “commencing in 2022.” We think the SAF facility, and thus the Vaults, has little chance of happening in 2022 as claimed. DG Fuels’ Chairman and CEO Michael Darcy has a horrific track record of execution: we count at least 3 other prior occasions on which Darcy has touted multi-billion dollar deals, only to have them go up in smoke. Darcy has been widely panned by industry operators as someone who “lacks credibility” and as someone who “appears every so often ... with some other plan, but as far as I know he has never gotten far.” In the words of one executive who previously dealt with Darcy, “There’s sending a random letter, and then there’s actually showing up with some money.” As far as DG’s SAF facility is concerned, DG will need \$3.6 billion to build the plant, including a \$2.1 billion DOE loan. Yet, DG still does not appear to have obtained this loan. Moreover, we found zero “signs of life” from DG in

Louisiana: no pending construction, waste or emissions permits, and no mention of DG Fuels in any local Louisiana board meetings. DG's sole Louisiana address traces to a 1,500 square foot office currently listed for lease.

We also find the months leading up to Energy Vault's go-public highly problematic. In our view, the timeline suggests that Novus (SPAC sponsor) insiders executed a series of self-enriching transactions and that the go-public was characteristic of a private "marking-up" of an otherwise worthless business, then subsequent dumping of that business onto the public markets via SPAC. NRGV's filings claim that prior to the Novus IPO, its principals held no contact, whether formal or informal, regarding a potential transaction with Energy Vault, yet 3 days prior to Novus's IPO, NRGV had already sent its investor materials to Novus principals, who were already invested in Energy Vault via a special purpose vehicle (SPV). We find the situation akin to that of Digital World Acquisition Corp (DWAC), which has disclosed both SEC and DOJ subpoenas amid similar red flags. As such, we have also sent our research to the SEC.

Amid this backdrop, we note that Heliogen (HLGN), another clean energy SPAC brought to market by NRGV Co-Founder Bill Gross, announced that it would [restate revenues](#) due to issues in accounting for revenue contracts with customers. HLGN shares are down 79% since the SPAC close. Novus's first SPAC, Novus Capital Corp I, merged with AppHarvest (APPH), which has since fallen 58% after failing to meet its initial SPAC estimates.

In April 2022, Energy Vault separated from its CFO, Andrea Wuttke. We suspect that the separation may have been catalyzed by the SEC's [new proposed SPAC regulations](#) which reference "unreasonable, unfounded, or potentially misleading" projections for companies with no or limited sales.

NRGV management has claimed that the SPAC transaction has left the Company "fully-funded", yet the Company's own estimates call for \$370 million in cash burn in 2022 and 2023 alone – far in excess of the \$191 million in net SPAC proceeds. NRGV's 180-day lock-up expires in less than 3 weeks, and we think shares are headed lower.

NRGV Insiders Previous Ventures: Bankruptcies, Criminal Allegations, and an ICO Scam

CTO Pedretti – Co-Founded Airlight Energy, Which Went Bankrupt and Faces Fraud Accusations

Prior to co-founding Energy Vault, NRGV Chief Technology Officer (CTO) Andrea Pedretti founded Airlight Energy, and was its CTO from 2007 to 2016. Like NRGV, Airlight was another supposed clean energy company which raised over 140 million francs from European investors, yet went bankrupt and now faces criminal allegations.

Airlight [intended to generate electricity](#) via Concentrated Solar Power ("CSP").¹ The company raised over 140 million Swiss francs (roughly \$110 million USD at the time) from Swiss and Italian investors, which was used to construct a single commercial project: a 150 kW solar field which intended to produce power for a cement factory. Airlight [claimed to have](#) "proprietary Fresnel technology" and announced partnerships with IBM and Siemens, yet the company burned through its cash and [declared bankruptcy](#) in 2016. We note that [Pedretti's LinkedIn](#) and Energy Vault's investor deck claim that he left Airlight in December 2015, when in fact Pedretti was CTO in 2016.²

¹ CSP technology has been around for decades and is the focus of another failed Bill Gross SPAC, Heliogen, Inc. (HLGN). Heliogen closed in early 2022 and shares are down 70% since then.

² NRGV discloses that "Airlight Energy Manufacturing SA declared bankruptcy in August 2016, while Mr. Pedretti was its Chief Technology Officer, which resulted in an investigation by the Public Ministry of the Canton of Ticino of all officers and administrators with signatory power. The related proceeding has not begun yet as of this date."

Airlight management [faces a criminal investigation](#) in Pedretti’s home Switzerland for alleged “aggravated unfaithful administration, reduction of assets to the detriment of creditors, favors granted to a creditor and mismanagement.” In February 2021, a group of 5 executives [were indicted](#). Reporting [suggests that Airlight](#) is suspected of running a kind of shell game, and had not kept accounting records for years leading up to its bankruptcy, with the last audited financials only for 2014.

