

PRIVATE INFRASTRUCTURE IN DEFINED CONTRIBUTION PLANS

**Enhancing Outcomes through Diversification
of DC Multi-Asset Investment Strategies**

America's retirement system is entering a new era. Defined contribution plans now hold more than \$14 trillion in retirement assets, with nearly 65% of all 401(k) contributions flowing into target-date funds—the investment vehicle that increasingly shapes retirement outcomes for millions of Americans. As these professionally managed portfolios continue to evolve, fiduciaries have a responsibility to thoughtfully evaluate opportunities to improve long-term participant outcomes.

Private infrastructure deserves serious consideration. For decades, the world's largest institutional investors have relied on infrastructure investments for their stable cash flows, inflation protection, diversification, and long-term growth potential. These essential assets—from power grids and digital networks to renewable energy, transportation, and water systems—provide services society depends upon every day while exhibiting investment characteristics that naturally complement long-term retirement portfolios.

At DCALTA, our mission is not to advocate for a single asset class, but to educate fiduciaries on the prudent implementation of private assets and other alternative investments within diversified, professionally managed participant investment options. This paper examines the role private infrastructure can play within defined contribution portfolios. Please note, it does not attempt to address certain fiduciary considerations that we anticipate will be further clarified by the U.S. Department of Labor in its forthcoming final rule, Fiduciary Duties Regarding the Selection of Designated Investment Alternatives. As that regulatory framework continues to evolve, DCALTA remains committed to providing educational resources that complement the guidance ultimately provided by the Department and other agencies.

I want to thank the members of DCALTA's Alts Implementation & Operations Committee and our many industry contributors whose expertise made this publication possible. Their collaboration reflects our shared commitment to advancing research, education, and thoughtful dialogue across the retirement industry.

We hope this paper serves as a practical resource for plan sponsors, consultants, investment managers, and policymakers as they continue to strengthen retirement outcomes for millions of American workers.



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I. EXECUTIVE SUMMARY

Objective

To educate and inform plan sponsors, investment managers, and consultants about the potential benefits and challenges of incorporating private infrastructure into Defined Contribution (DC) plans, particularly within Participant Investment Options (PIOs).¹

Key Themes

1. Characteristics of Private Infrastructure: Private infrastructure offers diversification, opportunities for both appreciation and predictable cash flows, and frequently provides natural inflation protection characteristics that help preserve purchasing power over time, filling an important need for long-term retirement portfolios.

2. Private Infrastructure in DC Plans: Private infrastructure can enhance long-term outcomes for U.S. retirement savers because the asset class has historically exhibited low-to-moderate correlation with traditional asset classes such as public equities and fixed income.

3. Implementation Strategies for DC Plans: Integration of private infrastructure strategies is best achieved through professionally managed, multi-asset PIOs that can align investment goals with participant objectives by enabling asset allocators to create a pattern of relative stability for limiting downside volatility, even while managing common investment characteristics such as illiquidity and valuation frequency.

4. Monitoring Private Infrastructure Performance: DCALTA believes fiduciaries should design and implement a due diligence process to consider relevant factors such as net of fee risk-adjusted performance, liquidity and valuation dynamics while balancing them with expected return impact.

II. INTRODUCTION

Defined Contribution plans are now the primary retirement vehicle for millions of individuals. As plan sponsors and consultants pursue improved long-term outcomes for participants, they increasingly look beyond traditional public markets. Infrastructure assets are the essential systems that underpin everyday life and sit in the middle of the growth and income spectrum attracting investments in the United States and globally, with assets under management in private infrastructure mandates reaching over \$600 Billion by the end of 2024.²

Infrastructure is best understood by observing how it impacts everyday lives; it is integral to how we function both individually and as a society. For every light switch that is turned on, there is electricity flowing through a vast transmission network. For every faucet that is opened, the water that flows is being delivered by underground systems in operation for decades. For every cell phone call we make, the 5G signal is connected through towers, fiber lines and data centers. For every item on a store shelf, those items have moved through ports, roads, rails and logistics hubs.

