



ASAP

(American Solar Action Plan)

PV-Wind Monthly Data Slideshow

September 2023

ASAP

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Highlights for June 2023



- PV capacity additions were a robust 2,481 MW; wind capacity additions were a washout – 0 MW.
 - MW = megawatts; GW = gigawatts (1000 MW); TW = terawatts (1000 GW)
- PV panel imports remain robust at \$1.5 billion. This is the ninth consecutive month that the value of U.S. PV panel imports top \$1.0 billion, which supports robust U.S. PV capacity additions in 2023.
- For the month of August, TAN ETF (solar) share prices were down 15.0%, and FAN ETF (wind) share prices were down 7.4%.
- China reports 78 GW of PV capacity additions in the first half of 2023, which is an annual pace of 156 GW.
- The global pace for 2023 PV capacity additions is 310 GW.

Slideshow Objectives



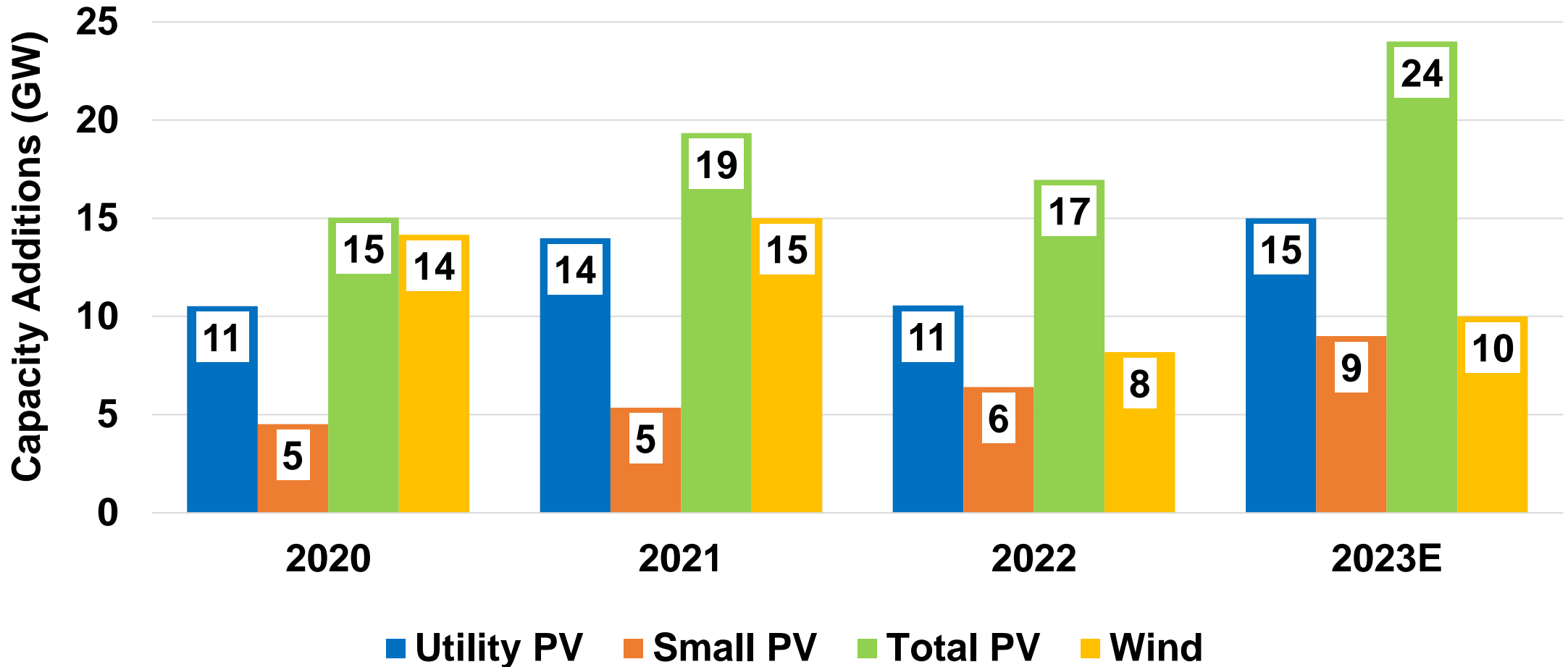
- To Document Monthly and Annual Growth in PV and Wind Capacity and Electricity Generation
 - MW = megawatts; GW = gigawatts; TW = terawatts; MT = thousand metric tons (polysilicon)
- PV and Wind Capacity Additions
 - The Graphs Show Current and Past Year Monthly PV and Wind Capacity Additions
 - For Perspective, Compare Current Monthly Capacity Additions to the Long-Term Goals
 - U.S. PV Long-Term Goal (2040 forward)
 - Monthly Average – 8 GW of Capacity Additions
 - Annual Average – 96 GW of Capacity Additions
 - U.S. Wind Long-Term Goal (2040 forward)
 - Monthly Average – 4 GW of Capacity Additions
 - Annual Average – 48 GW of Capacity Additions
 - World PV Long-Term Goal (2040 forward)
 - Annual Average – 700 GW of Capacity Additions
 - World Wind Long-Term Goal (2040 forward)
 - Annual Average – 300 GW of Capacity Additions
- Slides Present U.S. Monthly PV, Wind and Fossil Fuel Electricity Generation to Show Seasonality



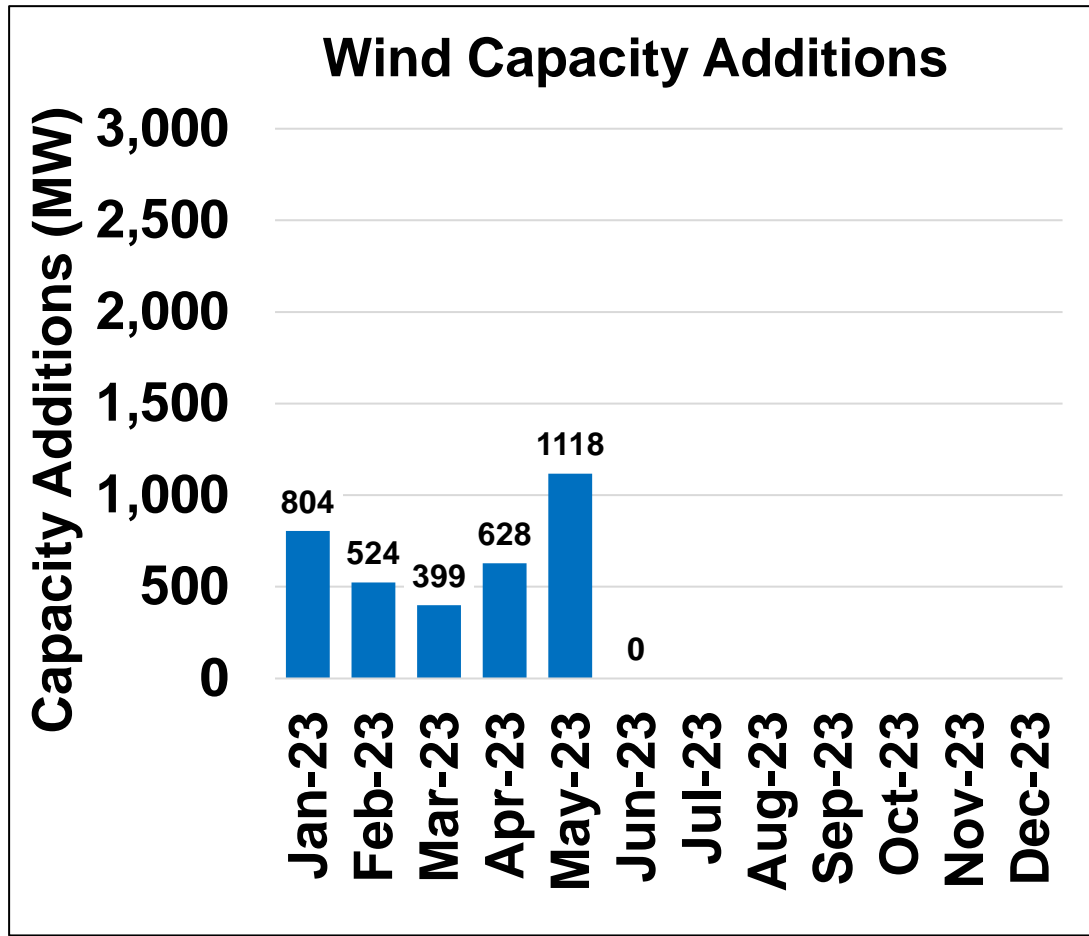
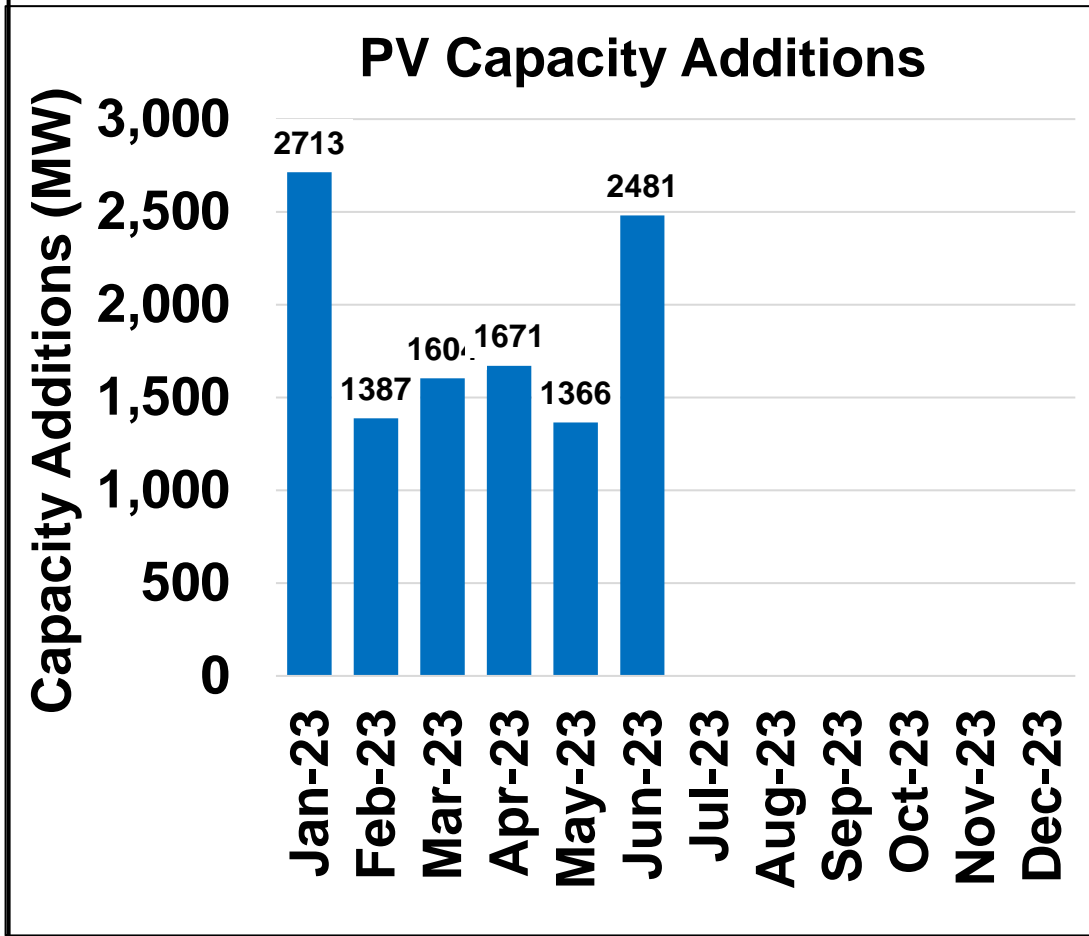
U.S. PV and Wind Capacities

2023 Forecast

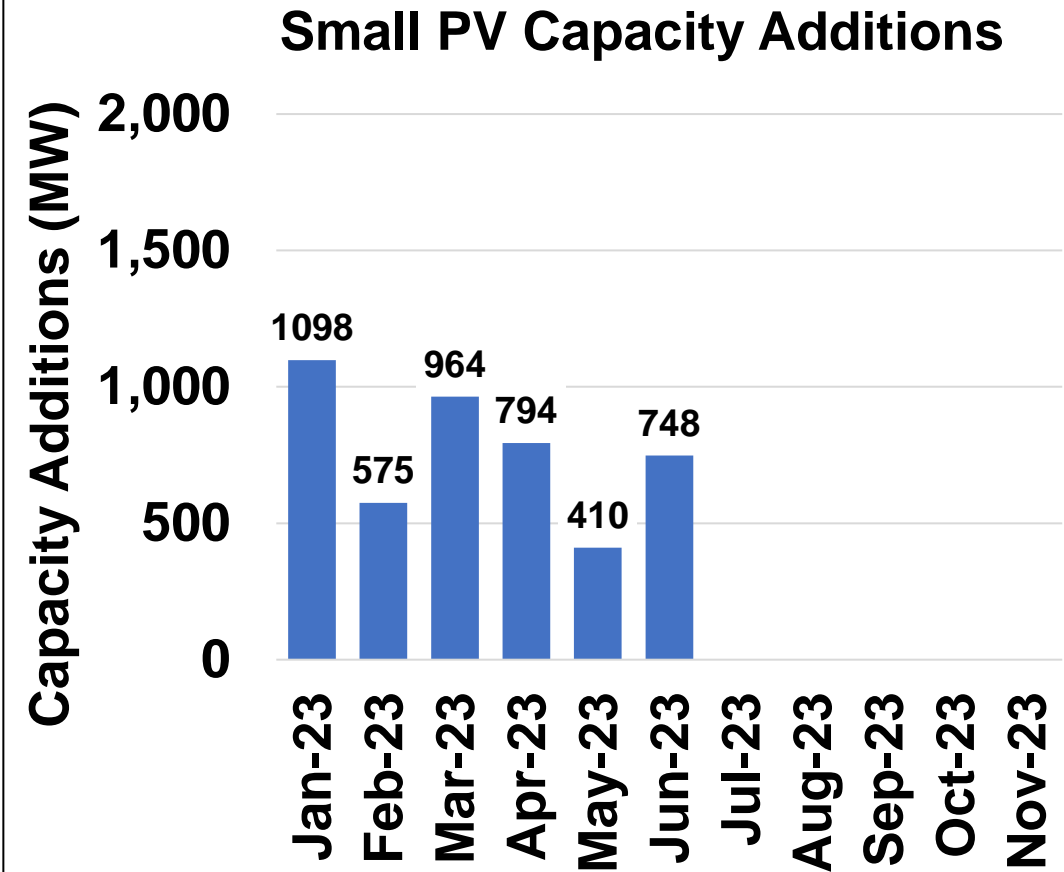
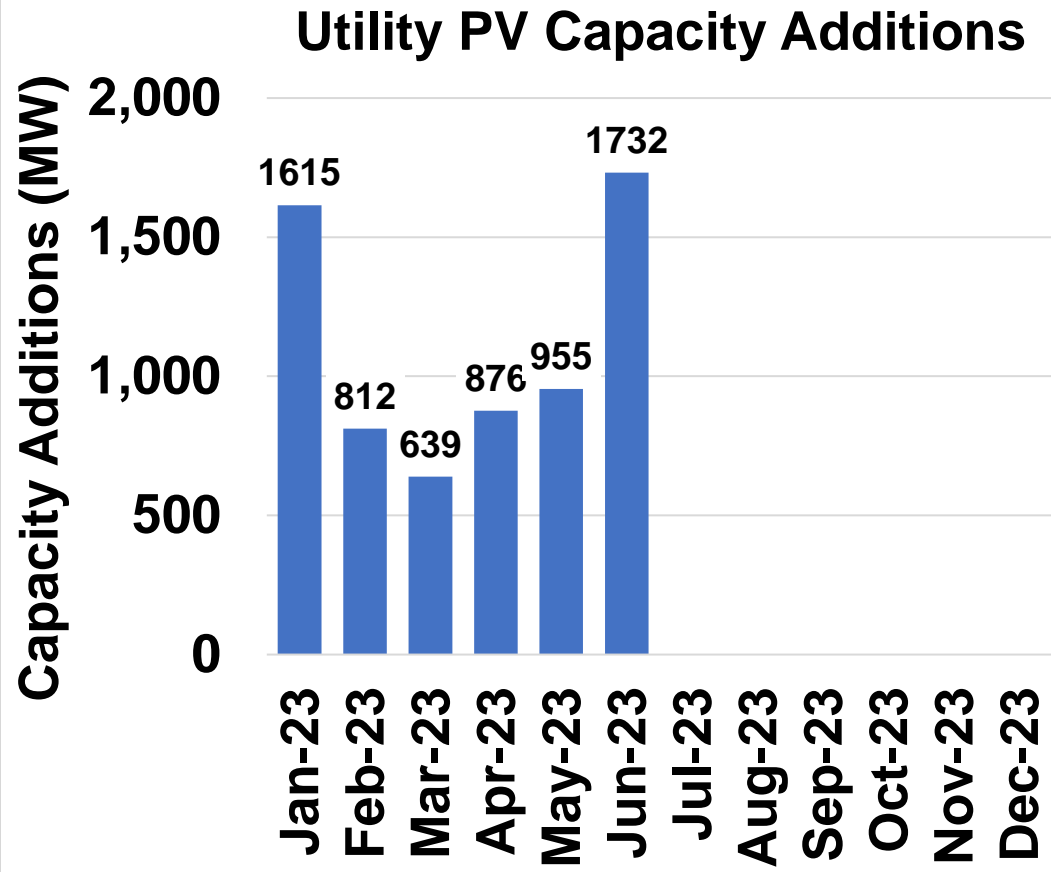
U.S. Annual PV and Wind Capacity Additions 2020-2022



U.S. PV and Wind Monthly Net Capacity Additions 2023 (through June)

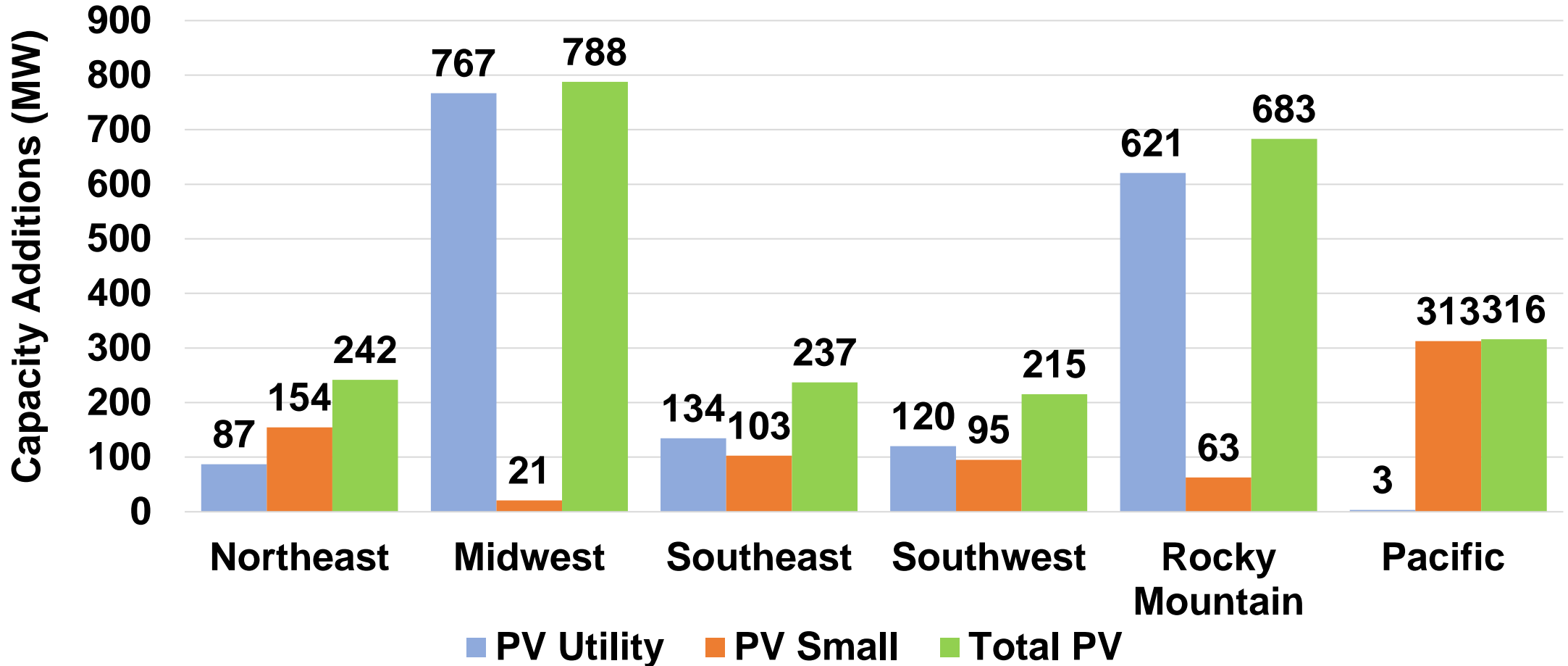


Monthly Utility and Small PV Net Capacity Additions 2023 (through June)

