



ASAP
(American Solar Action Plan)

PV-Wind Monthly Data Slideshow

February 2024

ASAP
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Highlights for November 2023



- PV capacity additions are 1,347 MW; wind capacity additions are a disappointing 5 MW.
 - MW = megawatts; GW = gigawatts (1000 MW); TW = terawatts (1000 GW)
- PV panel imports remain robust at \$1.4 billion. U.S. PV panel imports are averaging \$1.6 billion per month through the first eleven months of 2023, which supports strong U.S. PV capacity additions.
- For the month of January, TAN ETF (solar) share price declined 20.6%, and FAN ETF (wind) share price declined 7.0%.
- China reports 78 GW of PV capacity additions in the first half of 2023, which is an annual pace of 156 GW. China's PV additions are the result of expansion in polysilicon production, 2020-2022.
- The global pace for 2023 PV capacity additions is 310 GW.

Slideshow Objectives



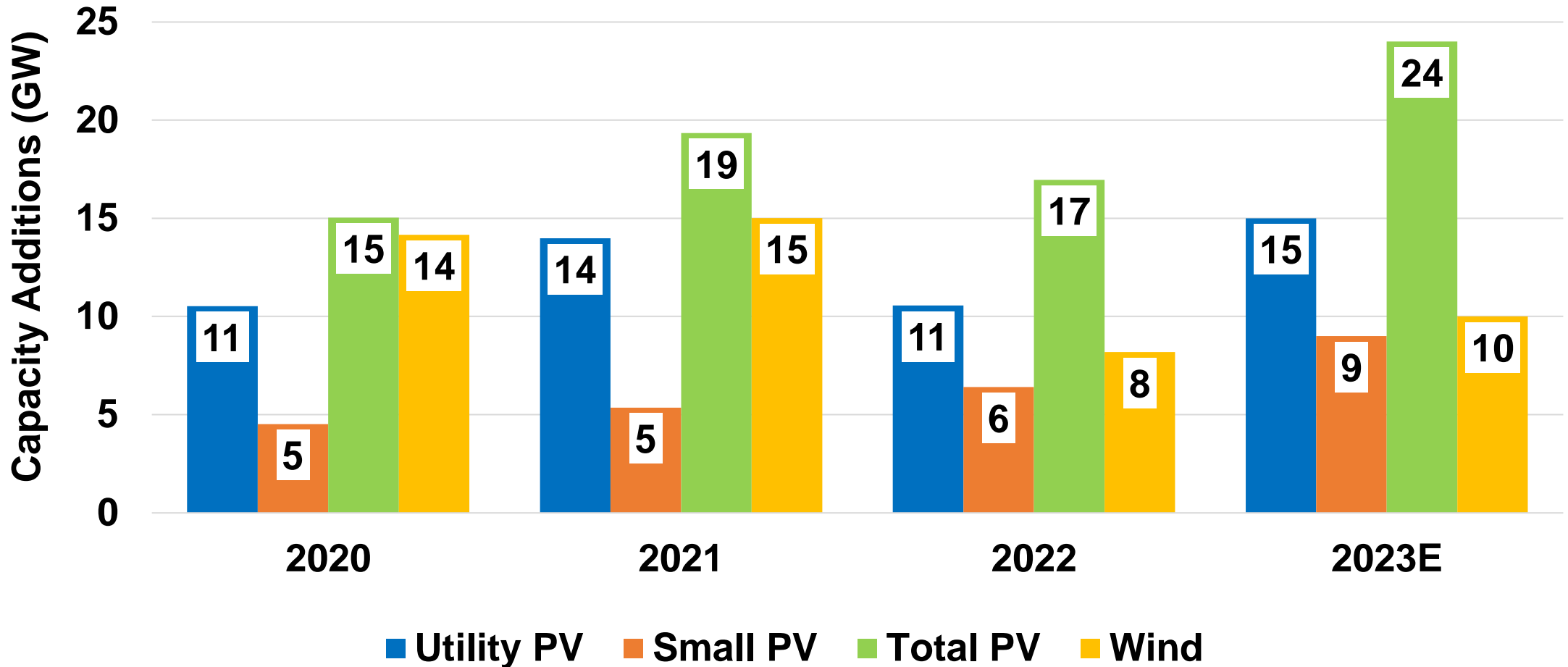
- To Document Monthly and Annual Growth in PV and Wind Capacity and Electricity Generation
 - MW = megawatts; GW = gigawatts; TW = terawatts; MT = thousand metric tons (polysilicon)
- PV and Wind Capacity Additions
 - The Graphs Show Current and Past Year Monthly PV and Wind Capacity Additions
 - For 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



