



Market Perspectives

Q3 2024



TD Wealth Asset Allocation Committee (WAAC) Positioning Overview

Equity (Neutral Overall)	Equity market returns remain positive year-to-date. While the U.S. market, and in particular technology-related names, are among the leaders, all S&P 500 Index sectors and many major equity markets are up this year. We believe that the equity market has a balanced return outlook. While earnings are growing (as represented by the MSCI All Country World Index), this has been partially captured by the market in valuations.
Fixed Income (Modest Overweight Overall)	Given the evolution of domestic inflation, the Bank of Canada (BoC) may no longer need to maintain monetary policy at very restrictive levels and we expect more policy rate cuts this year. However, barring a swift weakening of the economy, the BoC has stressed that rate cuts will materialize at a slower pace than the hikes they delivered in 2022 and 2023. This means that bond yields should not fall quickly, but this bodes well for the income component of bond returns and, therefore, we continue to expect fixed income to generate positive returns over the next 12 months. Furthermore, with the turn in monetary policy cycle, we expect that bonds will provide diversification benefits, reduce overall portfolio volatility and preserve capital.
Alternatives (Neutral Overall)	We believe that an allocation to alternative assets can benefit diversified portfolios especially when implemented over the long-term. Alternative assets can provide inflation protection and attractive absolute returns, while acting as long-term portfolio stabilizers via their diversification benefits and less correlated income streams. Given the nature of private asset classes as well as the present phase of value adjustment in several markets and asset classes, we believe that this may be an attractive time to increase or consider an allocation to alternative assets.
Cash & Cash Equivalents (Modest Underweight Overall)	We anticipate that the high yield we are currently seeing in cash may be temporary and we would expect a reduction in yields as the BoC and the U.S. Federal Reserve move towards easing measures. Overall, cash may not be as attractive as other asset classes in the medium term.

Quarter In Review

Global economic momentum gained a step relative to expectations but, even so, the Bank of Canada (BoC) and European Central Bank (ECB) began rate-cut cycles; the first G7 central banks to do so.

The BoC cutting the policy rate for the first time this cycle was good news for an economy coping with the highest policy rate in over twenty years. The Canadian economy should benefit from interest rate relief, but overall economic momentum is forecast to remain subdued as indebted consumers continue to adjust. Consumer spending is expected to cool even though the BoC has started to cut interest rates, as borrowing costs remain higher than the COVID-19 pandemic lows. Additionally, a softening labour market is expected to weigh on the pace of consumer spending. The unemployment rate has already climbed a full percentage point in 12 months, and it may rise further by the end of this year. The result is a more balanced job market to take steam out of wage growth and assist in anchoring inflation towards the 2% target on a sustainable basis.

The ECB joined the Bank of Canada in reducing interest rates alongside cooling inflation. Eurozone growth has surprised to the upside in early 2024, albeit from low expectations. Nonetheless, forecast revisions are now leaning toward upgrades, as the prospect of lower interest rates creates some optimism that a floor can be maintained under economic momentum. However, the risk of an uptick in inflation from geopolitical tensions or solid domestic labour markets remains ever-present.

China exceeded forecasters' economic expectations in the quarter, leading to an upgrade to 2024 gross domestic product (GDP). With a 5% growth target almost assured, there is doubt that the government

will provide more stimulus to the economy. Ultimately, China's aging demographics and restructuring of the economic drivers will maintain a slowing growth trajectory as the years progress.

In the U.S., economic growth this year is expected to nearly match 2023's pace, at 2.4%. However, this is partly due to a very strong 4% hand-off in the second half of 2023, which has boosted the 2024 average. By the end of this year, U.S. growth is expected to slow to 1.7% on a Q4 over Q4 basis, as the longevity of higher interest rates create more weight under the normalization of savings and job markets.

The pace of consumer spending in the U.S. appears to be slowing as overall household borrowing has slowed dramatically since the U.S. Federal Reserve (the Fed) started raising rates two years ago, and consumer credit growth, running at around 2%, is at its slowest pace outside of a recession. With pandemic-savings cushions largely exhausted, consumers may be tightening their belts. Spending on durable goods, which are big ticket items like vehicles and furniture, has also cooled. However, the job market remains strong. Hiring accelerated so far in 2024, enabled by much faster population growth than the official statistics captured, thanks to increased migration. That said, hiring looks set to slow with recent data showing employer demand has normalized to pre-pandemic levels. That should help turn down the heat on inflation trends in the service sector. However, core inflation on a year-on-year basis is expected to remain a bit on the high side of the Fed's comfort level through 2024 due to unfavourable base effects. We suspect the Fed will look through that to form a decision to cut rates at the end of this year.

Global Equity Index Returns C\$

Name	1M	3M	12M	3Y	5Y	10Y
S&P 500 Index (Large Cap)	3.98%	5.45%	28.80%	13.74%	16.11%	15.72%
S&P/TSX Composite Index	-1.42%	-0.53%	12.13%	5.98%	9.28%	6.95%
MSCI EAFE Index (Europe, Australasia, Far East)	-1.24%	0.69%	15.34%	6.38%	7.45%	6.98%
MSCI Emerging Markets Index (Emerging Markets)	4.40%	6.29%	16.83%	-1.45%	4.45%	5.79%

Source: TD Asset Management Inc. ("TDAM"). As of March 31, 2024.