Infrastructure comprises the physical systems that make modern life possible, and with the growth of the artificial intelligence industry and its corresponding energy requirements, demand for physical infrastructure is increasing even as existing funding sources approach their limits. Yet to date, infrastructure remains largely absent from most DC portfolios.

Infrastructure assets can provide durable income, a hedge to inflation, and broader diversification with less volatility and correlation to public securities – offering resilient characteristics for long-term DC portfolios. For investors, these systems offer something rare: an essential asset demand profile combined with long term visibility and long-lived, contracted or regulated cash flows.

III. UNDERSTANDING PRIVATE INFRASTRUCTURE

What is infrastructure?

The definition of infrastructure continues to evolve and may differ based on who is seeking to define it. For a long time, infrastructure constituted the essential and basic physical necessities that would enable a society and economy to function. Some infrastructure assets, such as transportation systems that include roads, bridges and tunnels, were regarded as public goods. Unlike prior decades, today's infrastructure demand is being driven simultaneously by digital transformation, energy transition, and shifting capital ownership models significantly expanding the opportunity set for investors.

Rather than begin by simply listing infrastructure sectors, a more intuitive approach is to define infrastructure by their attributes:

Essential Services: The asset delivers critical services — power, water, transport, or digital connectivity.

High Barriers to Entry: Large capital needs, regulatory requirements or natural monopolies limit competition.

Long Useful Life: Assets operate for decades, often 20-30 years.

Contracted or Regulated Revenues: Revenue is often structured through contracts with credit worthy entities such as governments and municipalities. These contracts are long-term and often regulated with concession (take or pay) agreements.

Inflation Linkage: Prices charged to infrastructure consumers are often indexed to inflation, either explicitly or implicitly.

Stable, Predictable Cash Flows: Once built, mature infrastructure assets exhibit low earnings volatility due to contracts and inflation linkage.

Low Failure Risk: Critical services cannot simply shut down, offering strong downside protection. These assets typically involve proven technologies and thus take minimal exposure to unproven newer technologies.

What are the types of infrastructure?

Infrastructure investors generally agree on what constitutes an infrastructure investment. The following sector categories are broadly recognized as infrastructure:

Utilities: Electric, gas, and water networks; transmission and distribution assets.

Transportation Infrastructure: Toll roads, bridges, tunnels, airports, ports, marinas and rail networks.

Renewable Energy: Energy generation from natural processes, including solar, wind, hydro waste to energy and battery storage.

Energy Infrastructure: Pipelines, storage facilities, gathering and processing systems, liquefied natural gas (LNG) infrastructure.

Digital Infrastructure: Wireless towers, fiber networks, data centers, and cloud/edge computing facilities, including those supporting artificial intelligence capabilities.

Social Infrastructure: Education, healthcare, justice, and civic assets, typically under long-term availability-based arrangements.



These sectors differ in end markets but share common economic properties including essentiality, durability and stable revenue frameworks.

What is the spectrum of infrastructure investments?

Infrastructure can be categorized by risk and return:

Core	Core Plus	Credit
• Mature, operating, essential assets • Contracted or regulated revenue • Lower risk, lower volatility • Strong income profile • Often have inflation-linked revenues	• Similar to core but with modest growth or selective volume or demand exposure • Balanced mix of income and appreciation	• Backed by hard asset collateral • Lower default rates and higher recovery rates (in comparison to corporate lending) • Contracted revenues, often with inflation-linked revenues • Detailed financial and affirmative/negative covenants protect cash flows from investments, and can help insulate against other infra related risks (e.g. construction risk)
Value-Add	Opportunistic	
• Majority greenfield development within the portfolio with a platform build out and expansion focus • Returns generated largely through appreciation	• Earlier stage business maturity that may include technology risk • Higher development risk, market exposure, and business transformation	

How does infrastructure generate cash flow?