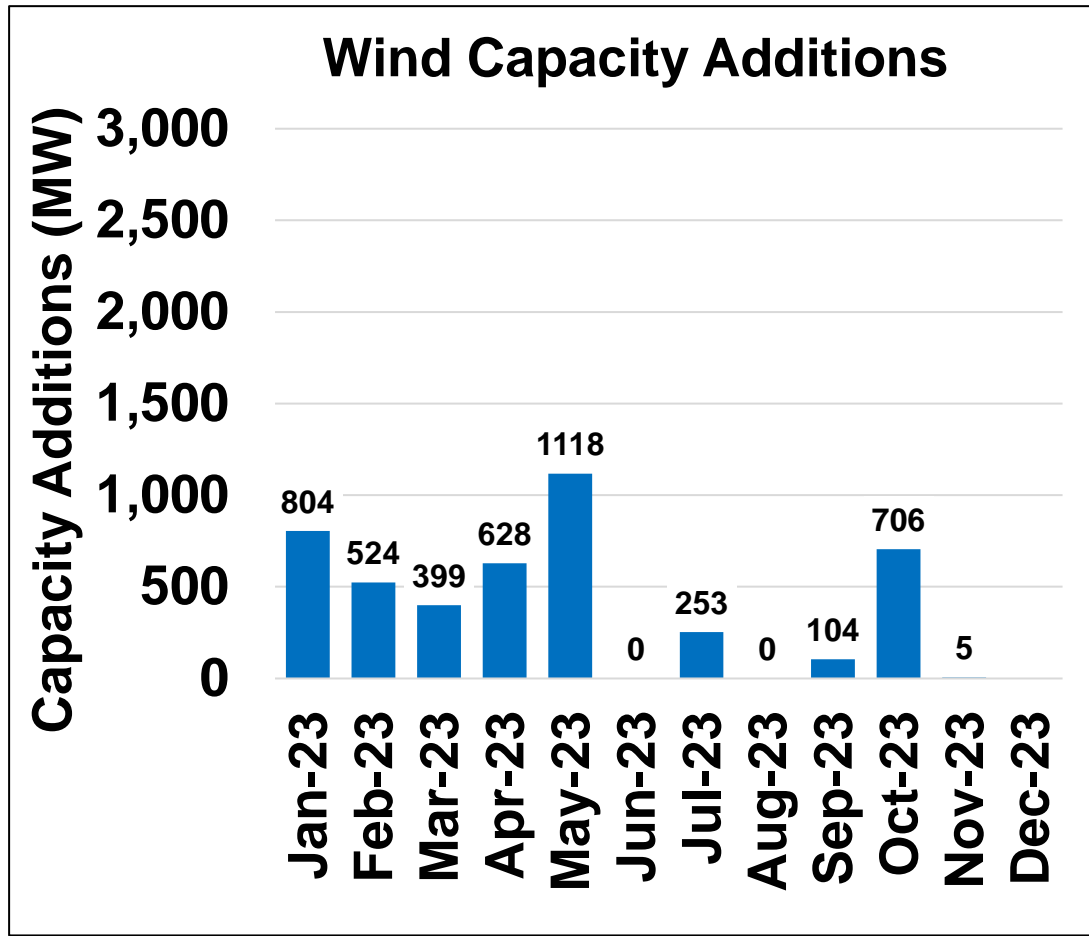