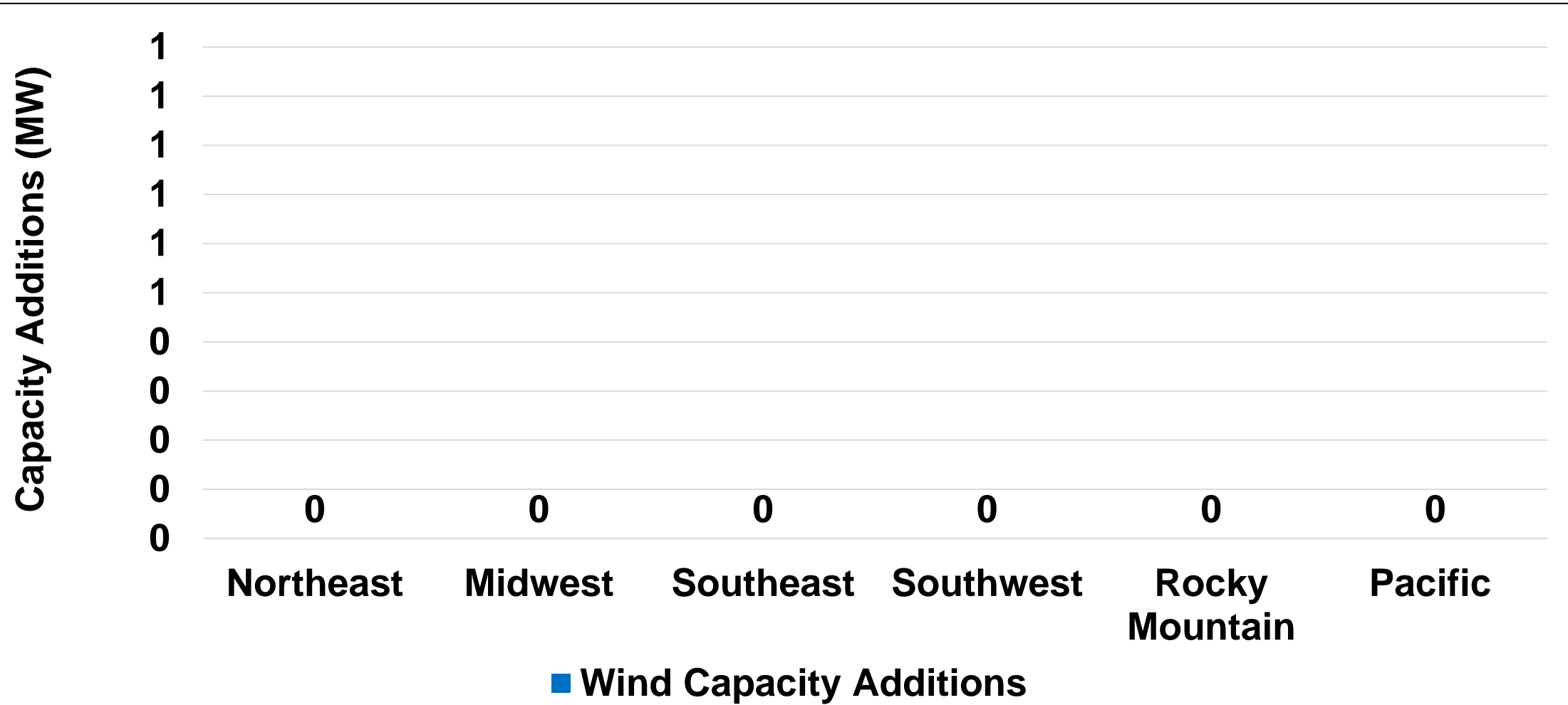


8/31/2023 Note: Small PV is less than 1.0 MW; Utility PV is 1.0 MW and greater

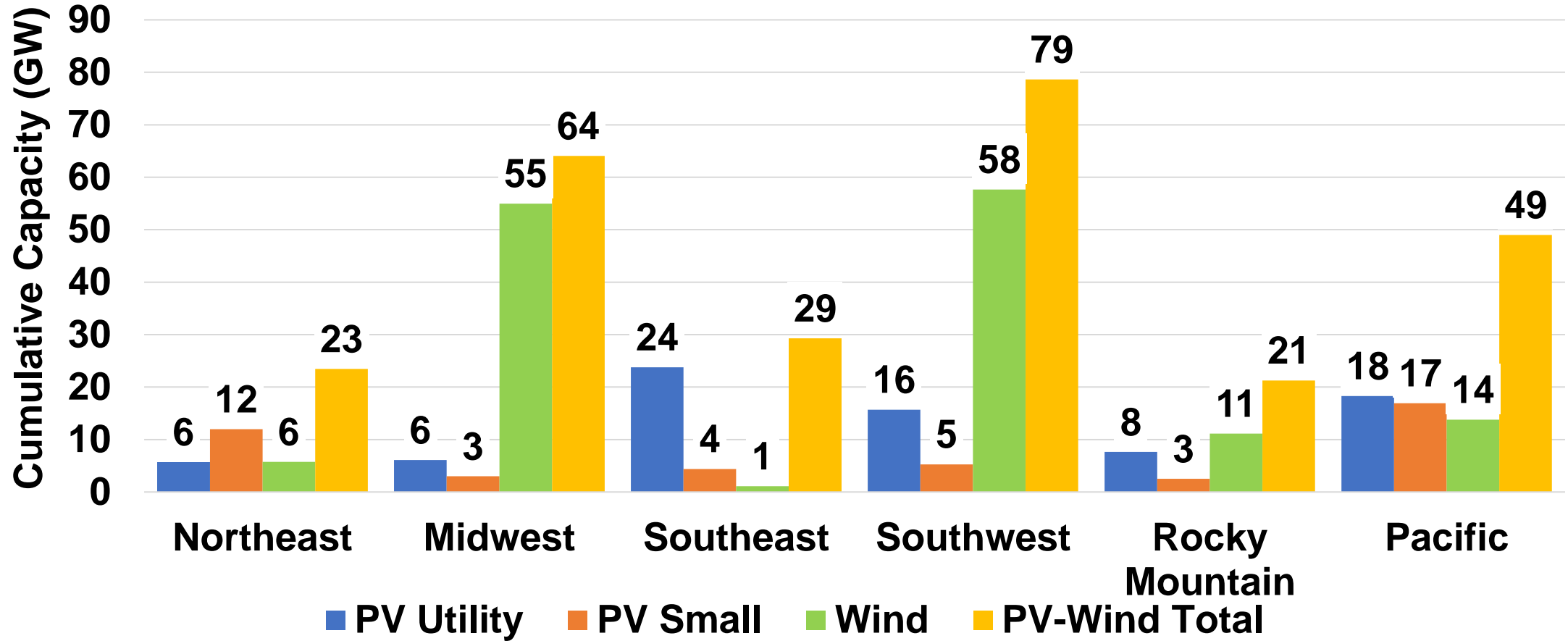
Regional PV Net Capacity Additions June 2023



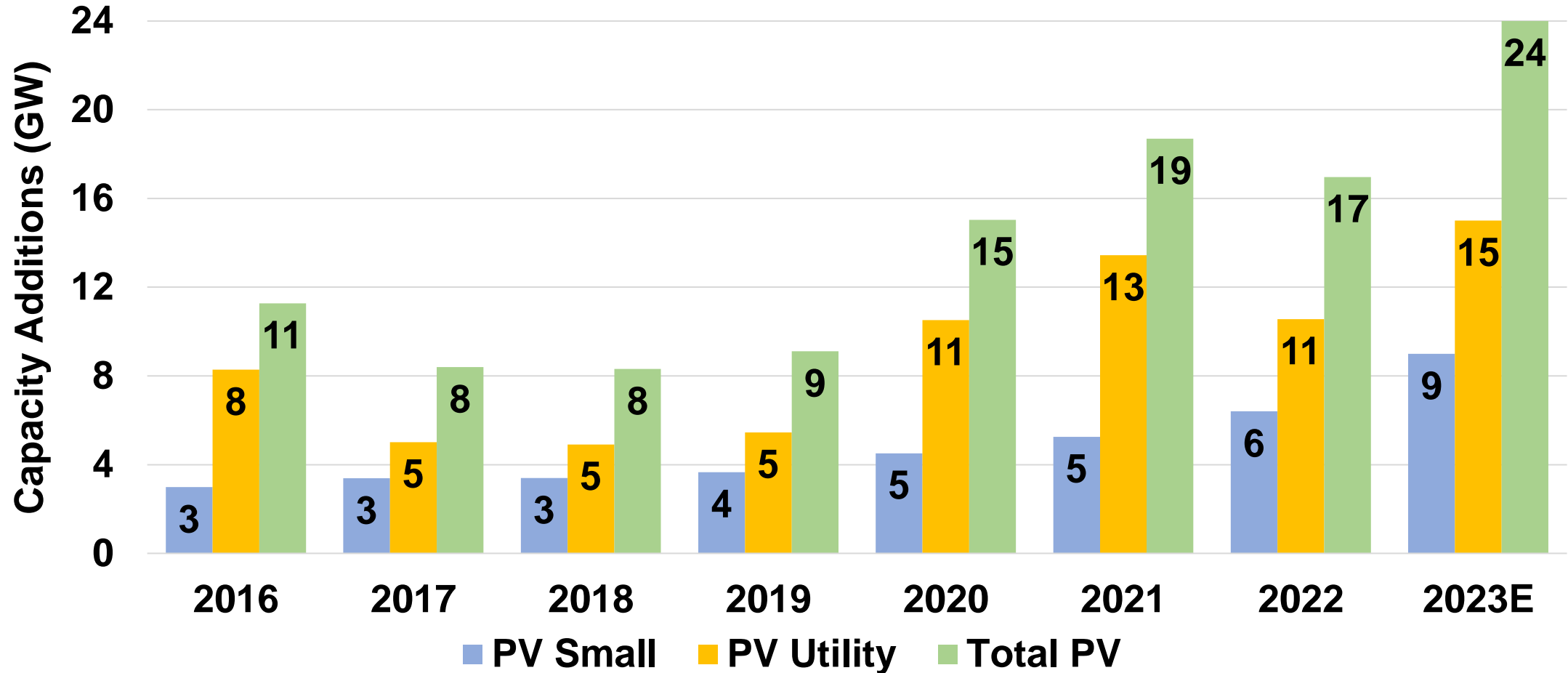
Regional Wind Net Capacity Additions June 2023



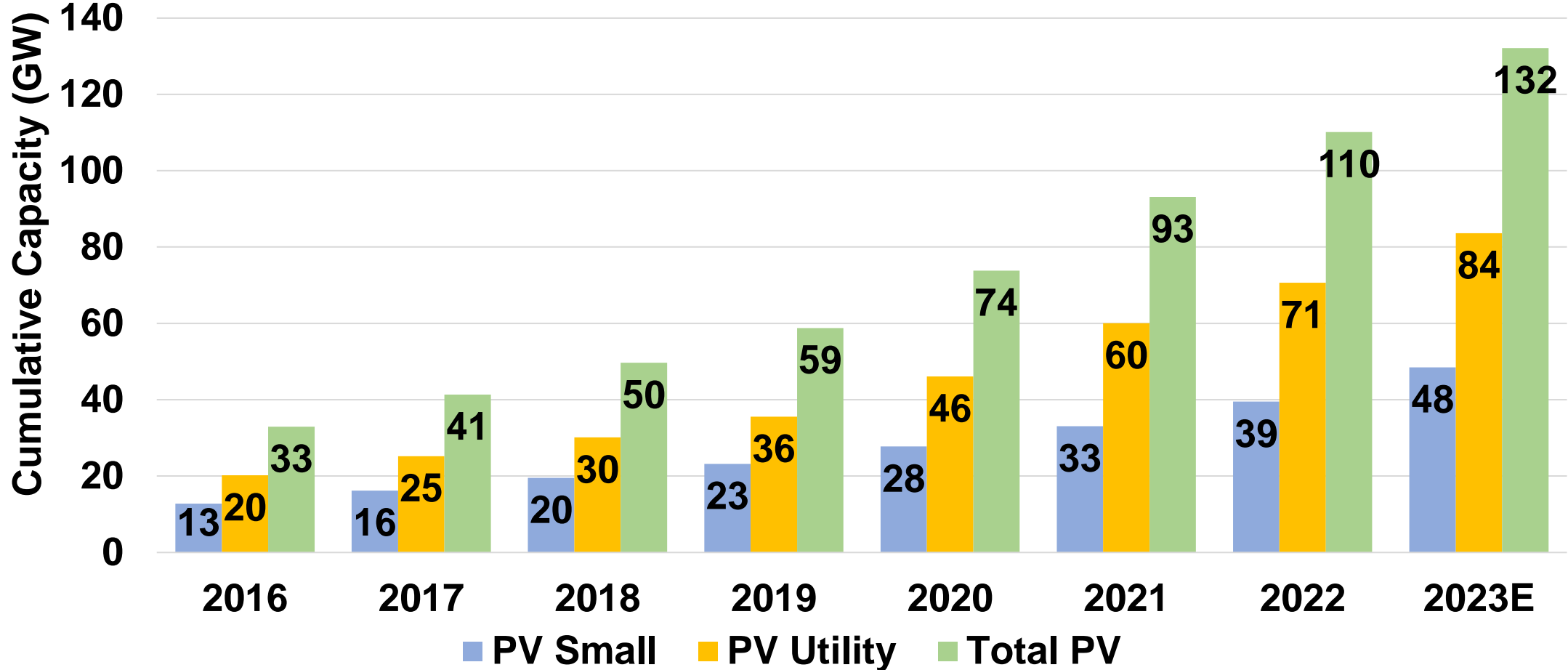
PV and Wind Cumulative Capacity by Region June 2023



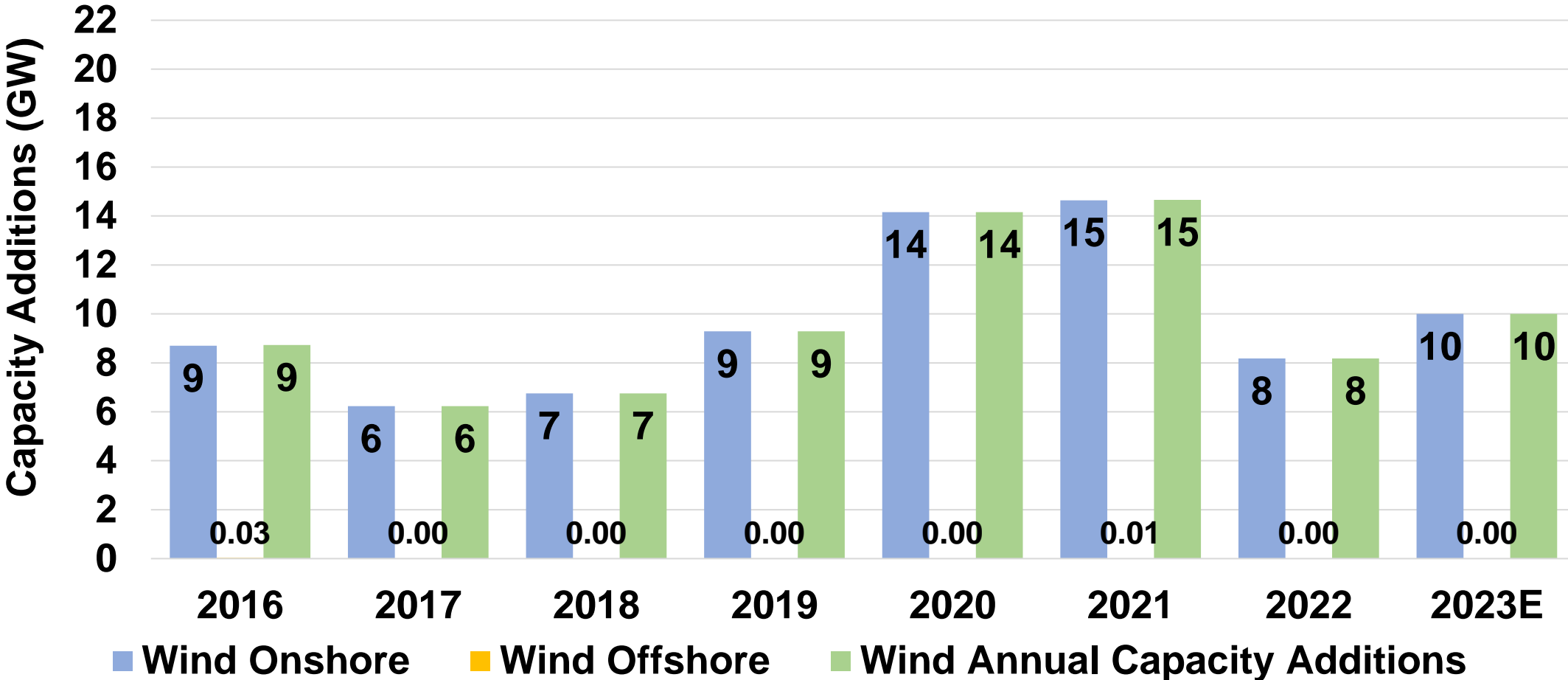
PV Annual Capacity Additions 2023 Forecast



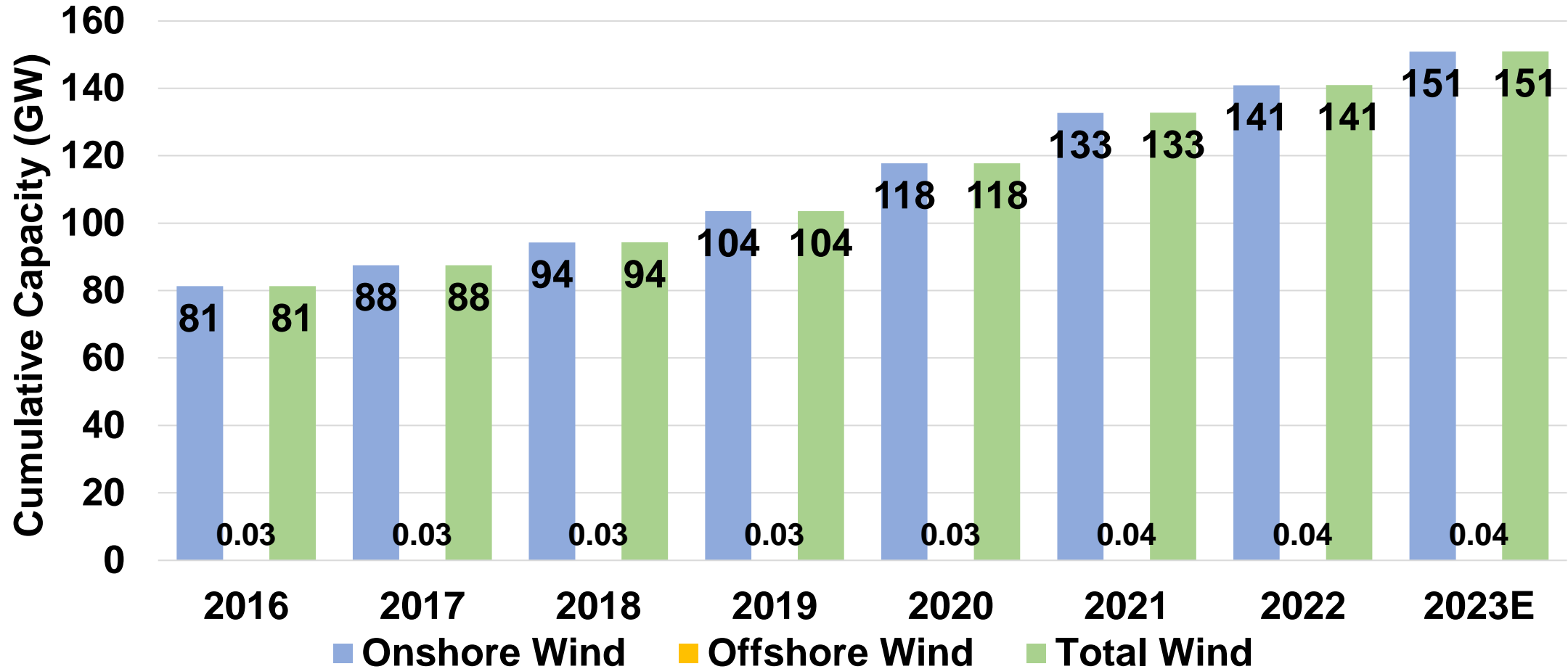
PV Annual Cumulative Capacity 2023 Forecast