Infrastructure assets fall along a spectrum of revenue predictability, providing asset allocators with a range of options based on portfolio and participant objectives:

Highly-Predictable	Moderately Predictable
• Regulated utilities • Contracted pipelines • Data centers and towers • Power Purchase Agreements (PPAs), long duration contracts, waste service contracts	• Transportation infrastructure with minimum revenue guarantees • Volume-exposed assets (e.g., airports, demand-based toll roads) • Infrastructure service businesses

How does infrastructure generate cash flow?

Infrastructure demand is accelerating globally due to a convergence of structural forces that are increasing both the scale of required investment and the opportunity set available to investors, whether sourced from private capital or defined contribution allocations. Globally, digitalization requires significant infrastructure investments in towers, fiber and data centers to address demand for high-speed connectivity, AI-driven computing demand, and migration of data storage to the cloud.

The rise of AI and electrification is intensifying the need to generate and transport energy. Electricity demand is climbing sharply across all regions, driven by both digitalization and the onshoring of manufacturing, while existing transmission infrastructure struggles to keep pace. More than 70% of global transmission lines are over 25 years old, with interconnection queues for new renewable projects stretching close to a decade.

Freight growth and urban congestion require new transportation assets, including electric vehicle charging networks and other efficiency upgrades. Moreover, corporations are increasingly divesting non-core infrastructure, which in turn is unlocking opportunities for private infrastructure capital. All of these structural shifts are creating a growing, diverse pipeline of investable infrastructure assets.

IV. PRIVATE INFRASTRUCTURE IN DEFINED CONTRIBUTION PLANS

Private infrastructure features several characteristics that make it a compelling addition to a DC asset allocation, particularly when viewed through the lens of long-term participant outcomes. These characteristics work together to support both accumulation and retirement objectives across a glidepath.

A defining feature of infrastructure is its ability to generate stable and predictable cash flows. Because revenues are often contracted or regulated and tied to essential services, infrastructure assets tend to exhibit lower earnings volatility than traditional equities. This cash flow visibility can play an important role within DC portfolios, particularly in later stages of a glidepath where consistency of outcomes becomes increasingly important.

Building on this foundation, infrastructure returns are typically derived from a combination of income and long-term capital appreciation. Income is generated through ongoing operations, while appreciation may result from reinvestment, inflation adjustments, and the long-lived nature of the assets. This dual return profile allows infrastructure to participate in growth while maintaining a more moderate risk profile than traditional equity allocations.

A key driver of both income stability and return durability is the asset class's relationship with inflation. Many infrastructure assets incorporate contractual inflation escalators or operate within regulatory frameworks that allow for periodic price adjustments. For institutional investors, those focused on hedging inflation sensitive liabilities with some growth upside tend to have larger allocations to infrastructure portfolios. Because DC retirees will require real, not nominal spending power in retirement, the embedded inflation linkage in private infrastructure helps preserve purchasing power over time, filling an important need for long-term retirement portfolios.