Pedretti Went to pquadrum, Another Clean Energy Venture, and pquadrum Went Bankrupt

In September 2016, Pedretti joined pquadrum engineering SA, per his LinkedIn and Company-provided biographies. pquadrum's LinkedIn lists just a single employee, Pedretti himself, and claims to “develop products and solution to our customers in many engineering domains: especially architecture and solar energy.” pquadrum’s website is now defunct, and [Swiss records indicate](#) that the company declared bankruptcy in 2021. Pedretti’s biography in the Company’s SPAC deck conveniently does not feature the Airlight nor pquadrum Engineering logos:

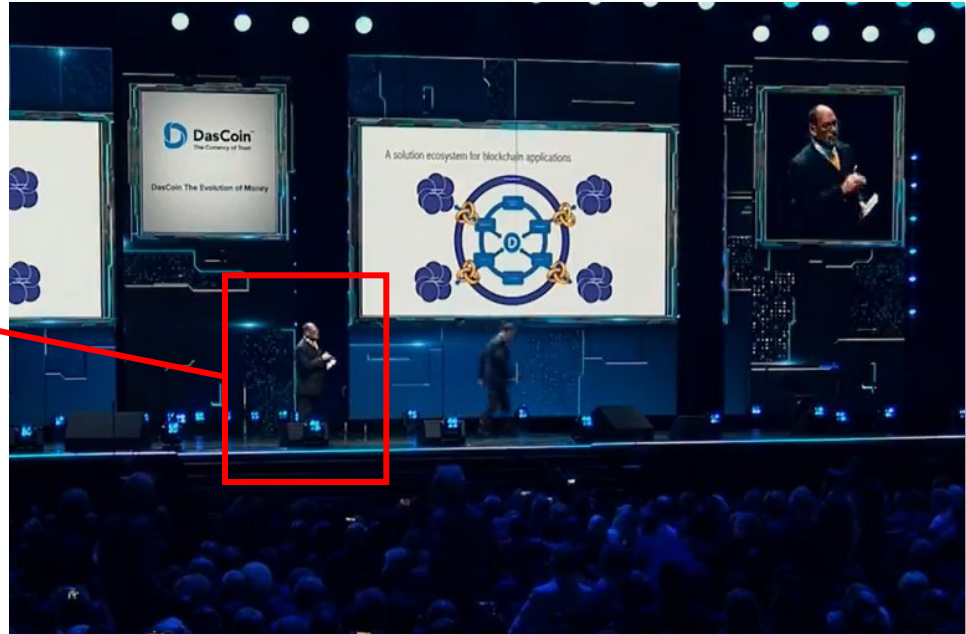
The slide displays the following information for the Management Team:

Management Team							Board of Directors	
Robert Piconi Co-Founder & CEO	Andrea Pedretti Co-Founder & CTO	Andrea Wurtke Chief Financial Officer	Merrick Kerr Chief Commercial Officer	Marco Terruzin Chief Product Officer	Laurence Alexander Chief Marketing Officer	Gonca Icoren Chief People Officer	Bill Gross Co-Founder & Director	Robert Piconi Co-Founder & Director
Prior Executive leadership roles in Fortune 100 public companies across various industries	Founder & CTO roles across multiple solar fuel / renewable energy tech companies	Executive finance roles in the hydroelectric power, solar and investment banking sectors	Executive financial & commercial roles within Energy and Renewable sectors	Product innovator and industry expert in climate change mitigation strategies	Executive Leadership roles leading brand strategy, marketing and sales enablement	Executive Leadership roles in human resource management and talent acquisition	ideallab	ENERGY VAULT
BBA University of Notre Dame; MBA Northwestern University's Kellogg School of Management	BS/MSc Civil Engineering (ETH) Zurich, Switzerland	BBA Rice University; MA Universität München; Ph.D. Harvard University	BSc University of Edinburgh, Chartered Accountants of Scotland	MSc Mech. Engineering PhD, Energy Economics MDA U.V.A, Darden School	Higher National Diploma Business Studies, London UK	Cranfield University; MSc International Human Resource Management; Orta Dogu Teknik Universitesi		

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CMO Laurence Alexander Touted DasCoin, a Crypto Scheme Which had its Assets Seized

Pedretti is not the only NRGV insider with criminal connections: NRGV’s Chief Marketing Officer (CMO) Laurence Alexander promoted DasCoin, an ICO era scam which was called a Ponzi scheme and had its assets seized by Polish authorities. See Alexander speaking at the April 2018 [launch of DasCoin](#), touting it as “the evolution of money” and “a solution ecosystem for blockchain applications”.



