4th Quarter Commentary

January 2026

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1. Introduction: Questions That Answer Themselves

Speakers should take a beat once in a while—for breath and for questions. The most relevant question on any agenda must be, for the person who asked it, *their* question. The start of a year is a fine season to take that beat, so this Commentary centers on questions that recently came our way. Let us begin with two verbatim client questions, from October and December, which were publicly answered shortly thereafter by TPL itself.

A) Why isn't Texas Pacific Land Corp. building data centers or having them built on their land?

B) You know that TPL and LandBridge are supposed to have all the ingredients for data centers. But now it must be that is very suspect and there is some doubt about that.

The TPL announcement was included in our annual Founders Letter a few weeks ago:[1]

> *In late breaking news—and quite apt, as it arrived while the closing to this letter was being written—Texas Pacific Land Corp. announced on December 17 that it concluded an agreement with a private company known as Bolt Data & Energy to develop large-scale data center campuses and related infrastructure across TPL land. TPL supplied one-third of the $150 million of capital raised as part of the agreement and will supply water for whatever projects might be developed. The Chairman of Bolt is Eric Schmidt, the former CEO and Chairman of Google. Accordingly, TPL itself is now a cornerstone investor in a strategic private market investment—and an AI one, at that.*[2]

In a *Fortune* interview two weeks later, Mr. Schmidt suggested potential anchor tenants or lessors for the Bolt data center campuses: "Google, Microsoft, Meta, Amazon, Oracle, OpenAI, Anthropic, xAI, Palantir, and even the White House's new Genesis Mission for AI." He said the plan is to begin with a 1-gigawatt capacity campus, energized by a gas-fired electric power plant, with an eventual goal of 10 GW.


FORTUNE

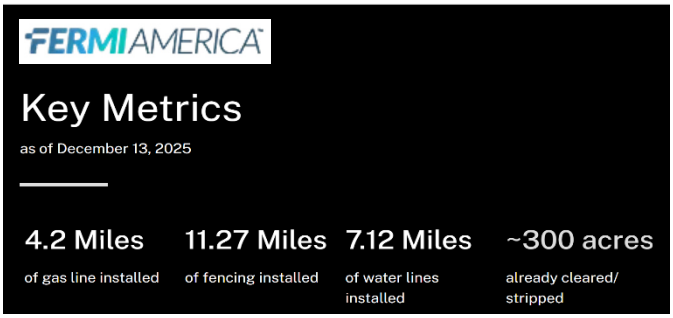
Google ex-CEO Eric Schmidt jumps into the AI data center business with a failed, 150-year-old Texas railroad turned oil giant

Jordan Blum
January 2, 2026 • 5 min read

What could this be worth?

[1] https://horizonkinetics.com/app/uploads/Founders-Letter-2026_Final.pdf
[2] https://www.texaspacific.com/investors/news-events/press-releases/detail/176/bolt-and-tpl-announce-strategic-agreement-to-pursue-data

For now, a Wall Street-style valuation, which is by reference to similar companies, is sufficient. A good one would be Fermi, Inc. Co-founded by former Texas Governor and U.S. Energy Secretary Rick Perry, Fermi had its IPO in October 2025. It plans on building the world's largest private AI data-center electric grid, at 11 GW. Fermi's early stock market value was $19 billion; it is now a "mere" $6 billion.



To be clear, at this point Fermi is a plan, not an operating company. As of December, it had cleared 300 acres of its 5,200-acre site. One will note three of the four key metrics Fermi uses to mark its progress. The first three: land, and how many miles of gas and of water lines have been installed. The other metric: 11 miles of fencing installed. To keep people off the aforementioned land.

That's the short answer to "where are the data centers?" More important than the *fact* of the Bolt Energy & Data deal is understanding the "why" of it. Because, had the announcement not occurred for another three months or six—that is, in the absence of public evidence—would someone who doesn't know the "why" have sold some TPL shares? Be assured, it happens.

The why of the deal—apart from our connection to Bolt through TPL and other private investments (again, see the year-end Founders Letter)—is related, believe it or not, to NVIDIA's new chip release cycle. Moreover, believe it or not, the NVIDIA chip development cycle is also a key to predicting the performance risk in the IT sector and the S&P 500 today.

So, it's very much worth understanding.

2. The New Wild West: Data Centers, Planned Obsolescence, and First Mover *Dis*-advantage

Statistics now abound about the demand for AI data-center campuses. The investing public finally understands that the IT companies view securing their own AI training and processing capabilities as a necessity, not an option. Yet they are apparently not aware that Texas has already become the new center of gravity of the U.S. data-center buildout.

No Longer an "If"

Texas Data Center Announcements

Project Name	Company	Tenants	Location	Planned Power Capacity	Power Source
Project Matador	Fermi America	TBD	Carson County, TX	11 GW	Natural Gas, Nuclear, Renewables, Battery Storage
Bolt	Bolt Data & Energy	TBD	West Texas (Permian Basin), Texas	10 GW	Natural Gas, Nuclear, Renewables
South Dallas One	GridFree	TBD	Hill County, TX	5 GW	Natural Gas
Chevron Data Center Development	Chevron	TBD	West Texas (Permian Basin), Texas	2.5 GW (up to 5 GW)	Natural Gas
Sweetwater	Iris Energy	TBD	Sweetwater, TX	2 GW	Renewables/ERCOT Grid
Stargate (Texas)	OpenAI, Softbank, Oracle, MGX	OpenAI, Oracle	Abilene, TX	1.2 GW (total 5 GW planned)	Natural Gas, Nuclear, Renewables, Battery Storage
Vantage Data Center Frontier Campus	Vantage	OpenAI, Oracle	Shackelford County, TX	1.4 GW	Natural Gas
Google Texas Data Center Expansion	Google	Google	Armstrong County, TX and Haskell County, TX		Renewables/ERCOT Grid (PPAs)
Project Jupiter	Stack Infrastructure and BorderPlex Digital Assets	OpenAI, Oracle	Santa Teresa, Doña Ana County, NM	700-900 MW	Natural Gas, Renewables, Battery Storage
Childress	Iris Energy	Microsoft	Childress, TX	750 MW	Renewables/ERCOT Grid

Source: Company Press Releases, Texas.gov, Texas Tribune, East Daly Analytics, PR Newswire , DataCenterKnowledge.com

The two largest projects on the accompanying list of Texas data-center projects are now comparable to the power base for the five largest metropolitan areas in the United States.

City	Population	Consumed Power (tWh)	Installed Power (GW)
New York city, NY	8,461,961	42.48	4.85
Houston city, TX	2,240,582	30.08	3.43
Los Angeles city, CA	3,918,872	23.64	2.70
Chicago city, IL	2,714,017	18.88	2.16
San Antonio city, TX	1,439,358	16.54	1.89
Dallas city, TX	1,278,433	16.37	1.87
Phoenix city, AZ	1,555,324	16.01	1.83
Nashville, TN	643,771	12.29	1.40
Louisville, KY	611,573	10.93	1.25
Jacksonville city, FL	856,616	9.86	1.13
Memphis city, TN	655,857	9.84	1.12
Indianapolis city , IN	846,674	9.70	1.11
Austin city, TX	907,779	9.34	1.07
Philadelphia city, PA	1,559,938	9.04	1.03
Fort Worth city, TX	815,930	8.82	1.01

Source: National Renewable Energy Laboratory

Another matter that is not front-page news: Many existing data centers, including relatively new ones, are already technologically obsolete. In the few years it takes to build a campus, the construction specifications around the electric power draw and heat man-

agement have already outgrown the prior standard. That's an additional source of demand for new data center capacity.

This data center obsolescence is by design, even if only as collateral damage—more specifically, the design of NVIDIA. Here's how that works.

- The NVIDIA H100 Hopper Chip that catalyzed the global AI "arms race" in October 2022 provided several times higher performance than the preceding A100 chips. It drew 700 watts of power, which is 14,000 watts (14 kW) for a rack of 20 servers, a standard configuration. A smaller-sized AI data center that draws 200 MW of power, which is 200 million watts, would hold 285,000 GPU servers.
- There is no electric utility from which a data-center developer can request 200 MW of additional power, other than isolated deals, such as to keep open (or reopen) an old (or mothballed) coal or nuclear plant. That's great cherry-picking for the early going, but it's not a sustainable strategy for … um … growing an orchard.
- Continuing the trend, NVIDIA's Grace Blackwell chip[3] began selling in March 2024. It performed roughly 30x faster than the H100 based on LLM Inference,[4] and draws 120 kW per server rack. That's over 8x more power draw than the H100 required.
- NVIDIA's new GPU, the Vera Rubin, will be released in the second half of 2026. It is said to have 5-10x the inference performance of the Grace Blackwell 200, and is 45% more efficient in terms of electric power consumption per computation.[5] *The Vera Rubin chip will draw up to 600 kW watts per rack,[6] which is 5x more than the current Grace Blackwell and 43x more than the H100 that started all this only three years ago.*

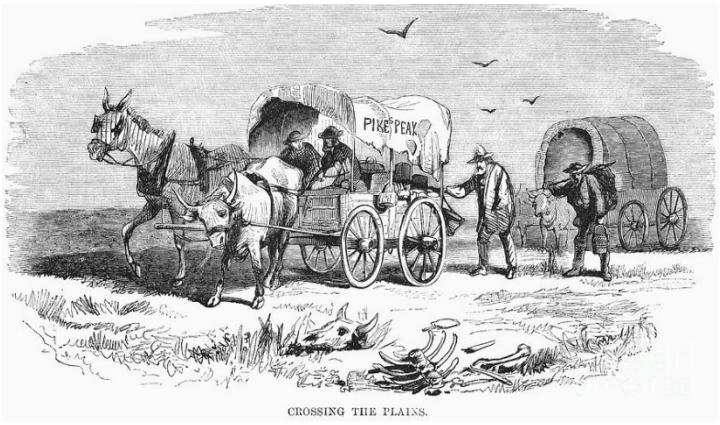
There are thousands of U.S. data centers, most of which are for cloud servers and ordinary data processing. It wouldn't be surprising if recently constructed AI data centers designed for the H100 and GB200 chips will be unable to draw the requisite power, at scale, for the Vera Rubin.