AI and Electricity Demand: Will the Power-Hungry Machines be Satiated?

Artificial Intelligence (AI) is a highly disruptive, general-purpose technology (GPT) with compute requirements that are likely to continue growing exponentially well into the 2030s. Alongside the rising share of electric vehicles on roads and the trend towards the onshoring of manufacturing, AI is beginning to create an electricity demand surge in the U.S. This surge has critical implications for infrastructure investment, especially as the AI-induced boom follows an extended period of flat U.S. electricity consumption.

AI models possess a seemingly insatiable thirst for electricity. To illustrate, between 2020 and 2022, annual electricity demand from Microsoft Corporation, Alphabet Inc. (Google), Amazon.com, Inc., and Meta Platforms, Inc. grew 58%. Most of this surge was driven by data center (DC) build, with Microsoft Corporation alone currently adding a new DC roughly every three days. DCs are power-hungry machines, and we expect their electricity demand to triple over the next decade.

The electricity demand boom will stress existing infrastructure, including generation capacity, transformers and the transmission and distribution

(T&D) grid. Without massive investment, as well as transformational innovations (for example, regarding battery storage, small modular reactors, and more efficient semiconductors), there is a rising risk that electricity demand may race ahead of supply. This could create a chokepoint that impedes AI progress, with negative consequences for innovation, productivity, security, and not to mention equity markets.

At TD Asset Management ("TDAM", "we", "our") we see five important questions to ask about the impending electricity demand boom:

- 1 Why is electricity load growth increasing now, after having been flat from 2007-2022?
- 2 Will power supply constraints impede AI progress?
- 3 Is AI unwelcome news for CO2 emissions and climate change?
- 4 What is the key risk of this boom?
- 5 What are the implications for investors?

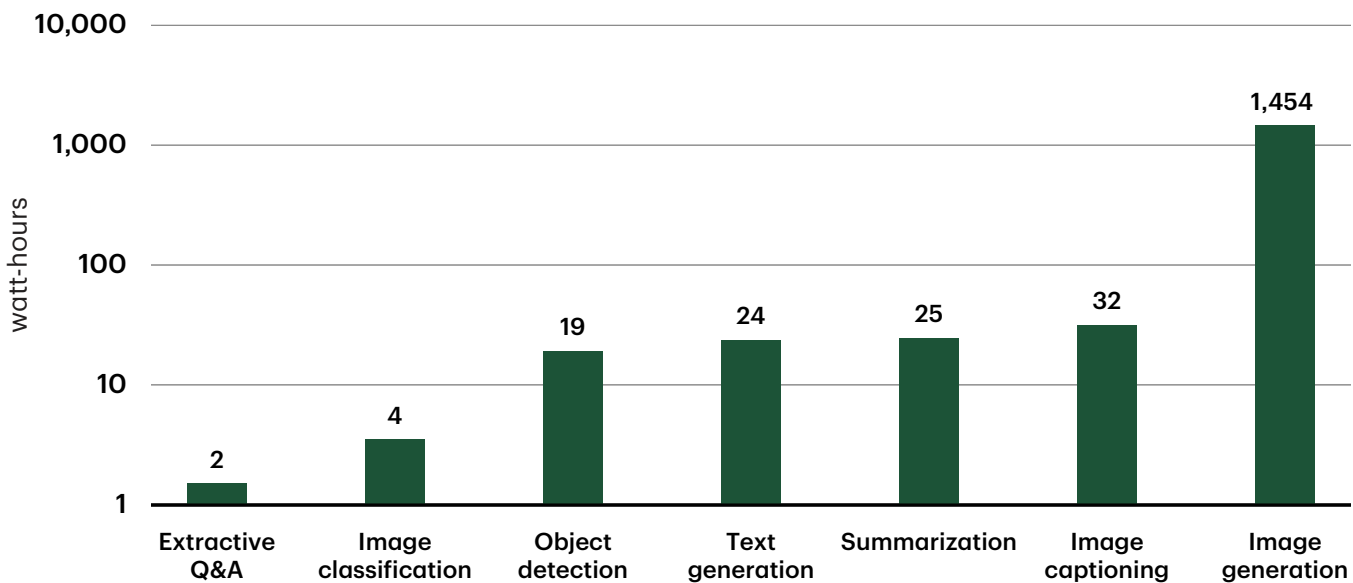
1 Why is electricity load growth increasing now, after having been flat from 2007-2022?

We are still in the early days of AI diffusion, analogous to where the personal computer was in 1980, the internet in 1995 or electricity in 1900. This is important because technology companies often believe that throwing more compute and data at an AI model is the best way to improve performance. As a result, the compute used to train AI models has been increasing exponentially over the last fifteen years with no signs of slowing down.

Training a foundational AI model requires an enormous amount of compute and hence, electricity. However, that is not the end of the story as inference is also power hungry and becoming ever more so. To illustrate, a traditional Google query requires about 0.3 watt-hours (Wh). However, a comparable ChatGPT request would necessitate 2.9 Wh, a roughly ten-fold increase. Future use cases for AI will increasingly emphasize compute-intensive capabilities which consume multiples more energy (**Figure 1**).