Just weeks later in May 2018, British Columbia officials issued a cease-and-desist notice against DasCoin. Per a later Polish official statement ([in Polish](#)), “CL Singapore [the operator of DasCoin] established, operated and propagated a network of independent representatives, called NetLeaders, rewarding them with a so-called NetLeaders Remuneration Plan.” These participants were given benefits for introducing new customers in an MLM-like fashion. In October 2018, Polish police [reportedly seized](#) \$11.6 million from DasCoin. As for the DasCoin coin itself, we refer to the following chart as annotated by [BehindMLM](#):



NRGV Insiders Have Tried and Failed in Gravity-Based Storage for Over a Decade

We think NRGV’s Vault is a nonsensical concept which is doomed to fail. Energy Vault is not this group’s first attempt at gravity-based energy storage. In 2009, Energy Cache was founded by CEO Aaron Fyke and backed by both Bill Gross’s IdeaLab and Gates Ventures, who each have also backed NRGV. Energy Cache planned to generate energy by lifting bags of rocks up and down ski lifts, and by 2012, the company had built a [50 kW prototype](#):



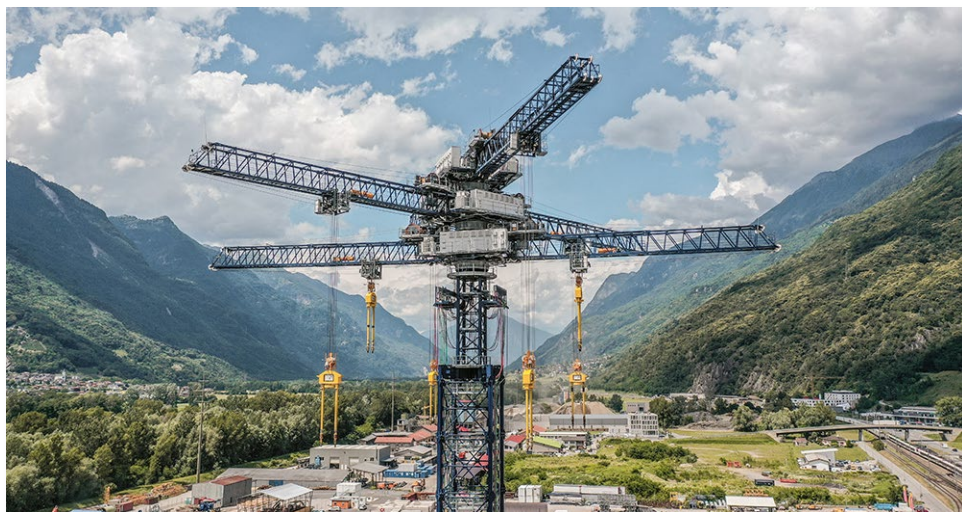
Fyke [suggested that](#) the company would build 500 kW to 1MW fully-scaled commercial lines, i.e., 10x to 20x the size of the prototype, yet we find zero record of any such fully-scaled lines having been built. The business was reportedly shuttered in 2013, which is corroborated by Fyke’s [LinkedIn biography](#). Energy Vault was borne out of this failure; Fyke was an advisor to the Company from 2017 through February 2022, and [claims that](#) Energy Vault’s configuration “greatly improved” on Energy Cache’s configuration:

Aaron Fyke (He/Him)
Founder and Managing Partner at Thin Line Capital

Advisor
Energy Vault SA
Oct 2017 - Feb 2022 · 4 yrs 5 mos
Pasadena, CA

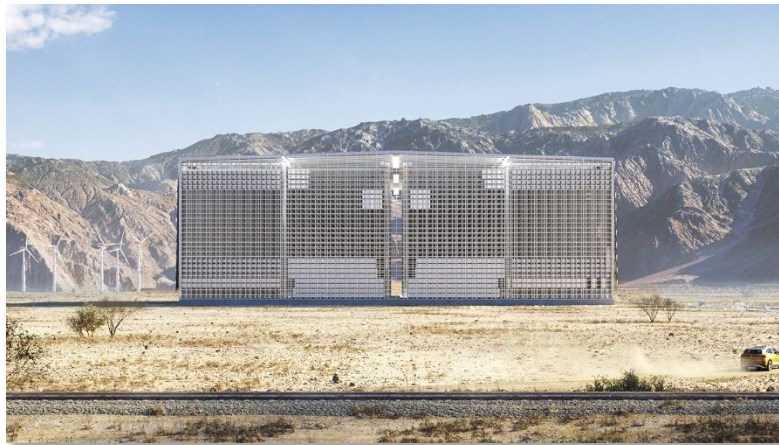
In 2017 I was part of the founding team to help create another gravity storage company, with a similar value proposition as I had pursued with Energy Cache. However, a number of key developments are greatly improved in the Energy Vault configuration!

