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MEMORANDUM

TO: Members of the Investment Committee, CalPERS
FROM: Meketa Investment Group
DATE: September 18, 2023
RE: Quarterly Infrastructure Performance Review, as of June 30, 2023

In our role as the Board Infrastructure Consultant, Meketa Investment Group ("Meketa") conducted a quarterly performance review of the Infrastructure Portfolio ("the Portfolio") for the California Public Employees' Retirement System ("CalPERS") Real Assets Program (the "Program") for the period ended June 30, 2023, based on data provided by Wilshire Associates and selected CalPERS reports.[1] This memorandum provides the Portfolio performance data and information on key policy parameters, with a summarized market commentary provided as an attachment.

Performance[2]

CalPERS' Infrastructure Portfolio outperformed its policy benchmark for all reporting periods.

Net Returns as of June 30, 2023	1 Year (%)	3 Year (%)	5 Year (%)	10 Year (%)
Infrastructure Portfolio Returns	4.8	8.8	7.5	11.2
Infrastructure Policy Benchmark[3]	(4.0)	7.3	6.5	6.0
Over (under) Performance	8.8	1.5	1.0	5.2
Consumer Price Index (For Reference Only)	5.0	5.4	3.9	2.6

We note the trailing one-year return, while beating its benchmark by a substantial margin, is meaningfully below prior periods, in part due factors described on the following page. Additionally, it has come in below CalPERS' expectations for the asset class of 5.3% to 5.5% set by the Capital Market Assumptions ("CMA") for Real Assets for the near- and long-term (five and 20 years). The three other trailing period returns as of June 30, 2023 are all comfortably above the CMA targets. We observe that the three- and five-year returns have been moving in a range of approximately 7% to 10% over the last year, partly reflecting the down COVID quarters moving through the periods, while the trailing ten-year return as been consistently in the 11.0% to 11.3% range for the last year.

[1] CalPERS Real Assets Quarterly Performance Report, including underlying Allocation, Characteristics, and Leverage Reports (Excel files), for the period ending March 31, 2023.
[2] Per Wilshire for the period ended June 30, 2023, reported with a 1-quarter lag, so as of March 31, 2022 (State Street Bank data).
[3] CalPERS Custom Infrastructure Benchmark, with historical composition as follows: MSCI/PREA U.S. ACOE Quarterly Property Fund Index Net of Fees (April 1, 2018 forward); Consumer Price Index ("CPI") + 400 basis points (July 1, 2011 through March 31, 2018); and CPI + 500 basis points (October 1, 2007 through June 30, 2011).

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For consistency with prior reporting, we note that the Infrastructure Portfolio's comparison to its benchmark should be viewed in the context that, since April 2018, the benchmark has had underlying assets that are 100% real estate, which is now completely reflected in all trailing periods except the ten-year, with the ten-year benchmark being roughly half real estate and half CPI+ 400 or 500 basis points.

Relative to CPI, as seen above, the trailing one-year return is coming in slightly below CPI, which we provide for reference only, as it used to be part of the Portfolio's benchmark, and continues to be used by other institutional investors, usually with a premium of anywhere from +300 to +500 basis points, depending on the risk-orientation of the portfolio. Also visible in the table above is the increase in CPI across the ten-, five-, and three-year periods, and the recent moderation reflected in the one-year period. We note that the Portfolio's returns exceeded CPI by 340 to 860 basis points over those periods.

We believe reasons for the lower trailing one-year return include, but may not be limited to the following: J-curve effects for newer commitments made from late 2021 through 2023, which comprise ~20% of the NAV and include vehicles with negative returns and no (i.e., not yet meaningful) returns for one or more of the prior four quarters; lingering impacts from decreased economic activity and valuations associated with COVID impacts, particularly in the transportation sector; and continuing low net income levels (see below). We note that the annualized returns for the most recent quarter and the past six months are 9.3% and 7.5%, respectively. As CalPERS continues to build out the Infrastructure Portfolio and increase its commitments to value-add strategies, future one-year period returns may also be dampened by J-curve effects.

Other aspects of performance drivers are consistent with prior reporting periods and recent market conditions, as highlighted below.[1] Please see the Market Activity Attachment for additional information on selected infrastructure sectors and related economic data.

All returns cited are for the trailing one-year period.

Risk Classification

→ **Core,** comprising 83.4% of the Portfolio, delivered middle single-digit returns. Just over half of the Core NAV is managed in separate accounts, almost a third in commingled funds, a little more than 10% in co-investments alongside existing managers, and a little less than 10% in direct investments. Global Diversified Infrastructure comprised almost 60% of the Core portfolio, with 17% in US Power & Energy, and less than 10% each in US Transportation, Global Transportation, Global Communications and International Communications.

→ **Value Add,** comprising 15.1% of the Portfolio, also posted middle single-digit returns. These investments are predominantly diversified commingled funds, at approximately 86% of the Value Add portfolio, with a new communications fund investment representing about 30% of the category, a new diversified fund comprising 15%, and some older funds and several co-investments making up the balance.

→ **Opportunistic,** comprising 1.5% of the Portfolio, continues to post negative double-digit returns. This category comprises one diversified commingled fund investment.

[1] Real Assets QPR Q1 2023 Final.

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Sectors

→ **Global Diversified Infrastructure** comprises 56.7% of the NAV and posted middle single-digit returns.

→ **US Power/Energy** represents 15.8% of the Portfolio, and delivered middle single-digit returns.

→ **Global Communications** comprises 11.0% of the Portfolio, and delivered high single-digit teens returns.

→ **US Transportation** accounts for 7.4% of the Portfolio and posted high single-digit returns.

