TO: Members of the Investment Committee, CalPERS
FROM: Meketa Investment Group
DATE: September 13, 2021
RE: Semi-Annual Infrastructure Performance Review as of June 30, 2021

In our role as the Board Infrastructure Consultant, Meketa Investment Group ("Meketa") conducted a semi-annual performance review of the Infrastructure Portfolio ("the Portfolio") based on data provided by Wilshire Associates for the California Public Employees' Retirement System ("CalPERS") Real Assets Program for the period ended June 30, 2021, 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 continues to outperform its policy benchmark for all reporting periods.

Net Returns as of June 30, 2021	1 Year (%)	3 Year (%)	5 Year (%)	10 Year (%)
Infrastructure Portfolio Returns	7.2	6.0	9.6	10.6
Infrastructure Policy Benchmark[3]	1.3	3.9	4.9	5.1
Over (under) Performance	5.9	2.2	4.7	5.5

Compared to six months ago, the trailing one year performance increased dramatically, up to 7.2% from -0.4%, with benchmark over-performance at 5.9% compared to under-performance at -0.8%. Trailing three year returns are unchanged from six months ago, with five year performance slightly up, and 10 year returns moderately down. This represents a rebound to pre-COVID performance levels: one year performance as of December 31, 2019 was 7.2%. In the intervening period, most infrastructure managers were conducting quarterly valuations, giving due consideration to the immediate impacts and future uncertainty around revenues and other return drivers, resulting in write downs on some investments. Many of these have since recovered as economic activity increased in many geographies and sectors.

[1] CalPERS Real Assets Quarterly Performance Report, including underlying Allocation, Characteristics, and Leverage Reports (pdf and Excel files), for the period ending March 31, 2021.

[2] Per Wilshire for the period ended June 30, 2021, reported with a 1-quarter lag, so as of March 31, 2021 (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).

Other aspects of performance drivers are consistent with prior reporting periods and recent market conditions, as highlighted below.[1] The referenced charts are provided in the Market Activity Attachment.

By Risk Classification: All categories improved over the prior six months.

- ***Core***, comprising 88.1% of the Portfolio, continues to deliver strong returns among the risk categories. Essential and International Core investments comprise 61.6% of the total Portfolio. We note that CalPERS increased its Core holdings by $500 million when a prior commitment was called by a manager with an existing, well-diversified portfolio.
- ***Value Add*** returns are approximately 100 bps below Core, but not a significant contributor to total returns at only 4.6% of the Portfolio. Value Add investments recovered from single digit negative territory as of Q4 2020.
- ***Opportunistic***, comprising 7.3% of the Portfolio, posted the best returns for the trailing one year period at over twice that of Core, and recovered from double digit negative territory of six months ago.

By Geography: The US recovery is ahead of other countries.

- ***Domestic*** investments, which make up 51.7% of the Portfolio, continue to perform well—above the Total Fund's target return, and have participated in the recent recovery. The increases in US Port Activity is one indicator of this recovery, as seen in the attached chart showing container trade volumes at three ports.
- ***International*** investments, which make up 48.3% of the Portfolio, improved several hundred basis points over Q4 2020, but are still hampered by reduced economic activity generally, and the very low level of airline travel specifically. See for example the attached chart showing the number of Total US Domestic and International Flights.

Other Selected Segments: Diversification has been important to the Portfolio's resilience.

- ***Commercial*** investments are 11.4% of the Portfolio, including a US toll road investment which shows improved returns as economic activity is increasing. For example, the attached chart showing the Moving 12-month Total Miles Traveled on All US Roads shows the number beginning to trend upwards.
- ***Essential*** investments are 30.6% of the Portfolio and include a variety of conventional and renewable power generation assets. These have held up well during the pandemic and continue to deliver solid returns. As noted for the attached chart showing Total US Power Generation, levels for the year ending March 31, 2021 were only 1.3% below the prior 12 months. Additionally, CalPERS' multi-source power portfolio is consistent with data presented in the attached chart showing US Power Generation by Source, with respect to the continuing importance of natural gas and the increasing importance of solar and wind.

[1] Real Assets Quarterly Performance Report as of March 31, 2021.

- ***Specialized*** investments are 26.2% of the Portfolio and include mainly sector-diversified commingled funds. Some of these have held up better than others over the past year, but collectively they delivered mid-single digit returns for the trailing year. Most of these funds are through their investment periods, and so not competing with other managers deploying of dry powder, the level of which has been steadily increasing over the years as seen in the attached chart.

Income: Returns are approaching the target range.