This supposedly “greatly improved” solution was the “Vault”, called the “EV1”, which took the form of a 400-foot tall, three-arm crane tower that raised and lowered concrete blocks to discharge stored energy, as pictured below:



The above EV1 is the Company’s Switzerland-based [demonstration unit](#), which NRGV claims holds “proven science”, “best-in-class economics”, and “unmatched performance”, among other things. However, amid widespread industry panning and the Company’s failure to ever build an EV1 at scale, NRGV scrapped the design. NRGV Co-Founder, Chairman, and CEO Robert Piconi [has now stated](#) that “Everything about the tower [EV1] is irrelevant because we aren't building it.”

Energy Vault’s new pitch is the EVx, which the Company again proposes has solved the numerous issues plaguing prior designs. However, as of the present, this EVx appears to be nothing more than a computer rendering:



We think that much like the EV1, the EVx remains a doomed concept. For our full opinions on the various reasons why we believe so, see page 11 and onward.

NRGV’s “Signed Contracts” Appear Bogus

Energy Vault’s \$1.6 billion SPAC valuation was supported by its claims of a massive order book, yet we find that NRGV Co-Founder Bill Gross has repeatedly misrepresented the scope of NRGV’s supposedly “signed contracts.” See NRGV’s massively reduced claims of its order book over time as summarized in our graphic below:

	January 2019	September 2021	May 2022	Total Change
Units	1,000	343 (implied)	71 (implied)	-93%
Capacity	35 GWh	12 GWh	2.5 GWh	
Order Value	\$7 billion	\$2.8 billion	\$497 million	

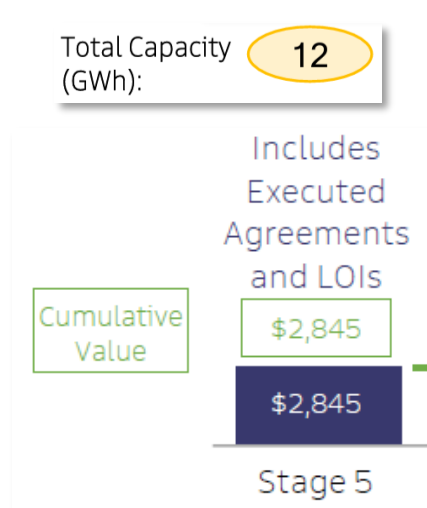
In January 2019, Bill Gross [spoke at a conference](#) in Munich, during which he claimed that the Company had already collected – as of January 2019 – \$7 billion of orders representing 35 GWh:

“We just announced this in the fall, and each of these units are 35 MWh and cost \$7 million dollars. We have orders for 1,000 units in a few months. We’re so excited to get this out there as fast as we can.”

However, NRGV’s September 2021 [presentation](#) showed just \$2.8 billion in “agreements and letters of intent” representing 12 GWh of capacity, both a massive departure from \$7 billion, while LOIs are not “signed contracts”.

January 2019: Bill Gross claims NRGV has already signed \$7 billion in contracts

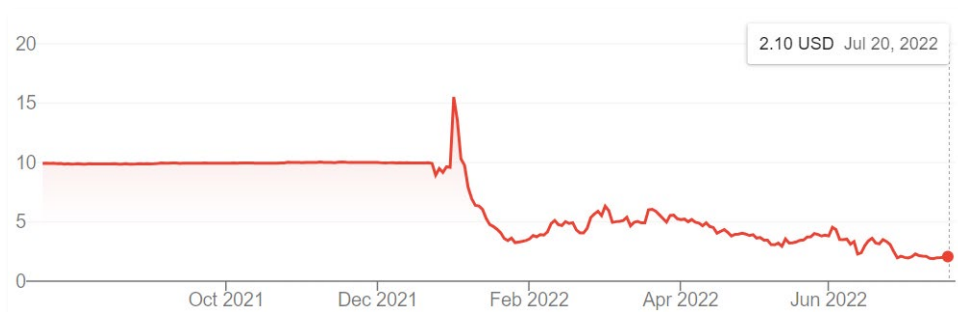
September 2021: just \$2.8 billion in “Agreements and LOIs”



On NRGV’s May 2022 conference call, the Company then once again cut these figures massively. CEO Piconi spoke out of both sides of his mouth, stating that the Company held “a growing number” of agreements, yet the Company then claimed its pipeline was just 2.5 GWh, rather than 12 GWh as prior:

“We had a growing number of signed LOI and executed agreements totaling approximately 2500 megawatt hours or 2.5 gigawatt hours across our gravity energy storage system portfolio alone. These are the signals that really, to me, give a lot of confidence and a lot of visibility as we look forward now into the business with our deployments this year and in the following years.”