Wind Annual Capacity Additions 2023 Forecast



Wind Annual Cumulative Capacity 2023 Forecast

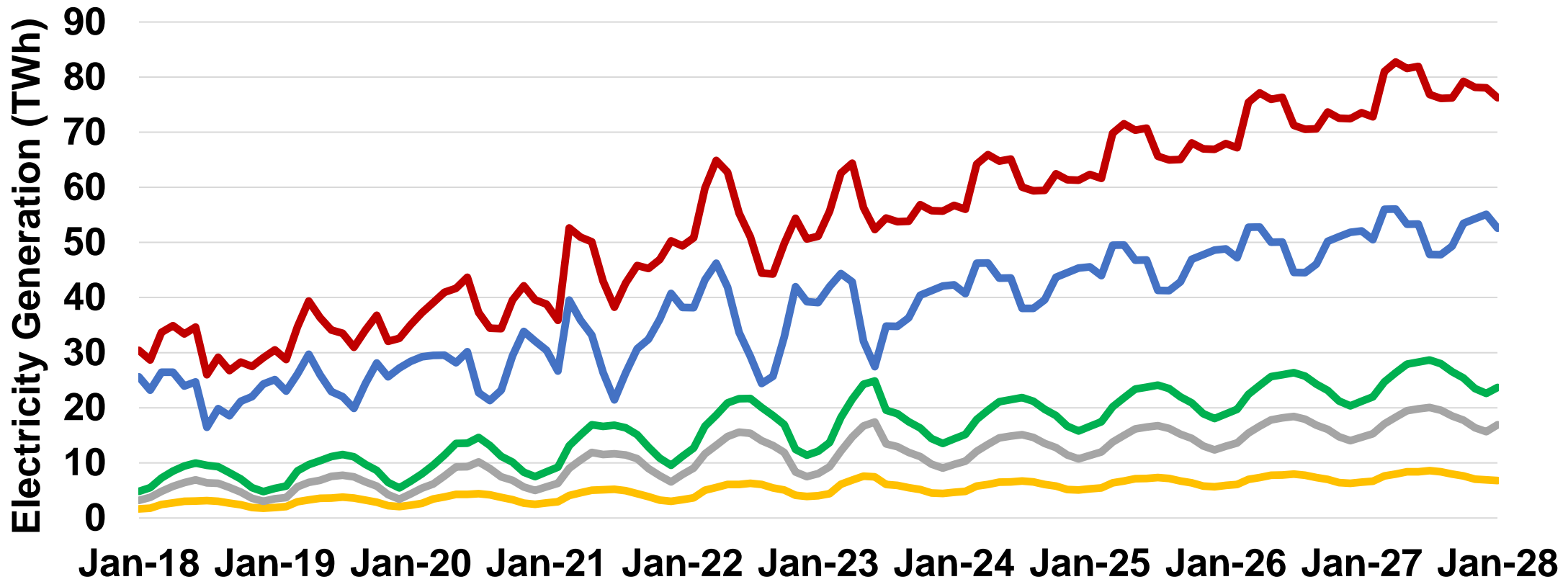




U.S. PV and Wind Electricity Generation

U.S. PV & Wind Monthly Electricity Generation (2018-2027)

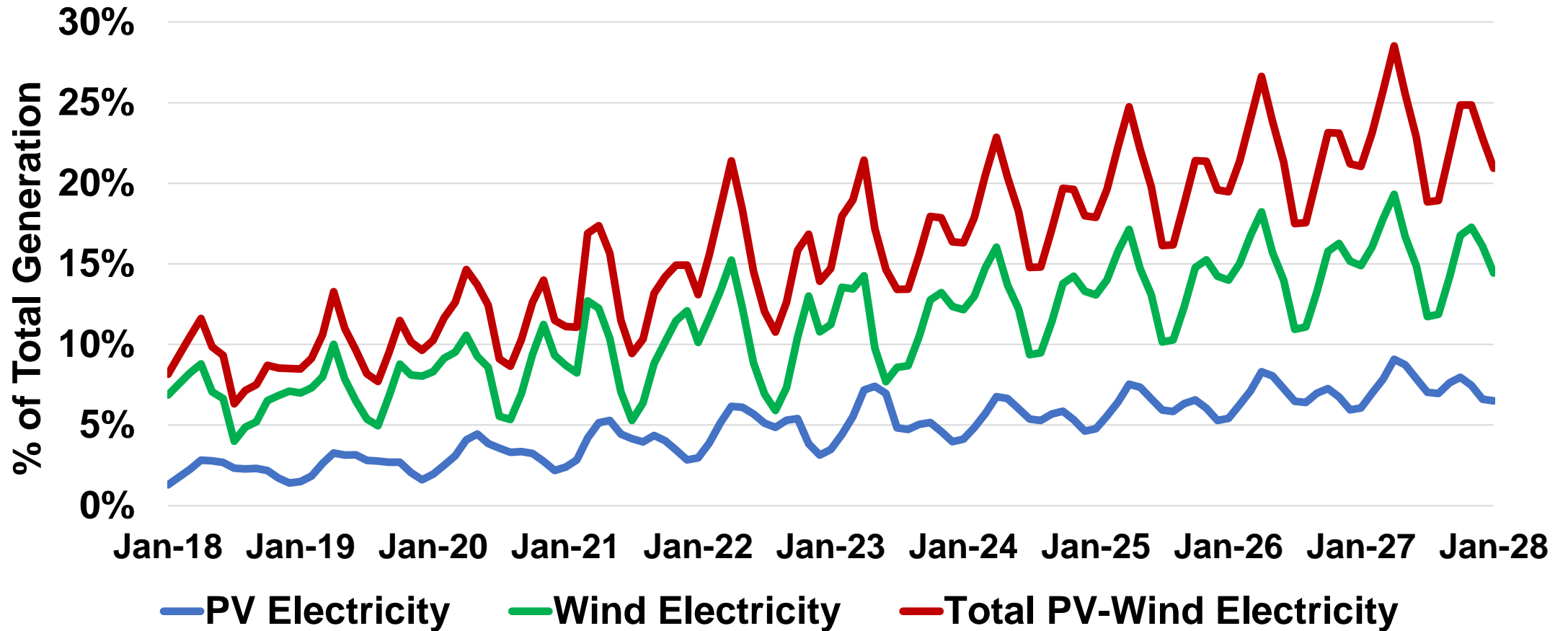
Actual through June 2023; Forecast through Dec. 2027



— Wind — PV Small — PV Utility — Total PV — Total PV-Wind

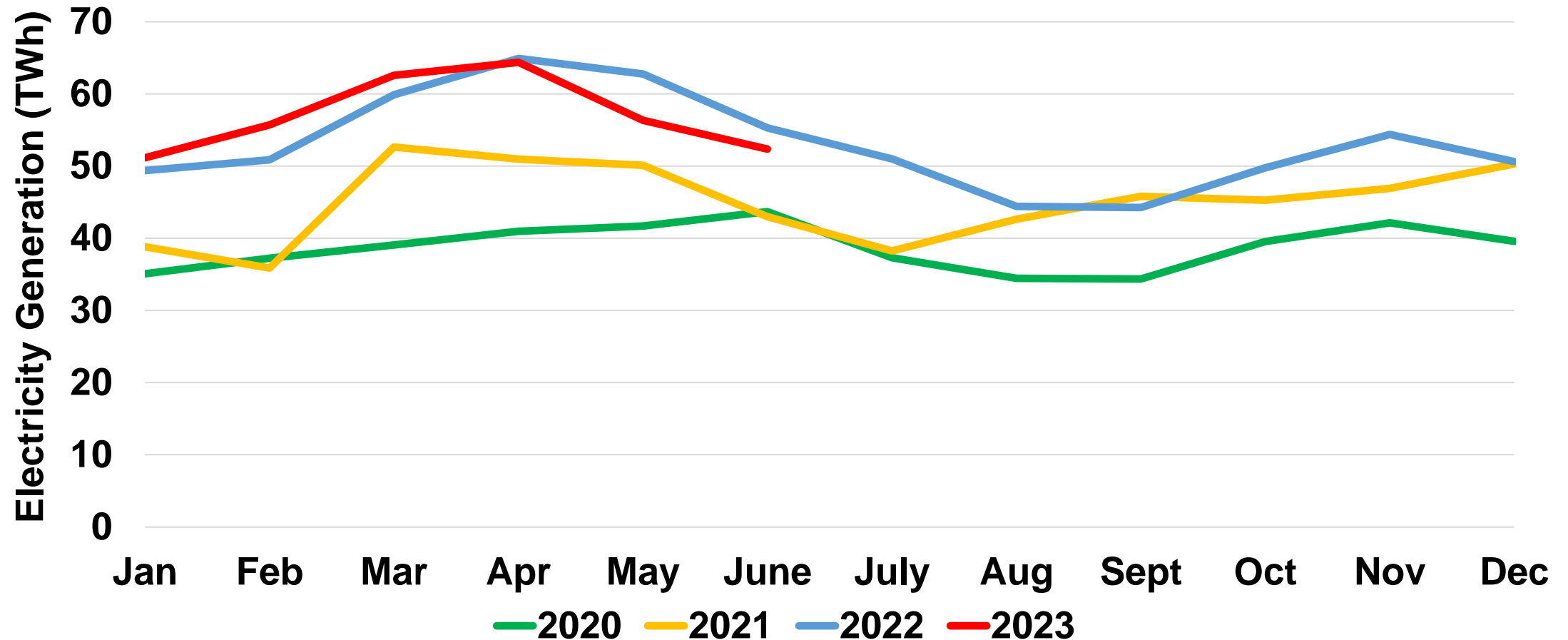
Note: PV Small is less than 1.0 MW; PV Utility is 1.0 MW and greater

U.S. PV & Wind Electricity as % of Total Generation Actual through June 2023; Forecast through Dec. 2027

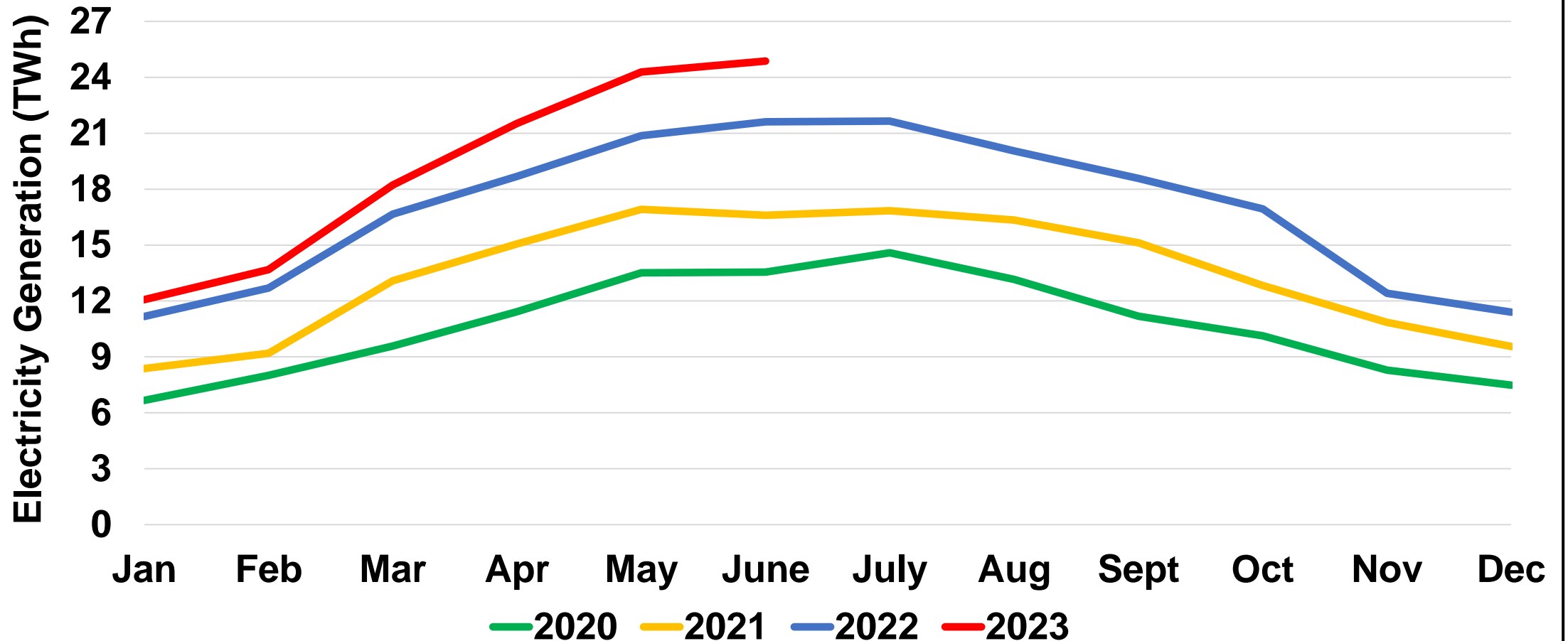


Note: Fossil fuel electricity generation was 60% of total 2020 electricity generation.

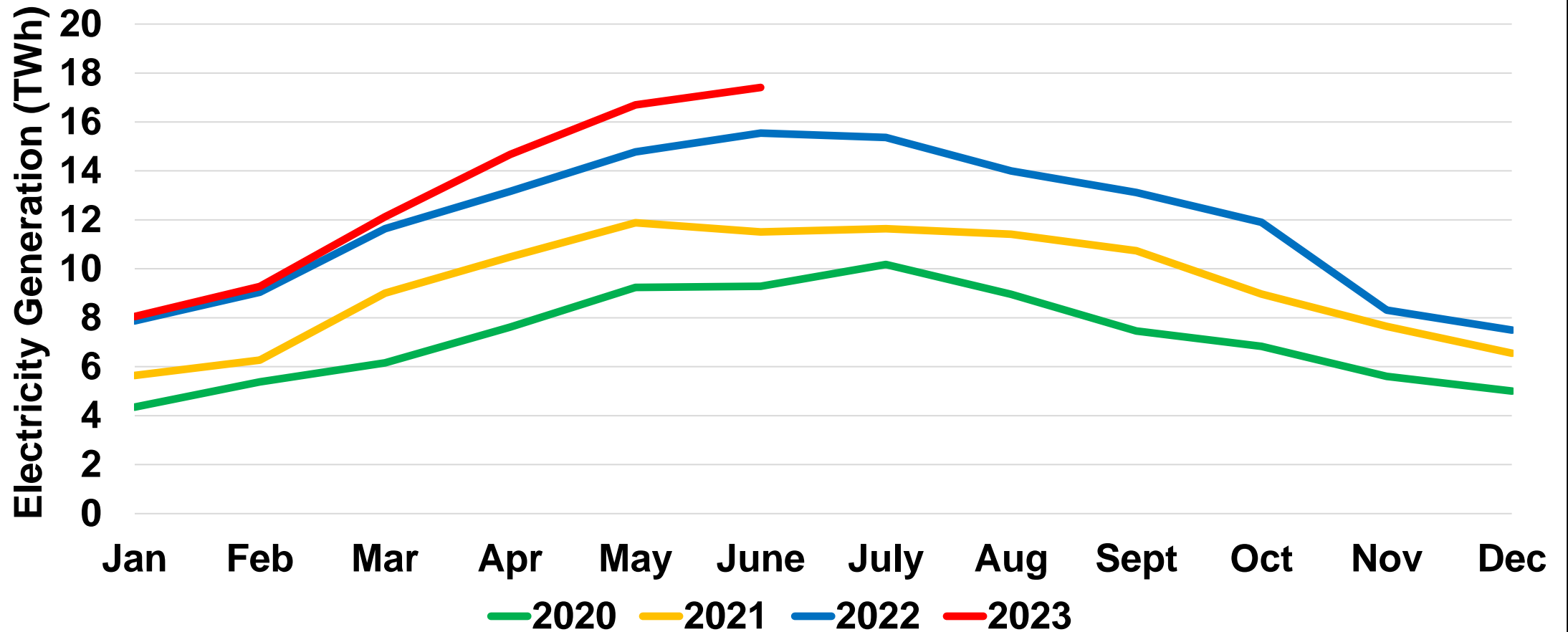
Combined PV and Wind Electricity Generation Year-on-Year (through June 2023)



PV Electricity Generation Year-on-Year (through June 2023)

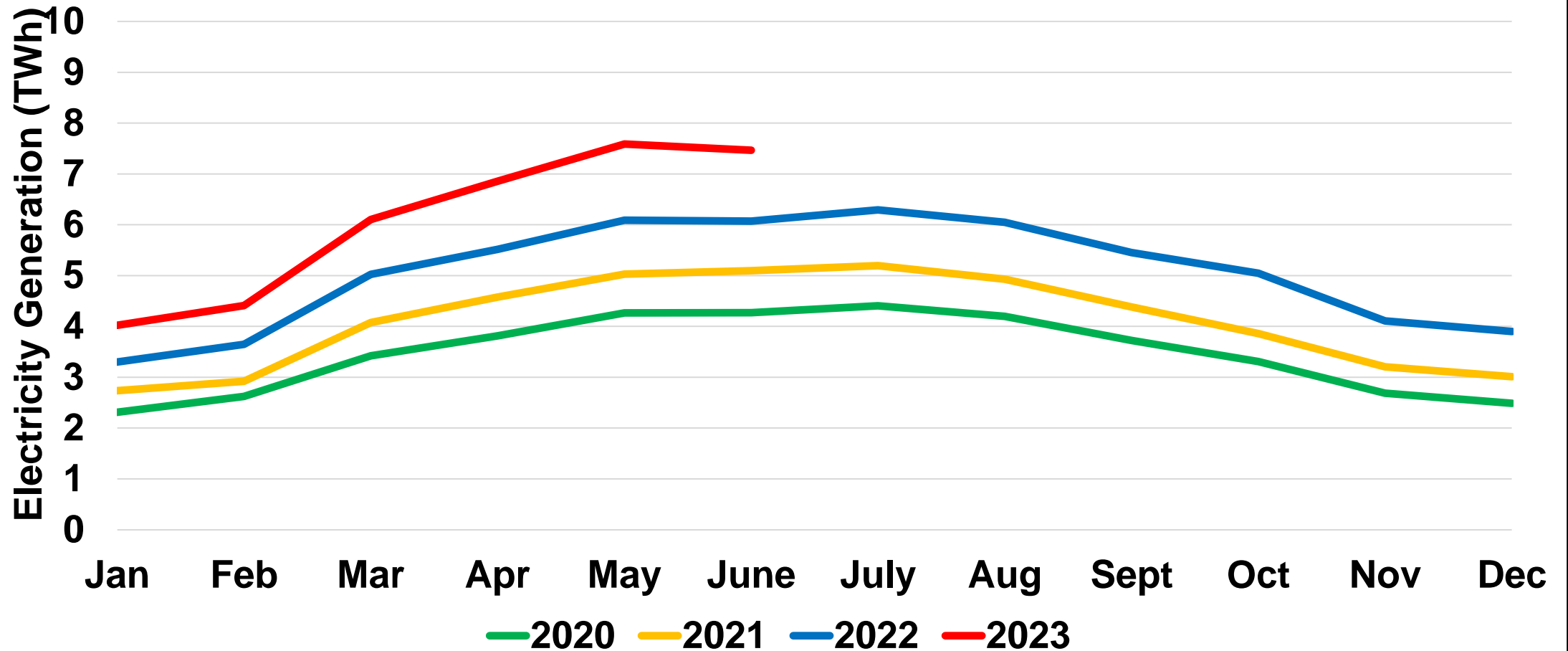


Utility PV Electricity Generation Year-on-Year (through June 2023)