A facility might also be inadequately engineered for the unprecedented thermal load of all those chips and for the cooling systems necessary to handle it. Capital that was expended quite recently to build then-state-of-the-art facilities might soon be functionally obsolete. A

[3] The GB200, which is two Blackwell GPUs connected to one Grace CPU.
[4] LLM inference refers to the process of using a trained large language model to generate outputs based on new input data, such as text prompts.
[5] https://www.archyde.com/nvidia-launches-vera-rubin-ai-supercomputer-architecture-at-ces-delivering-triple-the-performance-of-blackwell/
[6] https://www.tomshardware.com/pc-components/gpus/nvidia-shows-off-rubin-ultra-with-600-000-watt-kyber-racks-and-infrastructure-coming-in-2027

building can be repurposed, but probably not at the planned-for revenues or rent. It might even become a stranded asset.

This would be an example of first-mover *dis*-advantage. As our CEO Murray Stahl might recently have put it, when asked again why there were no data centers yet in the Permian Basin: "Because we're talking about the western U.S., you know how you know who the early pioneers were, the trail blazers? Theirs are the bones lying along the trail." Sometimes speed is not of the essence.



CROSSING THE PLAINS.

The ultimate victors in the battle for AI computing scale—what with, let's tick them off, the massive capital outlays, resource logistics requirements, rapid technology displacement cycle, and 99-year lease obligations—are likely to be the parties that take the time to gain knowledge and knowhow. Best not to confuse technology cred with basic business planning and capital allocation skills. There will be many opportunities for the careful, prepared operator, and the land isn't going anywhere.

Not the only one…

LandBridge Co. made its own development announcements in recent months to lease acreage to NRG Energy for a 1.1 GW natural gas electric power facility, and to Samsung C&T Renewables for battery storage projects. The acreage is in Reeves, Pecos, and Loving counties in the heart of Delaware Basin drilling activity. And also remarkably neighborhoodly with TPL acreage in that locale.

LANDBRIDGE

LandBridge Announces Strategic Agreement with NRG to Power Potential Data Center in the Delaware Basin, Texas

09/23/2025

Site could host a natural gas-powered plant to provide scaled power solutions for a data center development

HOUSTON--(BUSINESS WIRE)-- LandBridge Company LLC announced that it has entered into a strategic agreement with NRG Energy, Inc. with respect to a potential data center site in Reeves County, Texas, in the Delaware Basin.

The site could potentially house a 1,100 MW, grid-connected natural gas power generation facility, which NRG could construct if an appropriate power purchase agreement for a data center is secured. Initial air permit applications and electric interconnection requests have been submitted, which would allow for an in-service date as early as year-end 2029, if the project moves forward.

LandBridge's strategically located surface acreage, adjacent to the Waha Gas market hub, provides direct access to substantial existing low-cost natural gas and transmission infrastructure, supporting regional development and future operations.

LANDBRIDGE

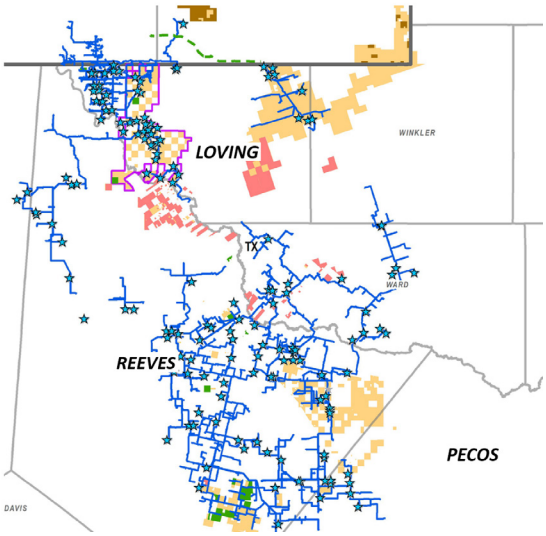
LandBridge Announces BESS Development Agreements with Samsung C&T Renewables

12/11/2025

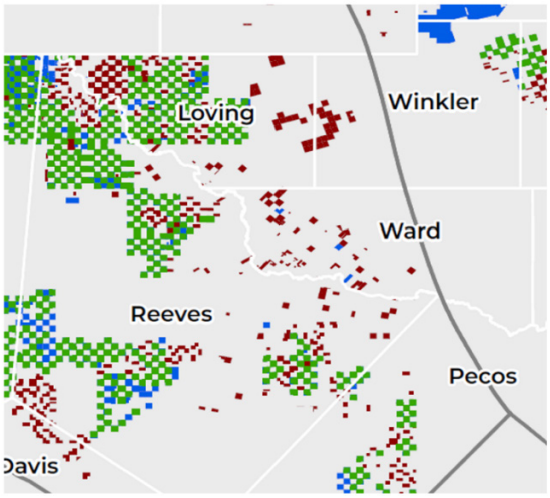
Agreements provide options to lease acreage for two potential Battery Energy Storage System projects with aggregate capacity of 350 MW.

HOUSTON--(BUSINESS WIRE)-- LandBridge Company LLC today announced that it has entered into development agreements with subsidiaries of Samsung C&T Renewables, providing the option to lease acreage for two potential Battery Energy Storage System ("BESS") projects in Pecos and Loving counties, Texas with an aggregate capacity of 350 MW. The agreements grant Samsung C&T exclusive rights at each site location to deploy and develop a facility designed to enhance grid stability, support renewable energy integration, and deliver clean power to the local grid. The projects, which could achieve commercial operation as soon as year-end 2028, represent the first BESS projects on LandBridge's acreage and underscore the Company's commitment to leveraging its premium land assets for innovative projects across conventional and renewable energy development.

LandBridge Property in Loving, Reeves & Pecos Counties



TPL Property in Loving, Reeves & Pecos Counties



Diverging competitive strategies are beginning to emerge among the AI-IT companies. A notable one is the January 12 news that Apple Inc. might agree to pay $1 billion annually to use Google's AI models and cloud computing capacity to underlie the next AI version of its Siri voice assistant. Google has decided to transform its business from an asset-light model whose financial success largely rested on a cost-free infrastructure—the internet—to that of a capital-intensive data-center operator. Apple has decided to become a renter rather than an owner. Each has made a diametrically different set of risk/reward and return-on-capital assessments.

NVIDIA's chip obsolescence-by-design strategy shines a light on the extraordinary opportunity for the strategic resource owners in the Delaware Basin, where Texas Pacific Land Corp, LandBridge, and WaterBridge—and where some of our private funds—own assets. It also shines a light on the competitive risks beginning to converge upon the AI-IT sector within the S&P 500.

Rather than repeat the full explanation from our January letter, some of it was put this way in a recent *Fortune* piece that paraphrased and quoted the CEO of IBM, Arvind Krishna:[7]

> *All the hyperscalers together could potentially add about 100 gigawatts, [Krishna] estimated, but that still requires $8 trillion in investment—and the profit needed to balance out that investment is immense.*
>
> *"It's my view that there's no way you're going to get a return on that, because $8 trillion of capex means you need roughly $800 billion of profit just to pay for the interest," he said.*
>
> *Moreover, thanks to technology's rapid advance, the chips powering your data center could quickly become obsolete. "You've got to use it all in five years, because at that point, you've got to throw it away and refill it," he said.*

Add another observation to that one, this time from Horizon Kinetics Founders Letter:

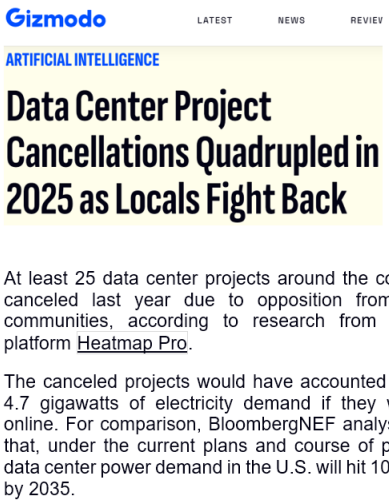
> *The bull case for the IT sector is that the companies will, in some reasonably timely fashion, achieve critical mass in AI computing capacity, allowing them to conclude their immense capital spending programs, whereupon their inherently high cash flow will be freed up and the earnings on those data centers will bloom.*
>
> *But the chip seller group—NVIDIA, Broadcom, Micron Technology, and AMD—intend that the sequential and rapid improvements in each new chip will make the previous one economically obsolete. If they are correct, then then the chip buyer group—Microsoft, Alphabet, Amazon, Meta, and Oracle—will not be able to reduce their capital spending, and there will be no halcyon cash flow resurgence.*
>
> *Alternatively, if the chip buyer IT contingent are correct, then the chip seller IT contingent will not continue to have rising sales and earnings. The point is, both groups of IT companies can't be right, yet they are valued as if they are. Either way, the consequences for the S&P 500 are serious: the seller group has an 11.5% weight in the index, and the buyers an 18.3% weight.*

[7] https://fortune.com/2025/12/03/ibm-ceo-no-way-hyperscalers-google-amazon-turn-profit-data-center-spending/

No Wall Street firm, to our knowledge, has taken it upon itself to try to calculate how many more years of programmed chip-obsolescence there will be—and what the normalized net income and free cash flow for the chip *buyers* would be under that scenario.