Figure 1: Power hungry – Inference energy used for various tasks (as a multiple of energy for a simple text classification, log scale)

Generating images requires more than 1,000 times the energy of text classification. The energy demands of sound and video generation will be thousands of times greater still.

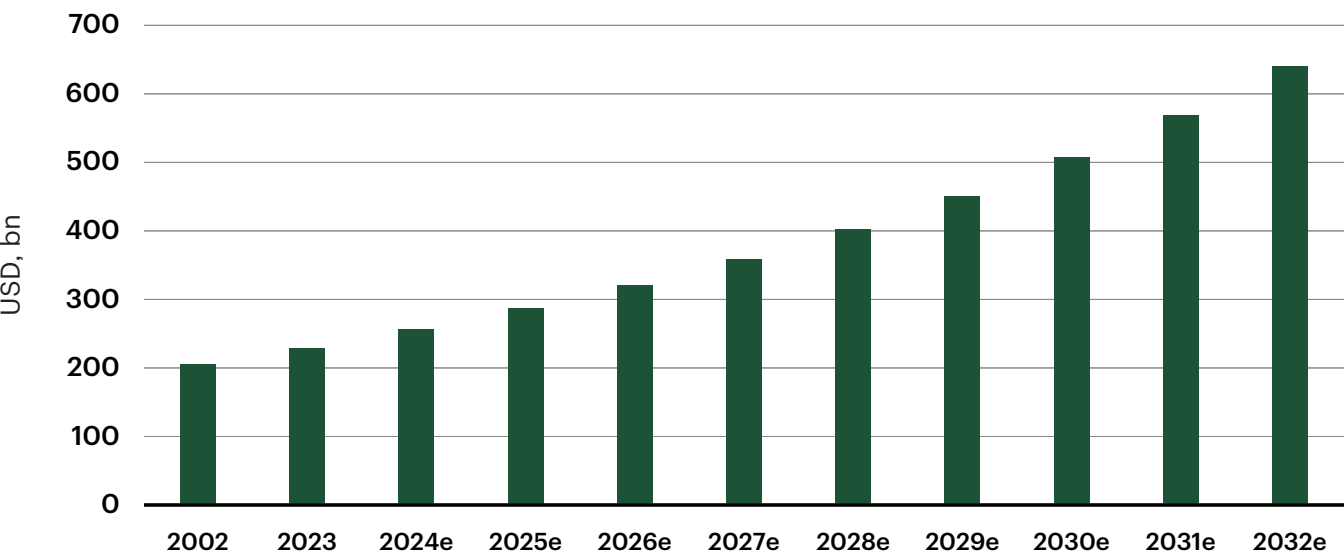


Source: "Power hungry processing: Watts driving the cost of AI deployment?" by A. Luccioni et al, Hugging Face and Carnegie Mellon, 2024.

Electricity

Turning to DCs, there are currently more than 8,000 globally, with the market size of DCs projected to soar (Figure 2).

Figure 2: Global DCs, forecasted market size (USD, billions(bn))
Expected to almost triple, representing a compounded annual growth rate (CAGR) of 12.1%.



Source: Bloomberg L.P. As at May 30, 2024.