Such massive reduction in claimed contracts make us question whether any of these contracts were real in the first place, or if NRGV insiders were simply blowing smoke the entire time. Amid this backdrop, we find it worthwhile to note that in May 2022, Heliogen (HLGN), another clean energy SPAC brought to market by Bill Gross and his associates, announced that it would be [restating revenues](#) due to issues in accounting for revenue contracts with customers. HLGN shares are down 79% since the SPAC close:



We Think NRGV is Highly Unlikely to See Material Revenues from DG Fuels

To be clear, we think NRGV's Vault concept is both a physical and commercial non-starter. Yet central to NRGV's claims of customer interest lies DG Fuels, which the Company claims will generate up to \$737 million in revenues "commencing in 2022." We think these claims are a pipe dream.

DG Fuels is run by Michael Darcy, Known for Touting Suspect Deals

In October 2021, Energy Vault [announced an energy storage agreement](#) with DG Fuels LLC, and then in May 2022 claimed to [expand the scope](#) of that project to "up to \$737 million in potential project revenue over time." DG Fuels is run by Michael Darcy and claims to be constructing a 500 MWh power project (up to 1,168 in total) in Louisiana. Energy Vault claims that it will provide Vaults to DG's projects, "the first of which is expected commence in mid-2022." However, we find DG's Michael Darcy has a long history of touting allegedly fake deals, and we think DG's Louisiana project has no chance of commencing in 2022. See a brief history of Darcy's failed ventures below:

Date	Project's Intended Scope	Funding Claims	Successful?
2002	Cruise Ship Manufacturing	\$1.6 billion guaranteed government loan	NO
2009	Wind Turbine Manufacturing	\$10 billion plus in tax credits	NO
2013	Alternative Fuels Production	\$4.6 billion in government funding	NO
2021	Sustainable Aviation Fuels (SAF)	\$2.2 billion guaranteed government loan	???

In 2002, Darcy attempted his hand at cruise ship manufacturing, yet this venture seemed more like a charade than a viable opportunity. A [Baltimore Sun profile](#) detailed Darcy's claims, yet Darcy "didn't have the \$1.64 billion he needs, or the congressional blessing he wants, or any history of closing deals this immensely complex." The profile also quoted a litany of industry executives who overwhelmingly characterized Darcy as a charlatan.

"Mr. Darcy was trying to buy Dolphin Cruise Lines, but at the end of the day he did not have any money ... He appears every so often, somewhere else in the cruise industry with some other plan, but as far as I know he has never gotten far." – Katsoufis, now president of Topaz International Cruises

Among a dozen cruise-ship executives contacted by The Sun, all but one said they recalled at least casual contact with Darcy concerning his desire to buy or invest in the industry. None could remember a deal that took place.

Darcy's critics - and he has many in the shipbuilding industry because of his long quest for congressional permission to bring foreign-built ships into American trade - say that his more conspicuous failures aren't just the result of failed negotiations, however. Sometimes there is little negotiation at all, merely Darcy's unfounded boast that a deal is afoot.

"Was he trying to broker a deal with us? That depends what you mean," said Philip C. Calian, the chief executive officer of American Classic Voyages, a U.S.-flagged cruise line that went bankrupt last year. "There's sending a random letter, and then there's actually showing up with some money."

A former official with Norwegian Cruise Lines said Darcy negotiated a deal in the early 1990s to become a "major investor" in the company, even traveling to the headquarters in Oslo to nail down the details. The arrangement fell apart because he couldn't produce the money.

A year ago, the Journal of Commerce reported that a memorandum was circulating purporting to be an agreement for D'Arcinoff Group to purchase CSX Lines, the domestic remains of the once-mighty American shipping line Sea-Land Service Inc. The memo was bogus.

CSX Lines' President Charles G. Raymond declined to discuss the memo, and when asked to talk about Darcy would offer only: "He has very little credibility."

In 2009, Darcy's D'Arcinoff Group [attempted to launch](#) wind turbine production in vacant manufacturing plants in the Northeast and Midwest. Darcy claimed that several publicly-traded companies signed letters of intent both to participate in the project and to buy fuel and energy generated by the project. However, Darcy declined to identify these partners at the time. Darcy [said he hoped to employ](#) 12,000 workers at two plants and other smaller sites in upstate New York, and claimed that the venture "has moved a great deal further forward" towards that end. However, nothing ever came of this venture, as [host locations](#) "fell through" with Darcy's plans.