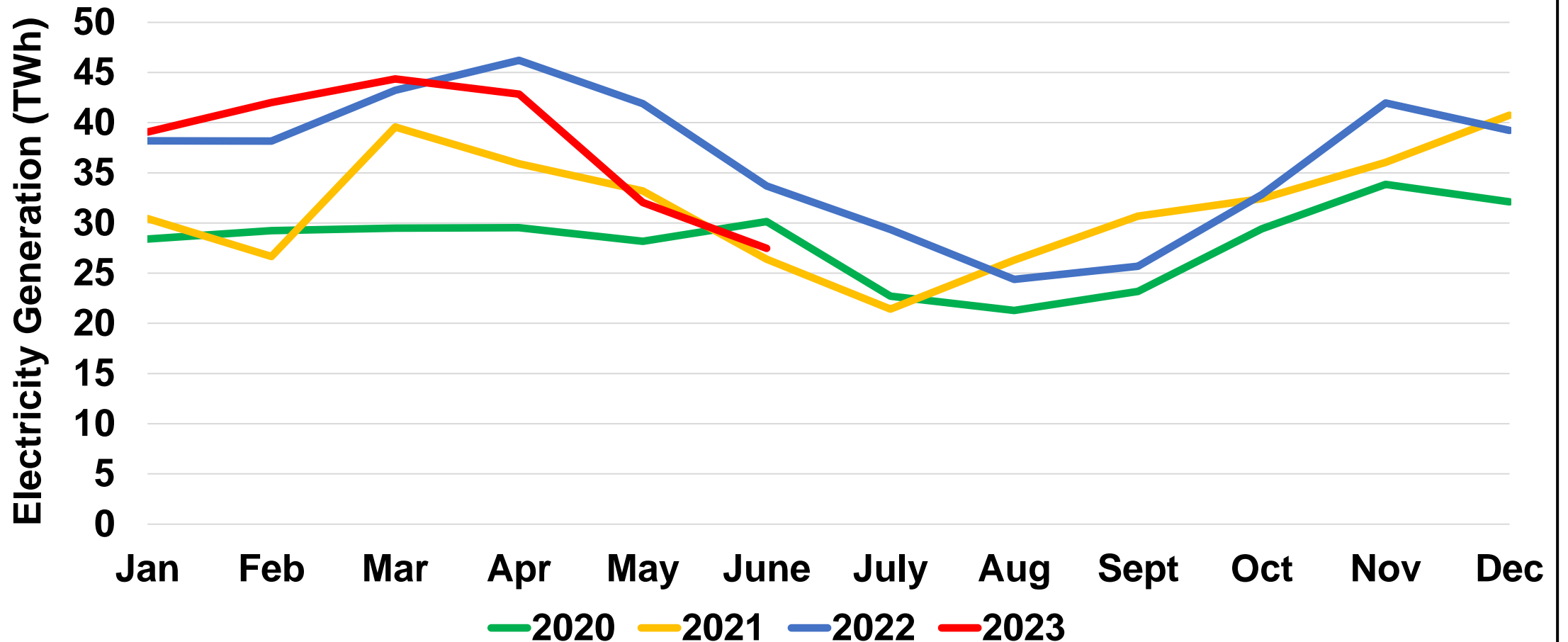


Note: PV Utility is greater than 1.0 MW

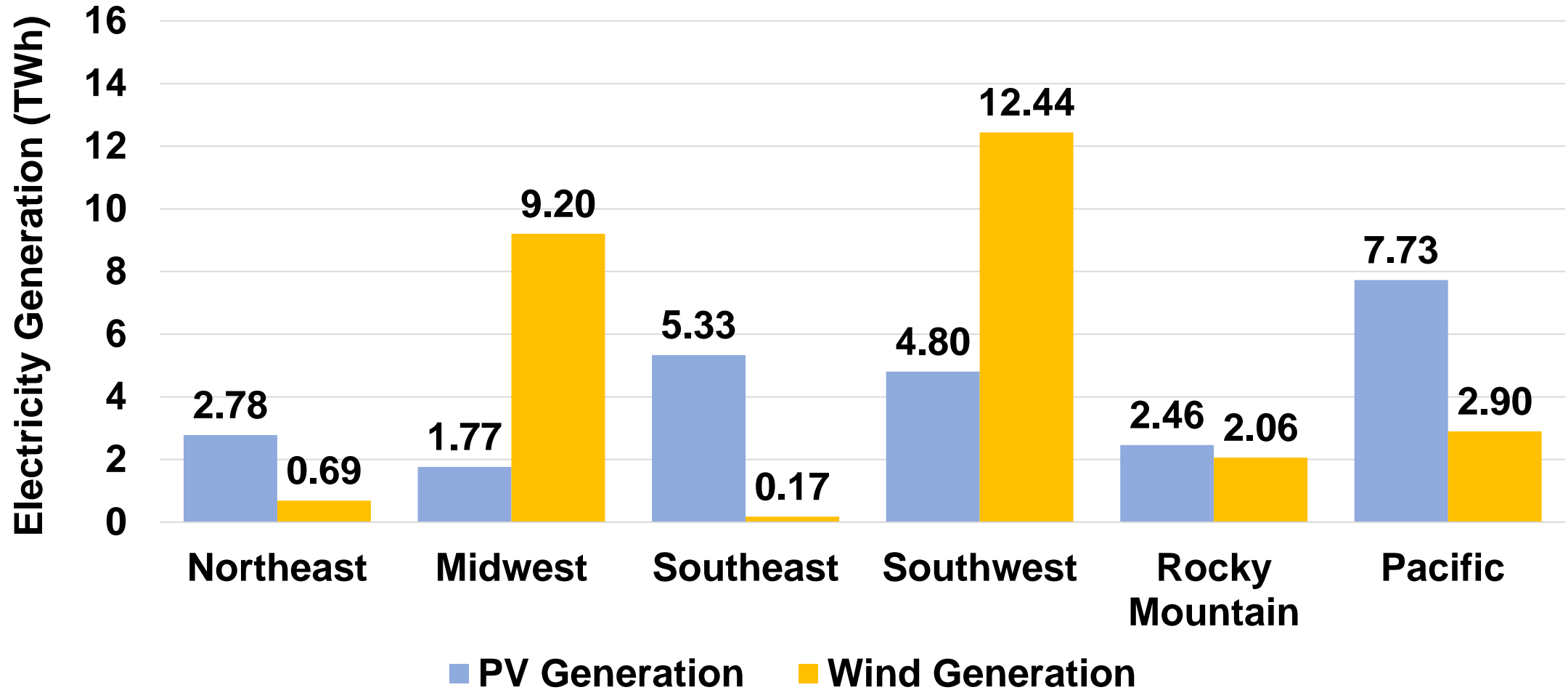
Small PV Electricity Generation Year-on-Year (through June 2023)



Wind Electricity Generation Year-on-Year (through June 2023)



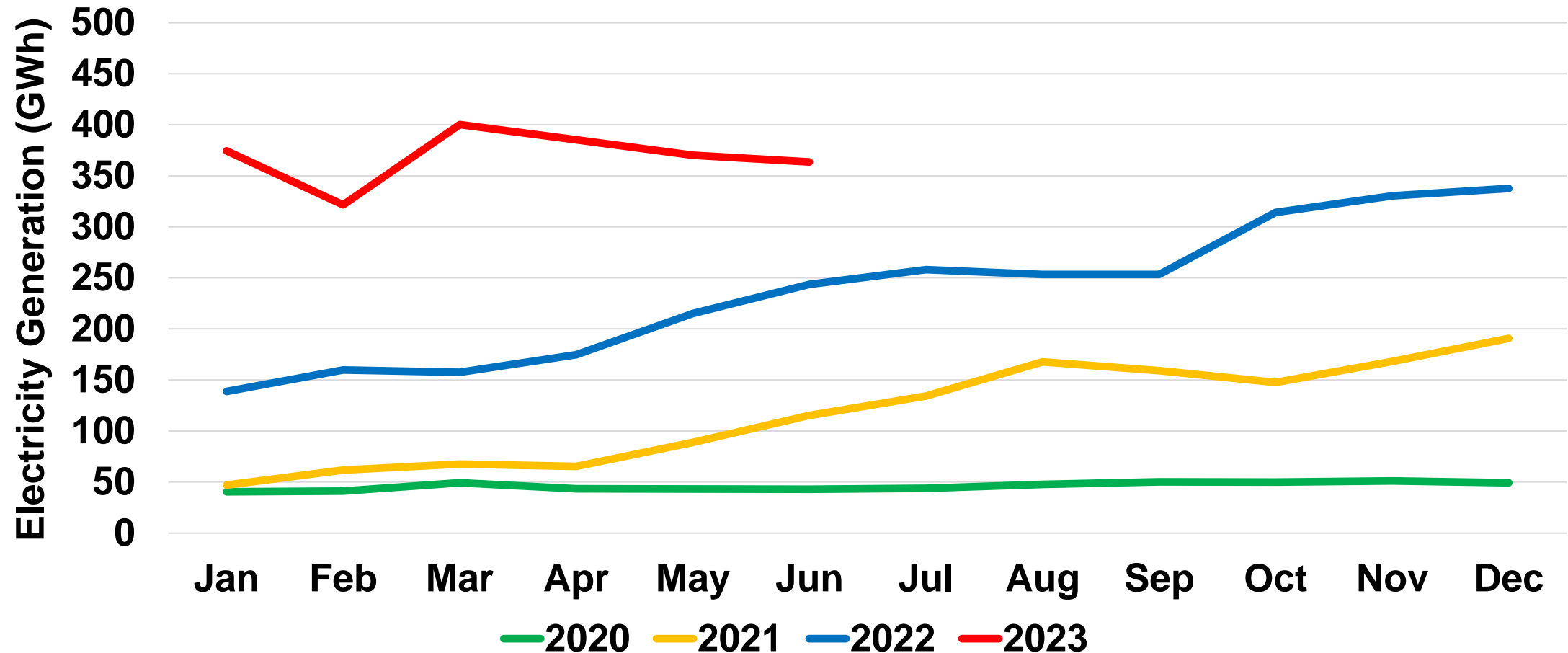
Regional PV & Wind Electricity Generation June 2023





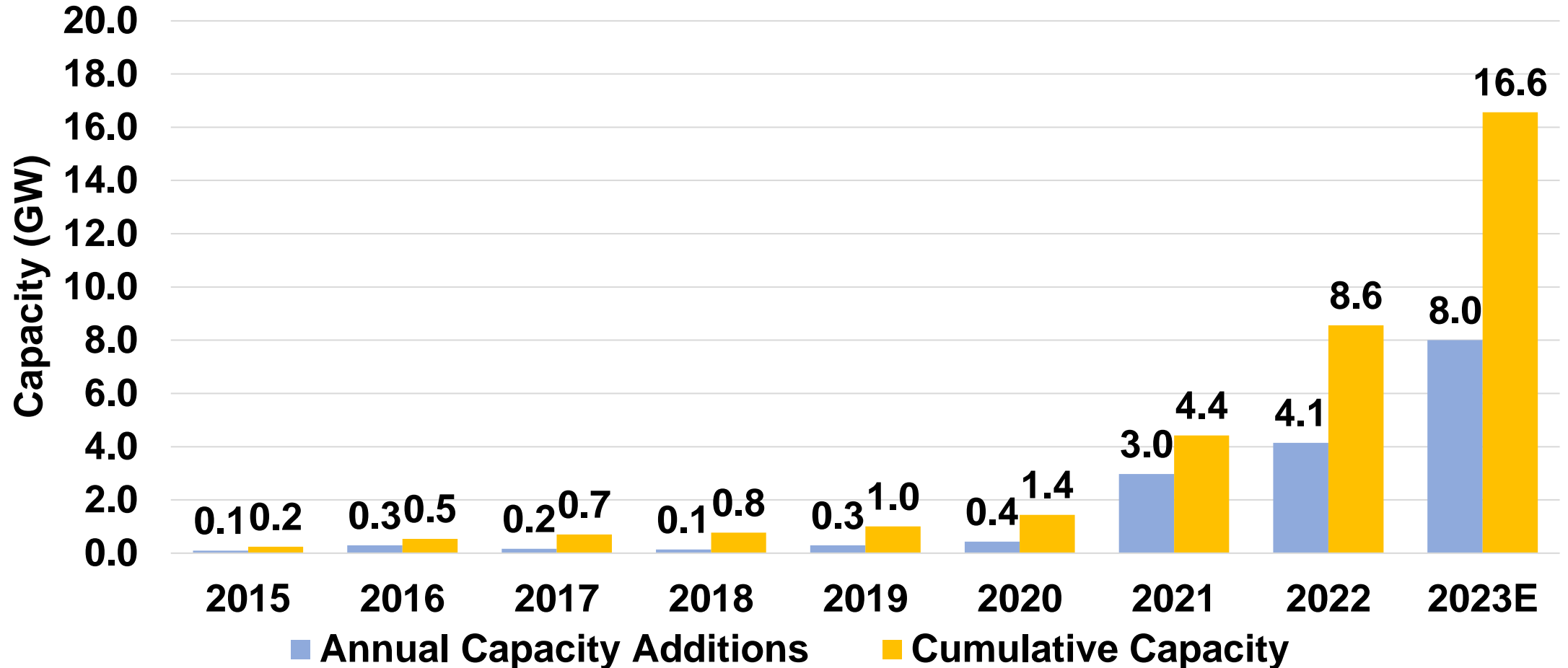
U.S. Battery Storage

Battery Electricity Generation Year-on-Year (through June 2023)



Battery Storage Forecast 2023

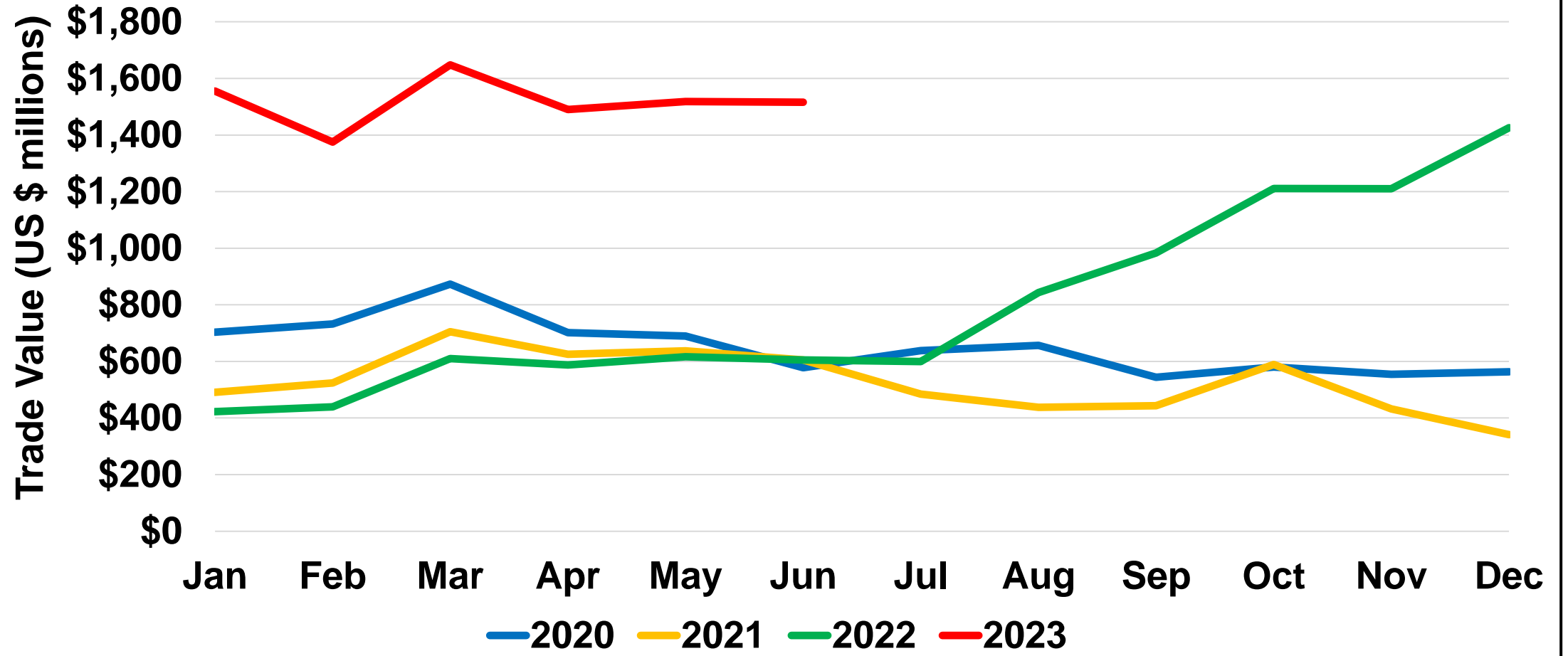
Annual Capacity Additions and Cumulative Capacity



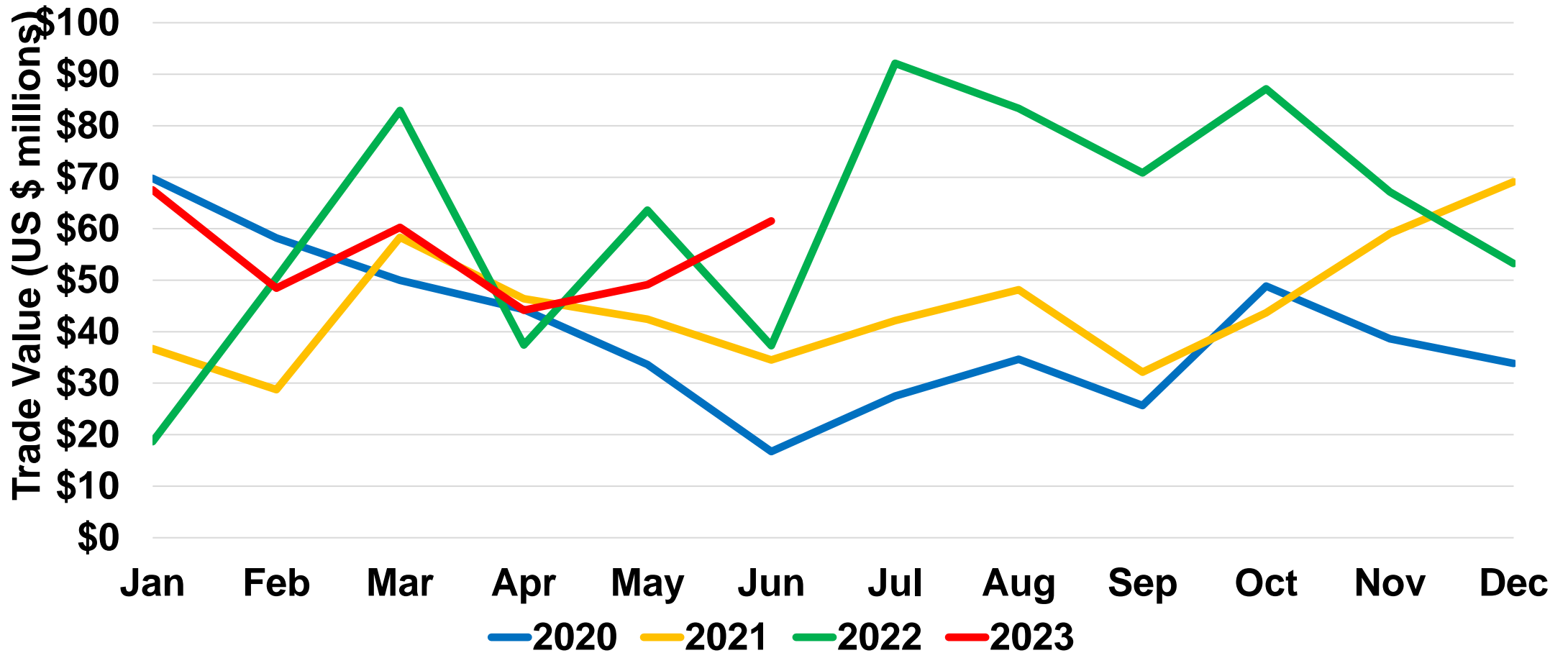


U.S. PV Trade (Cells and Modules)