→ **Global Transportation** is 5.9% of the Portfolio, and posted middle single-digit returns.

→ **International Communications** is 2.2% of the Portfolio, and performance is not yet meaningful.

→ **Global Power/Energy** is 1.1% of the Portfolio, and performance is not yet meaningful.

Net Income

→ The Portfolio's **one-year net income** was 1.4%, compared to 1.8% a year ago. Since before COVID, it has remained below Staff's long-term expectations of annual income between 3% and 5% over the long term. The low net income levels continue to be primarily due to lower levels of distributed income at certain transportation assets, including, in particular, airports, which experienced significant decreases in passenger traffic for a protracted period, and still have yet to fully recover. Other continuing asset- and fund-specific factors holding the Portfolio's net income down include those related to new funds' J-curves, foreign exchange effects, and variability of income production from selected businesses.

Implementation

The Portfolio's Net Asset Value ("NAV") as of June 30, 2023 was $14.6 billion, an increase of $3.0 billion, or 26.3%, compared to the June 30, 2022 NAV of $11.6 billion. The current NAV represents 3.2% of the Total Fund, and 20.8% of the Real Assets Program,[1] an increase compared to 2.6% and 16.6%, respectively, a year ago.

The increase in NAV is the result of a combination of contributions to existing and new investments, distributions, and net realized and unrealized gains and losses. For the prior year, the Portfolio's contributions outpaced distributions $3.2 billion to $0.5 billion, respectively.[2] We continue to expect to see contributions outpace distributions going forward, given the number and size of new commitments made over the last several years compared to the remaining smaller size of legacy assets.

The chart below shows the growth of the Infrastructure Portfolio as a percentage of the Total Fund over the last 12 six-month periods.

[1] The Total Fund market value was $462.8 billion, and the Real Asset Program NAV was $70.4 billion, as of March 31, 2023, per Wilshire.
[2] Real Assets QPR Q1 2023 Final.

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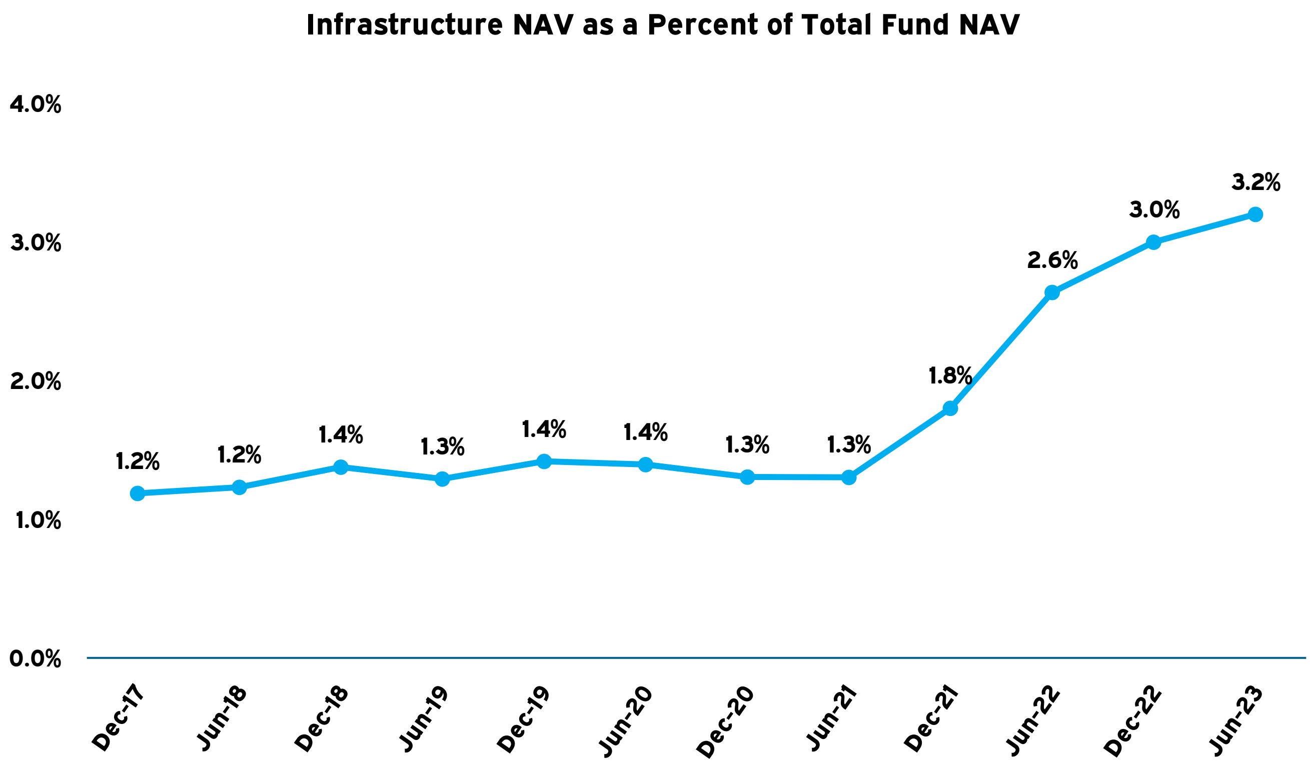

Through CalPERS' various investment vehicles, a significant number of new investments have been made in the first half of 2023 in North America, Latin America, Europe and the UK, and Asia Pacific in sectors including communications, energy (gas distribution, pipelines, and storage), renewable power, transportation (airports, seaports, and roads), and water.