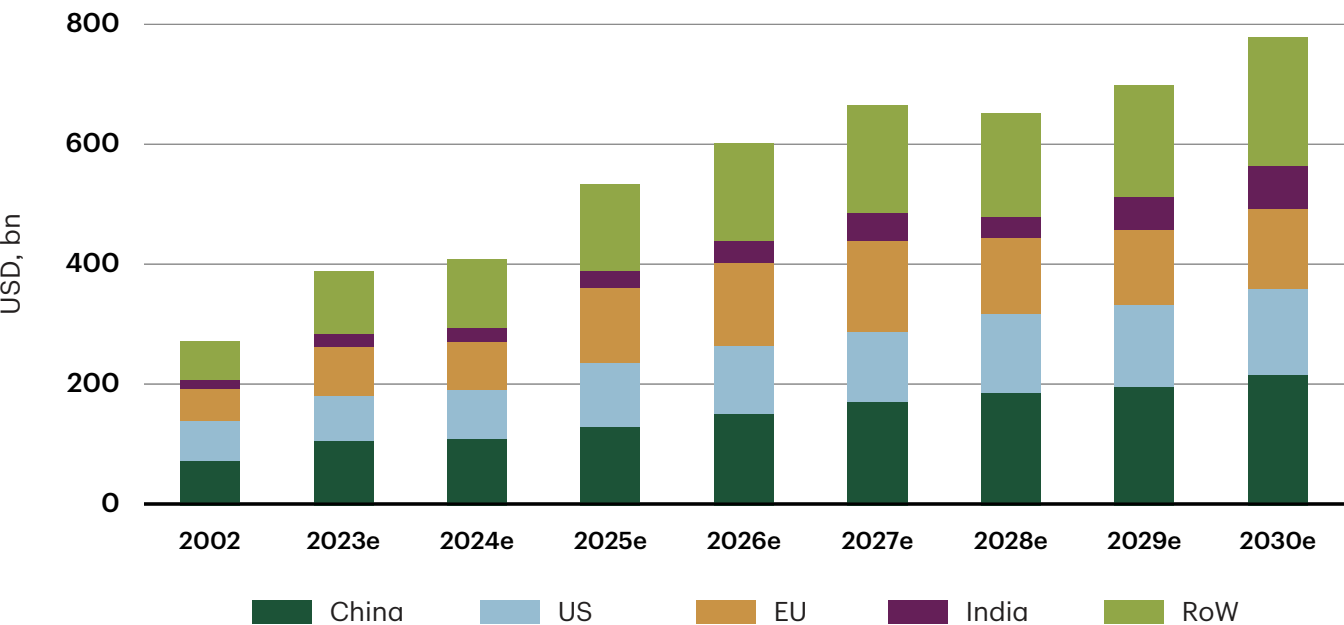


As DCs proliferate and become increasingly compute intensive, large scale cloud service providers, called hyperscalers, are all looking to put gigawatts of additional demand on the grid. To illustrate, the Electric Power Research Institute (EPRI) estimates that U.S. DCs currently consume about 100 Terawatt-hour (TWh) TWh/year with this increasing to 300 TWh/year by 2030.

Most importantly, there is an almost comically wide band, 150-510 TWh, around the EPRI's point forecast. The massive uncertainty about future electricity demand is under-appreciated and represents a critical challenge.

Load growth exhibited a piddling CAGR of 0.4% in the decade ending 2022, but the U.S. Energy Information Administration (EIA) projects this to increase seven-fold, to 2.8%, from 2023-2030. In response, infrastructure investment is expected to boom (Figure 3).

Figure 3: Global electrical grid investment by region (USD, bn)
With a CAGR of 14%, the total is forecast to almost triple from 2022 to 2030.



Source: Bloomberg L.P. As at March 31, 2024.

Energy

2 Where bits meet atoms: Will electricity constraints impede AI progress?

The possibility of insufficient electricity capacity offers a concrete example of where the fast-moving world of bits runs up against the slow-moving world of atoms. Think of the time it takes to add generation capacity, affix transformers, or build out the T&D grid. Moreover, utilities are by design slow-moving, regulated entities.

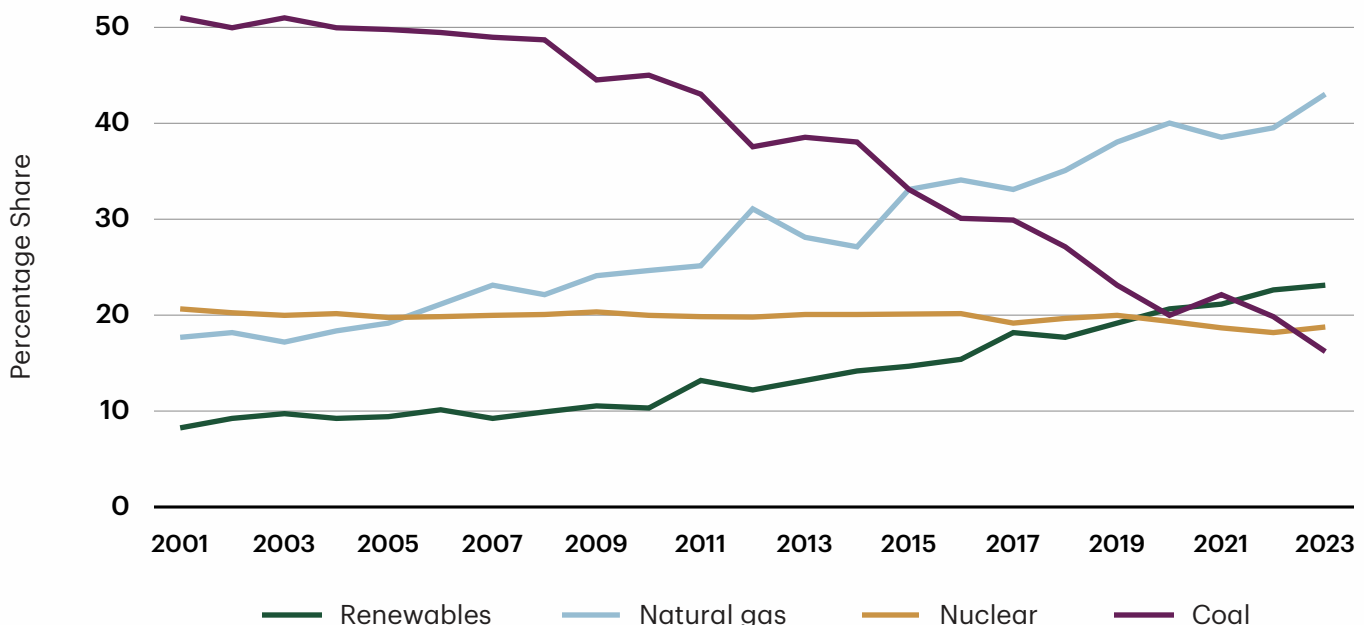
Reflecting this, many are worried about a looming power crunch. According to a survey by Barclays ("Grid of the future event: Highlight & survey results. February 20, 2024), 75% of respondents believe rising grid investment is a long-term secular trend. However, only a minority of those surveyed believe grid equipment and T&D capacity can keep pace.