U.S. Year-on-Year PV Panel Imports (through June 2023)



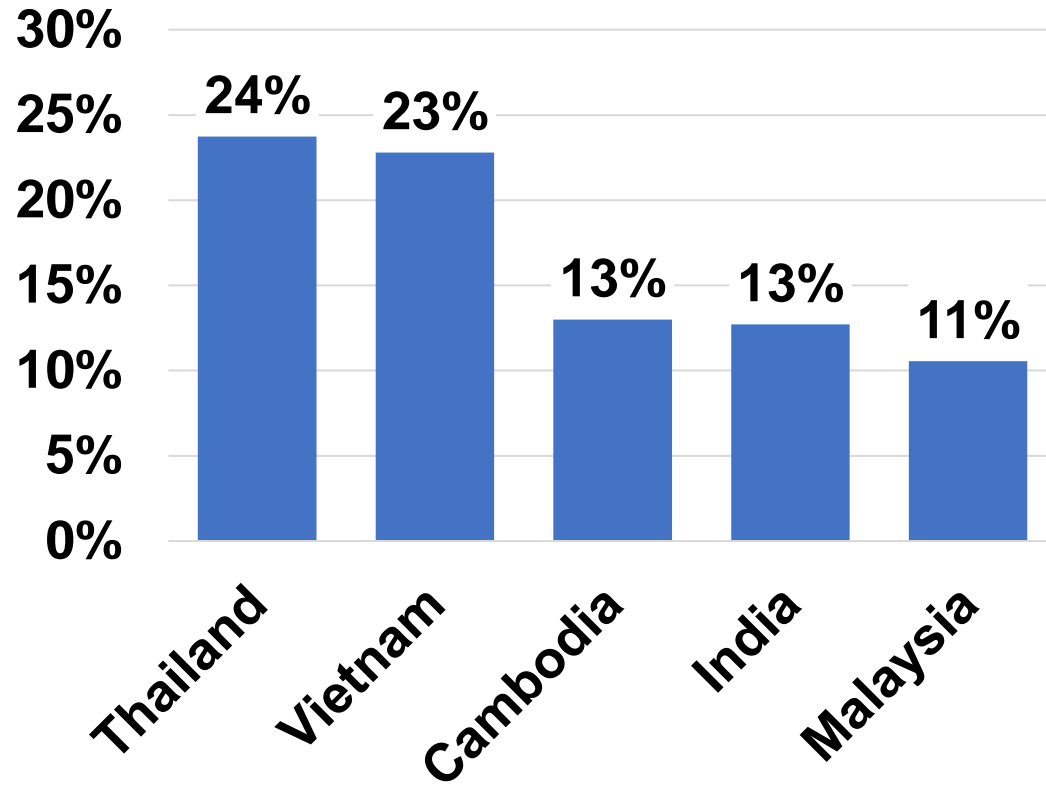
U.S. Year-on-Year PV Cell Imports (through June 2023)



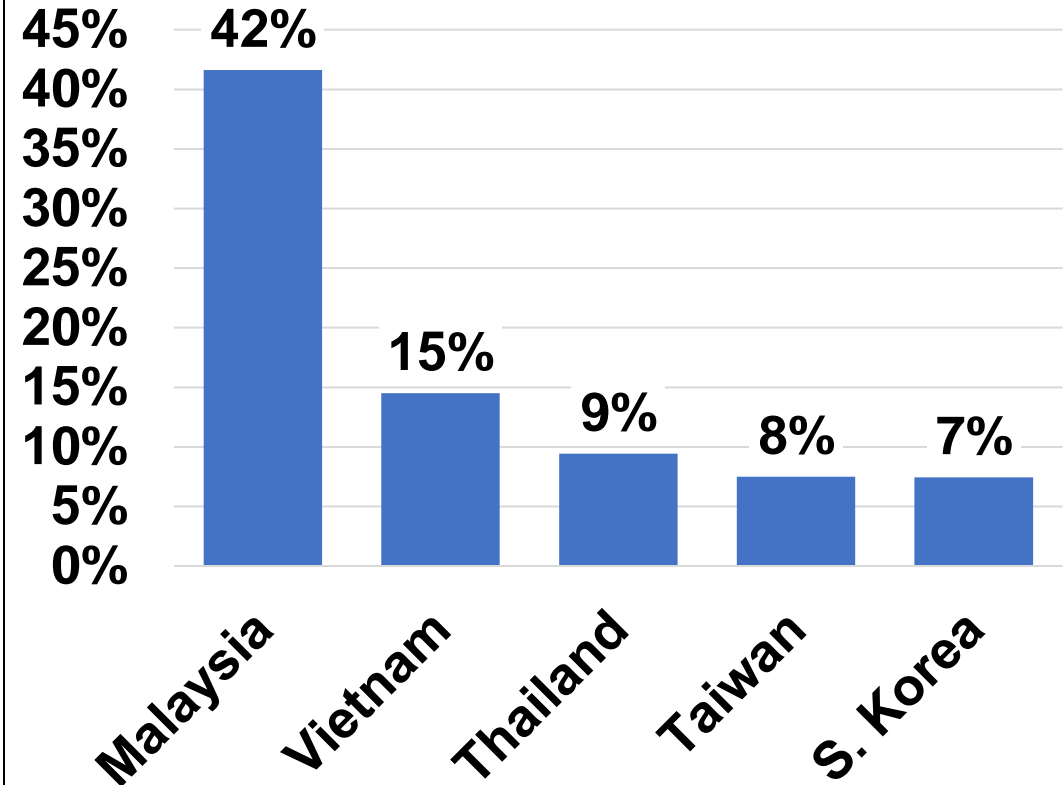
Monthly U.S. PV Panel and Cell Imports by Country June 2023



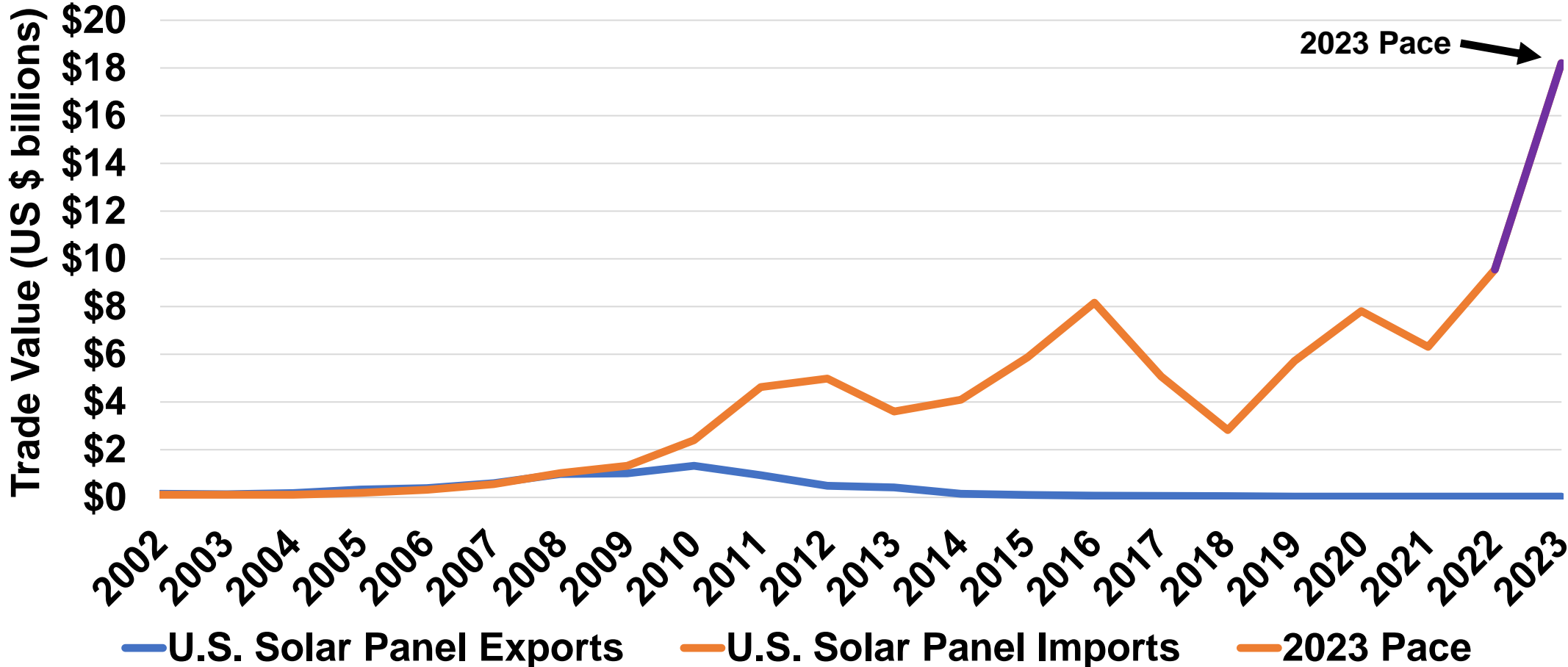
U.S. PV Panel Imports by Country



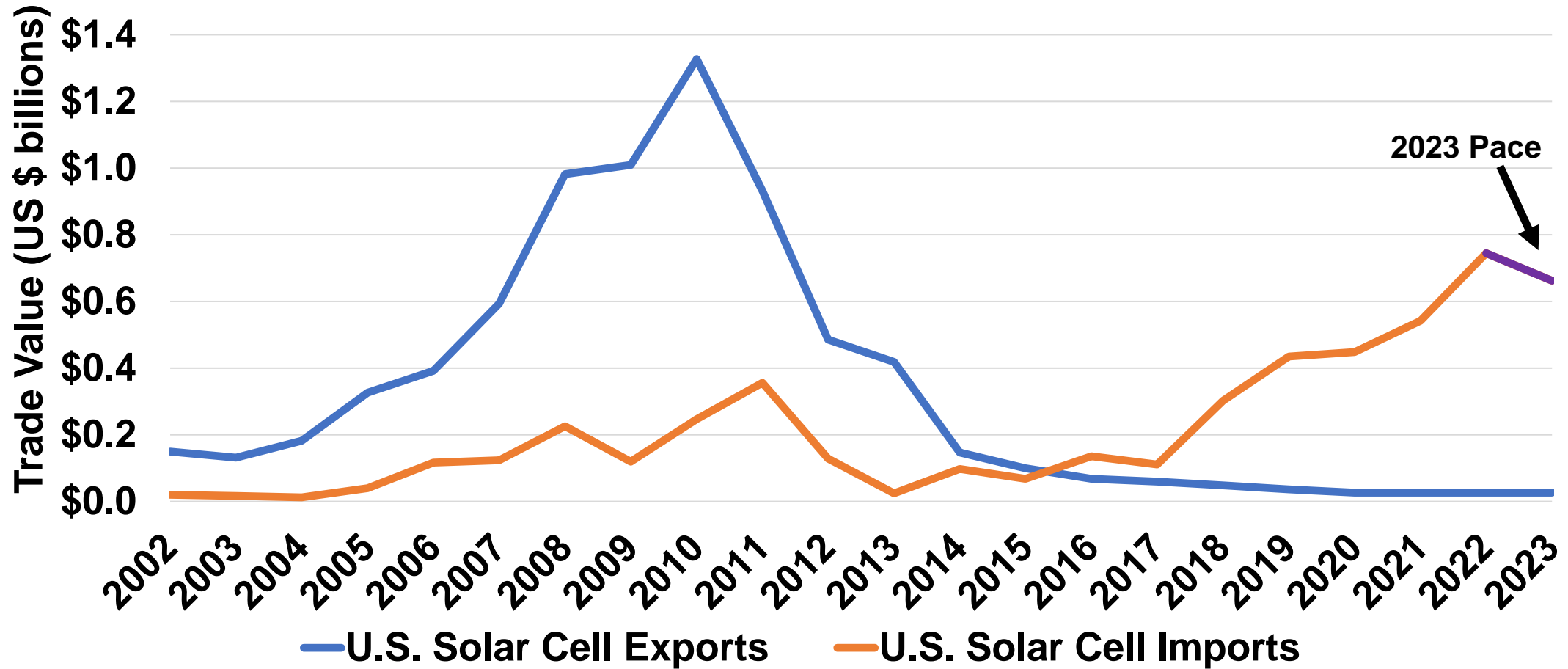
U.S. PV Cell Imports by Country



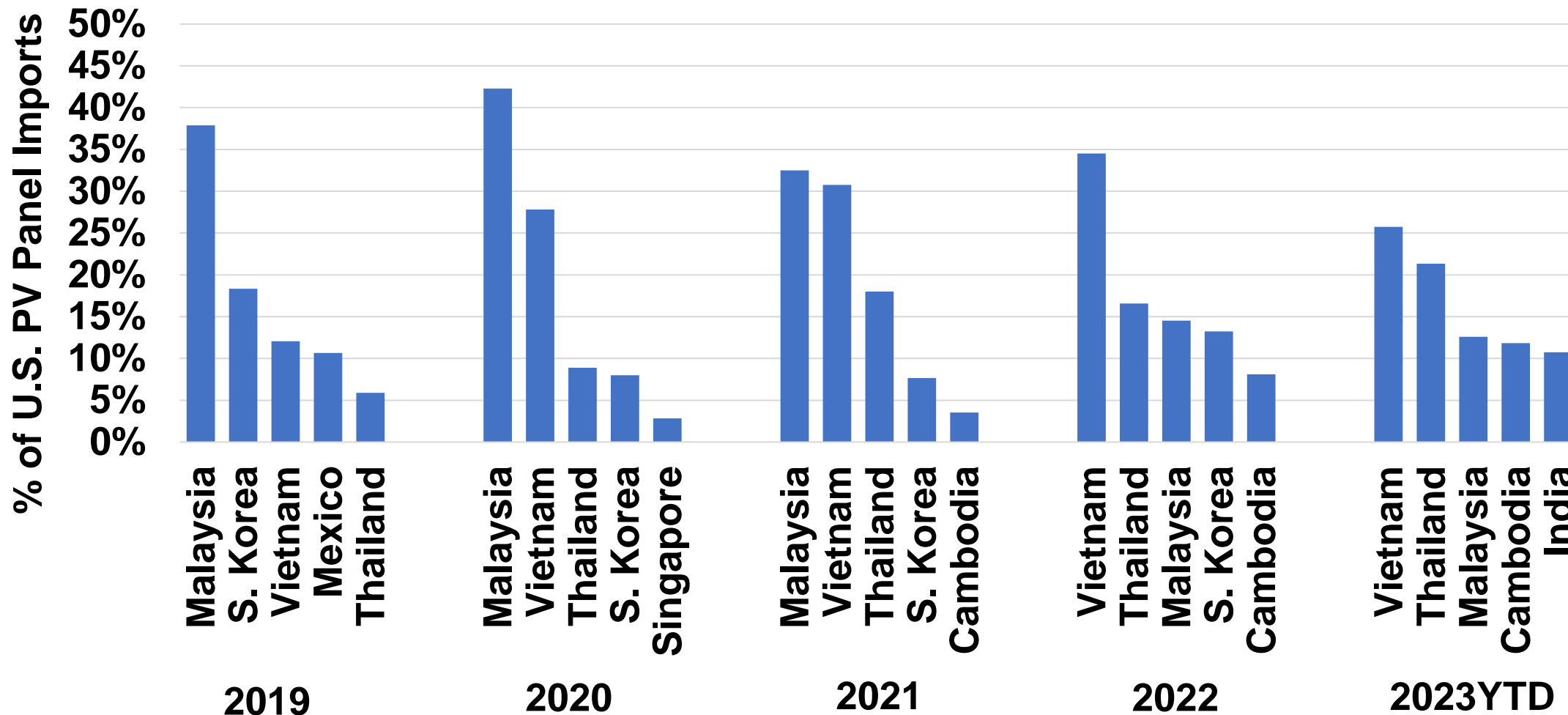
Annual U.S. PV Panel Trade through June 2023



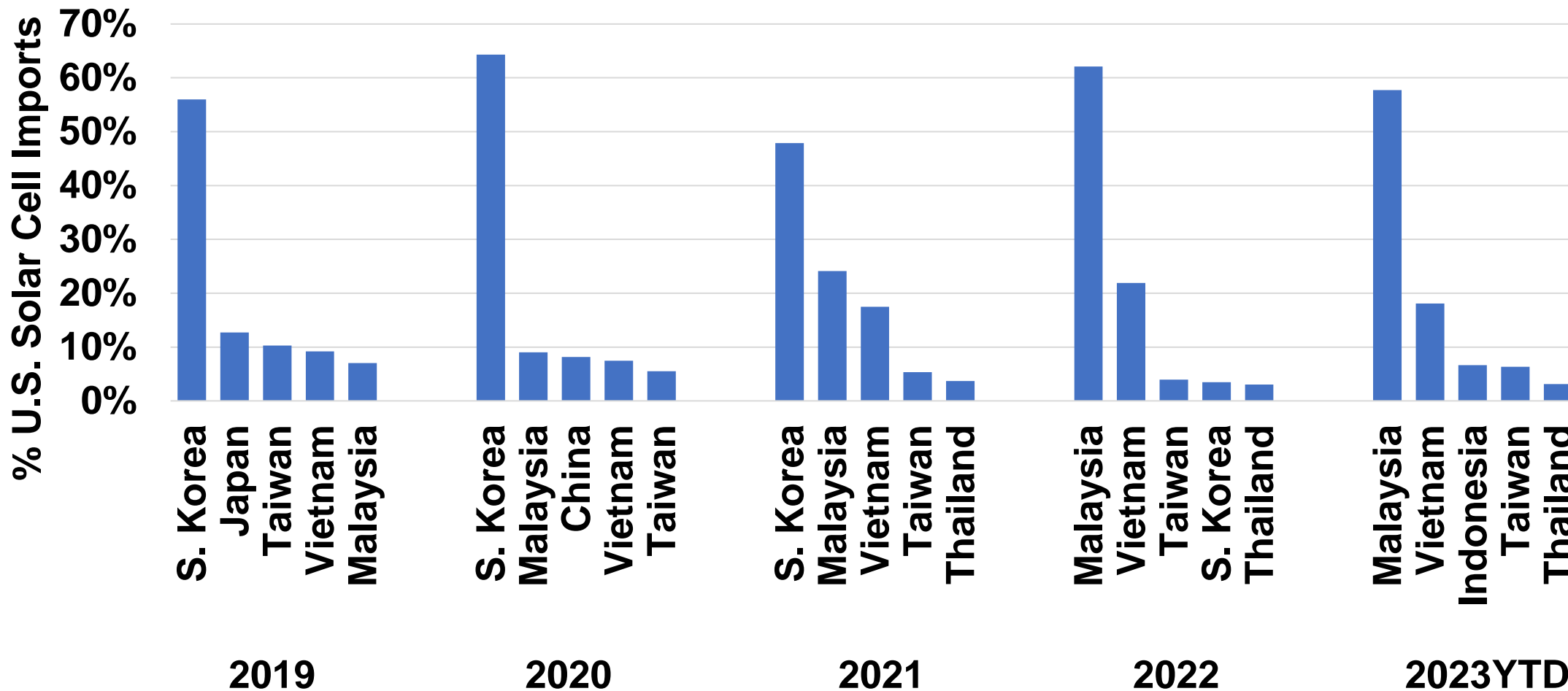
Annual U.S. PV Cell Trade through June 2023