- The Portfolio's one year net income is up slightly compared to Q4 2020, and at 2.8% is getting closer to Staff's expectations of annual income between 3% and 5% over the long term. As was the case six months ago, net income continues to be an important component of total return over the trailing 12 months, with net income exceeding appreciation.

Implementation

The Portfolio's Net Asset Value ("NAV") as of June 30, 2021 was $6.1 billion, an increase of $351.9 million, or 6.1%, compared to the December 31, 2020 NAV of $5.8 billion. The current NAV represents 1.3% of the Total Fund, and 13.4% of the Real Assets Program.[1]

For the prior year period, the Portfolio's contributions outpaced distributions $605.7 million to $342.5 million, respectively.[2] We would expect to see contributions outpace distributions going forward, given the number and size of new commitments made over the last two years compared to the remaining smaller size of legacy assets.

One new investment was made during the H1 2021 semi-annual period: a renewable power asset with a contracted revenue profile located in the US.

[1] The Total Fund market value was $469.3 billion, and the Real Asset Program NAV was $45.6 billion, as of June 30, 2021, per Wilshire.

[2] Real Assets Quarterly Performance Report as of March 31, 2021.

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 6/30/21 Exposure[1]
Risk Classification	(%)	(%)[2]
Core	60-100	88.1
Value Add	0-25	4.6
Opportunistic-All Strategies	0-25	7.3
Geographic Region	(%)	(%)[3]
United States	40-100	51.7
International Developed	0-60	48.2
International Developing	0-15	0.1
International Frontier	0-5	0.0
Manager Exposure [4]	(%)	(%)
Largest Partner Relationship	20 max	4.4
Investments with No External Manager	20 max	1.7
Leverage [5]		
Loan to Value	65% max	44.6%
Debt Service Coverage Ratio	1.25x min	1.90x

Meketa highlights for the Board that International Developed geographic exposure at 48.2% is not that far away from the 60% policy limit. We discussed this situation in some detail in our July 12, 2021 memorandum commenting on the 2021 Real Assets Strategic Plan, concluding in part: *As Staff continue to find attractive infrastructure investment opportunities outside the US, and considering the large equity checks necessary to acquire many types of infrastructure assets, Staff and the Board may wish to revisit the Portfolio-level geographic policy parameters to ensure they are aligned with and supportive of the recently approved Annual Investment Plans and this Strategic Plan*. Please see Meketa's July 12, 2021 memorandum for more analysis and commentary on this topic.

[1] Private investment data are one quarter lagged, so effectively as of March 31, 2021.

[2] Real Assets Quarterly Performance Report as of March 31, 2021; and Real Assets 2021.3.31 Characteristics Report (Excel), based on asset-level risk.

[3] Real Assets Quarterly Performance Report as of March 31, 2021; and Real Assets 2021.3.31 Characteristics Report (Excel), based on asset-level geography.

[4] CalPERS Real Assets Portfolio Allocation Report (Excel), Period Ending March 31, 2021: 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 ($56.4 billion).

[5] CalPERS Real Assets Portfolio Leverage Report (pdf), Quarter Ending March 31, 2021.

Conclusion

The Portfolio has been resilient in the face of decreased economic activity during the coronavirus pandemic, and its solid absolute and relative performance for the trailing one year period appears to indicate it is recovering in pace with production, trade, and travel. Performance for longer periods is consistent with prior reporting periods.

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.

The Portfolio is well positioned to benefit from the hoped-for continued recovery at home and abroad, with a combination of investments that continue to be defensive and steady, and ones that have upside associated with increasing economic activity and pre-existing growth trends that are still in place. The new investment of $500 million into an existing portfolio of contracted, regulated, and GDP-linked assets should be accretive in terms of enhancing overall diversification, resiliency, and return potential.