As of March 31, 2023, Portfolio NAV distribution is as follows relative to investment type and sub-type: Transportation is 34.0% and includes airports, seaports, rail, and roads; Power is 20.0% and includes renewables, conventional, and transmission assets; Communications is 19.5%; Energy is 13.2% and includes pipelines, storage, and distribution assets; and Other is 13.3% with 1% water and 0.2% waste assets.

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Key Policy Parameters

The Portfolio is compliant with all key parameters related to diversification and other limits applicable at the Portfolio level, as documented in the table below.

Key Portfolio Parameter	Policy Range/Limit	NAV 6/30/23 Exposure[1]
Risk Classification[2]	(%)	(%)
Core	60-100	83.4
Value Add	0-25	15.1
Opportunistic-All Strategies	0-25	1.5
Geographic Region[2]	(%)	
United States	40-100	51.8
International Developed	0-60	46.4
International Developing	0-15	1.8
International Frontier	0-5	0
Manager Exposure[3]	(%)	
Largest Partner Relationship	20 max	6.3
Investments with No External Manager	20 max	1.6
Leverage[4]		
Loan to Value	65% max	37.4
Debt Service Coverage Ratio	1.25x min	2.90

Conclusion

For all periods except the trailing one-year, the Infrastructure Portfolio continues to perform at or above expectations for the asset class and its predominantly Core risk-return profile. As was the case last quarter, performance continues to improve relative to the benchmark as the underlying real estate valuations moderate, thereby bringing down the benchmark's performance. Additionally, the Portfolio is still exceeding CalPERS' CMA for Real Assets and CPI for all trailing periods except the trailing one-year. As noted earlier, it is possible that as the Portfolio continues to increase in scale with new commitments, near-term returns could be suppressed due to the J-curve effect.

[1] Private investment data are one quarter lagged, so effectively as of March 31, 2023.
[2] Real Assets QPR Q1 2023 Final and 2023.03.31 RA Characteristics Datasheets (Final).xlsx, based on asset-level risk and geography.
[3] CalPERS Real Assets Portfolio Allocation Report, Period Ending March 31, 2023: calculated based on manager- and account-level NAV. Percent calculated using relevant NAV plus total unfunded commitments for relationships/investments and same for the Real Assets Program ($83.6 billion).
[4] CalPERS Real Assets Vital Statistics and Quarterly Management Report (web-based), Quarter Ending March 31, 2023.

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The Portfolio's development and its current position remains appropriate and consistent with applicable policies and guidelines:

→ *Risk* — Exposures are within the classification policy ranges;

→ *Geography* — Exposures are within the categorical ranges;

→ *Partner Relationships and Direct Investments* — Exposures are well below the maximums allowed; and

→ *Leverage* — Metrics are comfortably compliant.

As we have been observing for several reporting periods, the Portfolio continues to grow consistent with its Strategic Plan, now comprising 20.8% of the Real Assets Program and 3.2% of the Total Plan. In the first half of 2023, the Real Assets Program closed more than $2.0 billion in new or follow-on infrastructure investments under new or existing managers, through a variety of investment vehicles. Staff is building out the Portfolio with increased commitments to existing, long-time managers and commitments to new managers, taking advantage of the combined advantages of investing through large separate accounts, commingled funds, co-investments, and smaller separate accounts that invest alongside commingled funds, which together significantly increase capacity for capital deployment. The manager roster is increasing in strategy, geographic, and sector coverage, providing important diversification for a resilient Portfolio with return potential commensurate with its objectives.

Please do not hesitate to contact us if you have questions or require additional information.

SPM/EFB/jls

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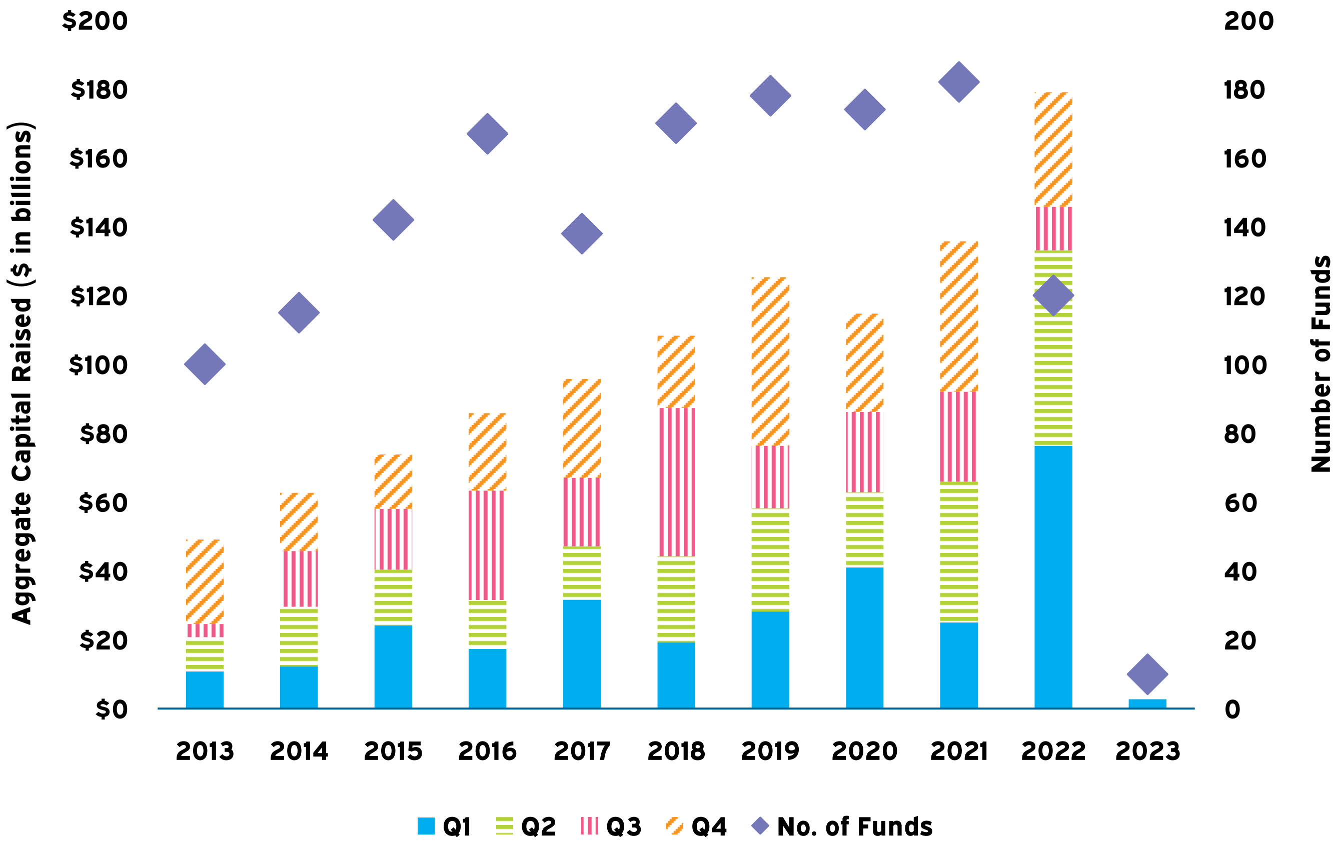
Attachment[1]