More pertinent for our clients, no Wall Street firm, to our knowledge, has tried to calculate what the profit opportunity would be for the Delaware Basin strategic resources owners. Which makes it impossible for them to suggest that the profit opportunity might be worth—picking a vague figure—some multiples of these companies' current market values. There are, simply, very few places where a sufficiency of remote land, natural gas, and water can all be brought together.

Helping to shepherd physical resource buyers toward the Delaware Basin are both Main Street and Pennsylvania Avenue. Prospective data-center projects are increasingly fended off by local communities. And earlier this month, the Trump Administration and governors from the mid-Atlantic grid—the one with the highest electricity price inflation in the nation (home to Northern Virginia, the densest data center market in the nation)—proposed "emergency" rule changes. These would make data centers pay more for new power than residential customers do.



Gizmodo LATEST NEWS REVIEW

ARTIFICIAL INTELLIGENCE

Data Center Project Cancellations Quadrupled in 2025 as Locals Fight Back

At least 25 data center projects around the country were canceled last year due to opposition from the local communities, according to research from intelligence platform Heatmap Pro.

The canceled projects would have accounted for at least 4.7 gigawatts of electricity demand if they were to go online. For comparison, BloombergNEF analysts forecast that, under the current plans and course of proliferation, data center power demand in the U.S. will hit 106 gigawatts by 2035.

The Washington Post
Democracy Dies in Darkness

The data center rebellion is here, and it's reshaping the political landscape

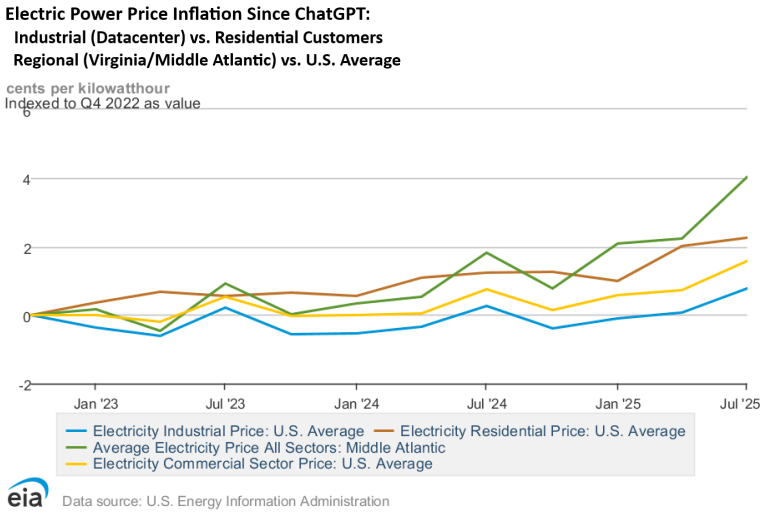
As the buildout of AI infrastructure alarms communities, it is fast emerging as a potent electoral issue across the political divide.

January 6, 2026

By Evan Halper

SAND SPRINGS, Okla. — This city bordering Tulsa is a battleground, one of many across the country where companies seeking to build massive data centers to win the AI race with China are coming up against the reality of local politics.

Sand Springs leaders were besieged with community anger after annexing an 827-acre agricultural property miles outside of town and launching into secret talks with a tech giant looking to use it for a sprawling data center. Hundreds of aggrieved voters showed up at community meetings. Swarms of protest signs are taking root along the rural roads.



WSJ

Trump Pushes Plan for Tech Companies to Fund New Power Plants

White House proposal would involve an emergency auction within the country's biggest power market

By Amrith Ramkumar Follow, Scott Patterson Follow and Jennifer Hiller Follow

Updated Jan. 16, 2026 7:06 pm ET

The Trump administration and a group of governors Friday proposed that the nation's largest power-grid operator hold an emergency auction to cover the costs of building new power plants.

The agreement would be an unprecedented attempt by the federal government to check rising electricity prices within…a 13-state power market [that includes an area of Northern Virginia known as Data Center Alley].

To fully understand these issues, one must fully understand the business of water. So perhaps it's no surprise that we've received questions on that as well. Thankfully, James Davolos—manager of the Horizon Kinetics Inflation Beneficiaries ETF—is versed in such matters.

3. The Way of Water: Hydrology, Hydrogeology, and More

Another recent question concerned the chemistry of the water needed for various applications:

I have a question about the water for the electric power production and cooling for data centers in the Permian. *Is it the same fracking water with the saline removed? Can that much desalinated water be produced that fast? Who is doing it? From the [Horizon Kinetics] mutual fund webinar it was said produced water is not good for data center use. I suppose it is good for fracking?*

A thorough response to these questions could easily be many pages. The best place to start might be by defining terms and providing some basic facts and figures.

Types of Water

Beginning with "the water for the electric power production," there are two forms. Hydraulic fracturing ("fracking") injects *source* water (hence the hydraulic moniker) into well bores at extremely high pressure. Along with small amounts of sand and chemical additives, this perforates shale fissures containing hydrocarbons. The source water for this is found in local aquifers, and is owned and sold by parties that own surface land, like TPL. It is predominantly

naturally occurring brine, or brackish, and while suitable for fracking, it has very limited uses without further treatment.

The water that comes out of the well, mixed with hydrocarbons, is a combination of the source water (flowback) and mostly formation water, generally referred to as *produced* water. Similar to source water, produced water is a heavy brine. In fact, it's much heavier, often 10x the saline content of sea water.

It also contains a variety of heavy metals (lead, arsenic, selenium); radioactive elements (radium); organic acids (acetate, formate); mineral salts (chloride, magnesium); and, of course, hydrocarbons. The reason the water exists—and is brackish—is that some 250 million years ago the region was a vast inland sea, up to 1,500 feet deep—Empire State Building height and deeper than Lake Superior— fed from a channel to the ocean that eventually closed. It eventually began to evaporate and accumulate sediment. The decomposing carbon from the teeming marine life formed the basis for oil and gas over these hundreds of millions of years.

Problems with Water – It's Not About Opening a Spigot

Once the residual hydrocarbons are separated from the produced water mixture via a skimming process, the water is an environmental liability that must be remediated. This can include a "recycling" process that removes just enough of the bad stuff for it to be reused for fracking without damaging equipment (corroding the piping, for example) or impinging oil production (by clogging shale fissures). The balance of the concentrated wastewater must then be disposed of via a saltwater disposal well.

A high quality well in the Delaware Basin might deliver 1.562 million barrels of oil equivalent ("BOE") of production.[8] Accompanying that oil, at a conservative water-to-oil ratio of 4:1, these wells will generate approximately 6.25 million barrels of produced water over their lives. New well designs in the Delaware also require approximately 875,000 barrels of frac water.[9] Produced water volumes are over 7x the amount of water required for fracking.

The produced water can be "recycled," with minimal filtration and separation treatment, such that it can be used for subsequent fracking operations, but not much else. But even with prodigious volumes of recycling, due to practical limitations, the vast majority of produced water must still be disposed.

[8] A well can run between 2 and 3 miles of horizontal length. If using an average frac length of 2.5 miles, that's roughly 12,500 feet. Such a well might produce 125 BOE per foot. Multiplied by 12,500 feet, that would be 1.562 million BOE.
[9] At the aforementioned 12,500-foot horizontal length, with an average water load of 70 barrels per frac foot. the frac water need is ≈ 875,000 barrels.

Thus, business is good for Permian water disposal companies—and it's only getting better (more on that later). Back to the question at the outset of this section, but with another complexity: The vast majority (>90%) of the water used in the *legacy* power/data center ecosystem is for power plant cooling, specifically to cool steam and condense it back into water.

However, modern "hyperscale" data centers (loosely defined, here, as > 1GW of power) render traditional dry cooling systems (using heat exchangers like in a household refrigerator or window air conditioner) inefficient, if not unavailing, particularly in very hot climates. Accordingly, direct cooling of the data centers now adds very substantial water demand relative to the traditional data center.

Starting with water demand for the electric power plant, cooling can *generally* be wastewater similar to source water, but that choice will impact the water efficiency. A modern high-efficiency combined-cycle gas-turbine power plant might lose, due to evaporation, about 70% to 80% of the water it draws.[10] The balance can be recycled for flushing the system of concentration and impurities that build up with continued evaporation, but will eventually need to be disposed of and replenished.

These numbers only increase with lower quality brine and wastewater. Applying these figures to a large 1GW power facility running at a 100% capacity factor—which doesn't actually happen[11]— the requirement is 5 million gallons of water (120,000 barrels) a day.

Source water can command over $1/barrel in certain parts of the Delaware Basin. But a large, long-term supply contract could be, conservatively, $0.50/barrel. This equates to over $20 million of annual revenue per gigawatt for the water supplier. To be clear, this is for untreated source water (brine); any additional treatment, disposal and/or transportation would likely cost more. These assumptions are based on the most efficient turbines operating under optimal conditions.

[10] National Renewable Energy Laboratory (NREL), "*Operational water consumption and withdrawal factors for electricity generating technologies: a review of existing literature*" Such a plant might draw 250-300 gallons of water per MWh and consume (via evaporation) 180-240 gallons/MWh.

[11] At an estimated $50 billion capital cost per GW, there is little/no tolerance for plant downtime. Grid-connected plants often run at an 0.85 capacity factor. In practice, there is no 100% uptime, so redundant power generation is required, as is even more water consumption.

Higher-Purity Water

There are processes/technologies for desalinating water enough to make it viable for agriculture and livestock—and with further treatment, potentially useful for data centers and even human consumption.

INTERESTING ENGINEERING

Innovation

World's first underwater desalination plant uses ocean pressure to halve energy use

By Mrigakshi Dixit | Dec 31, 2025

In 2026, Norwegian startup Flocean is slated to launch the world's first demonstrator and commercial-scale subsea desalination plant at Mongstad, Norway.