3 Is AI unwelcome news for CO2 emissions and climate change?

Unfortunately, there are four reasons to believe AI is bad news for emissions, at least for the next decade. First, natural gas power plants are the best near-term solution to meet AI-driven demand growth, as they can be built quickly (under 24 months for a combined-cycle gas turbine plant) (**Figure 4**).

Figure 4: The dash to gas – U.S. electricity generated by source (% share)

Natural gas and renewables will continue gaining share from coal, while nuclear's contribution has been stable for decades.



Source: Energy Information Administration (EIA). As at March, 2024.

Second, some coal plant closures might be delayed so that baseload growth can be met. Third, wind and solar are increasingly important but intermittency requires dramatic improvement in battery storage (from several hours to several days). Finally, although nuclear power is carbon free and has many fans, it has not represented a significant addition to U.S. generation capacity since the 1970s and 1980s.

4 The key risk: Enormous uncertainty about future electricity demand

Many anticipate increased grid congestion and constrained electricity supply. While we agree, we believe the key risk is actually the enormous uncertainty regarding future electricity demand.

There are critical uncertainties regarding technological progress, but a big concern for AI is how it proceeds to track cumulative costs over time. Earlier we cited the EPRI's estimate that the electricity consumption of U.S. DCs is set to increase from 100 TWh/year currently to 300 TWh/year by 2030, but with an enormously wide band, 150-510 TWh.

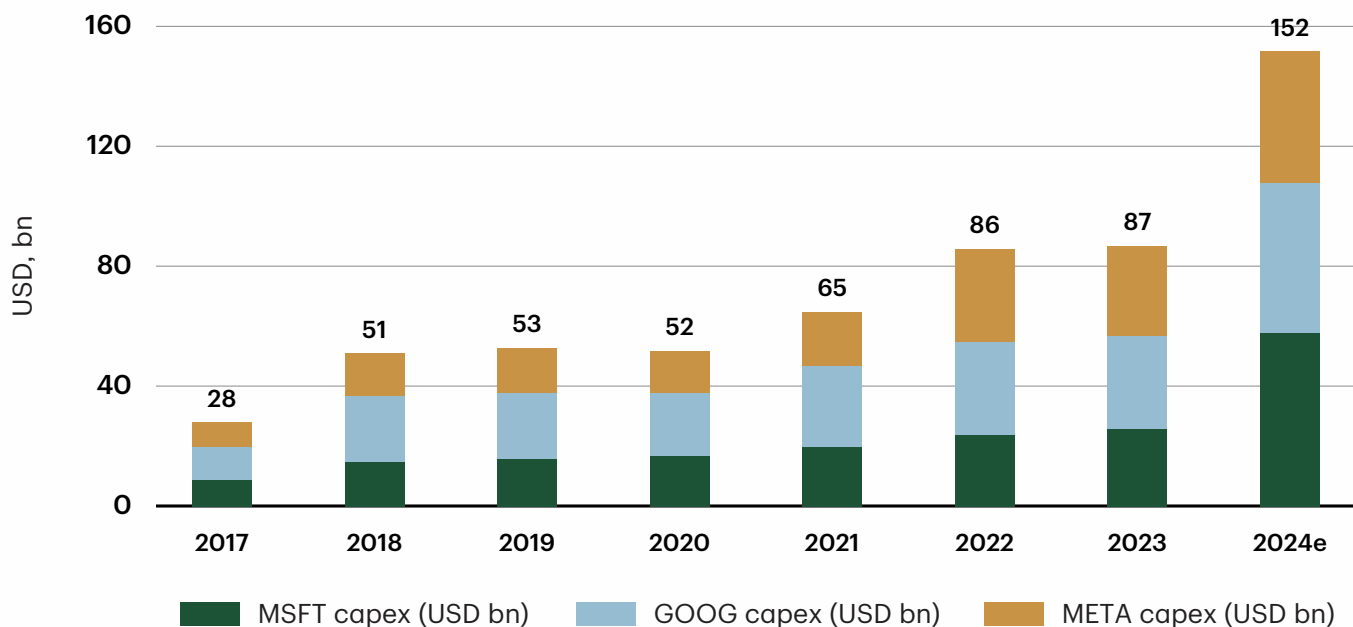
In light of such a wide band, what is the optimal investment path for utilities and infrastructure-related companies? There are clear risks to underinvesting, so should they just assume 510 TWh? However, there

are also major costs associated with investing too much, too early, especially if this ends up being yet another case of phantom demand. Further, there is significant risk of extreme volatility in DC build and electricity demand over the next decade.

In particular, the current capital expenditure (capex) boom by hyperscalers appears unsustainable. The big three are forecast to spend \$150 billion USD on capex this year with some commentators speculating that combined spending by 2030 could surpass \$1 trillion USD (**Figure 5**).¹ This capacity will likely be required eventually but it could be a decade later than some pundits expect.² A boom-bust cycle would create havoc for utilities and infrastructure-related companies because hyperscaler capex is a leading indicator of DC-driven electricity demand.