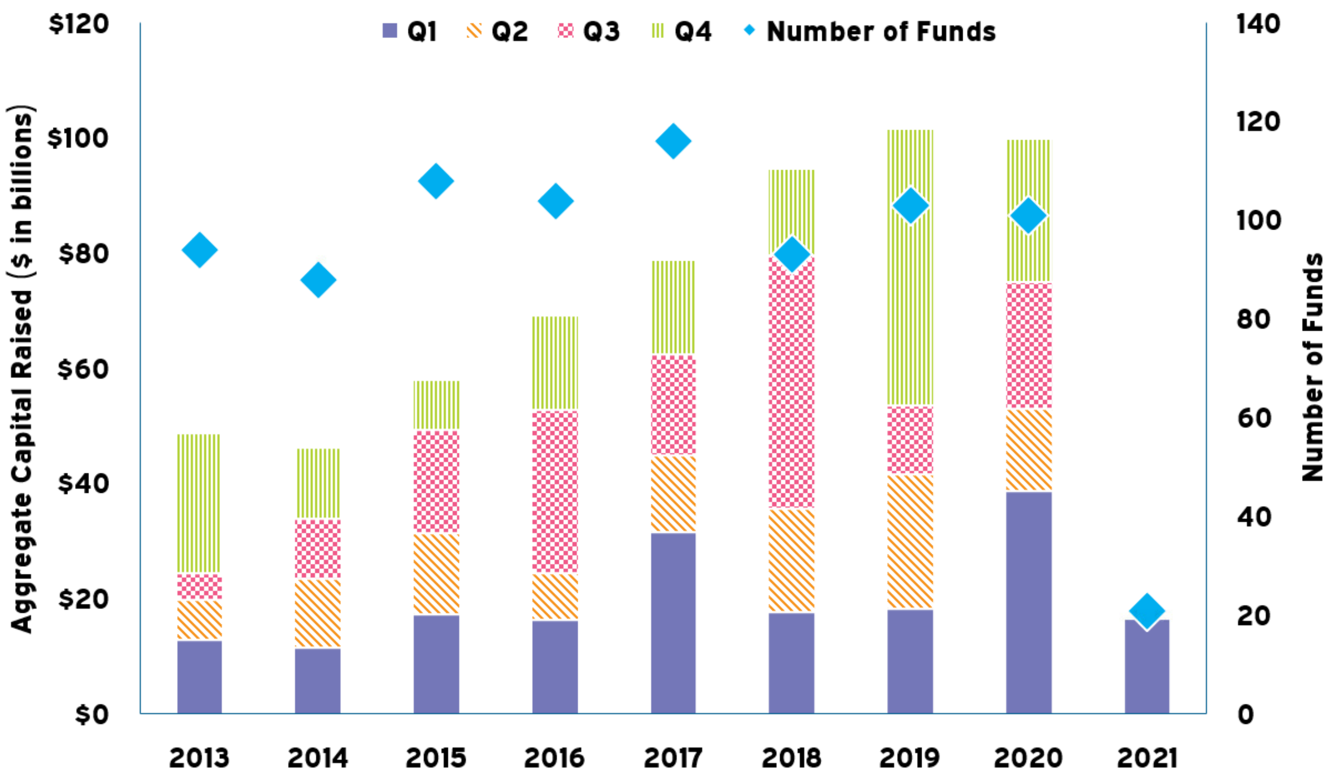
Please do not hesitate to contact us if you have questions or require additional information.

SPM/EFB/jls

Attachment[1]

Infrastructure Market Commentary – Q1 2021

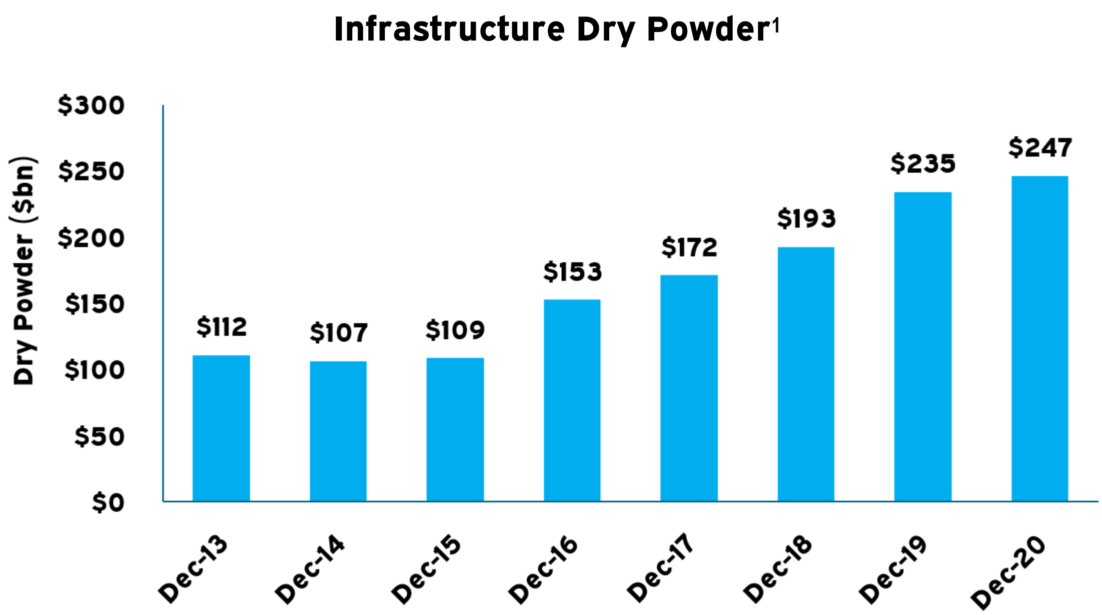
Global Quarterly Unlisted Infrastructure Fundraising[2]