By moving operations to the ocean floor, the company addresses the high costs, environmental damage, and energy intensity associated with standard land-based desalination facilities.

At depths of 300–600 meters, Flocean's technology taps into natural ocean pressure to drive desalination, slashing energy use and greenhouse gas emissions by 30-50% compared to traditional land-based plants.

The industry standard is reverse osmosis. This is an energy-intensive process that uses high pressure to push salt water through a membrane into freshwater—with the salt, bacteria, and minerals getting caught by the filter.

The energy intensity—and, hence, the cost—varies based on the pressure, which relates to the salinity or total dissolved solids. However, feasibility issues arise with waste byproducts when attempting larger-scale operations. In any desalination process, there is waste byproduct: all that saline and, among other contaminants, heavy metals and radioactive elements.

The cheapest and easiest options include ocean discharge and evaporation ponds, but which are geographically specific and have environmental issues of their own. With ocean water desalination, the basic salt concentrate is a serious problem (bleaching of reefs, killing natural macrobacteria). The other options include injection into saltwater disposal wells, and landfills, for which costs rise dramatically.

To the extent that electric power producers and their power-hungry data-center clients can absorb water treatment and waste disposal costs that may approach $2-$3 per barrel, the issue of scalability remains. The large-scale desalination projects around the world have the luxury of infinite source water and waste disposal in the form of an ocean. Dumping the brine concentrate back into the ocean has a multitude of environmental impacts, but this is a moot point inland. Accordingly, for most of the world, the only outlet for wastewater is costly landfills and saltwater disposal wells.

In terms of the intake part of the equation, without an ocean, aquifers are the only viable water source, as water use in most lakes and rivers is highly regulated. Aquifer source water, though, is not infinite, particularly in Texas. Most of the Delaware Basin is part of the broader Chihuahuan Desert, which receives less than 10 inches of annual rainfall (67%-80% less than a non-arid region), limiting aquifer "recharge."

The lack of abundant brackish aquifer water is evidenced by ranchers' ability to charge such high fees for source water, often above $1/barrel. During periods of acute shortage, the going

price in recent years for Texas water delivered to New Mexico has exceeded $3-$4/barrel. The supply of aquifer-sourced water simply cannot meet the ultimately enormous needs of the gigawatt-plus class of power plants. The only "viable" coolant water intake would be produced water from the frac well.

Recall that produced water often has 10x the total dissolved solids of seawater. In theory—with enough pressure and the attendant power bill—reverse osmosis could treat this. In reality, membranes that remove dissolved solids require changing upon saturation, and produced water's high concentrations would require constant replacement, rendering the process impractical.

Texas Pacific Water Resources (TPWR), a subsidiary of Texas Pacific Land, is developing a desalination technology that uses a freezing technique to separate the dissolved solids in produced water. The initial intended use case for the water includes agriculture, livestock and aquifer replenishment, but cost may be a limiting factor, absent government subsidies. Large-scale power generation in the region presents a potential private market demand source that, based on the end clients and their bounteous capital expenditures for AI development, are much less price sensitive.

At long last, to summarize this anything-but-brief reply to the question above: The primary *current use* for water within the data-center campus is related to cooling for power generation. However, direct data center cooling is likely to meet or exceed power-related water use, as large facilities are built in warm, dry regions. Water for power plant cooling water can be, but need not be, the same as fracking water (with or without the saline removed). Data-center cooling water, though, requires significantly more treatment than the source water found in aquifers. It may be possible to treat this water at scale, at the right price, and TPWR is amongst several companies piloting such programs.

— *James Davolos*

4. Pressure (Cooker): Water, Porosity, and Media

Here is a question from the last week of December, after the *Wall Street Jornal* published a piece on the Permian Basin: ***This appears to be terrible news. Is it? I would really appreciate your opinion/view please?***

This is the beginning of the article that caused such distress:

THE WALL STREET JOURNAL.

BUSINESS | ENERGY & OIL

America's Biggest Oil Field Is Turning Into a Pressure Cooker

Drillers' injection of wastewater is creating mayhem across the Permian Basin, raising concern about the future of fossil-fuel production there

By Benoît Morenne and Andrew Mollica
Dec. 25, 2025 11:00 pm ET

Shale drillers have turned the biggest oil field in the U.S. into a pressure cooker that is literally bursting at the seams.

Producers in the Permian Basin of West Texas and New Mexico extract roughly half of the U.S.'s crude. They also produce copious amounts of toxic, salty water, which they pump back into the ground. Now, some of the reservoirs that collect the fluids are overflowing—and the producers keep injecting more.

It is creating a huge mess.

The industry is working to clean up its act, but solutions to treat and ditch meaningful volumes of water far from the oil fields remain years away.

The problem is that a journalist is not an analyst. Nor is such activity ordinarily their job, apart from the very most-in-depth investigative projects.

A journalist's job is to gather information, largely from first-hand interviews and empirical data, and to weave those together into a narrative. Usually with a fair helping of emotive terms, like "pressure cooker" and "bursting at the seams."

To validly portray reality on a complex topic like this requires extensive multi-dimensional knowledge.

Even if the article in question were to have that knowledge, its focus is not *our* focus.

The article doesn't consider, for instance, that even if limited portions of the Permian Basin proximate to drill pads are reaching their limits for underground porosity or "pore space" for water sequestration, the Permian is very large.

TPL's surface acreage alone is 33% larger than the land area of Rhode Island. There's a lot of land in which to store water. It just has to be further away. Which would require more takeaway infrastructure and water handling services. Which means additional demand for the land assets of companies like TPL and LandBridge, in addition to the services provided by companies like WaterBridge.

To test a more fundamental question, let's momentarily accept the "pressure cooker" characterization of the article as correct and conclude that the Delaware Basin[12] will be shut-in; they'll just have to stop. What would happen?

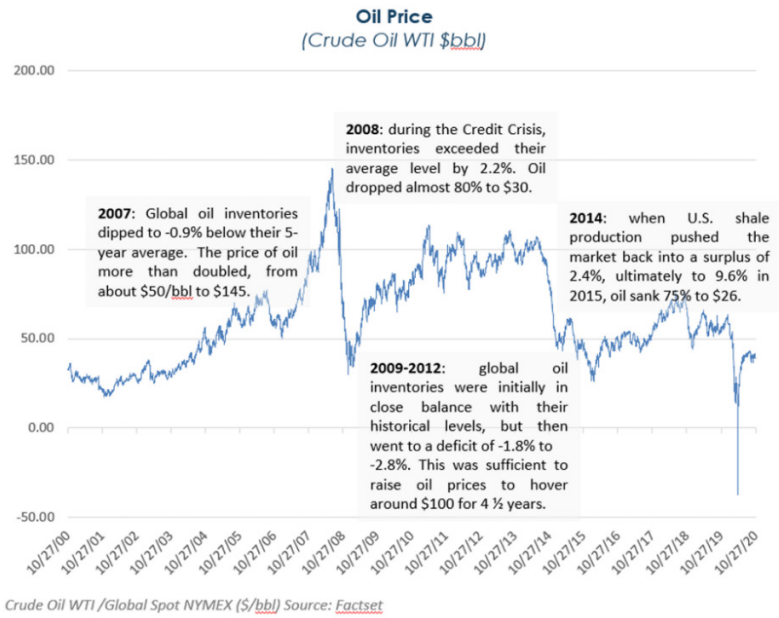
[12] The high water-to-oil ratios and acute water disposal demands are unique to the Delaware Basin, so the Midland Basin is excluded from the calculation.

This would remove about 3.5 million barrels of oil from global supply, equivalent to the production of the U.A.E., or about 4% of supply. It would not only exhaust any spare production capacity in the market, which serves as a natural buffer to mitigate inevitable supply outages. It would tip the global market into a distinct and material supply shortage.

The next question is whether the result would be $150/barrel oil or $250/barrel oil. If a 4% supply deficit doesn't seem like a lot, it's an AWFUL LOT for a demand-inelastic resource like oil and natural gas. It's a daily necessity—with a capital N—whether for cars and trucks, trains and planes, keeping the home heated or hospital lights on, or for critical precursor industrial chemicals that make just about *everything,* including nitrogen-based fertilizer. That's historical-record-reality, picture below…

> ***Rifling Through the Archives:*** *From our Q3 2020 Commentary[13], when there was great concern—this really was the fear among many—that oil prices would sink to zero and that any oil-related company would become defunct. Historical—even recent-history—price swings of -50% and +100% and greater have hinged on oil inventory surpluses or deficits relative to supply of as little as 1% or less.*

MARKET COMMENTARY
HORIZON KINETICS
3rd Quarter 2020 October 2020



Crude Oil WTI /Global Spot NYMEX ($/bbl) Source: Factset

OECD Crude Oil Inventory Surplus/Deficit Vs. 5-Yr Avg	
2007	-0.93%
2008	2.25%
2009	0.29%
2010	0.41%
2011	-1.87%
2012	-0.21%
2013	-2.83%
2014	2.41%
2015	9.62%
2016	7.56%
2017	1.33%
2018	-0.45%
2019	-1.06%
2020	1.94%

Source: U.S. Energy Info Admin

[13] https://horizonkinetics.com/app/uploads/Q3-CVALUE-Review_FINAL.pdf

For plain national security and geopolitical purposes, spare capacity would never be permitted to be exhausted, lest a doubling or quadrupling of the most critical economic resource deeply suppress economic activity and capability. Although it would make energy companies a lot more valuable.