Figure 5: Capex by Microsoft Corporation (MSFT), Alphabet Inc. (GOOG) and Meta Platforms Inc. (META) (USD, bn)

No longer capital light – spending has increased more than fivefold since 2017.



Source: Bloomberg L.P. As at May 30, 2024.

¹To illustrate the eye-popping scale of these investments, the 13-year Apollo program cost a total of \$120 billion USD and the 4-year Manhattan project cost \$30 billion USD (both in today's dollars).

²This is what occurred with the 1990s tech wave as well as earlier bouts of exuberance, such as the British railway boom in the 1840s.

There are two reasons to believe it might take longer for AI dreams to be realized. First, the diffusion of GPTs always takes decades (as it did with the steam engine, electricity, and personal computers/internet). Second, AI has not yet produced a so-called killer app, or an application so popular that the technology itself becomes indispensable to the majority of people. Right now we don't even know what that could look like and it might be many years before the big spenders earn a return on their massive capex outlays.

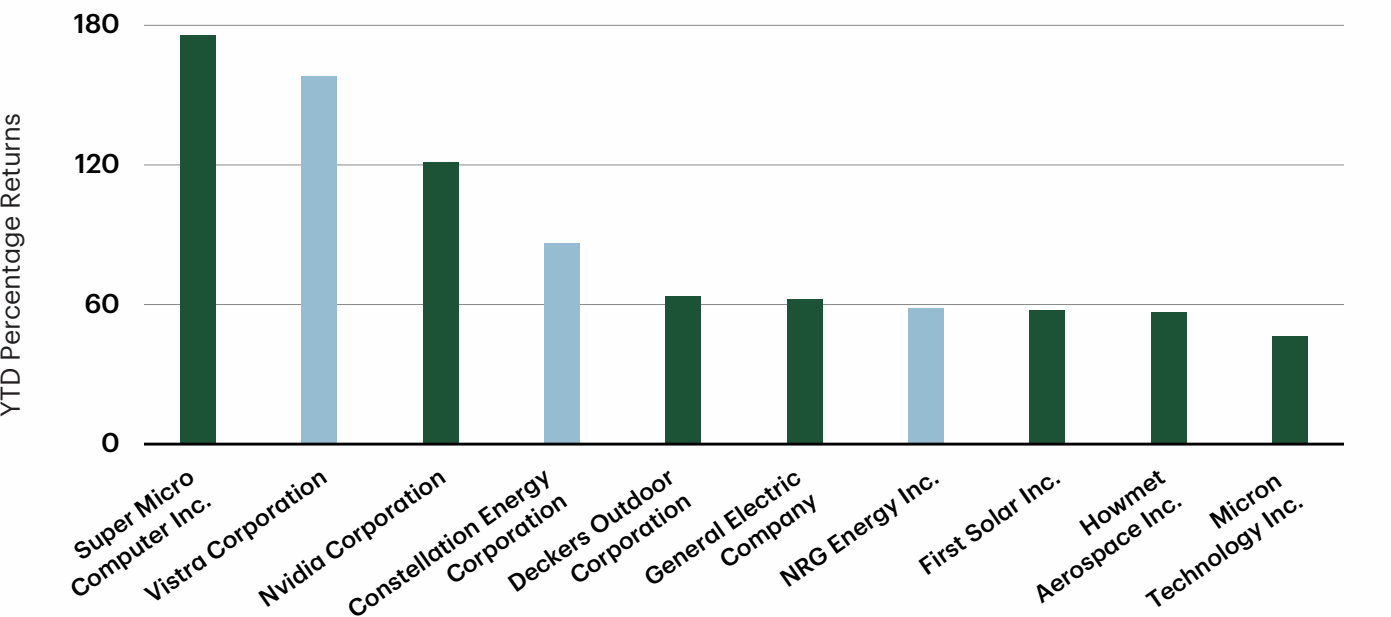
An important question for investors is then: How long will the hyperscalers' investment cycle last? We can never know for sure, but previous technology cycles lasted multiple years, suggesting we may be closer to 1996 than to 1999.

5 What are the implications for investors?

In this section we highlight the implications of increased electricity demand for utilities, companies exposed to electricity infrastructure, commodities, and infrastructure investments.

The increase in electricity demand has been great news for the Utilities sector. It has been the third best performing S&P 500 Index sector year-to-date, trailing only Telecommunications (includes GOOG and META) and Information Technology (includes MSFT and NVDA). Three companies from the Utilities sector delivered especially outsized returns (**Figure 6**).