Annual U.S. PV Panel Imports Rank Order of Countries Year-to-Date through June 2023



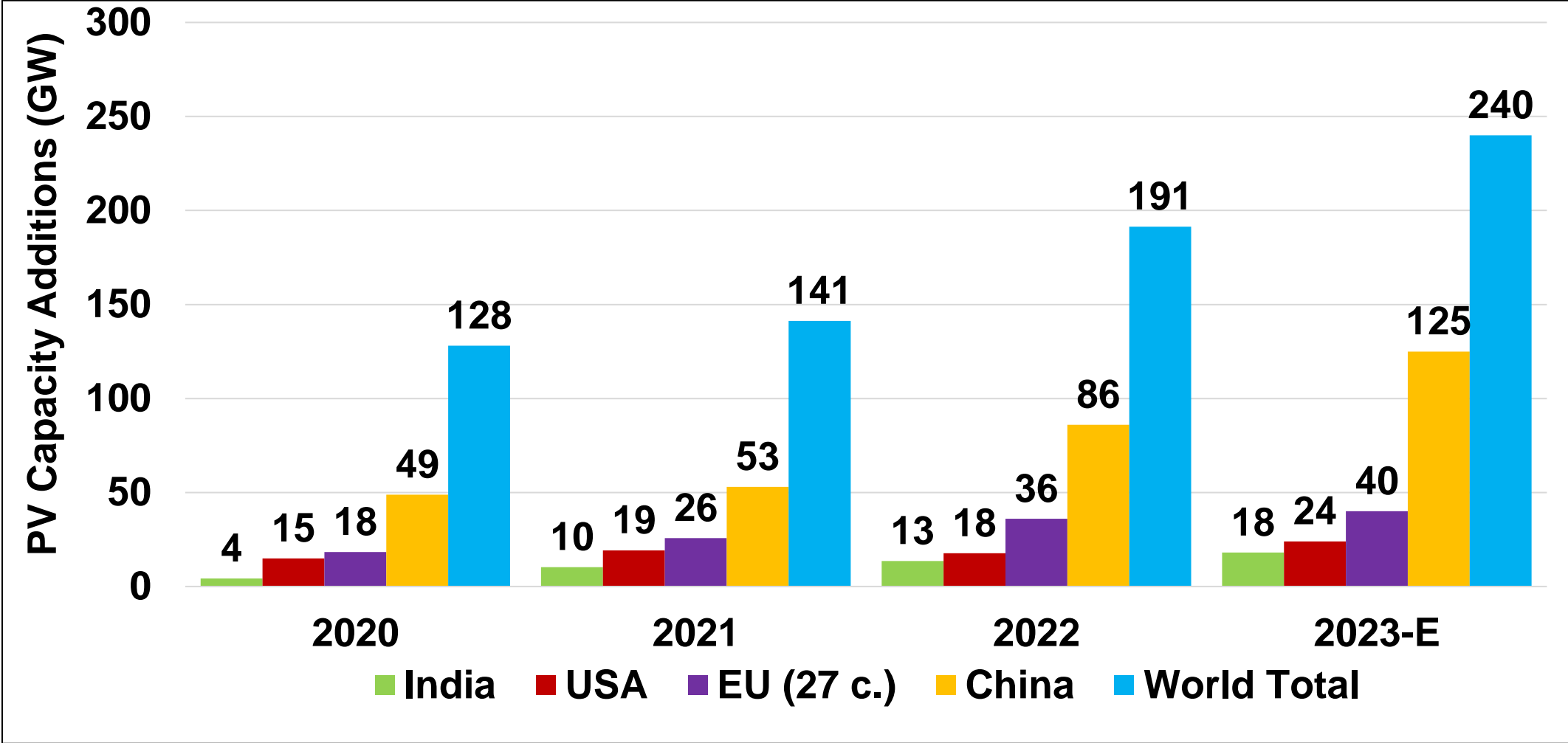
Annual U.S. PV Cell Imports Rank Order of Countries Year-to-Date through June 2023



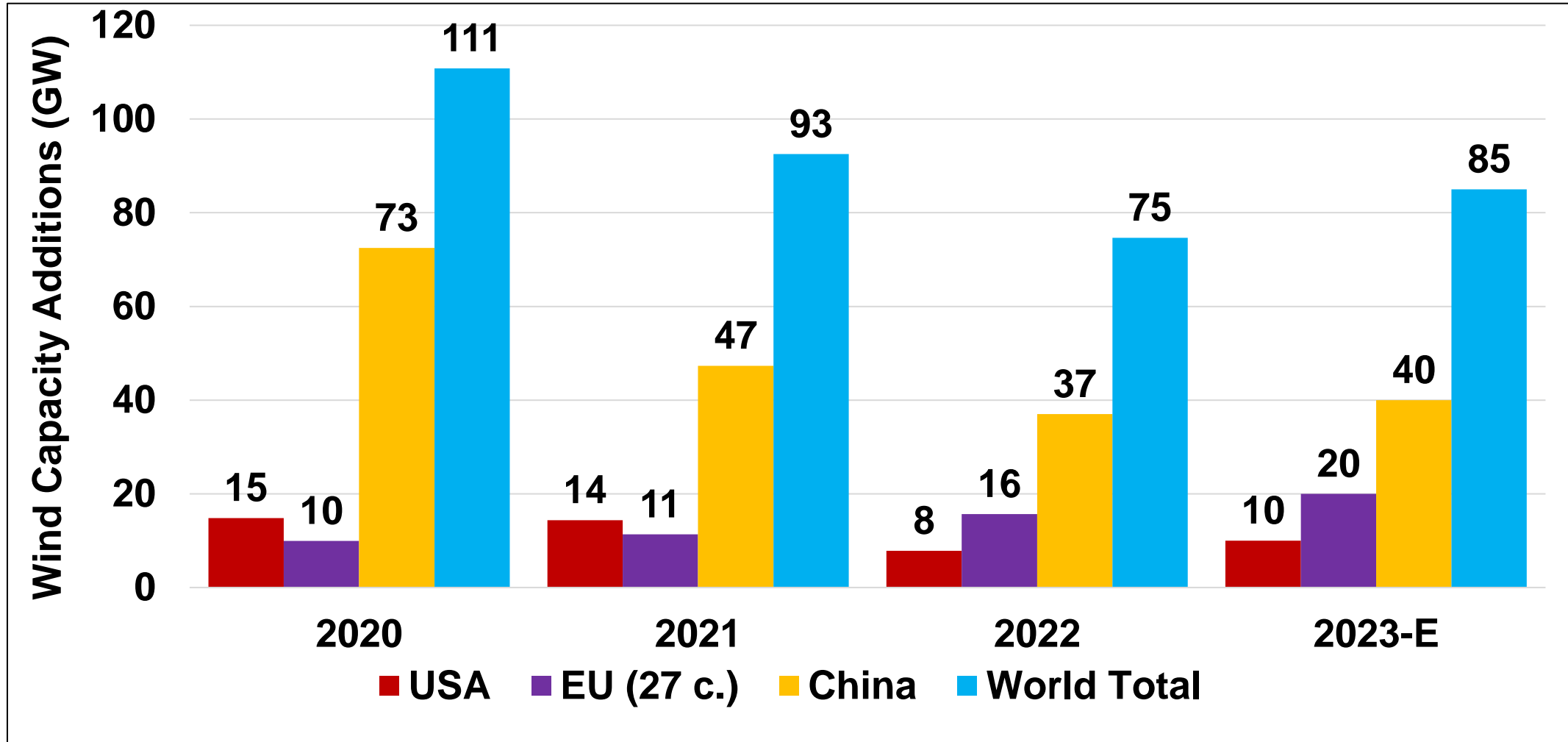


World PV and Wind

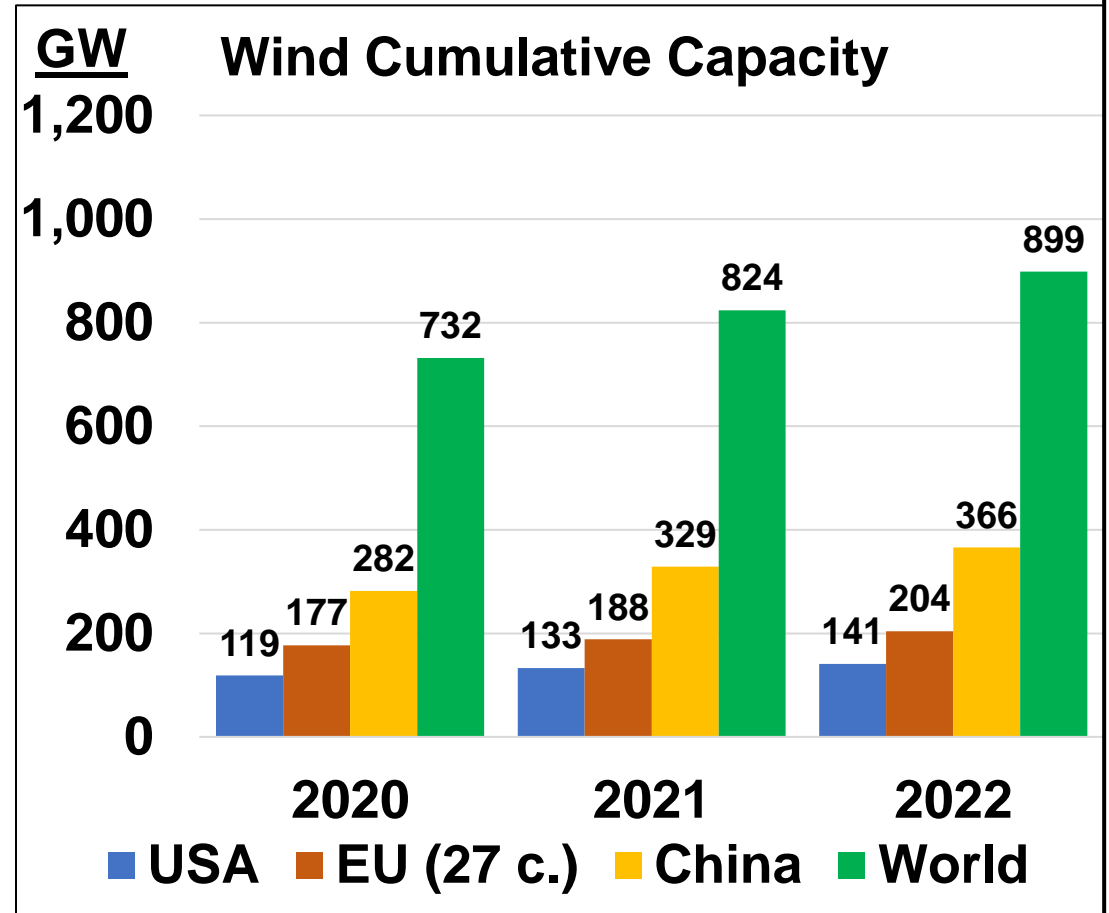
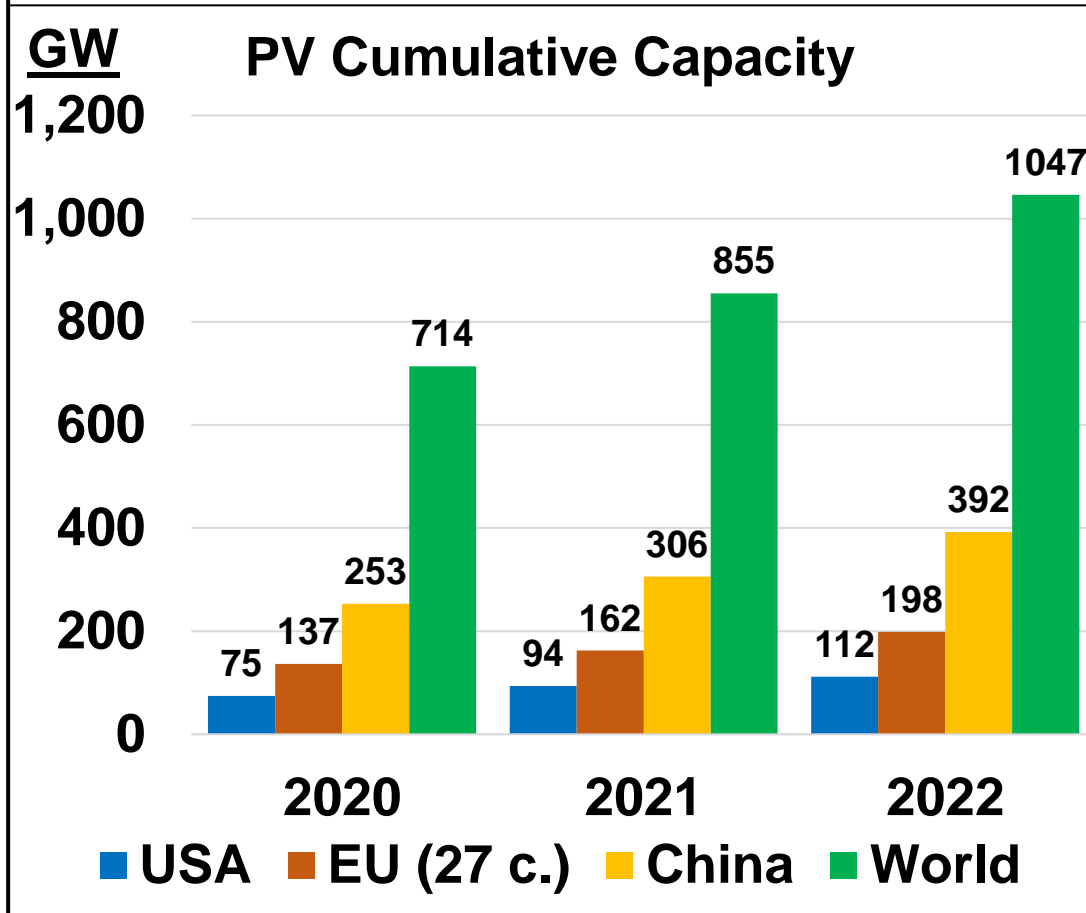
World PV Capacity Additions, 2020-2022 2023 Forecast



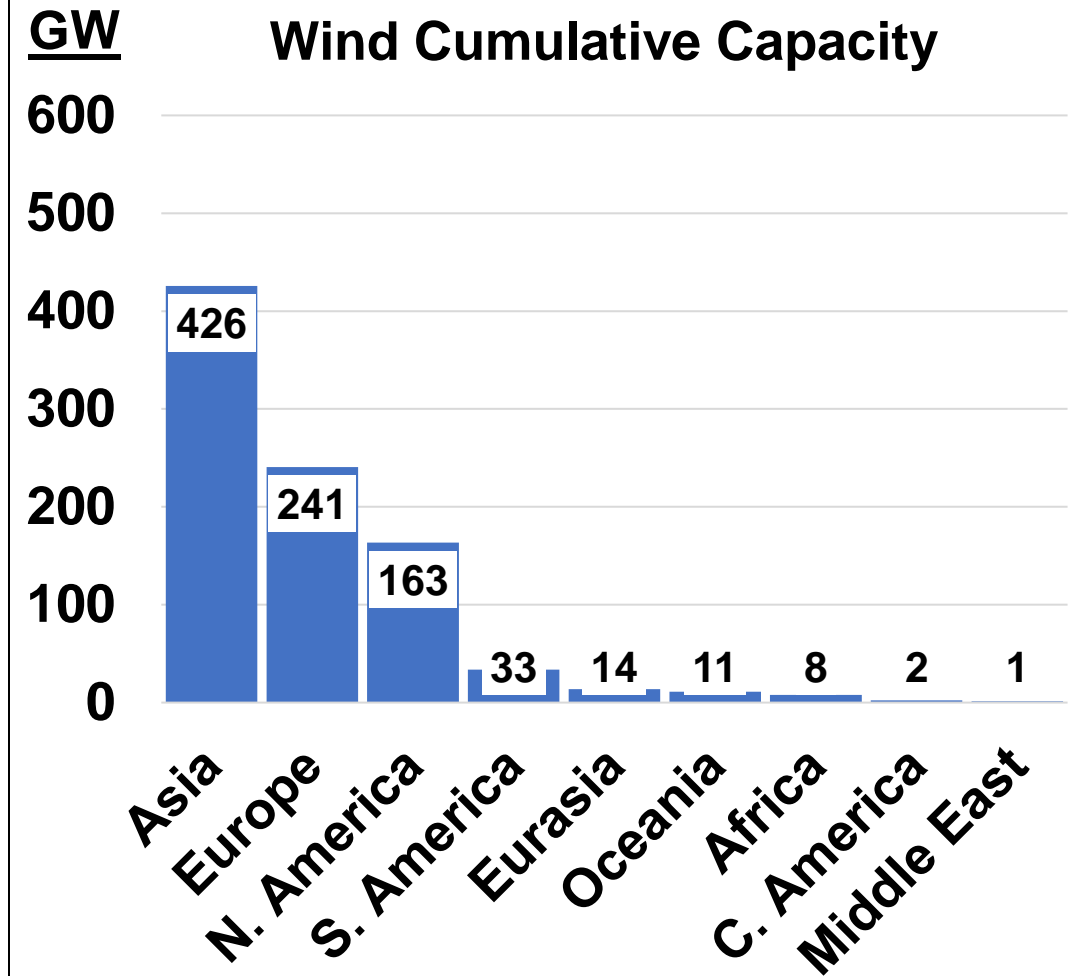
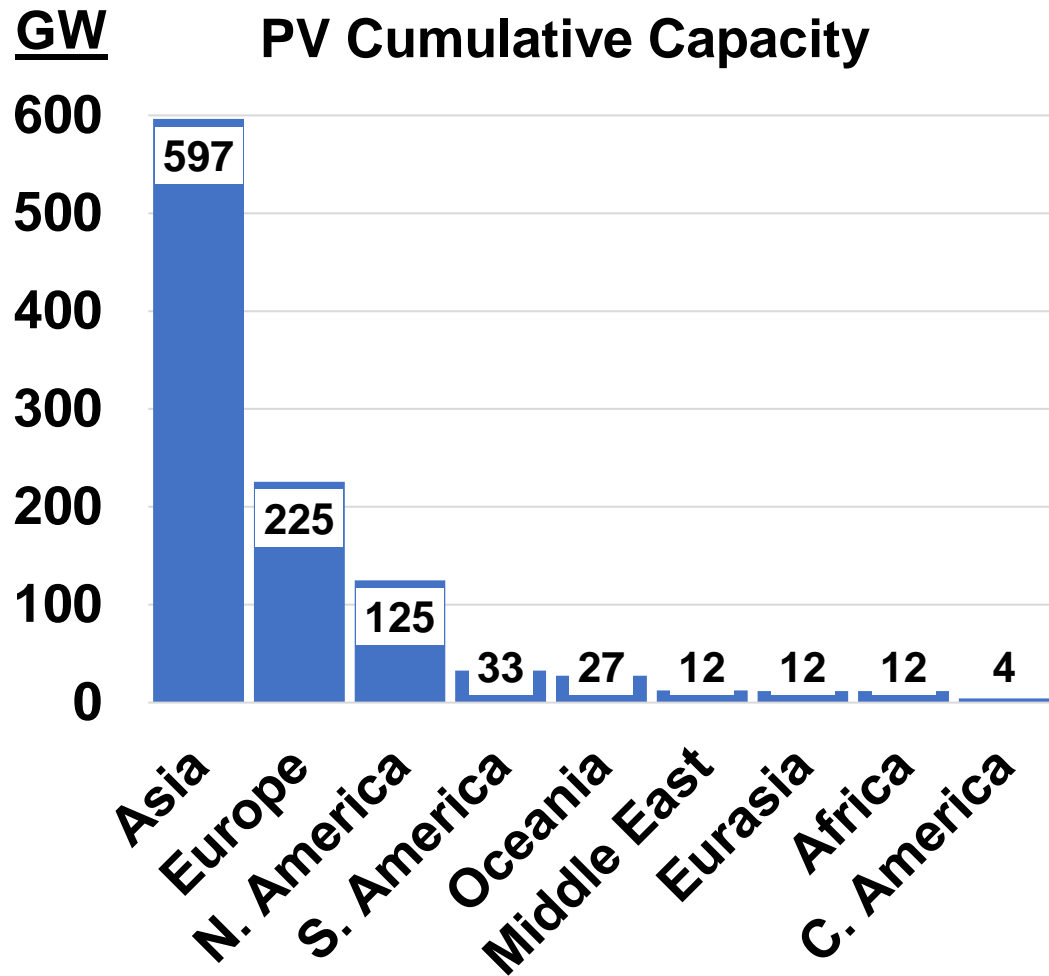
World Wind Capacity Additions, 2020-2022 2023 Forecast