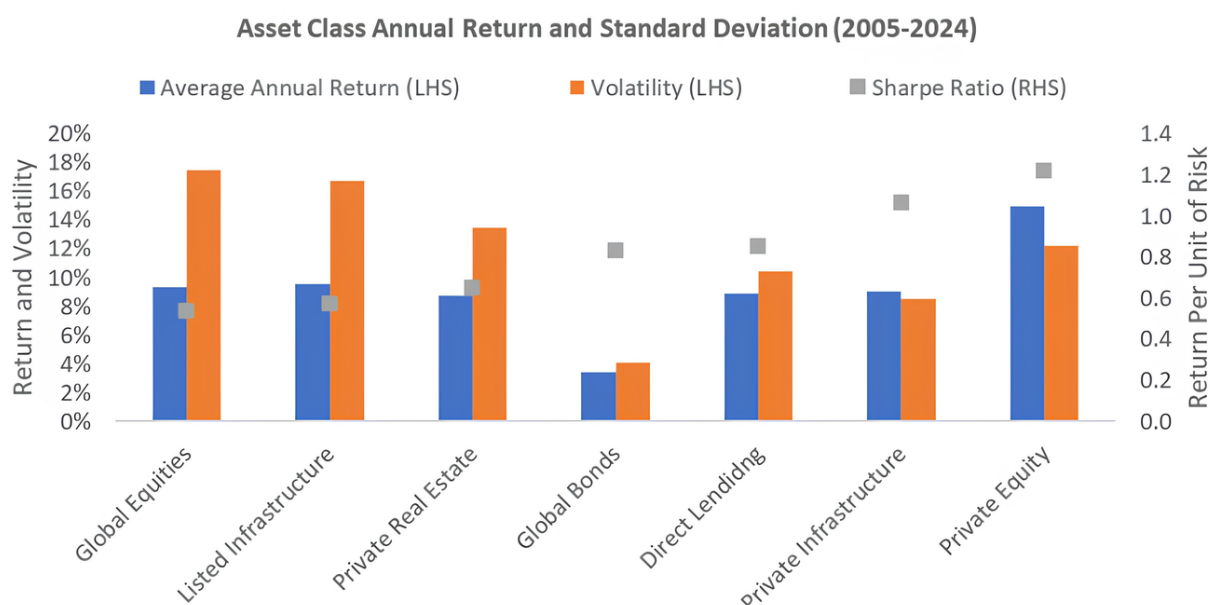
These characteristics also contribute to infrastructure's diversification benefits. Because returns are driven primarily by the usage of essential assets rather than corporate earnings cycles, infrastructure has historically exhibited low-to-moderate correlation with traditional asset classes such as public equities and fixed income.

Correlations	Global Equity	Global Agg	US Agg	US Gov't Bonds	US Credit	Private Equity	Private Real Estate	Private Infrastructure	Private Credit	Public Infrastructure
Global Equity	1.00	0.48	0.43	0.17	0.66	0.83	0.47	0.65	0.67	0.72
Global Agg	0.48	1.00	0.96	0.90	0.93	0.35	0.10	0.36	0.09	0.57
US Agg	0.43	0.96	1.00	0.95	0.93	0.34	0.16	0.43	0.01	0.59
US Gov't	0.17	0.90	0.95	1.00	0.78	0.09	0.02	0.22	-0.25	0.38
US Credit	0.66	0.93	0.93	0.78	1.00	0.58	0.29	0.59	0.33	0.72
Private Equity	0.83	0.35	0.34	0.09	0.58	1.00	0.66	0.74	0.74	0.67
Real Estate	0.47	0.10	0.16	0.02	0.29	0.66	1.00	0.58	0.48	0.48
Private Infrastructure	0.65	0.36	0.43	0.22	0.59	0.74	0.58	1.00	0.50	0.74
Direct Lending	0.67	0.09	0.01	-0.25	0.33	0.74	0.48	0.50	1.00	0.51
Public Infrastructure	0.72	0.57	0.59	0.38	0.72	0.67	0.48	0.74	0.51	1.00

Private asset classes examined unsmoothed returns. Correlation measures the degree to which two variables move together. The strength of this relationship varies from a level of 1.0, which indicates a perfect relationship, to -1.0, which indicates a perfectly opposite relationship. A correlation above 0.75 would be considered a strong relationship, and a correlation of 0 would indicate no relationship at all. It is important to remember that correlation does not necessarily describe a causal relationship. Data as of December 31, 2024. Source: Bloomberg, BofA, Burgiss, Cambridge Associates, KKR Global Macro & Asset Allocation analysis. Private Real Estate modeled using the Burgiss Real Estate Index. Private Infrastructure modeled using the Burgiss Global Infrastructure Index. Private Equity modeled using the Cambridge Associates Private Equity Index. Direct Lending modeled using Cliffwater Direct Lending Index. Listed Infrastructure modeled using Dow Jones Global Infrastructure Total Return Index. Global Agg modeled using Bloomberg Global Agg Total Return USD Index. US Agg modeled using Bloomberg US Agg Total Return Unhedged USD Index. US Govt modeled using Bloomberg US Government Total Return Unhedged USD Index. US Credit modeled using Bloomberg US Credit Total Return Unhedged Index. Global Equity modeled using MSCI ACWI Net Return USD Index (includes dividends). Indexes are unmanaged.