Capital raised in the first quarter of 2021 was less than the fourth quarter of 2020 and half of the capital raised in the first quarter 2019. The average fund raised so far in 2021 is $790 million, which is less than the 2020 average of $920 million. As of March 31, 2021, a total of 286 unlisted infrastructure funds were in market, according to Preqin, with a combined fundraising target of approximately $235 billion.

[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.

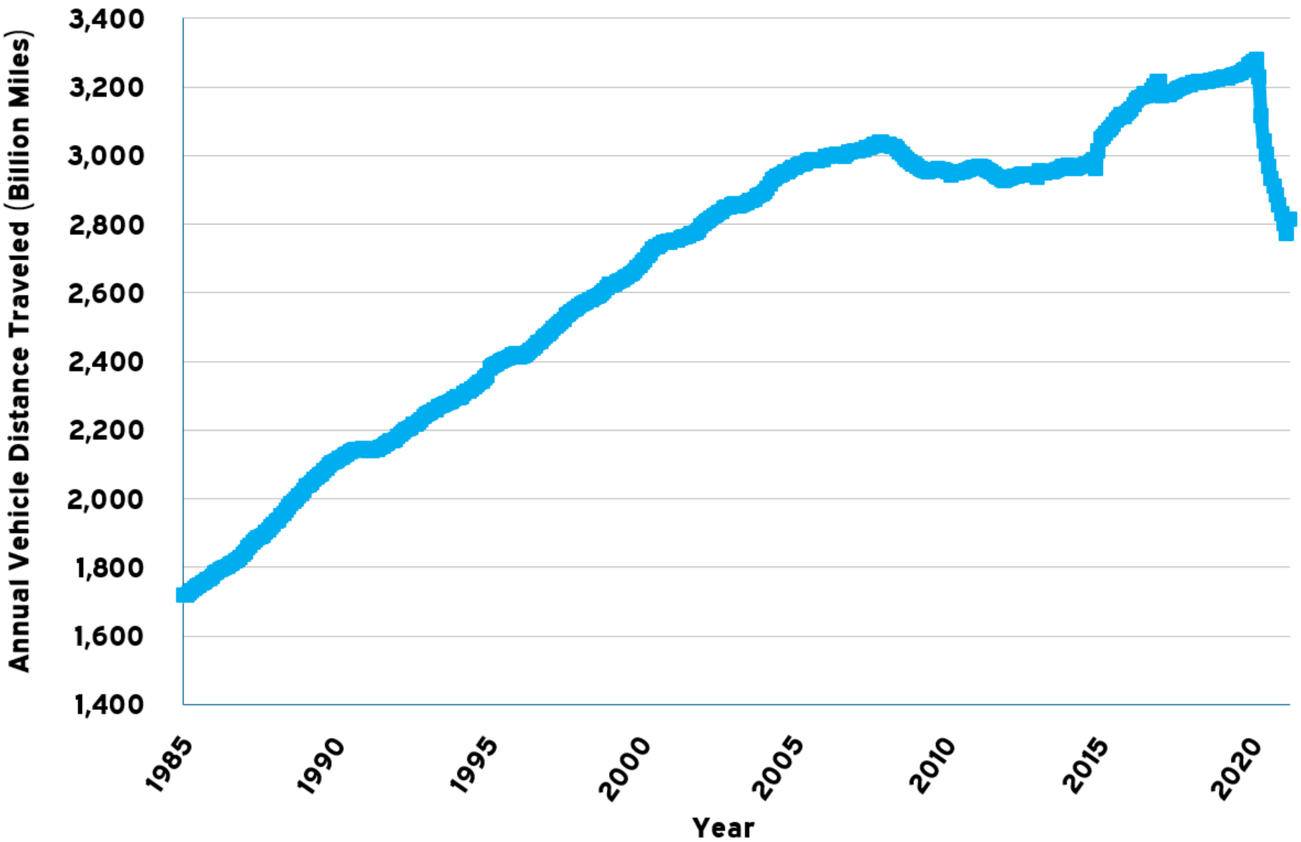
[2] Source: Preqin 2021 Global Infrastructure Report.