Infrastructure Market Commentary – Q1 2023

Global Quarterly Unlisted Infrastructure Fundraising[2]



After a strong 2022 that experienced record infrastructure fundraising of nearly $180 billion, 1Q 2023 was the lowest fundraising quarter in the past decade. Year-over-year, the first quarter was just 11% of the total raised in the same quarter of 2022 with the average fund size decreasing from $2.4 billion to $0.3 billion per fund.

[1] Commentary based on analysis of aggregated and deal-level data from Preqin, and other Preqin data, unless otherwise cited. Prior year data may have changed from figures shown in prior reports.
[2] Source: Preqin 1Q 2023.

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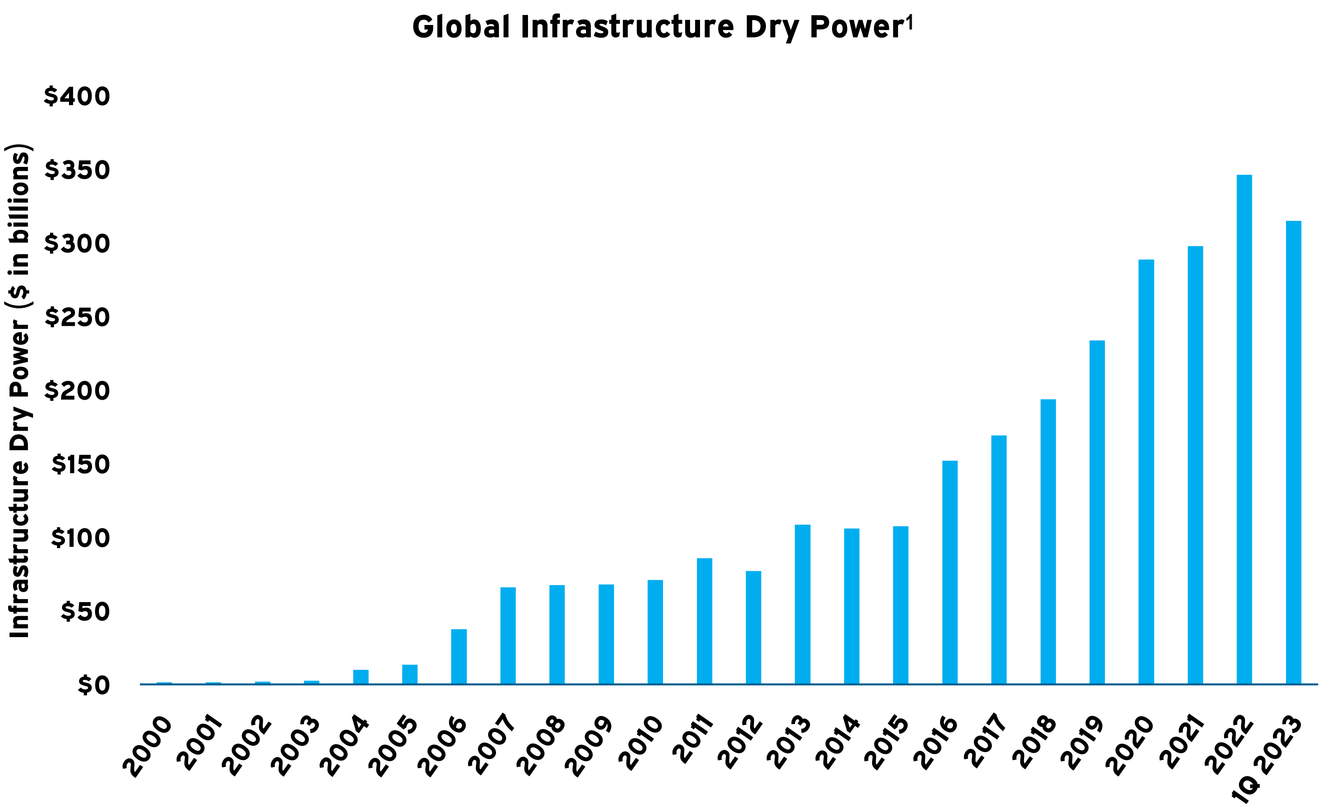

The available infrastructure dry powder decreased in the first quarter after year-over-year increases since 2015. The low fundraising totals and steady investing decrease the total dry power by 9% to $315 billion. The early days of the asset class are evident in the sub-$50 billion levels until 2007, after which levels stayed between $50 billion and $100 billion until they reached $150 billion in 2016. The dry powder remains robust even with the first quarter decrease.