This can enhance portfolio efficiency, particularly within DC plans that have historically relied heavily on these two asset classes.

These structural features have historically translated into strong risk-adjusted performance. Over long time horizons, private infrastructure has delivered approximately 9% annualized nominal returns, outpacing global equities and its listed counterparts, but with lower observed volatility.



Source: KKR. Data as of December 31, 2025. For private asset classes (Private Credit, Private Infra, Private Real Estate, and Private Equity), returns are net of Fee/Carry. Source: Cambridge Associates, Burgiss, Bloomberg, KKR Global Macro & Asset Allocation analysis. ³

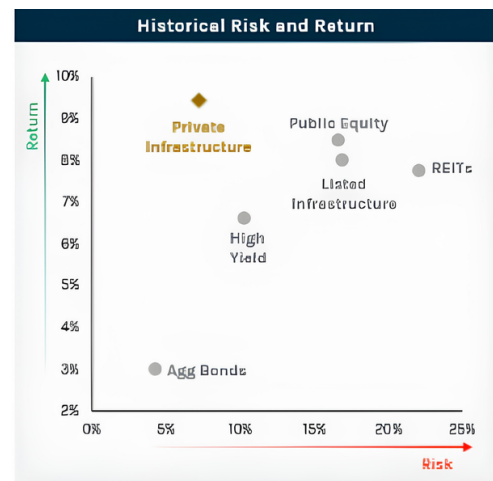
In addition, infrastructure has demonstrated resilience during periods of market stress. Because demand for essential services tends to persist across economic cycles, infrastructure assets have generally experienced fewer and less severe drawdowns than more market-sensitive asset classes. This pattern of relative stability can be particularly relevant in DC portfolios, where limiting downside volatility can meaningfully impact participant outcomes.

Combined, these features support the inclusion of infrastructure in portfolios designed for multi-decade time horizons, supporting DC participants during both accumulation and decumulation phases of retirement.

How can private infrastructure empower a portfolio?

1. History of strong risk-adjusted returns

Over the past 20 years, private infrastructure has delivered approximately 9% annualized nominal returns, outpacing global equities and its listed counterparts. During this time, private infrastructure has exhibited equity-like returns with closer to bond-like volatility, thus occupying a favorable position on the risk-return spectrum and presenting an attractive opportunity to investors.



All data quarterly. Above represents 20 years of growth from the period Dec 2004 – Dec 2024.⁴

2. Diversification

Diversification within a DC asset allocation has long been limited to allocations to public equities and fixed income. As DC fiduciaries consider a broader opportunity set of investments, including a full range of private markets investments, the low-to-moderate correlation that private infrastructure has relative to many traditional asset classes presents a desirable attribute. Private infrastructure provides access to a different set of assets that have unique return profiles, driven more by the underlying functioning of daily living and GDP growth than the success of any particular business that drives the price movement of equities or debt. The asset class may also support income-focused glidepath stages based on its predictable cash flows. When constructing an asset allocation for DC plan participants, private infrastructure may provide diversification benefits not available in asset allocations that rely only on public equities and fixed income.

	Public Equity	Agg Bonds	High Yield	Public REITs	Listed Infrastructure
Correlation to Private Infrastructure	0.58	0.00	0.47	0.49	0.70

All data quarterly from the period Dec 2004 – Dec 2024. Private infrastructure represented by Burgiss All Infrastructure Index. Public equity represented by MSCI World Index. REITs represented by FTSE-NAREIT All Equity REIT Index. Public listed infrastructure represented by S&P Global Infrastructure Index. Agg Bonds represented by Bloomberg US Aggregate Bond Index. High Yield represented by Bloomberg Global High Yield Bond Index.