This last point should perhaps have been first: The issue of rising subsurface pressure in the Delaware Basin is not a new development. The regulatory oversight body for the oil and gas industry, the Railroad Commission of Texas, has already taken major measures to manage this:

- It established Seismic Response Areas to monitor subsurface disturbances, and with very strict water injection volume caps.
- Outside of those areas, it has effectively ended permitting for all "deep disposal" (injection below the oil and gas formation that is prone to seismic events).
- Shallow wells also face pressure and volume limits, along with rigid daily reporting requirements.

Effectively, if drillers stay within the depth and pressure limitations, the tremors and surface disturbances cease. There are implications, of course. First, this dramatically reduces the quantity of water that can be injected into the Delaware Basin.

Fortunately, Texas, in its enormity, has abundant "out-of-basin disposal" already operating today, with much more under development.

Nor is out-of-basin disposal "years away," as asserted in the article. Construction has already commenced on the initial phase of the WaterBridge Speedway pipeline project. It will include 70 miles of 30" pipeline that will provide over 1 million barrels of daily water disposal egress that is already permitted. There are another 3 million barrels of potential development. This project is expected to be operational by the middle of this year.

So, does this "appear to be terrible news"? It depends on the eye of the beholder.

> Oil and gas producers are almost certainly looking at higher water-handling expenses by virtue of 70-mile disposal routes. Better than being "shut-in" by a pressure cooker!
>
> It's anything but terrible news if you control the land and water systems that provide long-haul water transportation. In fact, it's welcome news for companies with large existing saltwater disposal-well capacity that is permitted and/or operating.

All in all, we found the article's teaching-moment content—and its convenient December 25 publication date—to be a very merry help for this Commentary.

5. Yet More Water: Power and Price

Let's drill into a final water question we recently received:

With all this increased demand for water through these different types of electric power generation, how does one arrive at a price for water?

The first most important question is this: How much water is needed for a data center? Answer that, and one can try to develop a sense of price and revenue opportunity.

First, it's important to note that there are two customers for the water, and both need it for cooling purposes. One customer is the data center itself; the other is the electric power plant that keeps the data center running. The balance of these two users is evolving rapidly.

Power Plant Water Usage

We now know that each newly developed large-scale data center campus will need its own power plant. Also known, electric utilities are the largest water users in the U.S., at 40% of the total. The unavoidable reason for all that water usage is that the three forms of utility-scale uninterruptable electric power—natural gas, coal, and nuclear plants—are thermal plants. In other words, they boil water to produce the steam that rotates the turbine/dynamo generator system. That steam must then be cooled to condense back to water.

That makes for two primary forms of water usage in a power plant: the water that is required to cool the plant (some of which is lost to evaporation) and the water required to generate the steam. The efficiency differences are enormous, if also highly dependent on the measurement methodology (more on that in a moment).

The U.S. Energy Information Administration finds that natural gas plants draw only 15% as much water per MW hour as a coal plant. That's because, when shut down or taken off line for maintenance, both coal and nuclear plants require a long time to cool—and continue to require water during the cool-down period.

With a coal plant, the fuel continues to burn even if no additional coal is fed into the furnace; the existing supply must be exhausted before the machinery cools. Therefore, water continues to be cycled even while no power is being generated. For a nuclear plant, the reaction can be slowed, but the reactor remains hot—it's radioactive—and must continue to be cooled even when taken offline. At a gas-powered plant, when the flow valve is closed, heating ceases immediately, so the cool-down period is far more rapid.

That makes natural gas inherently more efficient, which is one of the many reasons it will be the fuel of choice for data centers. This can be seen in the comparative water consumption figures. The U.S. Geological Survey provides figures that also account for evaporative and

maintenance losses, which indicate that natural-gas-powered plants lose only about 35% as much water per unit of electric power produced by nuclear plants and only 44% as much as coal.[14]

For a picture of how much net water might be required for a large data center, the answer depends very much on which figures are used; a simplistic, blanket number doesn't work. For instance, the national average "water intensity" figure reported by the Energy Information Administration is about 11,500 gallons of water used to produce one MWh of electric power, [15] which is 276,000 barrels per day.

However, that includes many legacy power plants that use "once-through" cooling technology that requires enormous amounts of water withdrawal from a nearby body of water, although very little actual water consumption. That's because rather than evaporating it, the hot water is simply discharged back into the river, lake or other body of water. This is also an environmental problem, and a method that is now effectively banned under the Clean Water Act.

Newer cooling tower systems draw much less water, but have much higher actual water consumption because of evaporative loss as the re-cooling method. A 1 GW gas fired cogeneration plant consumes about 120,000 barrels of water a day, which is 44 million barrels a year.[16] Let's bookmark this figure and attend to the data centers.

Data Center Water Usage

Data centers need to dissipate enormous amounts of heat, and there are different cooling methods with various advantages and benefits. The primary systems include dry cooling, wet cooling and adiabatic cooling. Dry cooling (the refrigerator-like heat exchanger method) requires minimal water but very high energy input costs (and terrible hot-climate efficiency). The wet cooling—as in a power plant—requires minimal energy but consumes large amounts of water. Adiabatic cooling is a hybrid solution with intermediate water and power costs, but is very expensive and potentially unstable in harsh environments.

Given the power shortage and desert climate of the Delaware Basin, dry cooling doesn't seem a viable solution. A conservative example might assume a 50/50 split of wet and adiabatic coolers. If a modern 1 GW data center will require a heat rejection load of approximately 8.76

[14] https://pubs.usgs.gov/sir/2019/5103/sir20195103.pdf
[15] https://www.eia.gov/todayinenergy/detail.php?id=56820
[16] Withdrawal and consumption rates for a modern CCGT facility range from 250-300 g/MWh and 180-240 g/MWh. This nets to 120,000 barrels/day and 44 million barrels/year.

TWh per year[17] (equivalent to about 800,000 average U.S. homes, or 95 skyscrapers), that's a lot of heat to dissipate. And will only be exacerbated by the summer heat in Texas.

At that 50/50 split, the water consumption would be on the order of 67 million barrels per year.[18] *This is roughly 70% more than the power plant requires.*

Source water in the Delaware Basin now goes for $1/barrel or more. At 50 cents, the 1 GW power plant's annual water bill will be $22 million. The data center situation is much more complex, as the water specifications are far more stringent than for power plant cooling towers. This water might cost $1-$2/barrel (including treatment and disposal). The midpoint of $1.50, applied to 67 million barrels, adds $100 million to the water bill.

However, even this calculation is insufficient, because of power loss between the amount of electricity that leaves a power plant and how much actually enters the data center's servers. That's because the transmission system is not a perfect conductor, and much of that power is lost as radiated heat. That loss ratio is described by the term Power Usage Effectiveness (PUE). An exceedingly efficient PUE of 1.15 means that a data center with 1 GW of critical computing power needs to have at least a 1.15 GW power plant to fully energize its servers. This would adjust the power water bill to $25 million/year.

The 1 GW annual water bill is now at least $125 million. Bolt Energy & Data asserts it hopes to build a 10 GW campus. The Chevron Data Center hopes to scale to 5 GW.

These calculations should be taken merely as illustrative—so that, even if only directionally and generally correct, they imply *billions of dollars of recurring, high-margin annual revenue* to the Texas water business ecosystem.

To the extent that the broad investment community is blithely unaware of these circumstances, it falls to us to ask a question of our own—in fact, the leading question:

> How might all of this—even by what order of magnitude?—impact the market values of WaterBridge (with a mere $2.8 billion market value), Landbridge (at $4.7 billion) or even Texas Pacific ($24 billion)?[19]

Data center/power generation water demand nationally is already intense enough that populated areas are going to reject such a project if they can, and agricultural areas will need to reject it. Most people and most industries have already situated themselves near water. It's

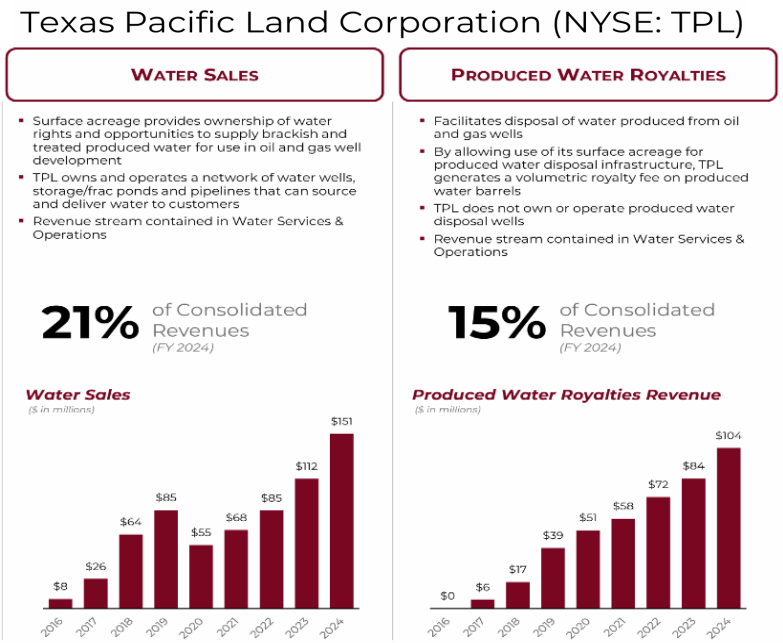
[17] Simply multiplying out 1GWh x 24 hrs/day x 365 days/year = 8,760 GWh
[18] If 50% of the load were handled with wet (evaporative) cooling, this will require approximately 6.5 million gallons/day (Lawrence Berkeley National Lab assumes a water usage effectiveness (WUE) of 1.8 L/KWh). The adiabatic will require just under 1.1 million gallons per day (the Microsoft Sustainability Report, Dec. 2024, assumes a WUE of 0.30 L/kWh). These translate to over 180,000 barrels per/day and 67 million barrels per year.
[19] Market capitalizations based on the closing share price January 23, 2026

one of the first things any society does, anywhere it finds itself. Now, if you happen to *own* a source of available, otherwise-unclaimed water in the present environment, how would you feel about that? Rhetorically speaking, of course.