[1] Source: Preqin Dry Powder downloaded April 2023.

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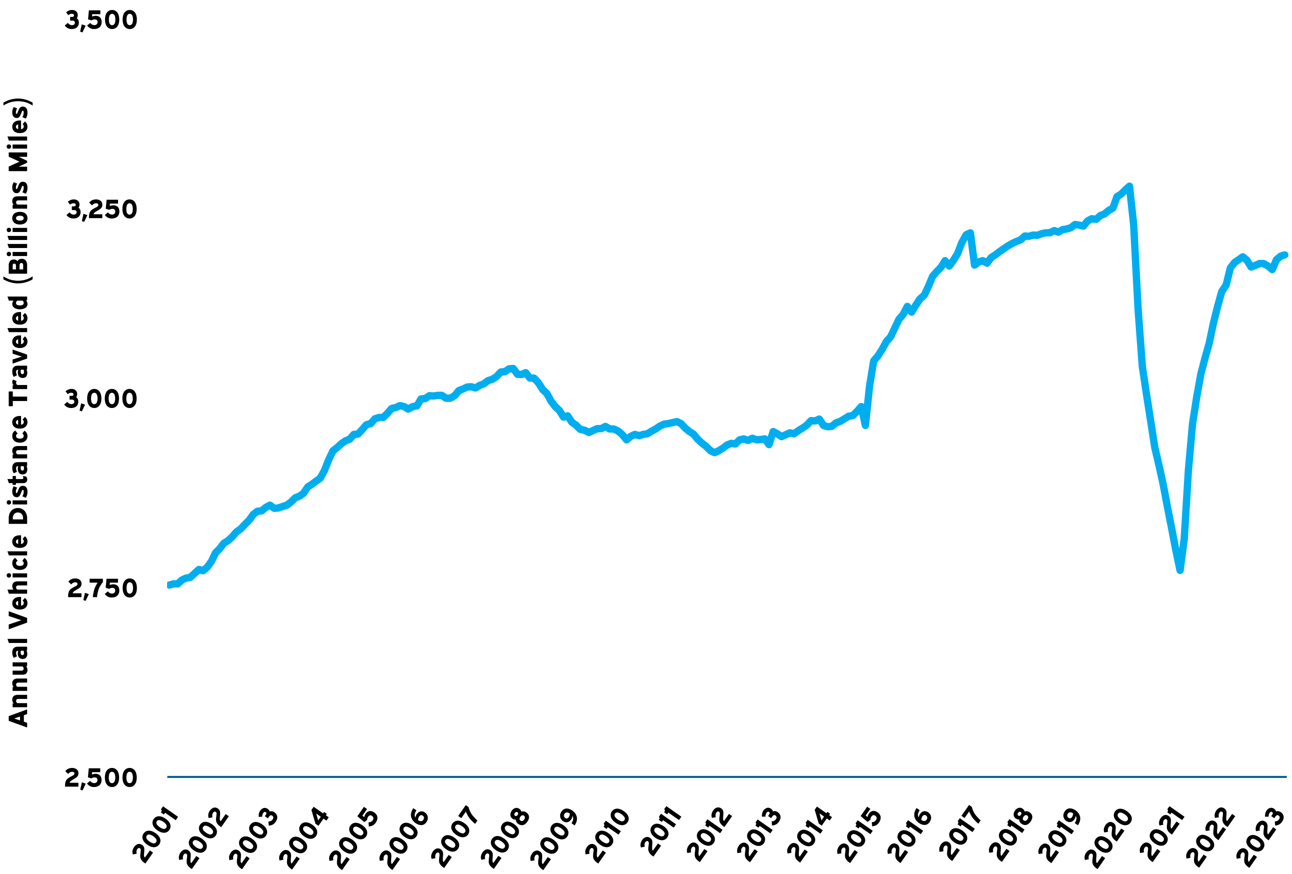
Trailing 12-month Annual Vehicle Miles on All US Roads[1]



The first quarter continued post-pandemic travel recovery with a total of approximately 752 billion miles. This represented an increase of 2.6% over the same period in 2022. The trailing 12-month travel mileage is effectively back to where it was pre-COVID, indicating a welcome and positive return to movement as COVID-19 restrictions loosened and people continue going back to offices, etc. After peaking at over $5.00 per gallon in the second quarter of 2022, the average monthly price has decreased down to $3.54 per gallon by the end of the first quarter.

[1] Source: US Department of Transportation, Federal Highway Administration: Office of Highway Policy Information.