Along with the steady growth in annual commitments, the amount of uncalled capital (aka "dry powder") within infrastructure funds more than doubled between 2013 and 2020. Notably, capital contributions have increased in line with the amount of dry powder over this period, suggesting that the substantial rise in dry powder is primarily due to the strong fundraising environment and not a slowing deployment pace.

[1] Source: Prequin.

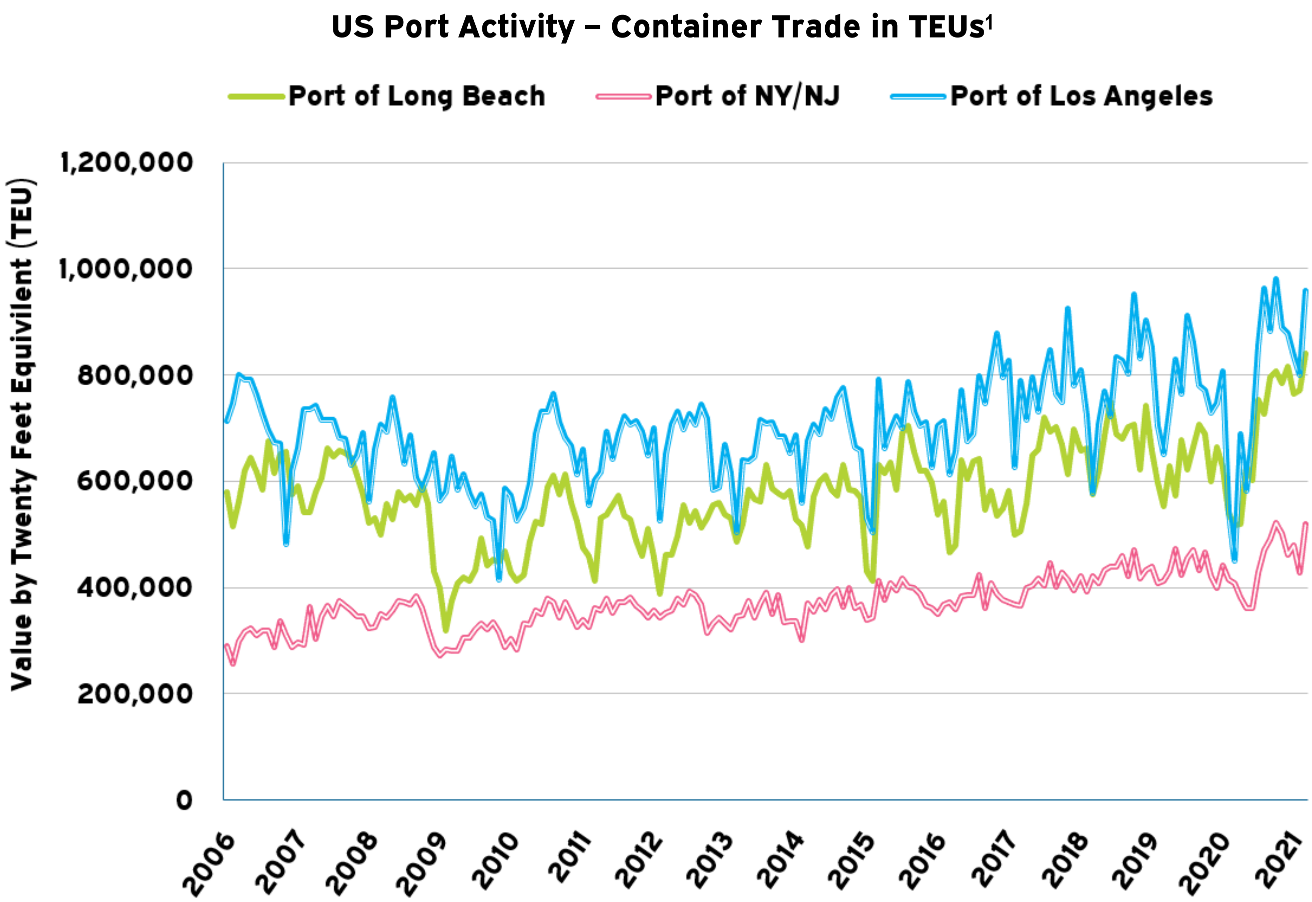
Moving 12-month Total Miles Traveled on All US Roads[1]



The first quarter was far below pace for travel on US roads totaling approximately 691.7 billion miles. This represented a decrease of 2.0% over the same period in 2020. That said, the travel data is trending back to higher values, indicating a natural return to travel as COVID-19 restrictions continue to loosen.