In 2013, D'Arcinoff announced a \$4.6 billion alternative fuel project to build a 40,000 bpy synthetic fuels facility in Hudspeth County, Texas. Darcy initially claimed the facility would be operational "by the end of 2016", and the group signed an offtake [agreement](#) with GE Aviation. Yet D'Arcinoff once again failed. D'Arcinoff's original press release appears to have been taken down, but [third-party reports remain](#). Laughably, in March 2021, DG Fuels [uploaded a press release](#) to its website with the headline that "GE Aviation Pursues Alternative Fuel Sources for its Jet Engine Testing". While investors might mistakenly believe that this pertains to the Company's current SAF plans, it's in fact a [recycled press release from November 2013](#).

DG's Louisiana Plans Require \$3.6 Billion; We See No Signs of Life at DG

DG Fuels' Louisiana facility is anticipated to cost \$3.6 billion, \$2.15 billion of which is contingent upon a loan guarantee from the DOE. In September 2021, DG Fuels claimed it was "invited to submit a Part II application" for this loan guarantee under the Title XVII program. A month later, [DG Fuels claimed](#) its facility "is expected to be completed in mid-2022."

Yet DG Fuels has not provided any public update on the status of the DOE loan, nor were we were unable to find local pending construction, waste, or emissions permits – typical signposts we might expect of such an ambitious project. We also found no mention of "DG Fuels", "Sustainable Aviation", or other such keywords in St. James Parish, Louisiana local [board meeting minutes](#) or a broader search of the site. We also found no local press regarding any buzz around the site, as one might again expect of such a venture.

Instead, DG Fuels appears to list a [single Louisiana address](#) which directs to a small office building, rather than a 500 acre plus plot of land as the SAF facility requires. The offices are currently [listed for lease](#):



The Vault Remains a Physically and Commercially Doomed Concept

Energy Vault makes a variety of claims about the Vault that we think are simply not grounded in reality:

- Energy Vault initially suggested that its EV1 Vaults would be placed nearby energy generation sources, namely wind farms. Wind farms are ideally placed along areas which hold both strong, consistent winds such as coastal areas, open plains, and in mountain valleys. By contrast, the EV1 functions by pinpoint placement of massive blocks of concrete, which could be liable to sway in the very same winds required by wind farms. Energy Vault has now attempted to solve this problem by effectively wrapping the vault in a building, making it more akin to a massive elevator structure.
- Energy Vault claims it can build its Vaults in 8 to 12 months, despite having never constructed a single grid-scale Vault in its entire operating history. CEO Piconi claimed in the SPAC roadshow that “We can turn a 50 MWH system around in 8 months” For context, The Burj Khalifa (weighing ~500,000 tons) took 6 years to complete, the CN Tower (~ 130,000 tons) took over 2 years, and Chicago’s Hancock Center took over 3 years (whose framing is ~46,000 tons alone). NRGV’s proposed Vaults are, in our view, far more complex given their numerous moving parts and failure points, and would thus require far more time to complete. For example, sadly, [local Swiss press reported](#) in June 2022 that a 22-year-old construction worker suffered injuries from a fall from a Vault under construction. We note as shown that the EVx unit appears to remain at a relatively primitive stage of construction, as pictured below:



Similarly, in February 2022, NRGV announced a deal with Atlas Renewable, a Chinese company owned by China Tianying Inc (CNTY), to deploy a 100 MWh Vault in Rudong, Jiangsu Province. NRGV then claimed in its [Q1 2022 earnings report](#) to have broken ground on this project. See [a photo of the site in April 2022](#):



Yet 4 months after groundbreaking, officials from the Energy Investment Committee of the Investment Association of China [visited the site](#) on July 8 and took a photo which appears to show little tangible construction progress:



- Energy Vault claims its Vaults will maintain 97% uptime. We find this highly implausible, as the best wind farms in the world, which contain vastly simpler technology and have been proven to operate for decades, operate with 95% uptime.
- The Company also claims the Vaults will last 35 years and require minimal maintenance expenditures over their useful lives, as the “storage medium and mechanics fundamentally do not degrade over time.” Unless Energy Vault has found ways to break the fundamental laws of the physics, we fail to see how the Company claims its Vaults “do not degrade over time.”
- Energy Vault claims that its “best-in-class economics” would be aided by manufacturing of concrete blocks at 50% of the cost of peers. In our view, this doesn’t pass the laugh test: Energy Vault has never manufactured concrete at scale, and has provided no evidence for these claims, that we can tell. Energy Vault has also floated the idea of utilizing recycled wind turbine blades, coal ash, mining tailings, or concrete debris in such blocks, so as to lower their costs. Our view is that if these solutions were truly viable, then they would already be being used in other applications. However, these alternatives suffer from deficiencies such as changes in weight (a lower weight would lower the energy generating capabilities of the vault), or structural integrity (a more brittle block would degrade at a faster rate).
- Energy Vault claimed the EV1 would boast round-trip efficiency of 90% plus, and that the EVx will boast 85% plus efficiency. We again find this implausible at scale: the actual measured efficiency of the demonstration unit – which is a fraction of the size of NRGV’s proposed Vaults – was a mere 75.3%. We think that if the Company can’t generate 85% plus in its demonstration unit, it will be even more difficult to generate these figures in its full-scale units. Other energy experts have also expressed skepticism. For example, per [former energy project developer Steve Brick](#): “Everybody always says they’re going to make 90 percent. I’d have to see the real performance data. I think 90 percent is a pipe dream.”