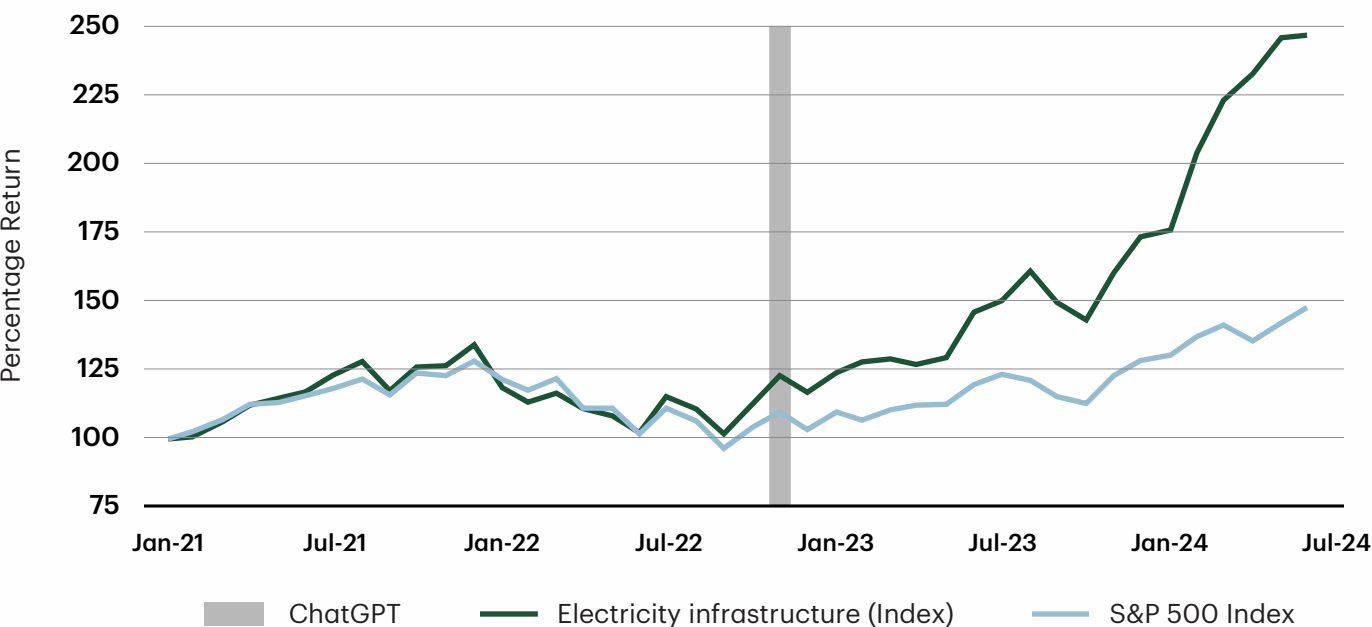
Figure 6: S&P 500 Index Top 10 companies (as a percentage, year-to-date (YTD))
It has been a technology-driven market, but three of the top ten are Utilities.



Source: Bloomberg L.P., as of May 31, 2024.

Companies exposed to electricity infrastructure have also performed well. As shown in **Figure 7**, a hypothetical market-cap weighted index of eight companies exposed to energy infrastructure*, illustrates how these companies outperformed the S&P 500 Index, since ChatGPT was released in late 2022.

Figure 7: An index of eight companies exposed to electricity infrastructure has outperformed since ChatGPT was released



Source: TDAM, Bloomberg L.P., as at May 31, 2024.

*This is not an investable portfolio and is for illustrative purposes only. Hypothetical index comprised of: Eaton Corporation plc, Trane Technologies plc, Quanta Services Inc. Vertiv Holdings Co, nVent Electric plc, Equinix Inc., Digital Realty Trust Inc., and Amphenol Corporation.

Regarding commodities, the upgrading of the power grid, as well as the green transition, is beneficial for copper and aluminum. To illustrate, grid demand for copper is expected to exhibit a CAGR of over 12% to 2030. Another beneficiary is natural gas, which will continue to play a key role in electricity generation for at least the next decade.

Finally, the infrastructure asset class should benefit from significant investment in power. Moreover, we view the asset class as attractive because it has a relatively low correlation to equities, provides a hedge against inflation, and offers long-term, stable, risk-adjusted returns. Overall, we believe the investment case for infrastructure is very compelling.


























TDAM offers a number of high-quality solutions that can provide exposure to the growth expected in electricity demand over the coming decade and beyond. This includes investments in companies within Utilities, electricity infrastructure, commodities, and Infrastructure. Contact your advisor to learn more about these opportunities and how they can potentially enhance your portfolio's performance.

WAAC Positioning And Outlook

Asset Class Assumptions






To close out the quarter, we were neutral on equities and alternatives, with a modest overweight to fixed income and a modest underweight to cash & cash equivalents. The TD Wealth Asset Allocation Committee meets monthly and will make necessary strategic adjustments to asset class views as the environment unfolds.