Up to this point in 2021, the average U.S. price of a gallon of gas went down to a monthly average of $2.64 per gallon, with a peak of $2.90. This compares to $2.26 and $2.64 seen in 2019, respectively.

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

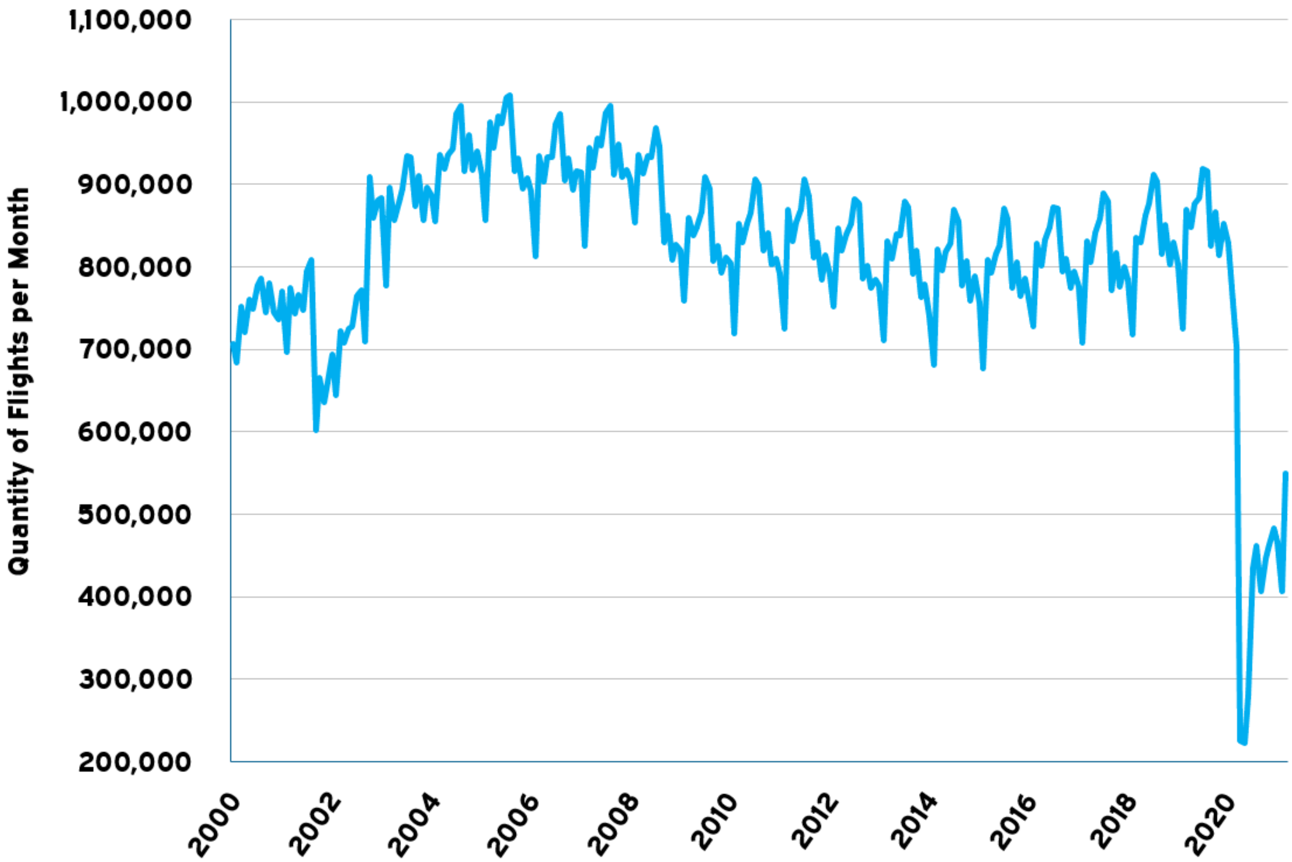


The chart presents the top three US ports by container volume, as measured by twenty-foot equivalent units ("TEU"). Activity at the three ports provides a high-level representation of the volume of imports received into the US more broadly.

During the first quarter of 2021, volumes at the three ports increased by 1.7 million units relative to the same period in 2020. On a year-over-year basis, the combined port volumes increased by 2.5 million TEU, or 11.8%, over the prior 12-month period. The Port of Long Beach recorded an increase of 17.3% (1.3 million TEU), the Port of NY/NJ reported an increase of 3.3% (0.2 million TEU) and the Port of Los Angeles recorded an increase of 12.1% (1.1 million TEU) over the prior 12 months.