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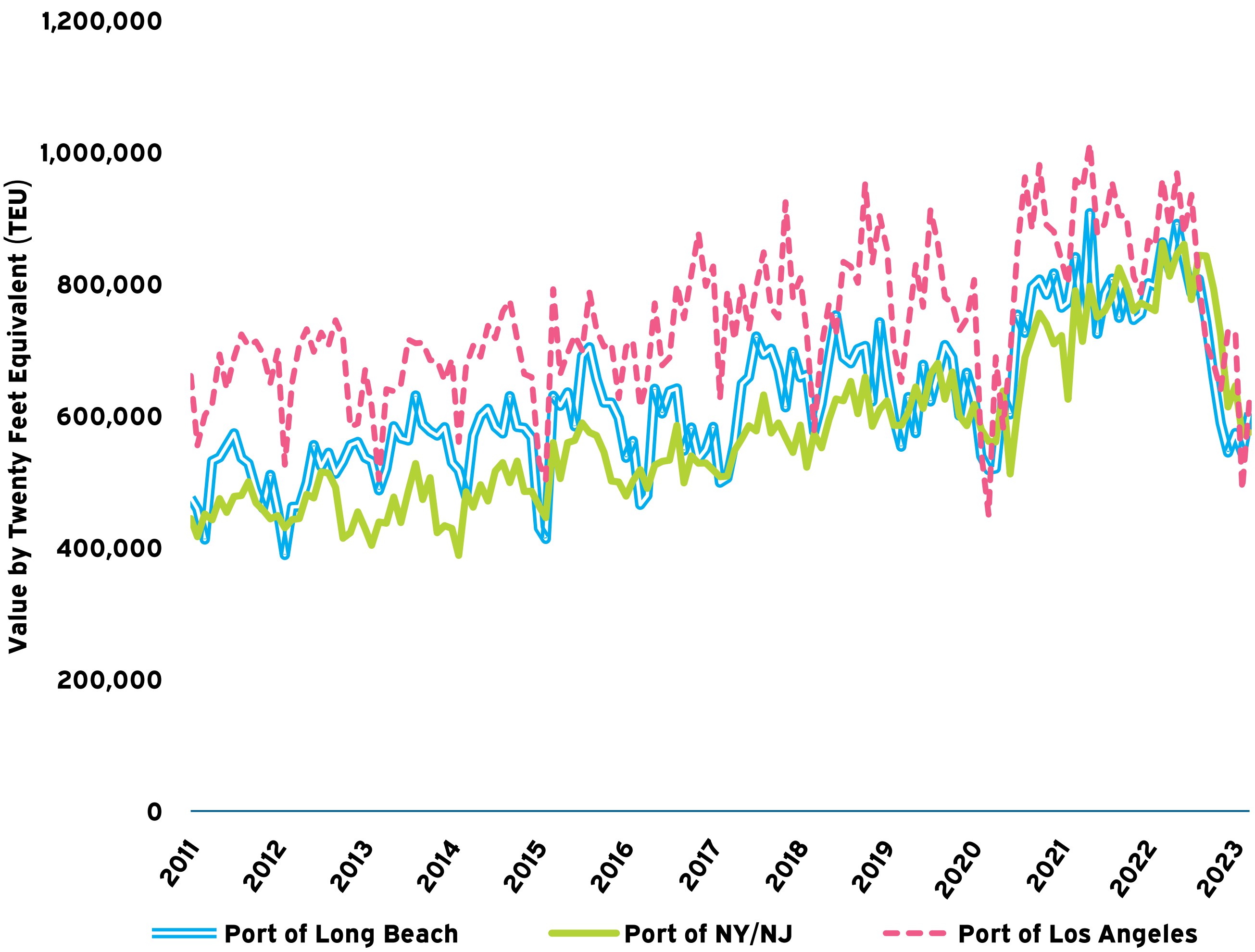
US Port Activity – Container Trade in TEUs[1]



The chart presents the top three US ports by container volume, as measured by twenty-foot equivalent units ("TEU"). Activity at the three ports provides a high level representation of the volume at US ports more broadly.

During the first quarter, volumes at the three ports decreased by 2.2 million units relative to the same period in 2022. On a year-over-year basis, the combined port volumes decreased by 3.2 million TEUs, or -10.9%, over the prior 12-month period. The Port of Long Beach recorded a decrease of 11.4% (1.1 million TEUs), the Port of NY/NJ reported a decrease of 4.7% (0.4 million TEU), and the Port of Los Angeles recorded a decrease of 15.8% (1.7 million TEUs) over the prior 12 months.