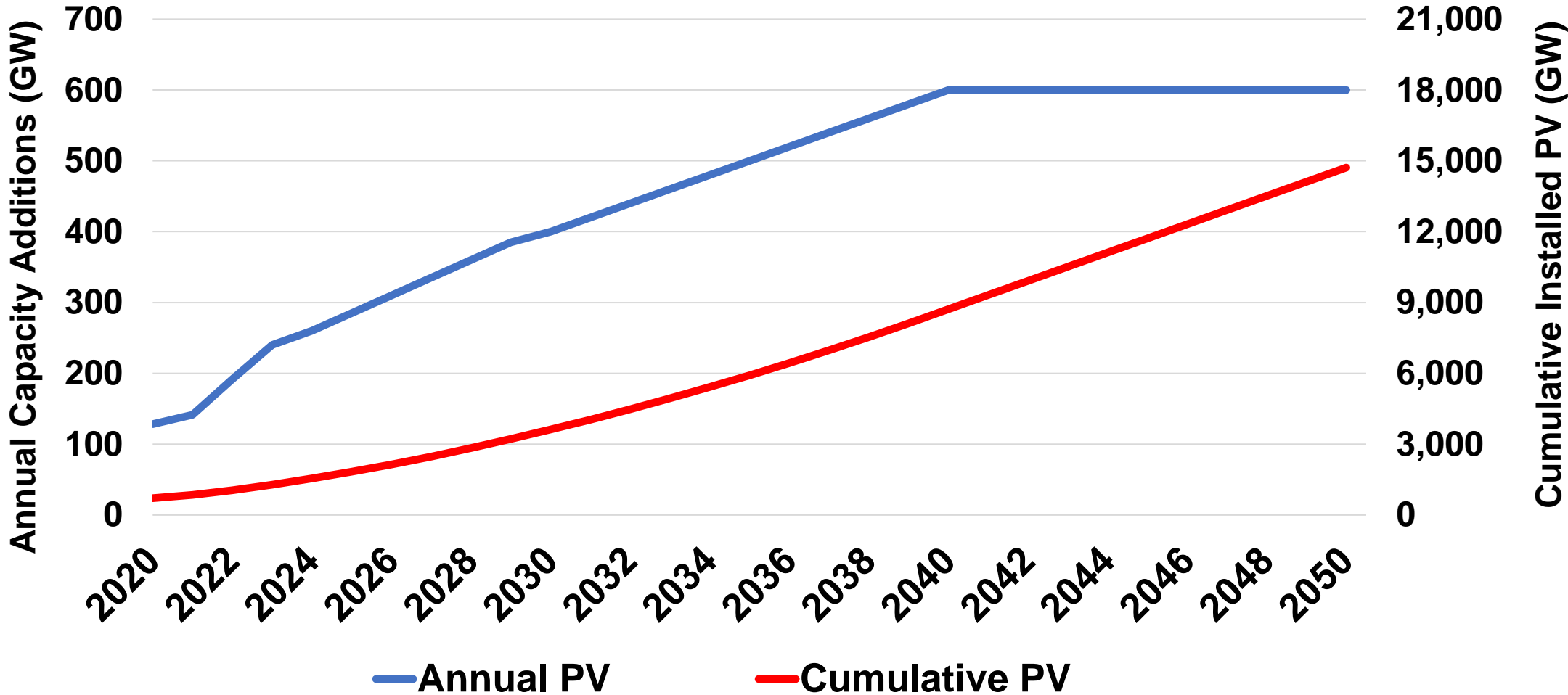
PV and Wind World Cumulative Capacity



2022 World Regional PV and Wind Cumulative Capacity



ASAP's World PV Forecast through 2050

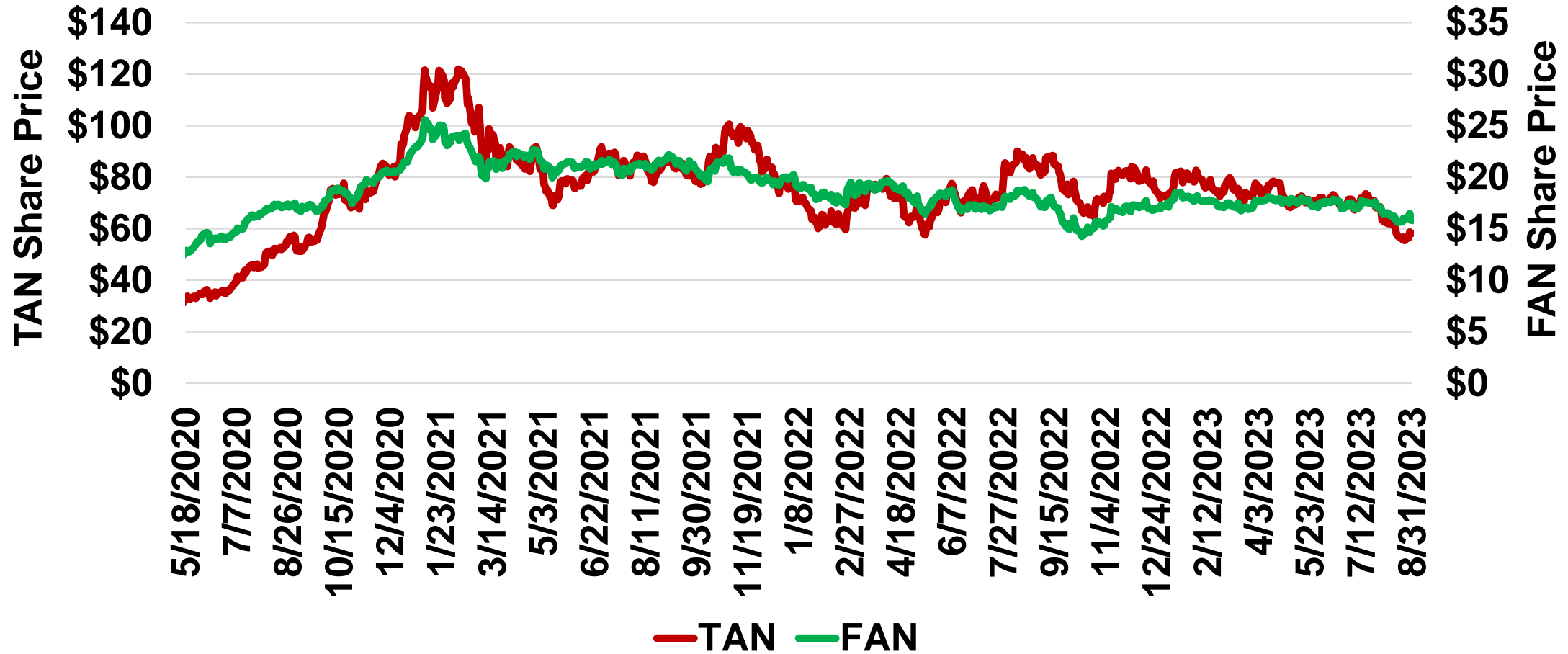




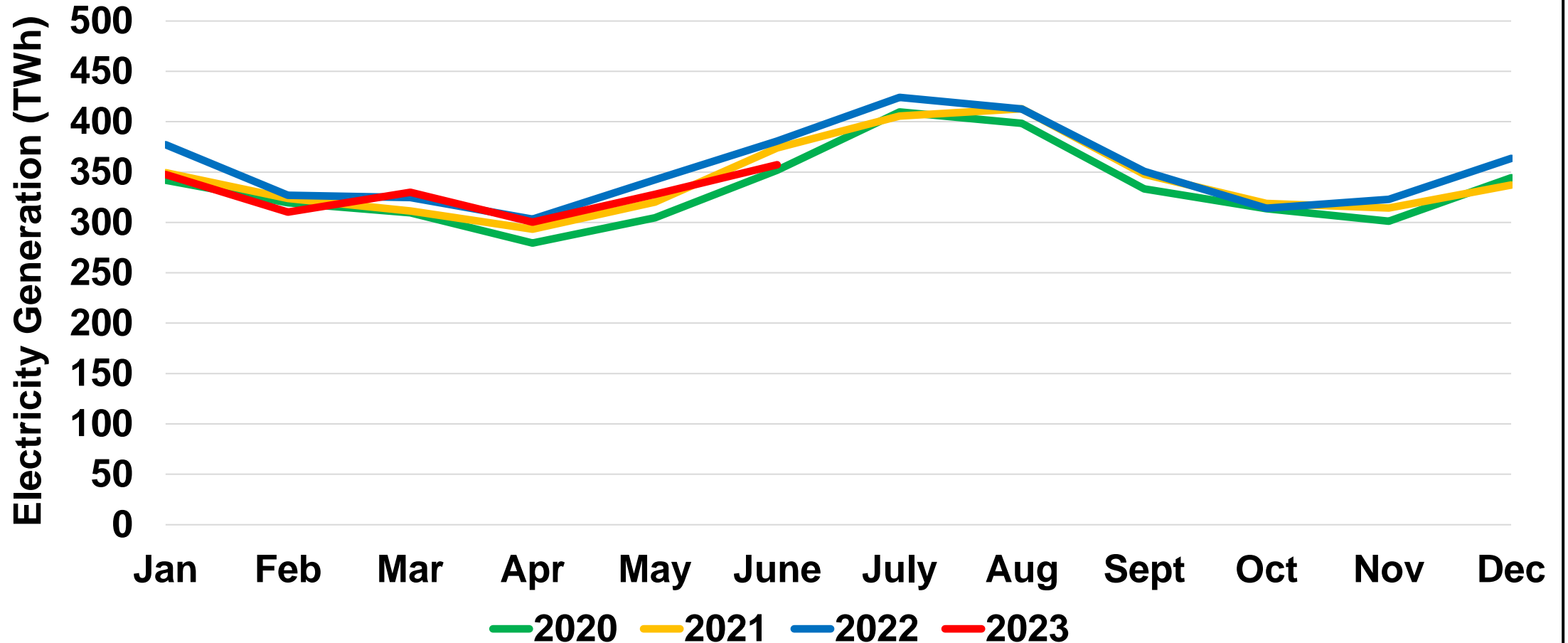
U.S. Electricity Market Overview

TAN and FAN Stock Prices
Monthly Electricity Supply and Demand
Electricity and Energy CO₂ Emissions

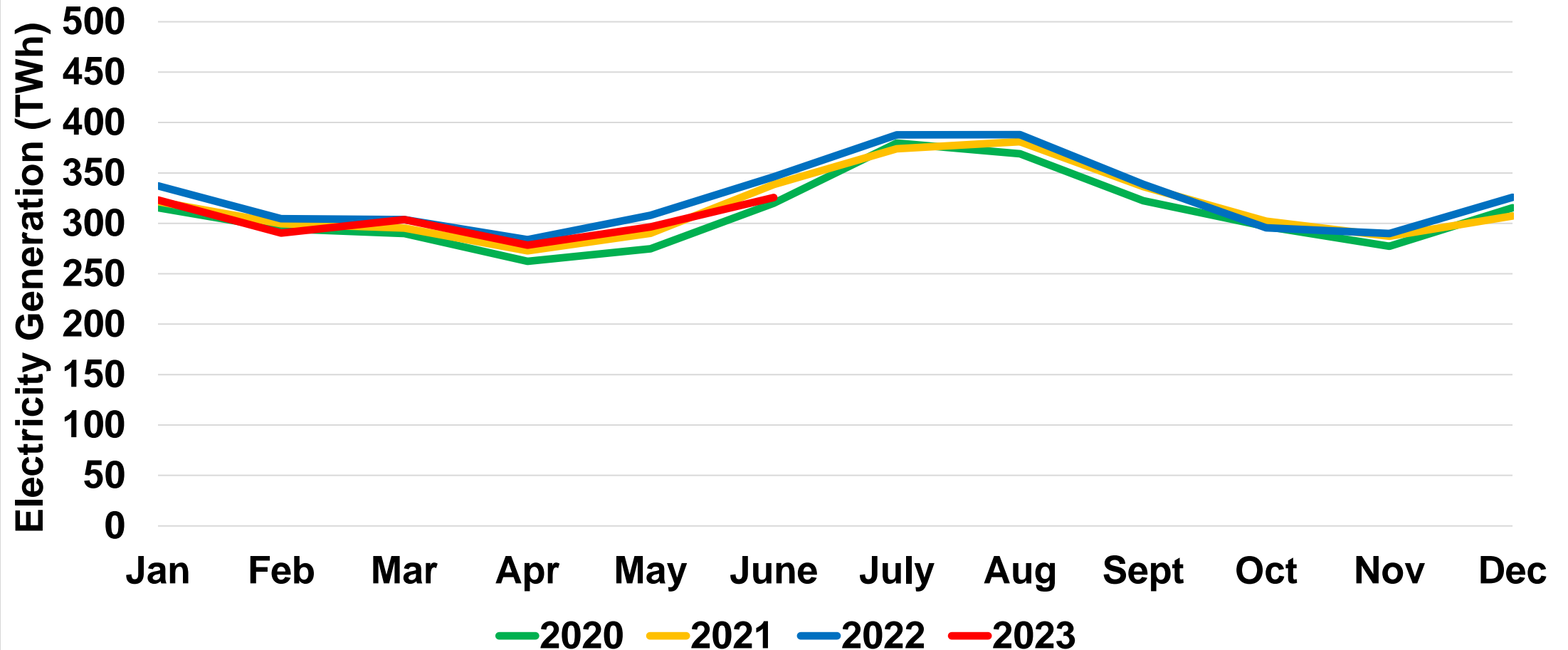
TAN (Solar) and FAN (Wind) ETF Share Prices (Adjusted Close Prices through August 31, 2023)



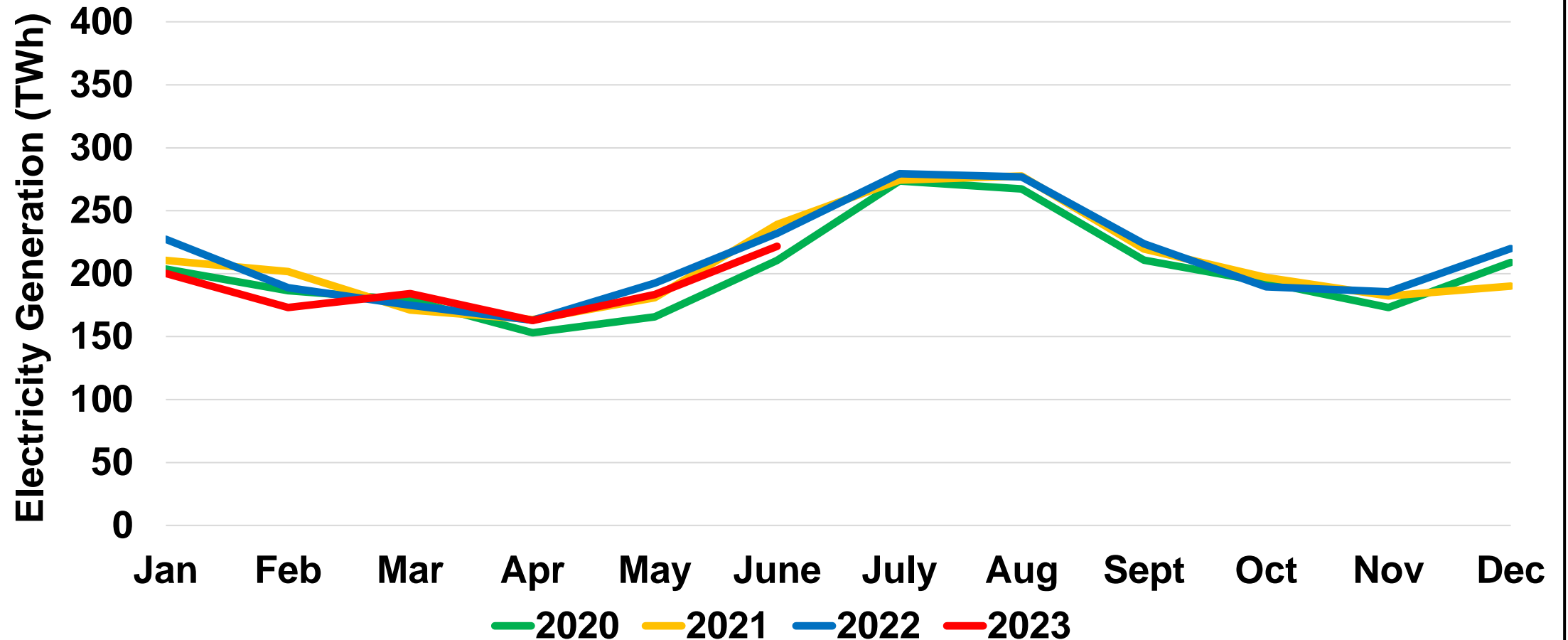
U.S. Total Electricity Generation Year-on-Year (through June 2023)



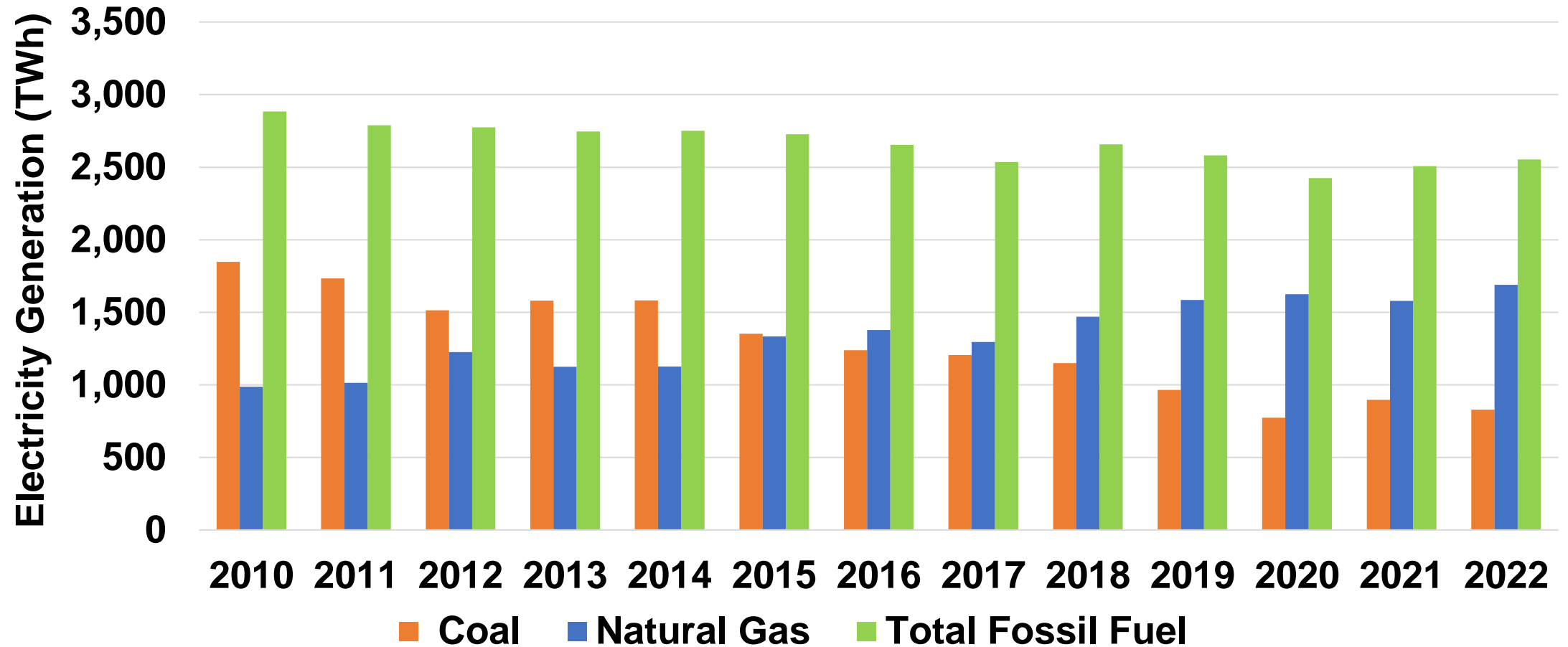
U.S. Total Electricity Demand (Retail Sales) Year-on-Year (through June 2023)