We encourage investors to not merely analyze our opinions, but those of energy experts:

- Michael Barnard – who has consulted for numerous projects related to decarbonization over the past decade – has published various articles critical of Energy Vault, [stating at first that](#) “Energy Vault was so

obviously flawed in so many ways in its first incarnation that I didn't even bother to critique it. I expected it to wither and die, unmourned. But I didn't count on the SPAC craze..." Barnard further criticized the Company's claims to be environmentally friendly, their economic projections, and the viability of the EVx. In sum, Barnard stated that: "Energy Vault's solution which 'fixes' the problems with their first approach leads to CO₂e per kWh numbers worse than natural gas generation, and makes a mockery of their claims of low cost storage."

- Thijs Ten Brinck – who has a Masters Degree in Sustainable Energy Technology – [has also criticized](#) Energy Vault's claims, calling out the Vaults for "thousands of single points of failure" and for dubious claims of carbon friendliness.
- Finally, various [Youtubers](#) and Redditors [have debunked](#) the Company's claims in as little as 4 minutes.

Even if the Vault is Capable of Fulfilling its Outlandish Claims, it Remains Economically Useless

Even if we take all of these Company's claims at face value, the Company in the end claims that its Vault will harbor costs of "a couple hundred" to \$600 per kWh. Yet at these rates, NRGV's solution isn't a solution at all, as this remains far more expensive than existing battery and hydro storage. For example:

- A [July 2019 report](#) from the Department of Energy (DOE) found that pumped hydropower storage cost \$165 per kWh and compressed air energy storage cost \$105 per kWh.
- A [December 2020 report](#) from the DOE found that pumped hydro storage has a projected cost estimate of \$262 per kWh for a 100 MW, 10-hour installed system. Battery storage was estimated at \$356 per kWh.
- Moreover, these costs are coming down: a [November 2021 study](#) from researchers at the National Renewable Energy Laboratory (NREL) estimated that battery storage costs would come down by 42% by 2030, and 58% by 2050, at their midpoint estimates, to \$198 per kWh and \$149 per kWh, respectively.

Energy Vault Claimed to Have a "Fully Funded Business Plan", but is Short on Cash

Energy Vault has claimed that its business would be fully-funded as a result of the SPAC transaction, "even...if we could get at least \$30 million to \$50 million..." but the Company's own financial projections indicate that NRGV is set to burn \$370 million in cash in 2022 and 2023. See per the Company's February 8, 2022 [Fireside Chat](#):

"We believed, even in a high redemption scenario, we knew we were going to have a fully funded business plan, if we could get you know at least \$30 million to \$50 million out of the you know the final SPAC transaction."

As a result of the SPAC, in February 2022, the Company raised gross proceeds of \$236 million or net proceeds of \$191 million after transaction costs. Yet the Company's estimates show that the business is set to burn a combined \$370 million in cash flow in 2022 and 2023:

The key elements of the projections provided by management of Energy Vault to Novus are summarized in the table below, and took into account the assumptions and definitions discussed in the two paragraphs immediately following the table:

	Forecast Year Ended December 31,				
	2021E	2022E	2023E	2024E	2025E
	(in millions)				
Revenue	\$ 0	\$ 148	\$ 535	\$1,519	\$2,764
Adjusted EBITDA	(36)	(10)	102	366	662
Capital Expenditures	25	211	193	156	122
Cash Flow	(49)	(234)	(136)	21	247

Of course, these are Energy Vault's estimates, and not ours. Given our view that the Company's actual revenues for 2022 and 2023 will fall far short of the outlandish SPAC projections, we think it is likely that the Company also burns more capital. In either event, we find Energy Vault's claims to have a "fully-funded" business highly misleading, at best.