One day, people will know a lot more about water. Financial news network hosts will cite statistics about its use and invite water analysts or water ETF managers from Fidelity or BlackRock to talk about the exciting growth opportunities. Then, after the excitement wears off, they'll ask those same analysts why the water stocks are underperforming and whether they've gotten ahead of themselves, if that market is too hot, or whether it's permanently cooled because, after all, the market discounts the future.

The Water Market: Now & Future

This whole water business thing … *it's not a future projection. It's already the past and present.*



Water revenues at TPL exceeded 35% of revenues in calendar 2024. The 2025 figures will be available shortly. They were pretty much zero eight years ago. A chart of their revenue growth describes the angle of elevation, at basically 45%-50% a year, of a classic hot growth stock.

TPL operates a capital-light business model, with minimal expenses related directly to its source-water operations, and effectively no direct operating expenses related to the salt water disposal royalties. The preponderance of water infrastructure companies in Texas focuses almost exclusively on produced water. This is a function of recurring, long-term contracted revenues associated with large disposal systems. Source water is viewed as higher-margin—but more cyclical and lower-volume—than produced water.

Source water systems will be mission-critical to the operation and expansion of data centers in Texas. A logical conclusion would be that these systems are considerably more valuable than might be reflected in current operating cash flows. TPL, for those who are unaware, has

the largest source-water infrastructure network in the northern Delaware Basin.[20] This network is a derivative of its large surface land position, and its associated interest in the source water bearing aquifers.

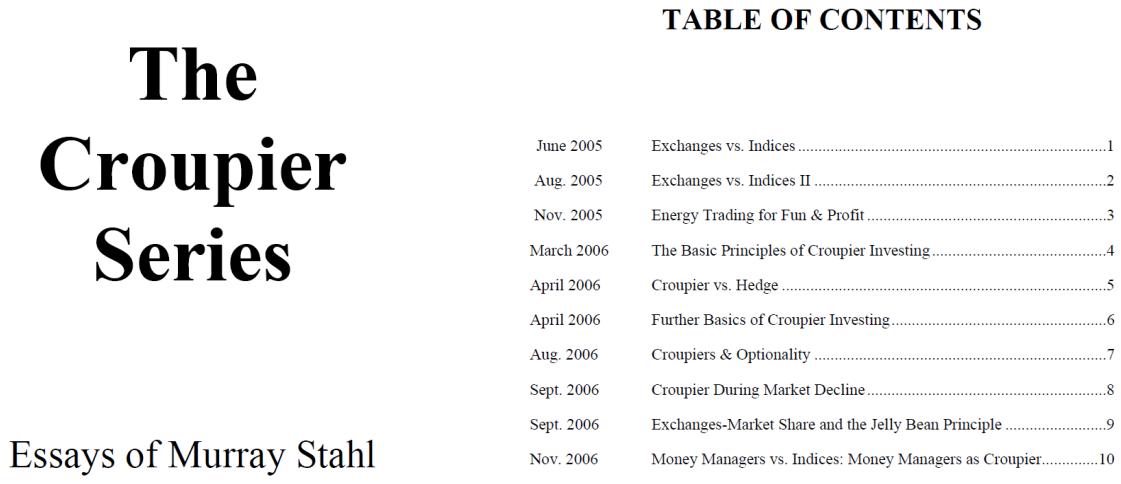
Of course, one of the reasons TPL has been appealing for so long is its land- and royalty-based business model. The asset-light, persistently high-margin model comes up in another type of company: financial croupiers. For that, we turn back to our deep bench for Brandon Colavita, manager of the Horizon Kinetics Blockchain Development ETF.

— *James Davolos*

6. Then and Now: Searching for Croupiers

One of the benefits of working at a firm like Horizon Kinetics is access to the vast array of written research that continues to build as the years go on. It is an unmatched resource, as many of the segments and themes we cover have been studied and published continuously in our 30+ year history. If anyone wants proof, just ask for a copy of our firm's first research report, on Texas Pacific Land Trust in May 1995.

As much as I'd love to take credit for the firm's thesis on croupiers—the corporate equivalent of the casino that sets up a gaming table to invite activity and collect fees therefrom, but without itself putting much capital at risk—the research predates my arrival at the firm by well over a decade. But that doesn't mean the message and thesis from that time have changed.



The Croupier Series

Essays of Murray Stahl

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[20] Company presentation

Exchanges vs. Indices, June 2005

At the time of our first published studies of the securities exchanges 20 years ago, there were 11 major publicly traded exchanges:

- Chicago Mercantile Exchange
- International Securities Exchange
- Deutsche Boerse
- Australian Stock Exchange
- Singapore Stock Exchange
- Archipelago Holdings
- NASDAQ
- London Stock Exchange
- Toronto Stock Exchange
- Euronext
- Hong Kong Exchanges & Clearing

The New York Stock Exchange was still private, although it was arranging a back-door IPO by merging with publicly traded Archipelago Holdings.

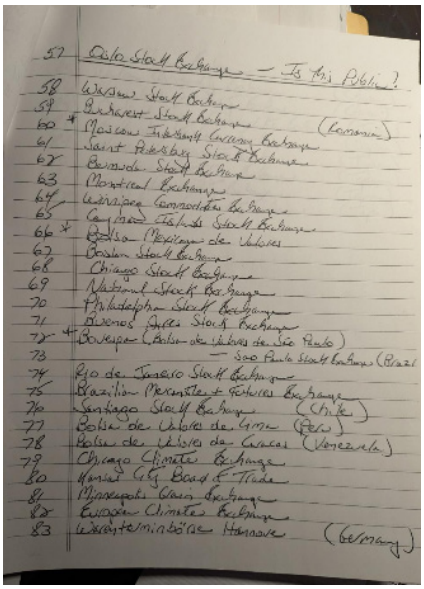
Even so, the demutualization of these member-owned entities—and public offering of their shares—was a recent phenomenon with limited public market performance history. Most of those I've touched on had only been public for a handful of years. Until that point, absent historical stock price data, the best measure of long-term performance was the published prices for seats on the respective exchange, where available. Even that data was misrepresentative and required further inquiry.

For instance, the published price performance of New York Stock Exchange seats was anything but robust. From 1986-2004, the annualized price change was under 4%. It would have appeared to be a poor business. If one looked deeper, though, an investor in a seat could earn a substantial income by leasing it to an active floor trader. If that income were reinvested in purchasing additional seats, the annualized return on investment would have jumped to over 17%.

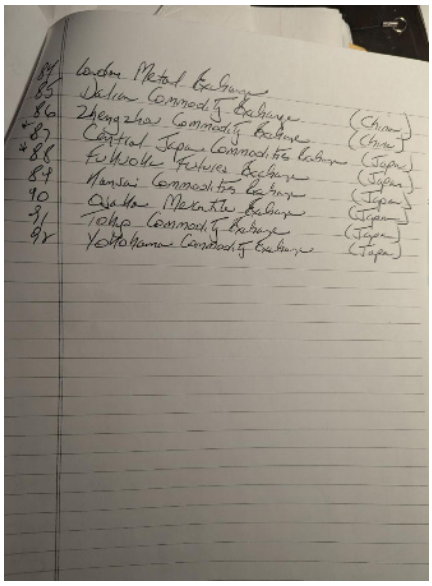
This type of analysis was clearly overlooked by the institutional investment community, which increasingly imposed its own analytical methods into the inclusion and weighting rules of the major equity indexes. Which led to this anticonventional observation:

> *One might therefore legitimately wonder whether an ownership position in an exchange is not ultimately a superior form of indexation to classical indexation. Instead of the purchase of perhaps thousands of companies in order to create a global index, one would purchase only a relatively small number of exchanges.*
>
> *In those places in the world where exchanges exist, a stock exchange is a near monopoly. The exchange is characterized by a cost structure clearly dominated by fixed costs. Variable costs are a very small part of the exchange cost structure.*
>
> *— Contrarian Research Report, June 22, 2005*

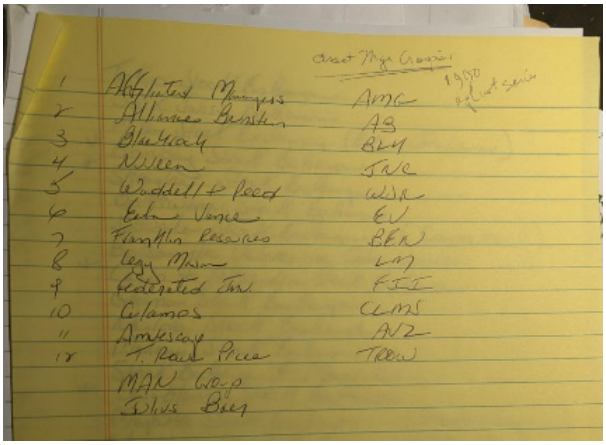
Unexpectedly pertinent to this discussion, Horizon Kinetics is preparing to move offices. While going through old files for the keep/discard exercise, two HK Research Archives artifacts popped up.



Even before it was available, we were seeking to own that best form—almost an idealized model—of a financial markets croupier: a business engineered to earn more money than its corporate customers who represented the market at large, and to make money even when they didn't. A business that didn't have to put much capital at risk, that didn't require debt leverage. We knew it existed, but we lacked the access. We just had to wait for it to be created for us.



Which brings us to a related artifact from the archives. This one, dated 1990, is a list of U.S.-traded asset managers, labeled "Asset Manager Croupiers" and numbering 12. This was a preliminary tally for an eventual 11-member Money Managers Index which, due to acquisitions over time, has been whittled down to five companies. We've been calculating it monthly for decades. And it has proved the point that money managers do markedly better than the market itself.