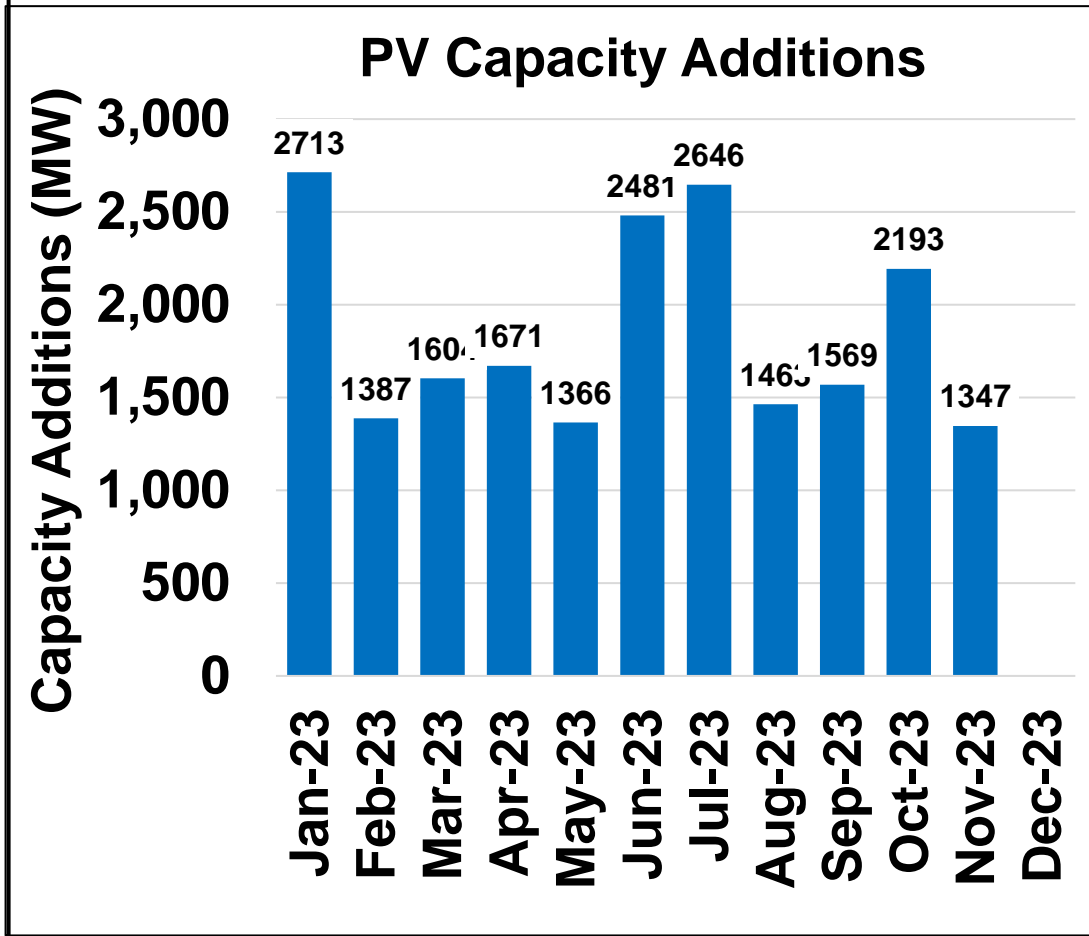
U.S. PV and Wind Capacities