[1] Source: www.polb.com, www.panynj.gov and www.portoflosangeles.org

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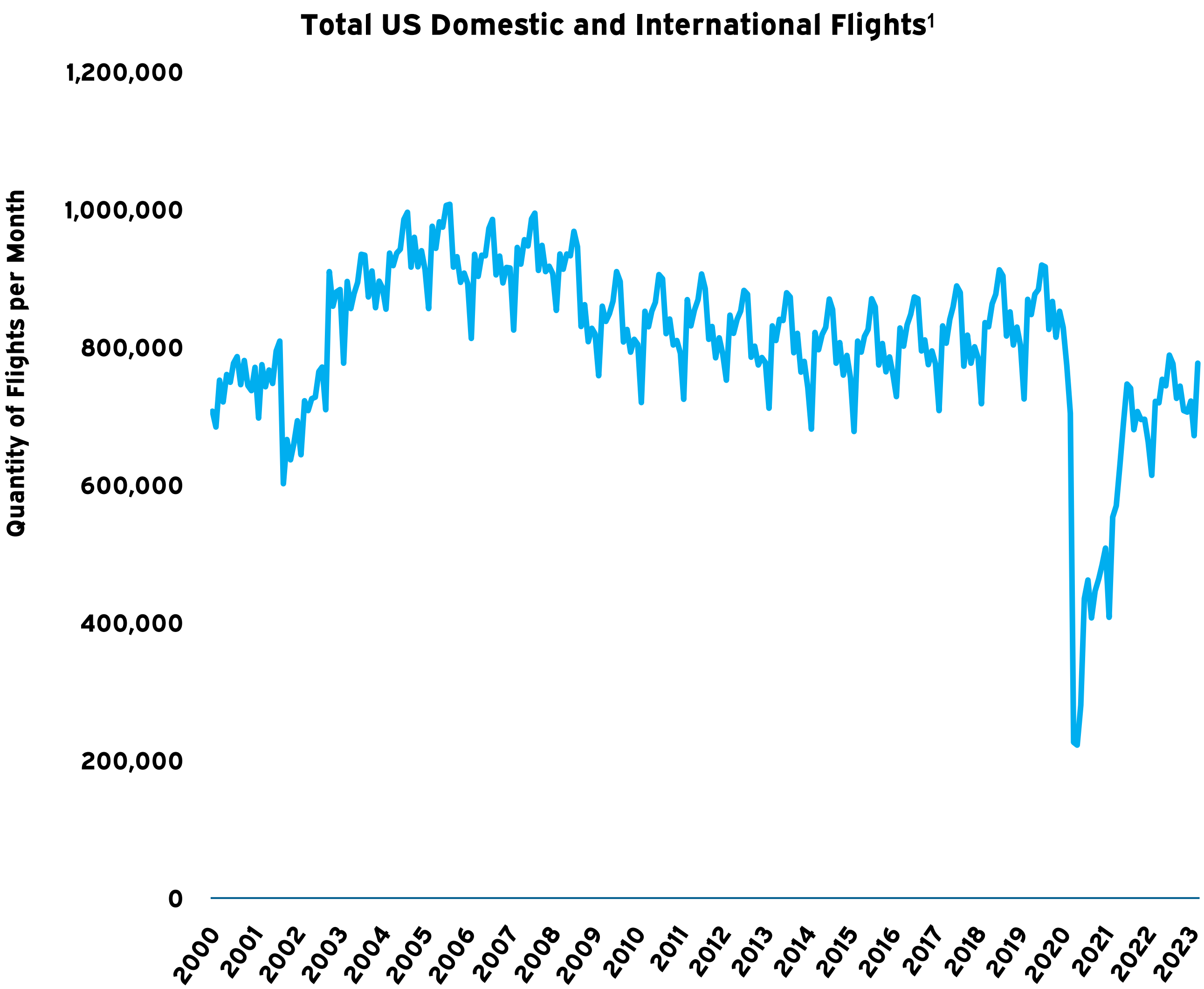

The chart above presents all US domestic and international flights, excluding foreign point-to-point flights by month. Historically, air traffic is cyclical with peaks in the summer months and troughs in the winter months.

There were 0.2 million more flights during the first quarter of 2023 over same period in 2022, representing an 8.6% increase. In addition to the number of flights, the total number of passengers travelling on US and international airlines increased by 24% for the 12 months ended March 31, 2023 over the prior 12 months.

[1] Source: Bureau of Transportation Statistics: Flights, All US, and Foreign Carriers.

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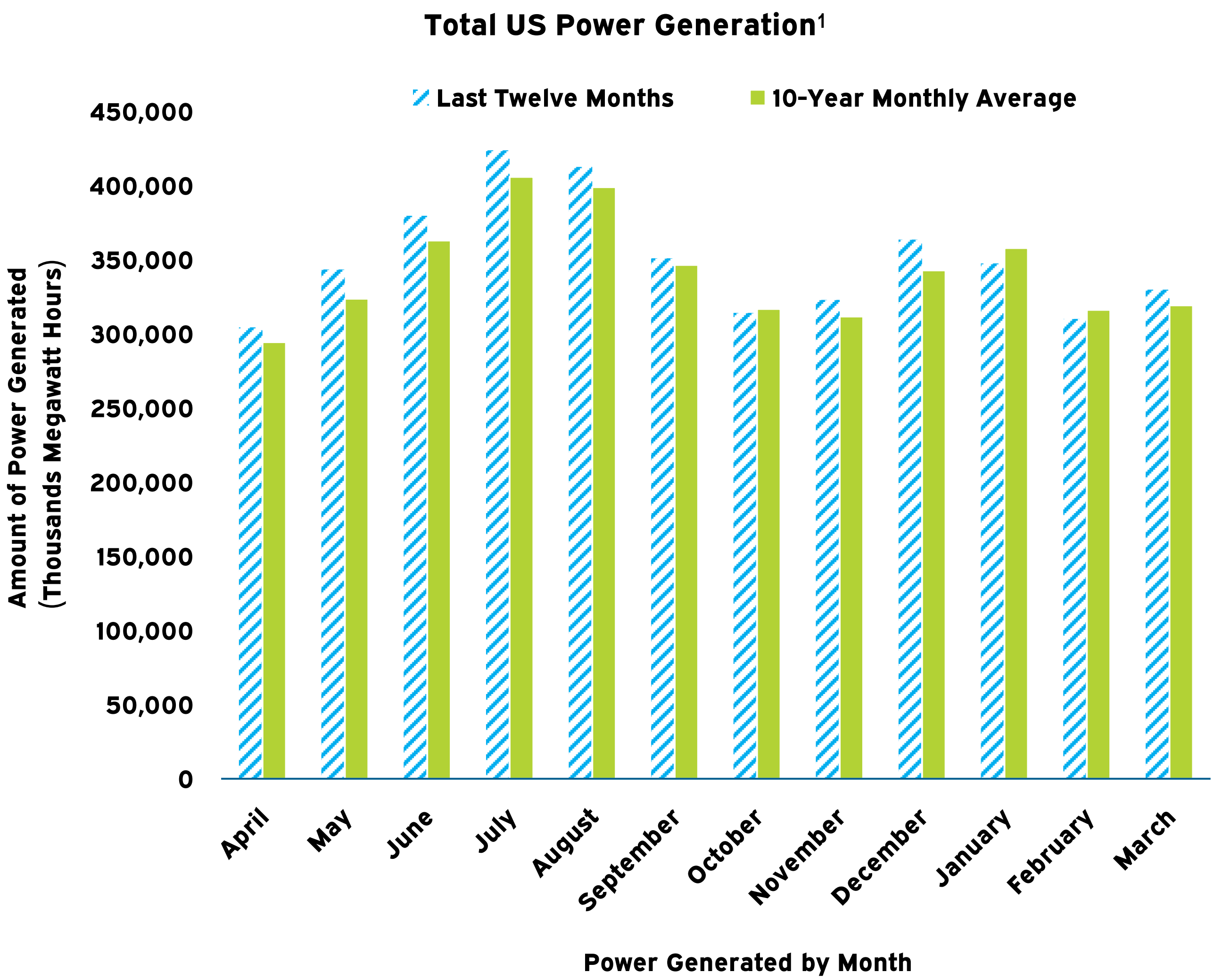