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

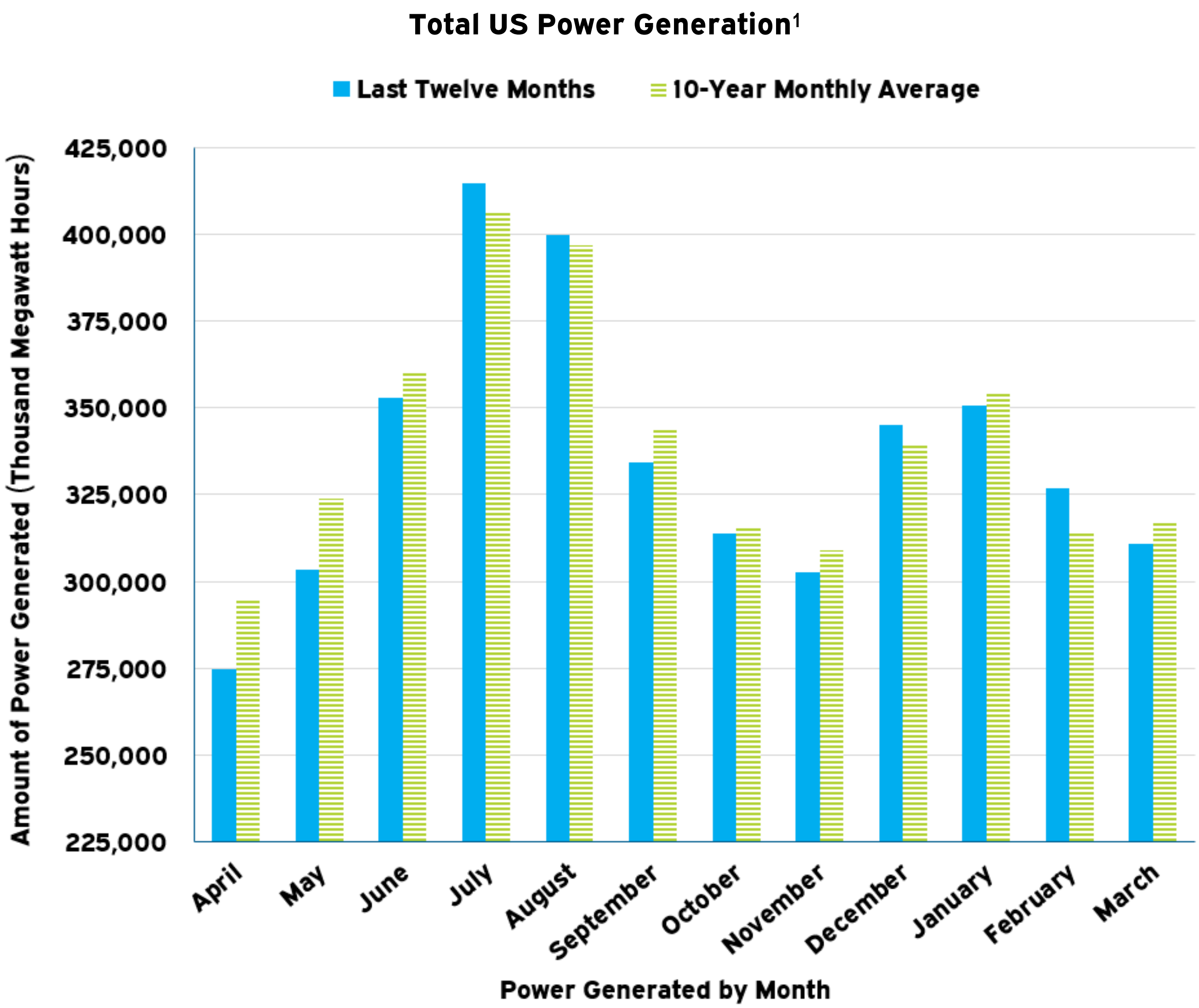
Total US Domestic and International Flights[1]