From 1990 through 2025, the annualized return from the original eleven asset managers was just over 15%.

It wasn't possible, some 35 years ago, for HK to deploy large amounts of capital in

securities exchanges. The CME Group and Nasdaq went public in 2002, and CBOE not until 2010. Accordingly, some use was made of a next-best version. Asset management is an example of a croupier style of business, one that we were obviously familiar with, being one ourselves. The premise is fairly simple: If given the opportunity to gain exposure to a certain segment of the market, or the market as a whole, would you prefer to be a fee-payer or a fee-taker?

Meaning, if you walk through the proverbial front door of such an establishment and retain a manager to invest your funds—whether an investment advisor, mutual fund, hedge fund, or private equity fund—you pay the manager a fee. If you walk around to the back door by buying shares in the same money manager, you effectively earn a share of the manager's fees. As a class of investment, you'll do better than the market over time because:

- First, asset managers earn their fees even when the market is down.
- Added to that, shares of a money manager are not limited on the upside by the market's appreciation. That's because there is a proportional-to-market rise in fees on existing assets under management, as well as fees on additional assets that tend to be added when markets rise.
- Asset managers require almost nothing in incremental capital expenditures to service a higher level of assets. The product is intangible, so servicing $100 million or $1 billion can be done with substantially the same physical and human resources
- Financial capital is typically not at risk—unless a money manager is investing alongside its clients. Managers operate a toll booth model on the entry into certain asset categories.

But money managers are far from ideal as long-term compounding vehicles. The reasons are straightforward:

- Asset managers have a far-larger employee element than most exchanges. More important, insider incentive fees (commissions, bonuses, and private-fund participation) limit the economic gain. The better the investment results, the bigger the insider rewards.

  An excellent example is Affiliated Managers Group, a very successful firm with $800 billion of assets under management, an amalgam of dozens of specialized and often storied managers in which Affiliated has taken a significant stake over the years. Examples include Third Avenue Management, Tweedy Browne, and Yacktman Asset Management. On a consolidated basis, compensation expense is about 50% of revenues, even before administrative and other costs.

- The managed-assets capital is not permanent, with rare exceptions, because the manager has no control over redemptions, which increase during down markets.
- Nor does such a firm, as a rule, accumulate and compound its own capital. The principals generally withdraw their bonus and participation earnings, so that while they might personally build large capital reserves, the business itself does not. Affiliated Managers has $4.3 billion of gross shareholders' equity, but only $3.3 billion net of non-controlling interests (presumably belonging to the principals of firms they've acquired). Deduct the $4.2 billion of intangible assets like goodwill: there is no tangible shareholders' equity.

Asset managers can certainly have a diversifying and additive role in a portfolio. Affiliated Managers Group is a holding in some of our strategies. It has no dividend yield, so the return will be exclusively from share price appreciation.

Another, Alliance Bernstein LP, provides an inverse risk/reward profile. As a limited partnership, it distributes its income, and the yield is about 9%. In this sense, shareholders get to withdraw most of their prospective returns up front: In the last 10 years, Alliance Bernstein shares have appreciated only 4% a year. Including dividends, though, the rate of return was 14%.

Nevertheless, it is the securities exchange sector—there isn't an exchange sector in the S&P 500, though you'd think there should be—that continues to yield higher intrinsic returns and ongoing opportunities (albeit they're less than a 0.5% weight). Aside from the Miami International Holdings (MIAX) IPO, in which we participated several months ago, it remains possible to participate in privately held exchanges through a publicly traded proxy.

A Croupier in Action

Urbana Corp., as an example of the above, being entirely consistent with the theme of this year's Founders Letter. It is itself quasi-private—at least by practical Wall Street standards, just as TPL was when we first wrote about it—in that the market cap is an institutionally invisible $286 million and the average daily trading volume is only about 19,000 shares for the more liquid non-voting Class A local shares. It is not the fare that performance-benchmarked buyers with stringent minimum trading-liquidity constraints trade in, unless they are somehow willing and able to spend years buying a few thousand dollars' worth every day.

Urbana is like a closed-end fund, though not officially, as the company actually reclassified from an investment fund to a corporate structure in 2015. Securities laws governing investment funds would have limited Urbana's position sizes and prevented its ability to

exercise control over issuers in which it invests, something the company has done across many of its private businesses over the years.

Its preferred area of investment is securities exchanges and trading platforms, with some other (mostly financial) businesses mixed in. Over one-quarter of the NAV is in two still-private, growth-stage securities exchanges.[21] Its fourth-largest holding is MIAX, which started as a private investment. Urbana's return on MIAX so far is 3x its cost. Moreover, as with so many portfolio or holding-type companies, it traded at roughly 40%-50% discounts to its NAV for many years. Lately that discount has narrowed, but is still substantial.

Urbana was originally incorporated as a mineral exploration company in 1947, and still holds 44 claims on gold interests in Urban Township, Quebec, making the company unique in many regards. A semipublic/semiprivate, investment holding-like company willing to build long-term controlling positions in names that are difficult to gain exposure to, with gold interests, and trading at a substantial discount to NAV.

The makeup of the trading instruments on securities exchanges will evolve, but exchanges remain the venues that enable and facilitate that trading. It was not necessary decades ago to anticipate that something as intangible as share price volatility and its portfolio hedging properties could become a tradeable instrument and a 200-million-contract-a-year product for the CBOE. It *could* have been reasoned that once the CBOE began developing the VIX business line that it was a free call option embedded in the share valuation.

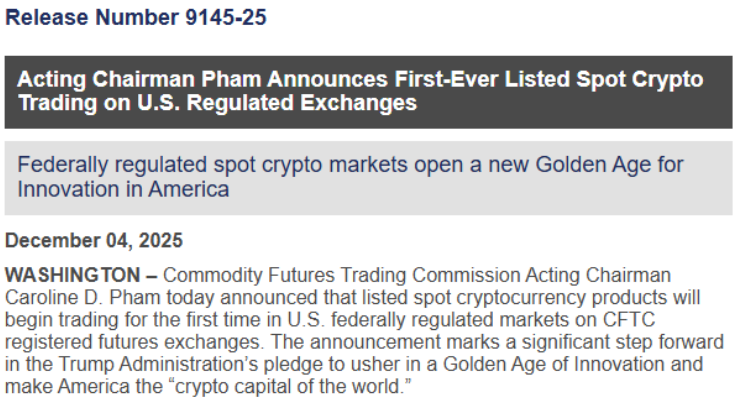
It wasn't necessary to divine, several years ago, the potential of a new digital asset class and the associated blockchain technology to enhance security exchange growth prospects. In this case, though, the implications for exchanges are vaster and deeper than a single family of instruments like the VIX. At the time, most exchanges only had small exposures to blockchain—a few efforts here and there. Clearly, it was a focus for the future, but regulators presented a difficult backdrop for new initiatives. We were happy to wait in these consistently profitable croupier businesses and hold their free optionality.

Logic dictated that regulators would want to properly supervise the trading in the digital asset class. The situation just required clarity on what was allowed. If blockchain and the associated digital assets were to be legitimized and institutionalized on a national and global scale, they would have to gravitate toward the regulated exchanges.

[21] CNSX Global Markets and Blue Ocean Technologies

And if any business model could adapt and stay relevant in the face of a transcendent new technology—to continuously evolve "atop the market"—then it would be this one in particular, which has been doing so for hundreds of years.

In late 2025, the CFTC and SEC provided a joint statement that "clarifies staff's views that SEC- and CFTC-registered exchanges are not prohibited from facilitating the trading of certain spot commodity products." Whereupon spot crypto trading began to trade on CFTC registered futures exchanges.



Release Number 9145-25

Acting Chairman Pham Announces First-Ever Listed Spot Crypto Trading on U.S. Regulated Exchanges

Federally regulated spot crypto markets open a new Golden Age for Innovation in America

December 04, 2025

WASHINGTON – Commodity Futures Trading Commission Acting Chairman Caroline D. Pham today announced that listed spot cryptocurrency products will begin trading for the first time in U.S. federally regulated markets on CFTC registered futures exchanges. The announcement marks a significant step forward in the Trump Administration's pledge to usher in a Golden Age of Innovation and make America the "crypto capital of the world."

It's much more than that, though. There are now other avenues—boulevards, even—of exchange-based transactions that blockchain applications can support. One is tokenization. This is the process of issuing, recording, and transferring an asset on and via a blockchain as a digital asset "token." It could be anything: a copyrighted song; a baseball card, a collectible stamp. This has already taken hold at the largest U.S. equity exchanges and clearinghouses.

What is a token in the traditional securities markets? In one pie-slice of the financial markets, it means that when trading stocks, they'll actually be tokenized shares. The transactions will not have to pass through the processing hands of intermediaries like brokers, banks, and traditional clearinghouses, because they'll be immediately and securely recorded and settled on a blockchain. The experience won't change much for the average trader, but the efficiencies and capabilities can be revolutionary (in their way).

For instance:

- *24-hour trading and global participation on exchanges*

  Increasing trading hours doesn't require a blockchain. The exchange's matching engine is just as robust at 2AM as at 2PM. But try funding your account through the banking system on a weekend, even domestically. Then try a cross-border transfer.

  The biggest difficulty of trading after hours is the necessity to "plug-in" to systems that are not open for business. For every matched trade on an exchange, there is a clearance and settlement process that requires multiple parties to update their records and move

assets. It is the back end, or post-trade environment that creates difficulty. Cash and securities settle on different systems.

Tokenizing these assets puts them on the same system, running 24/7, bypassing incumbent systems limitations and allowing matching engines to flow undeterred. If you can "de-silo" traders in globalized markets, reducing the barriers to transacting, history is definitively clear that liquidity and trading increase.