Energy Vault's Go-Public Timeline Appears Highly Problematic

In the months leading up to Energy Vault's SPAC go-public, the Company has executed a series of transactions which allowed Novus insiders to effectively participate in Energy Vault financings at highly discounted rates. It appears to us that Novus then dumped Energy Vault onto the public markets at a vastly inflated valuation based on obviously unattainable economic projections, hence crystallizing 3-4x gains for themselves. See our summary of the timeline leading up to Energy Vault's go-public below:

Date	Culper Description of Events, Based on Public Filings
Pre-Feb 1, 2021	Helena SPV (unrelated to Novus) commits to invest in Energy Vault.
Dec 2020 to May 2021	Energy Vault raises \$55 million in Series B-1 Preferred Stock; Helena entities take down 80% of the total raise. SEC filings later disclose the Series B-1 held an effective conversion price of just \$2.14 per share.
Feb 1, 2021	Laikin, Elkus, and Feinberg (Novus insiders) discuss, via call, potential personal investments in the Helena SPV. Laikin asks for an allocation to the SPV, despite it being over-subscribed.
Feb 3, 2021	Laikin, Paulson, and Foster sign an NDA with Helena, and commit to make personal investments in Helena the next day.
Feb 5, 2021	Elkus introduces Paulson and Laikin to Robert A. Piconi, Co-Founder and CEO of Energy Vault. Energy Vault sends a mutual NDA and investor presentation to Novus.
Feb 8, 2021	Novus completes its IPO. Despite Energy Vault having sent its investor materials to Novus 3 days earlier, SEC filings claim that "Prior to the consummation of the IPO, neither Novus, nor anyone on its behalf, contacted any prospective target business or had any discussions, formal or otherwise, with respect to a transaction with Novus."

Apr 14, 2021	Novus signs a mutually exclusive letter of intent with Energy Vault. Prospectuses fail to disclose if Novus ever signed any other letters of intent with other potential targets, as is commonplace in SPAC transactions.
July 2021	Energy Vault begins financing Series C Preferred Stock to entities incl. Idealab and Helena.
Sept 8, 2021	Novus and Energy Vault jointly announce SPAC go-public deal at a \$1.6 billion valuation.
Sept 30, 2021	Series C Preferred Stock financing closes. SEC filings later disclose the Series C Preferred Stock investment held an effective conversion price of \$7.24 per share, providing a 28% discount to Energy Vault's go-public price.

Between December 2020 and May 2021, Energy Vault sold 2.1 million shares of Series B-1 preferred stock at \$14.05 per share. 80% of the total slug, or 1.7 million shares, went to entities affiliated with Helena.³

Amended prospectuses disclose⁴ – [after SEC prodding via comment letters](#) – that Helena's effective purchase prices after considering share conversions as a result of the go-public was a mere \$2.31 per share on a consolidated basis. As such, we estimate Helena investors – including Novus insiders – are sitting on massive gains which represented over \$74 million at IPO. See our math based on public disclosures in the table below:

Shares	Price/Share	Total Value
9,408,105	\$2.14	\$20,133,345
319,154	\$7.24	\$2,310,675
9,727,259	\$2.31	\$22,444,020

	Price	Net Profits
Go-Public	\$10.00	\$74,828,570

We also find the timeline of conversations between February 3, February 5, and February 8 to be highly problematic, and reminiscent of the very same conduct [which has led DWAC into SEC and DOJ investigations](#). Consider that SEC filings claim that:

“Prior to the consummation of the IPO, neither Novus, nor anyone on its behalf, contacted any prospective target business or had any discussions, formal or otherwise, with respect to a transaction with Novus.”

However, 3 days earlier, Energy Vault had already sent a mutual NDA to Novus. We struggle to see how the contemplation of a mutual NDA would not constitute a “formal” or informal discussion of a transaction. This was even confirmed by Robert Piconi himself via an interview [with Cheddar on](#) September 9, 2021, just a day after Novus and Energy Vault jointly announced the go-public deal. Piconi stated that:

³ See [prospectus dated January 2022](#), page 200.

⁴ Per [the prospectus](#), page 105 “The offered securities consist of (i) 9,408,105 shares of our Common Stock, which were purchased from Legacy Energy Vault at a price of \$2.14 per share, after giving effect to the exchange ratio in the Business Combination and (ii) 319,154 shares of our Common Stock, which were purchased from Legacy Energy Vault at a price of \$7.24 per share, after giving effect to the exchange ratio in the Business Combination.”

“And because uniquely the principals from Novus II, the SPAC that we’re merging with, they were already investors in the company late last year. So this made it a very interesting discussion to have aligned investors who saw the need to fully capitalize the business plan...”

Rather than characterizing the SPAC transaction as “fully-capitalizing the business plan”, what we see in Energy Vault is a continual marking-up of a worthless business in the private markets, then a dumping of that business onto the public markets at a vastly-inflated valuation.

NRGV’s 180-day lock-up is set to expire on August 10, 2022, in less than 3 weeks. We are short and believe shares are headed lower.