Equities – Neutral Overall Outlook

	Maximum Underweight	Underweight	Neutral	Overweight	Maximum Overweight	
Canadian Equities						<p>Canadian gross domestic product (GDP) growth has slowed and inflation has subsided. As a result, the BoC recently announced a 25 basis points reduction of its policy rate. The indication that rates have peaked and potential for further reductions is supportive for the economy. The TSX Composite Index offers some attractive opportunities with strong free cash flows within the Energy sector, relatively inexpensive Financials stocks, and reasonable overall valuation.</p>
U.S. Equities						<p>The U.S. labour market and GDP growth have remained robust. S&P 500 Index returns this year have been driven by both multiple expansion and earnings growth. While mega cap technology firms are a significant contributor to returns, partly driven by AI opportunities, all S&P 500 Index sectors are in positive territory and the index may command a premium valuation due to its higher technology exposure.</p>
International Equities						<p>While macroeconomic conditions are sluggish, particularly in Europe, we feel that international equity valuations are overly discounted and that future returns will be more inline with global markets. Japanese equities look attractive on a relative basis, with momentum building behind a corporate reform agenda aimed at boosting profitability and valuation multiples.</p>
Chinese Equities						<p>The Chinese equity market has rebounded recently. We believe that further upside might be more limited as the country continues to work through the challenges in its property sector.</p>
Emerging Markets ex. China						<p>Some emerging market central banks appear to have paused their rate hiking cycle, with Brazil and Chile cutting rates. While this is supportive of better domestic growth in these countries, it might be partially offset by the impact weaker global growth could have on exports.</p>

Fixed Income – Modest Overweight Overall Outlook



Domestic Government Bonds	 <p>Modest Overweight</p>	<p>If the Canadian economy continues to evolve as it has in the first half of 2024, we anticipate that the BoC will deliver more rate cuts into the end of the year. Although bond yields have fallen as expected ahead of the turn in the monetary policy cycle, there is room for them to fall further if the BoC can continue to predictably reduce its restrictive monetary policy stance. Over the longer term, we believe government bonds continue to remain appealing due to their potential to generate positive nominal returns.</p>
Investment Grade Corporate Credit	 <p>Modest Overweight</p>	<p>Investment grade spreads remain tight overall and reflect a modest softening of the global economic backdrop. We see Canadian investment grade corporate bonds as more attractive than U.S. investment grade corporates as spreads in Canada continue to be meaningfully wider.</p>
Global Bonds-Developed Markets	 <p>Neutral</p>	<p>As more leading central banks begin cutting rates to ease the restrictiveness of monetary policy, investor attention is turning to the uncertainty emanating from global elections. As election-induced, idiosyncratic policy risks weigh on markets, the evolution of each central bank's easing cycle and bond returns are not foregone conclusions. For example, we anticipate the U.S. Fed will be in a position to cut its policy rate as early as September, which should have positive implications for U.S. bond market returns. However, the upcoming U.S. election may impact investors' economic forecasts for 2025 and beyond, and in turn, capital market valuations across all asset classes. Therefore, we expect opportunities across developed market bonds to vary over the next 12 to 18 months.</p>
Global Bonds-Emerging Markets	 <p>Modest Underweight</p>	<p>The dispersion of returns within emerging markets continues to present opportunities on a tactical basis. While yields remain attractive in some regions, local-currency government bonds in many emerging market countries have already priced-in significant rate cutting cycles and therefore there is reduced potential for emerging market bonds to outperform developed market bonds. A strengthening U.S. dollar and persistent volatility in U.S. government bond yields may also be a headwind for emerging market countries with high levels of U.S. dollar liabilities.</p>
High Yield Credit	 <p>Modest Underweight</p>	<p>All in yields remain attractive, but high yield spreads continue to be expensive and not reflective of potential challenges within the sector. While the majority of high yield companies are performing well, many of the riskier high yield issuers are struggling with heavy debt loads and slowing growth. As a result, we remain cautious at current valuations and favour the higher quality cohort of the market.</p>

Alternatives – Neutral Overall Outlook



Commercial Mortgages	<p>Modest Overweight</p>	Commercial mortgages continue to provide accretive income while insulating investor returns from the increased volatility in interest rates.
Private Debt (Universe)	<p>Neutral</p>	High credit quality and global diversification provides an income ballast in an uncertain economic environment. Incremental income and potential capital appreciation from interest rate moderation provide upside.
Domestic Real Estate	<p>Modest Underweight</p>	We believe a significant portion of the value adjustments in the Canadian commercial real estate space have been taken. Moving forward we see more reason for confidence in the multi-unit residential, retail and industrial spaces.
Global Real Estate	<p>Modest Underweight</p>	We believe the majority of the value adjustments have occurred in the U.S., UK and Nordic countries, while other regions, such as Australia, are in the midst of value adjustments.
Infrastructure	<p>Modest Overweight</p>	Increases in cash flow from higher-than-expected inflation is buffering rising interest rates. Investor appetite is particularly focused on energy transition investments and critical infrastructure sectors that generate stable, growing cash flows.

Alternatives

Sub-Asset Class

Maximum Underweight

Underweight

Neutral

Overweight

Maximum Overweight

U.S. Dollar



Neutral

Relative growth differentials favor the U.S. economy and by extension the U.S. dollar. While U.S. growth may also decelerate, it is expected to remain stronger than in Canada or parts of Europe. This leaves room for relative strength in the U.S. Dollar.

Commodities (Gold, Energy, metals, agriculture, carbon)



Modest Overweight

Commodities can help to diversify portfolios as their returns have a low correlation to both stocks and bonds. Underlying fundamentals remain supportive for key commodities (e.g. oil or copper), as supply remains either disciplined or restricted. Gold has been supported by central bank buying as well as demand from China. These factors have more than offset the headwinds from the year-to-date rise in real yields and the U.S. dollar.



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Market



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