- *Improvements to risk management*

  Blockchains allow for a world of instant settlement, greatly reducing counterparty risk. Their immediacy also enables almost instantaneous redeployment of that capital. Capital becomes more efficient, and trade errors and defaults less-frequent.

  There are many more, and more complex, variations and extensions of this basic application of the blockchain in financial transactions, but this should be sufficient to convey the reason this is a big idea and development.

  An entirely separate discussion can be had about the displacement threat that blockchain can pose to major incumbent financial institutions that represent centralized control over transactions, like international money transfer.

This might all sound very dry and academic, but it's happening as we speak. All of a few months after the joint SEC/CFTC announcement, the NYSE issued a press release describing a new platform for trading and settlement of tokenized securities. The NYSE's parent, Intercontinental Exchange, is already planning for 24-hour round-the-world trading, for which the company is already working with Bank of NY Mellon and Citigroup.

— *Brandon Colavita*

ICE

The New York Stock Exchange Develops Tokenized Securities Platform

JAN 19, 2026

NEW YORK--(BUSINESS WIRE)-- The New York Stock Exchange, part of Intercontinental Exchange, Inc. (NYSE: ICE) today announced its development of a platform for trading and on-chain settlement of tokenized securities, for which it will seek regulatory approvals.

NYSE's tokenized securities platform is one component of ICE's broader digital strategy, which includes preparing its clearing infrastructure to support 24/7 trading and the potential integration of tokenized collateral. ICE is now working with banks including **BNY** (NYSE: BK) and **Citi** (NYSE: C) to support tokenized deposits across ICE's six clearing houses around the world to help clearing members transfer and manage money outside of traditional banking hours, meet margin obligations, and accommodate funding requirements over different jurisdictions and time zones.

- *Will facilitate 24x7 trading of U.S. listed equities and ETFs*
- *Will allow for fractional share trading*
- *Will offer immediate settlement via tokenized capital*

7. Conclusion: The Extraordinary Value of a Royalty

Having written for years about the many and marvelous differences between the royalty business model and almost any other—about its profit margin advantages, operating leverage, long-term compounding superiority, inflation-beneficiary attributes, and so on—count us skeptical that the consensus truly esteems it sufficiently, or even sees it as a different type of investment.

Maybe it's because royalty companies remain outside the indexation lens. The shares of Wheaton Precious Metals—driven mostly by royalties and streams on gold and silver production—may have risen over 10x in the 10 years that many portfolios have held it. And it has a stock market value above $60 billion. Yet it is not in the S&P 500, perhaps by virtue of its Canadian domicile or the "passive" nature of its royalty business.

In fact, there are no royalty companies in the index, except for the oil and gas royalty portfolio within Texas Pacific Land Corp. No matter the reasons, Wheaton Precious Metals—and similarly extraordinary companies—remains nearly invisible outside of metals and mining specialists or niche Canadian investors.

Or maybe we simply use too many words. Herewith, two fewer-word examples to make the case. The runner-up comes first.

> "There are in fact only so many notes an ear can hear in the course of an evening. Don't take it too hard. Your work is ingenious, it's quality work. There are simply too many notes, that's all. Just cut a few and it will be perfect."
>
> — *Emperor Joseph II of Austria to Wolfgang Amadeus Mozart in the film* Amadeus

Runner-Up

When there is the odd Wall Street comment about a royalty company, it typically includes the observation that it has a high P/E ratio, meaning, "Whatever else we said, you don't want to buy something too expensive."

That statement marks unfamiliarity with the idea that $100 of net income from a royalty company, which has no capital expenditure requirements, is worth a lot more than $100 of income from a company that must spend over $50 of that income to buy new plant and equipment. Like Google, for instance, this past year! On that basis alone, you could say that $100 of royalty income is worth about $200 of Google's income. But that would be a big understatement.

Because there is also the interesting problem of non-producing royalties, to which conventional analysts assign no value without a definitive timeline for future production. Franco Nevada Corp.'s revenues and earnings, for instance, come exclusively from its 119 producing assets—that's only ~28% of its royalty portfolio. The remaining 311 assets, or

~82% of the portfolio, have yet to contribute any revenue (including 38 mines in "advanced" development").

Should the valuation of the shares rest exclusively upon less than one-third of the royalty portfolio? Or would you pay something more than that?

It might be a prudent practice to do exclude those future projects for mining companies, which will incur large costs with a fair degree of uncertainty about the ultimate profitability. But the royalty holder typically incurs no capital costs and no operating cost: the dormant asset portfolio is effectively a zero-cost "call option" on both the commodity price and potential future production.

This is another reason for the often-dismissive relegation of royalty companies to the "high P/E" category that don't rate a Buy List ranking.

The economics of those dormant Franco Nevada reserves could have been scrutinized when the initial investments were consummated years ago, perhaps when gold and silver prices were $1,000 and $15 an ounce. At their recent prices of $4,800 and $94, give or take, those call options are extraordinarily more valuable.

The Real Value of a Royalty

In July 2025, Altius Minerals sold a 1% royalty on the Silicon and Merlin gold discoveries in Nevada to a subsidiary of Franco Nevada for $275 million. The mines are operated by AngloGold Ashanti, which had a market valuation of $26 billion on the date of the deal announcement.[22]

This is consequential, as a 100% royalty on these assets would, by simple multiplication, be worth 100x that, which is $27.5 billion. That's not possible in practice, since a 100% royalty wouldn't leave any revenues or earnings for the mine operator. Nevertheless, it's the agreed-upon value of that revenue stream between two arms-length, highly informed parties.

The implied value of a 100% royalty on that Nevada property—again, not actually possible—would be more than the entirety of AngloGold at the time of the announcement. AngloGold is a substantial miner with properties in Africa, Australia, and the Americas. One might weigh the royalty value of a mere 1% royalty revenue stream on a single mine against a global portfolio of conventional, asset-intensive direct mining property ownership and operations.

[22] July 23, 2025

Altius Minerals is a pretty small company, with a market cap of $1.5 billion, but it was only $900 million when the transaction took place last year. In other words, the sale of that 1% royalty interest amounted to about 30% of Altius's entire market value. Altius still retains a 0.5% interest in the Silicon Gold Project.[23]

Altius Revenues for the 9 months to Sept. 2025

Source	Royalty Revenue	% of Total
Copper	17,678	
Copper/Nickel/Cobalt	1,390	
Copper	**19,068**	**43%**
Potash	13,535	31%
Electricity	7,075	16%
Iron Ore	4,488	10%
Lithium	130	0%
	44,296	**100%**

Note: upon completion of a recent acquisition, lithium royalties will be approximately 20% of total revenues.

The implied value for the entire 1.5% royalty is $412 million. For those keeping score at home, the cost basis for the investment in 2015 was approximately $300,000. The company's return was approximately 1,375x, or 106% annually. *Such is the convexity—or moonshot-ness, to the non-analyst—of a royalty investment when mines get developed and the commodity price rises.*

The Altius shares rose 75% last year. That did not happen because of its gold royalty earnings, of which it has very little. Copper, though, is up 33% in the past 12 months, and was 40% of the company's revenues for the first nine months of 2025. Potash prices are up 22% in the last year, and potash royalties were 30% of revenues.

There are other ways to make money from copper, but it requires a bit more direct involvement, and unconventional "risk" assumption. This is a strategy that the financial news networks *have* picked up on (see accompanying stories, as of last month).

[23] Subsequently renamed Arthur Gold Project

CNN Business

Copper prices are rising. Thieves are taking notice

DEC 22, 2025

By Samantha Delouya

Los Angeles — Brazen thefts are threatening the grid, with thieves climbing onto car roofs to cut down telephone lines or prying open manholes in broad daylight to strip copper wiring. The effects have been felt nationwide: roads and bridges going dark, 911 calls that fail to connect and higher utility bills as replacement costs get passed on.

"This doesn't happen just once a week or once a month," the LASD detective said of copper thefts. "These things happen daily."

Seven miles of copper wire, gone

When Los Angeles unveiled its newly built Sixth Street Bridge in 2022, it was hailed as a new city landmark. At night, the 3,500-foot bridge, with wide pedestrian walkways, would light up in shifting LED colors.

Three years later, the bridge sits dark.

Thieves have stolen more than 38,000 feet, or seven miles, of copper wire from the bridge, causing $2.5 million in damage, according to the local assemblymember who represents the area.

Bloomberg

Copper Hits $12,000 for First Time as Tariff Trade Upends Market

Mark Burton

Tue, December 23, 2025 at 9:06 AM EST

(Bloomberg) -- Copper hit a fresh all-time high above $12,000 a ton as severe mine outages and trade dislocations linked to US President Donald Trump's tariff agenda put the crucial industrial metal on course for its biggest annual gain since 2009.

Prices rose as much as 2% to $12,159.50 a ton on the London Metal Exchange, extending a rally that has lifted prices by more than a third this year. The possibility that Trump will place tariffs on the metal has been a central factor driving prices higher, with a surge in US imports through the year thrusting manufacturers elsewhere into a bidding war to keep hold of supplies.

On the intertwined topics of taking a beat, using fewer words, and a "has it been *that* long?" moment, just two weeks ago, the HK Inflation Beneficiaries ETF passed its fifth anniversary.[24] The fund adheres to a "capital-light, hard-asset" strategy that was inspired by royalty businesses. Though, in truth, all that a half-decade's performance often tells you is how valuations have changed.

For a clearer, more definitive picture, give things another several years. The Altius example above shows what can happen over a decade. Multiple decades, if one is favored with a business with staying power, is when the compounding magic happens. And that answers most questions.

[24] INFL 5-Year Anniversary Update letter **View PDF**

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