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

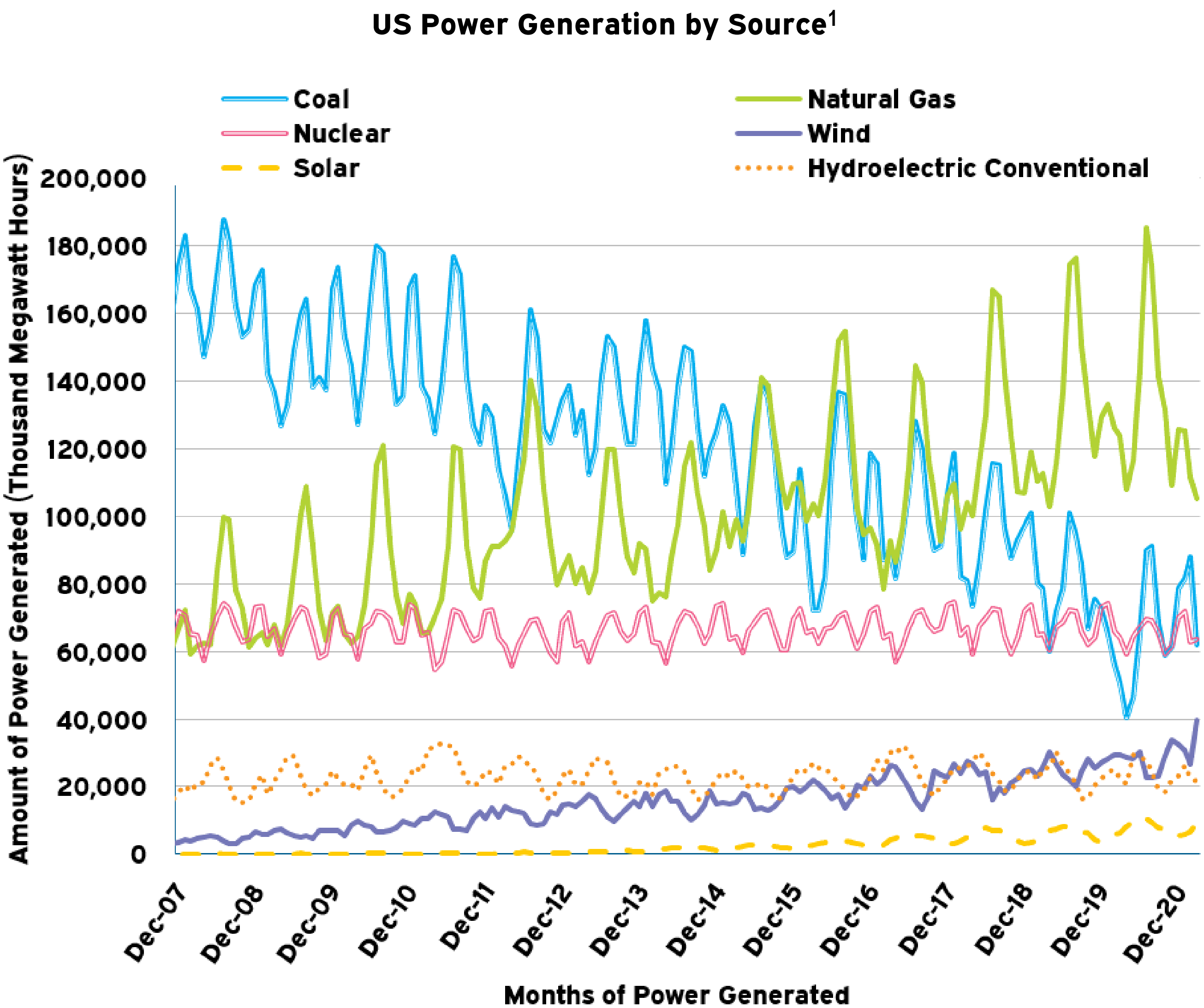
There were 0.9 million fewer flights during the first quarter of 2021, representing a 38.4% decrease compared to the same period in 2020. Air traffic activity decreased by 52.1% over the 12 month period ended March 31, 2021 over the previous period. In addition to the number of flights during the first quarter decreasing year-over-year, the total number of passengers travelling on US and international airlines decreased by 70.5% from 2020 to 2021 with the lowest level of international travelers since 2003.

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



The graph above presents the total net generation for the past 12 months compared to the 10-year average for each month. Over the past year, power generation was below the 10-year average in eight out of 12 months. Net energy generation in the US decreased by 2.8% during the first quarter, compared to the same period in 2020. For the 12-month period ended March 31, 2021, net energy generation decreased by 1.3% over the previous 12 months.

[1] Source: US Energy Information Administration: Electric Power Monthly, March 2021.



Three power generation sources in the US—coal, wind, and solar—increased 35%, 11%, 31%, respectively, in the first quarter of 2021 (versus the same period in the previous year). Generation from natural gas, nuclear, and hydroelectric conventional dropped by 11%, 3%, and 3%, respectively, during the same period. Wind and utility scale solar continue to make up a small portion of total net energy generation in the US, accounting for only 10% and 2% of energy generation in the first quarter, respectively, while coal, natural gas, and nuclear accounted for 23%, 35%, and 20%, 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 couple of years.

[1] Source: US Energy Information Administration: Electric Power Monthly, March 2021.