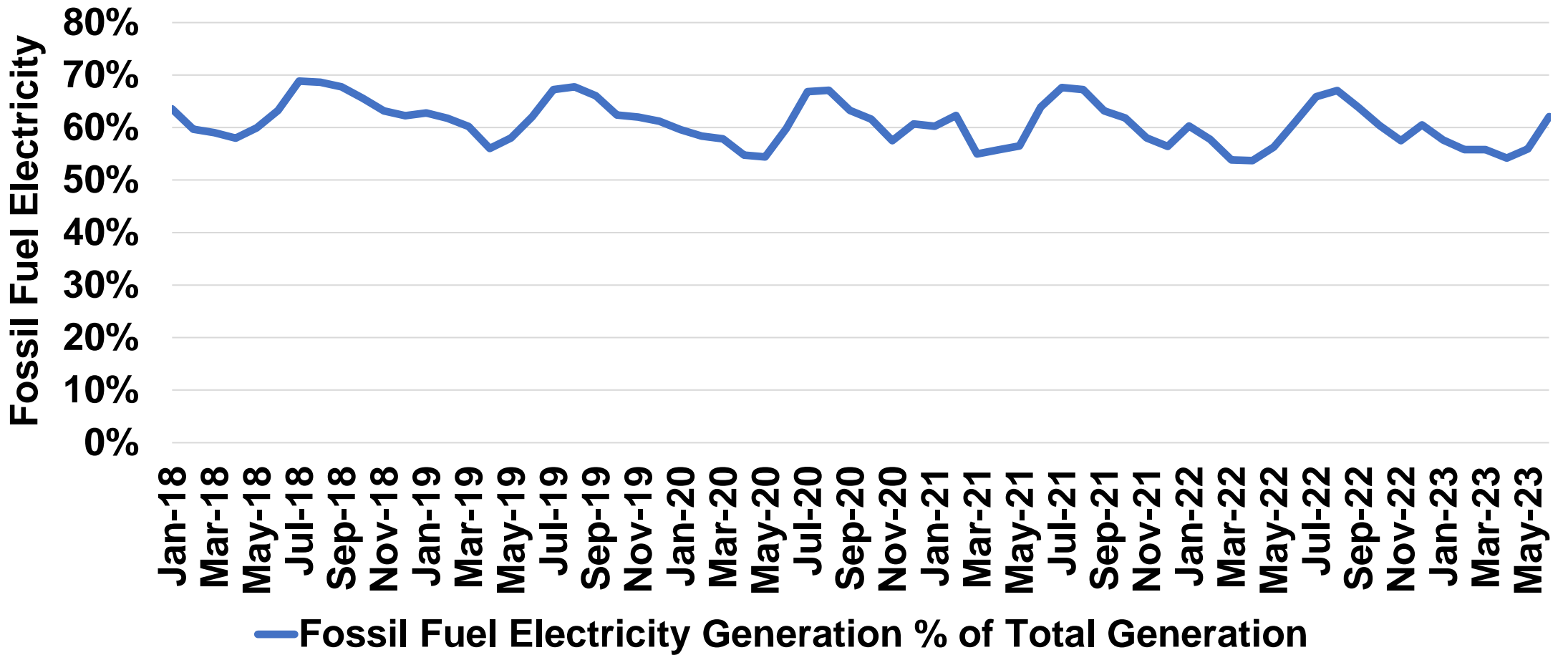
U.S. Fossil Fuel Electricity Generation Year-on-Year (through June 2023)



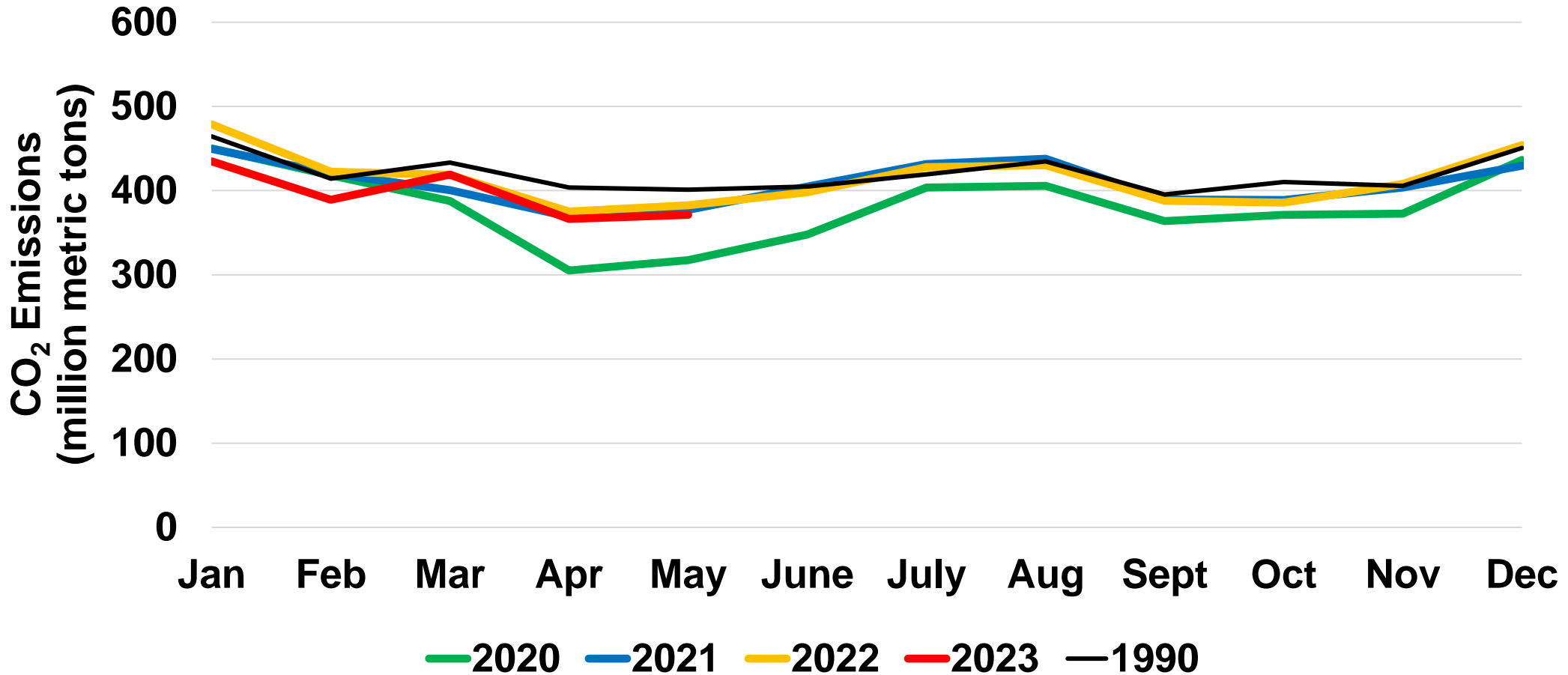
U.S. Annual Fossil Fuel Electricity Generation (2010-2022)



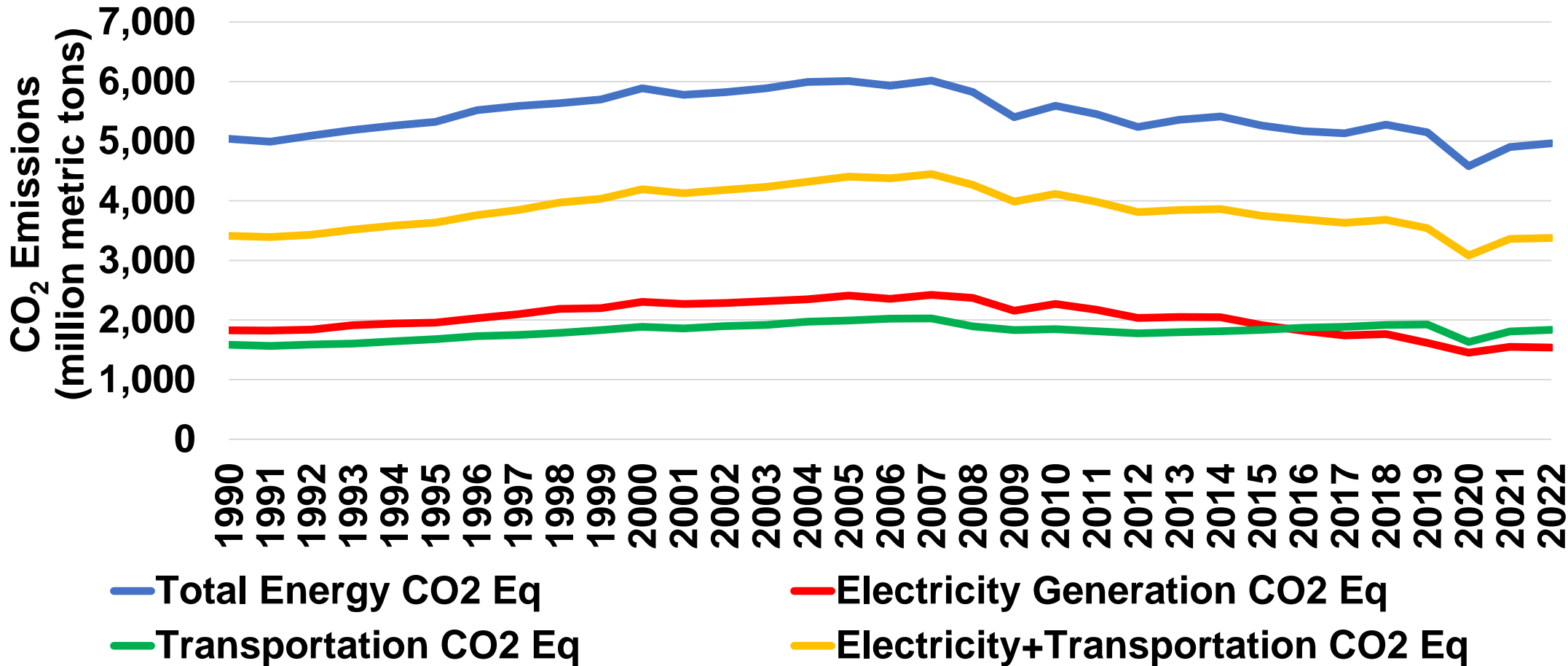
U.S. Fossil Fuel Electricity Generation % of Generation through June 2023



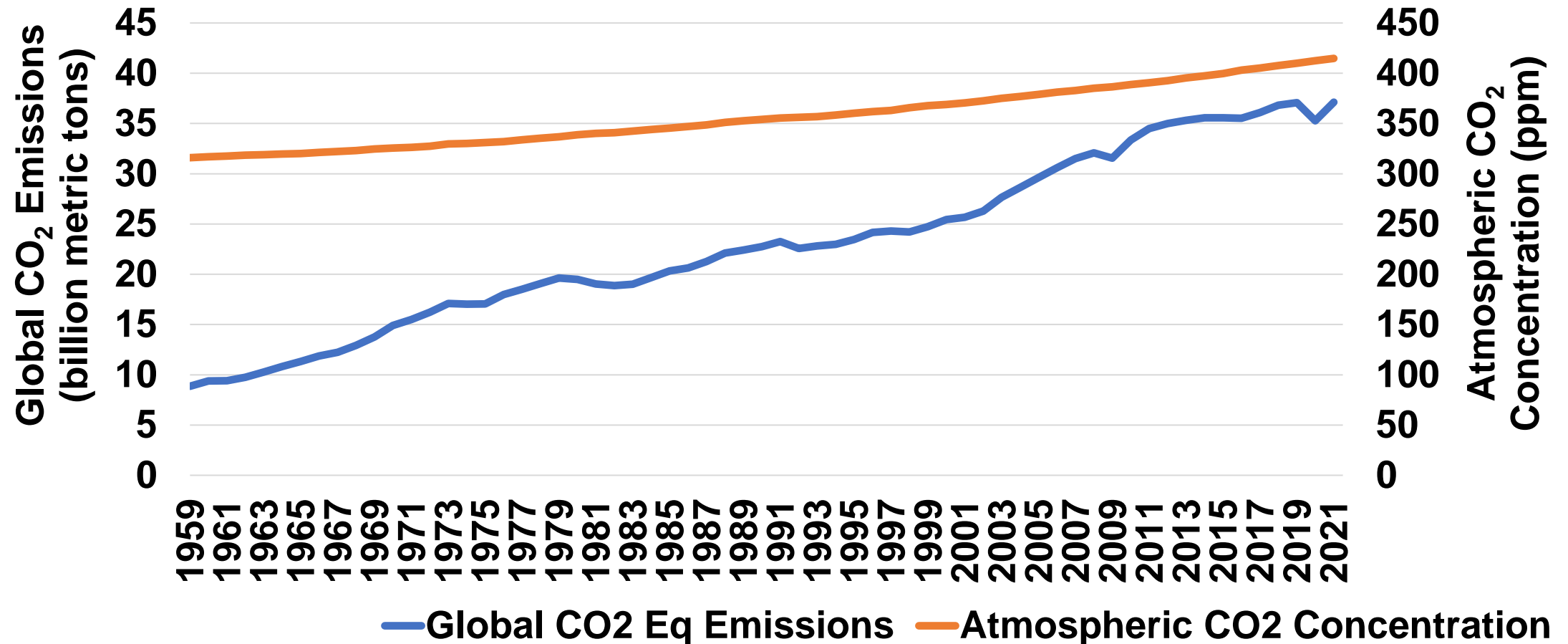
U.S. Monthly Energy Use CO₂ Equivalent Emissions (through May 2023)



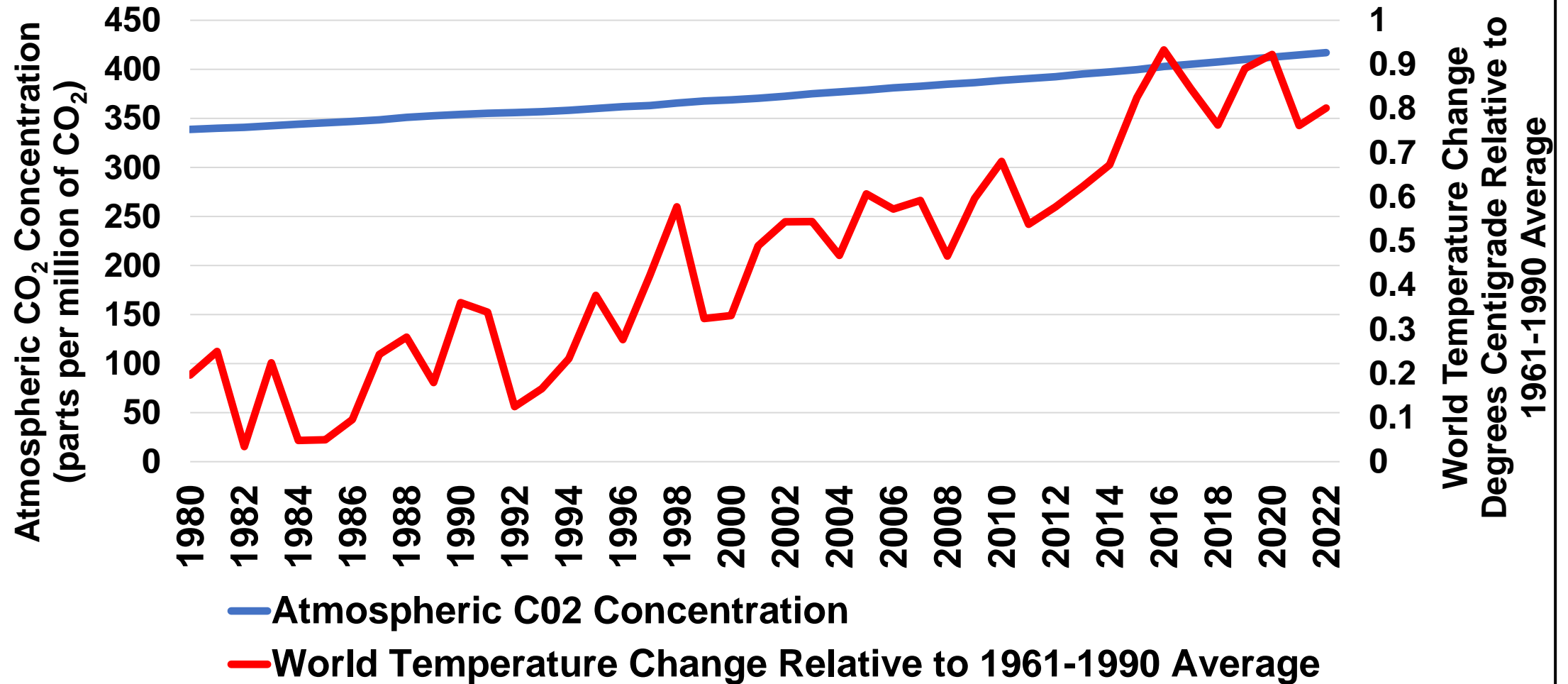
U.S. Fossil Fuel CO₂ Equivalent Emissions (1990-2022)



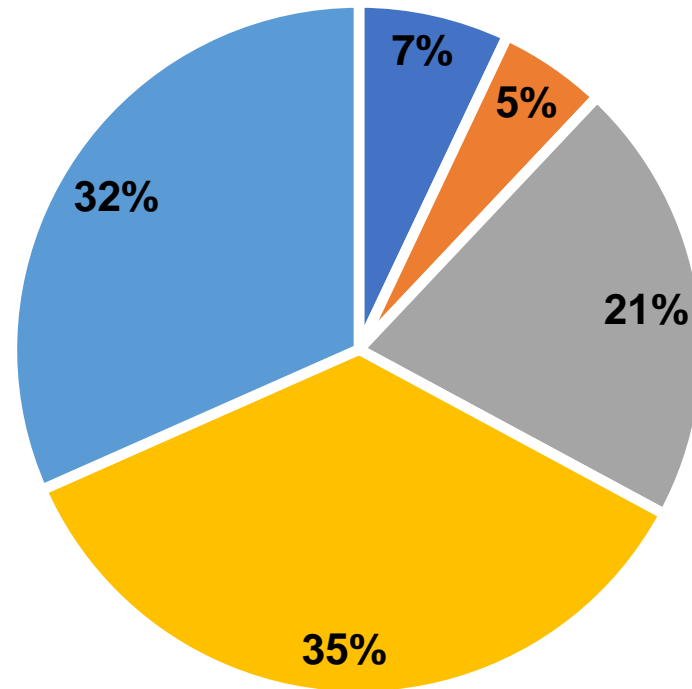
World CO₂ Emissions and Atmospheric CO₂ Concentration (1959-2021)



World Temperature and Atmospheric CO₂ Concentration (1980-2022)



U.S. Energy CO₂ Emissions by Sector (2020)



■ Residential ■ Commercial ■ Industrial ■ Transportation ■ Electric Power

ASAP Regional Map