3. Relative stability during market stress

Historically, private infrastructure has shown resilience in times of typical public market stressed environments. It can also serve as a hedge against inflationary and recessionary periods. The reason for this dynamic is simple and intuitive, yet very powerful: no matter the circumstances in the economy or the financial markets, people, businesses and society still require that the power grid provides electricity, water and gas and other utilities still flow and function, and the roads remain passable. An allocation to private infrastructure investments accesses these attributes in a DC portfolio, and may offer less volatility even relative to infrastructure investments in the public markets.

As awareness of the potential benefits of private infrastructure continue to expand in the DC market, we believe more asset allocators should consider making a meaningful allocation to the asset class. Given the multiple ways to access the asset class, asset allocators will want to be very thoughtful regarding the needs of retirement plan participants and how they can best benefit from the inclusion of private infrastructure into their asset allocation options. This paper will enable a greater consideration of the potential benefits of adding Private Infrastructure investments to DC retirement plans.



V. INTEGRATING PRIVATE INFRASTRUCTURE IN DEFINED CONTRIBUTION PLANS

Since our inception, DCALTA's mission has been grounded in the principle that the inclusion of a modest allocation of diversified, professionally managed alternative assets within a multi-asset portfolio will enhance retirement security. Consistent with this mission, integrating private infrastructure into 401(k) plans should follow these same tenets – implementing private markets multi-asset participant investment options such as target date funds or managed account portfolios.

These approaches provide several potential advantages:

- Participants may lack the expertise to navigate the complexities and risks associated with private investments. By introducing private infrastructure in a multi-asset portfolio, they benefit from professional management that can optimize allocation and risk management.
- Enhanced Diversification: Private infrastructure can provide access to higher-yielding assets that are less correlated with traditional equity and fixed income investments, improving the overall risk-return profile of the portfolio.
- Ability to manage liquidity: For years, participants have relied on daily liquidity. Portfolio managers can effectively manage liquidity when combining daily-priced and less liquid assets.
- The inclusion of private infrastructure in DC portfolios may help mitigate sequence of return risk for participants who are near or in retirement.



One of the reasons infrastructure investments can offer attractive returns is because they are capital intensive and often involve long-term commitments. This long-term orientation, coupled with the characteristics discussed above makes infrastructure a good fit for retirement portfolios.