The graph above presents the total net generation for the past 12 months compared to the 10-year average for each month. Net energy generation in the US remained steady with an increase of 1% during the first quarter, compared to the same period in 2022.

[1] Source: US Energy Information Administration: Electric Power Monthly, March 2023.

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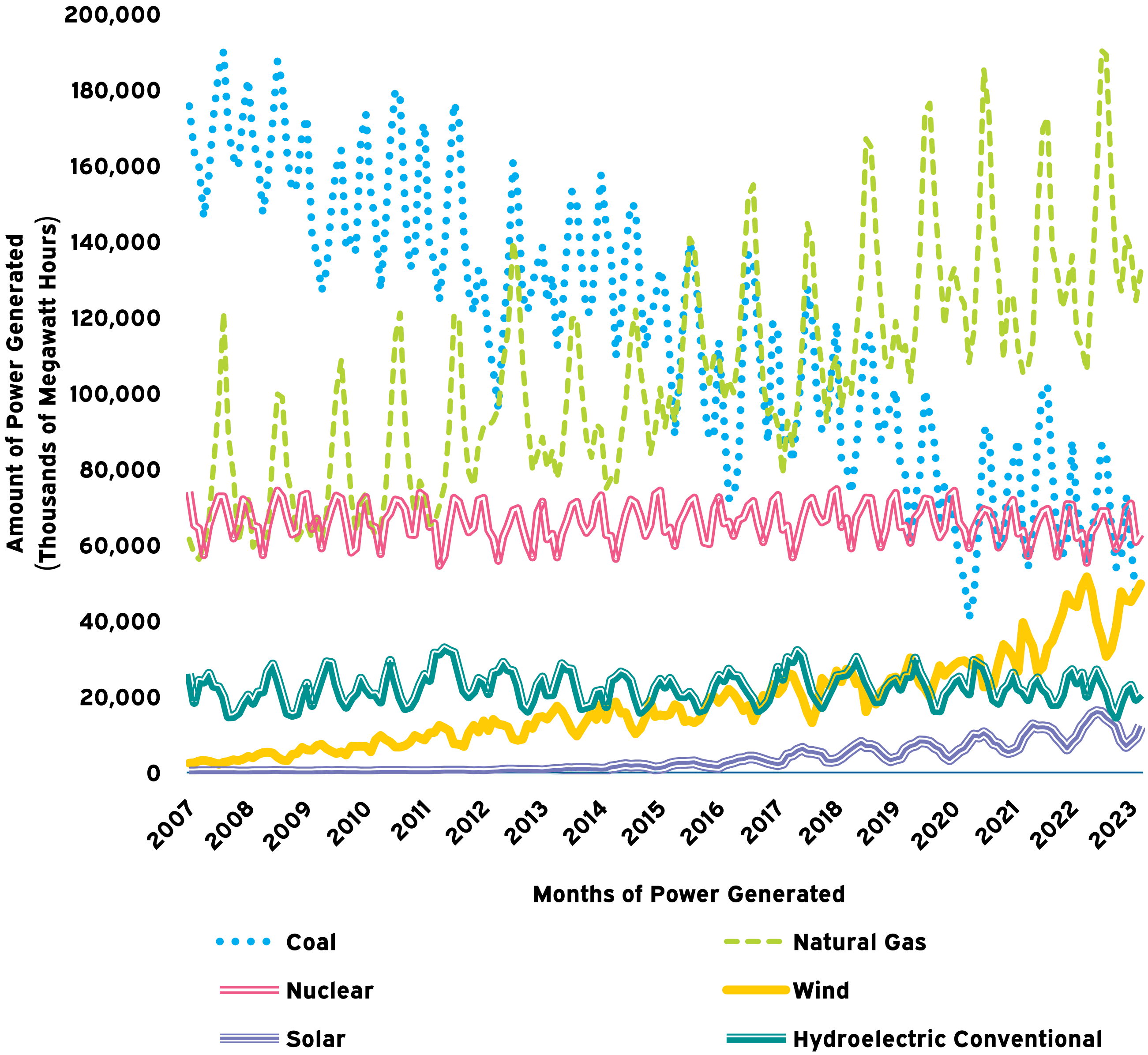
US Power Generation by Source[1]



In the first quarter 2023, total US power generated increased by 1% over the same period in 2022 with the largest increase from the renewable sources and natural gas. Wind and utility-scale solar continue to make up a small portion of total net energy generation in the US, accounting for only 12% and 3% of energy generation, respectively. Natural gas, coal, and nuclear accounted for 41%, 18%, and 18%, respectively. However, the growth of wind and solar as sources of energy generation continues to increase at a faster rate than coal and natural gas, especially over the last several years.

[1] Source: US Energy Information Administration: Electric Power Monthly, March 2023.