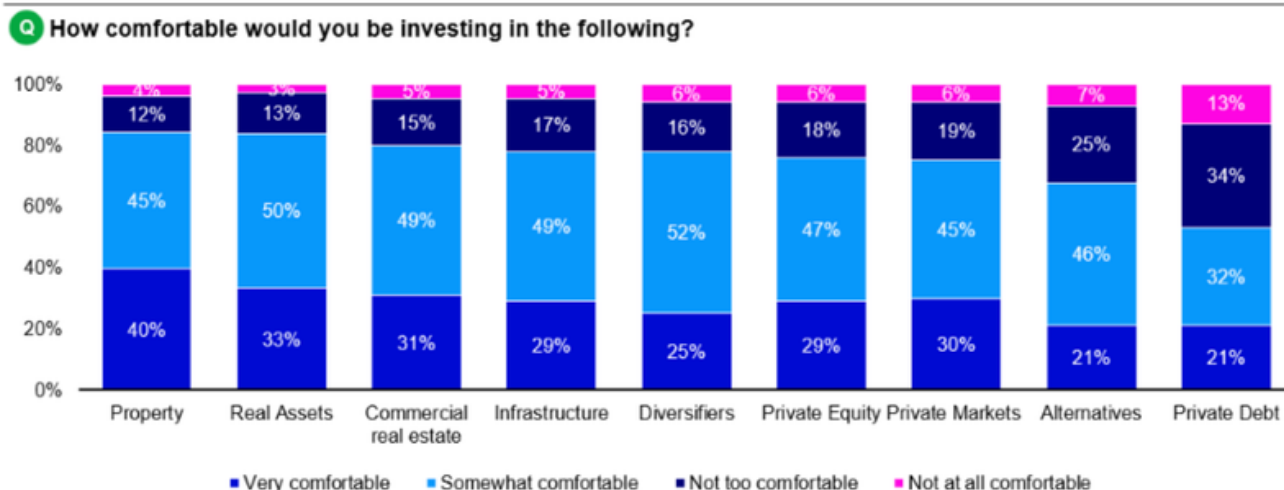
Plan Communications

The integration of private markets into DC plans is relatively new for most DC participants. Even though infrastructure investments are likely to be imbedded in professionally managed portfolios like target date funds, real assets funds or managed accounts, it is important to educate participants on the rationale and benefits of including infrastructure in a DC asset allocation.

When considering educational materials, a sample statement might read: “Infrastructure invests in essential services — like power, water, transportation, and digital networks — through long-term assets that can help provide stability, inflation protection, and income for your retirement savings.”

DC Plan Participant Familiarity and Interest

Participants are more comfortable with private markets descriptions related to tangible assets



Source: Invesco US participant survey, September 2025 (n=512).

According to a recent Invesco survey of over 500 large plan DC plan participants, there appears to be growing interest in having private markets included in target date funds and managed account portfolios. Of note, the familiarity among participants was observed to be higher with tangible private assets.

VI. CONCLUSION

We believe private infrastructure is one of the most intuitive asset classes for long-term investors. For DC participants, it offers a rare combination of:

- Durability
- Stable income
- Inflation protection
- Diversification
- Low volatility
- Long-term alignment with participant objectives

As outlined in this whitepaper, the asset class can provide plan sponsors and fiduciaries with a viable strategy to enhance and secure retirement outcomes, particularly within a multi-asset framework such as a Target Date Fund (TDF) or Managed Account (MA). The asset class can provide diversification to both traditional fixed income and public equities, offering opportunities for predictable revenue streams and asset appreciation. As with other private market investments, common characteristics like illiquidity, quarterly valuation frequencies, and higher costs of capital require complex analysis and responsible implementation. DCALTA encourages plan sponsors, investment managers, and consultants to explore private infrastructure as a means to enhance long-term retirement security. We recommend further exploration of resources, including regulatory guidelines, performance benchmarks, and additional case studies, to support informed decision-making and optimize participant outcomes.

DISCLOSURE

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References

1. DCALTA (2025, July). Principles for DC Stakeholders on the Consideration and use of Private Market Investments. A PIO may be a single manager, asset class, or strategy, or may be a multi-asset approach such as a balanced fund or a target date fund (TDF). Each PIO is separately managed solely in the best interest of participant investments in that PIO, including for liquidity purposes. PIOs may have multiple components (such as asset classes) and multiple managers/funds within each component.
2. CEM Investment Benchmarking Database (As at Dec 31, 2024).
3. Private Real Estate modeled using the Burgiss Real Estate Index. Private Infrastructure modeled using the Burgiss Global Infrastructure Index. Private Equity modeled using the Cambridge Associates Private Equity Index. Direct Lending modeled using Cliffwater Direct Lending Index. Listed Infrastructure modeled using Dow Jones Global Infrastructure Total Return Index. Global Bonds modeled using Bloomberg Global Agg Total Return USD Index. Global Equity modeled using MSCI ACWI Net Return USD Index (includes dividends). No representation is made that the trends depicted or described above will continue.
4. Private infrastructure represented by Burgiss. All Infrastructure Index Public equity represented by MSCI World Index. REITs represented by FTSE-NAREIT All Equity REIT Index. Public listed infrastructure represented by S&P Global Infrastructure Index. Agg Bonds represented by Bloomberg US Aggregate Bond Index. High Yield represented by Bloomberg Global High Yield Bond Index. Past performance is not an indicator of future returns.