2023 Forecast

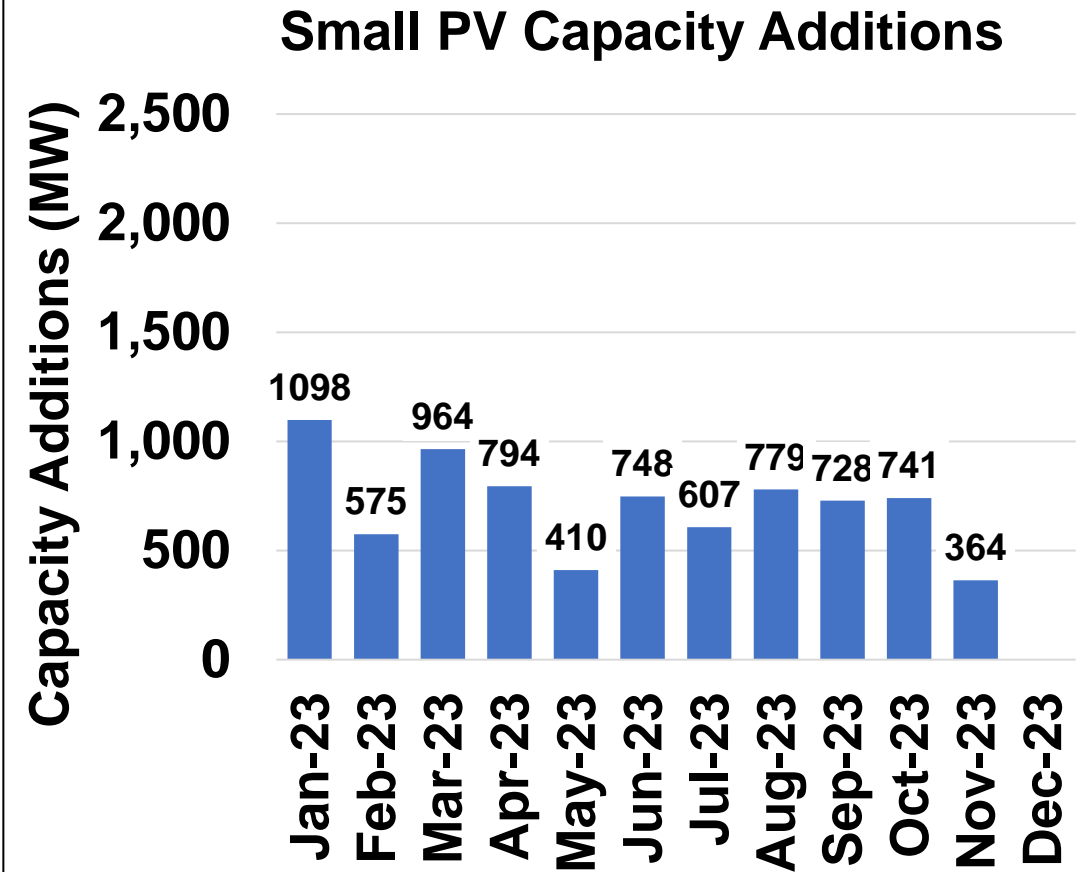
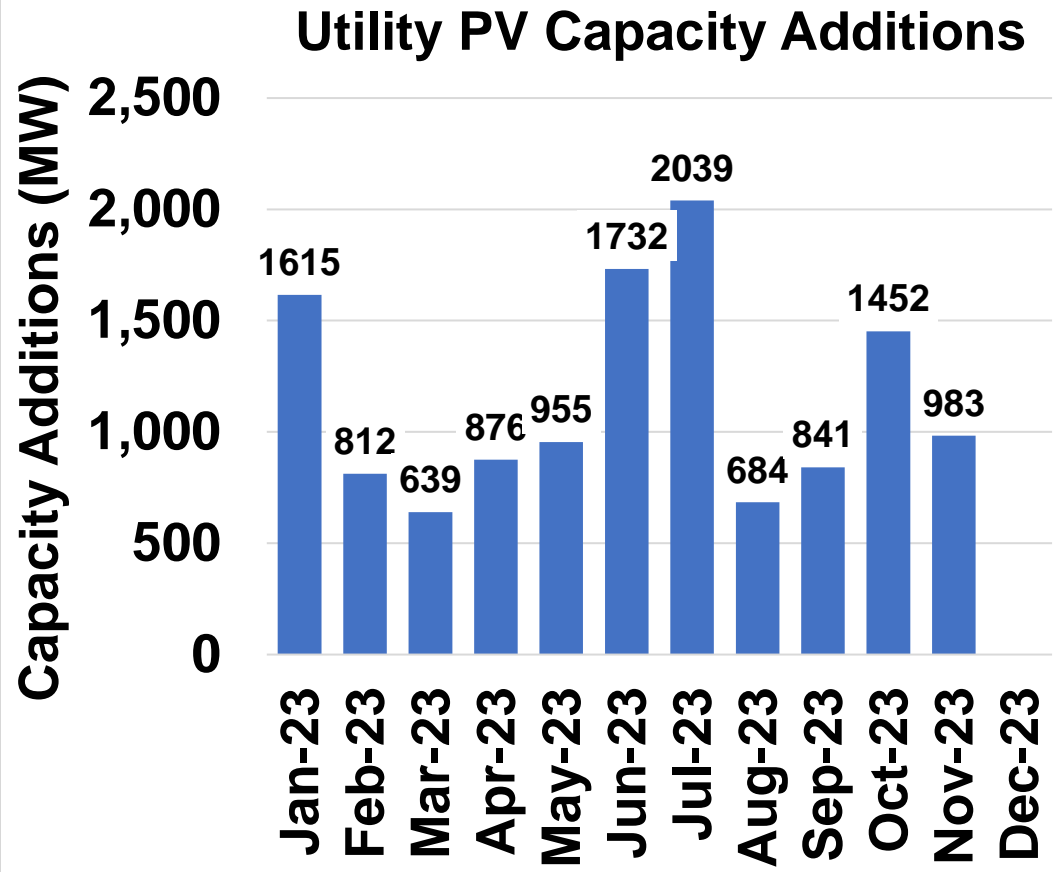
U.S. Annual PV and Wind Capacity Additions 2020-2022



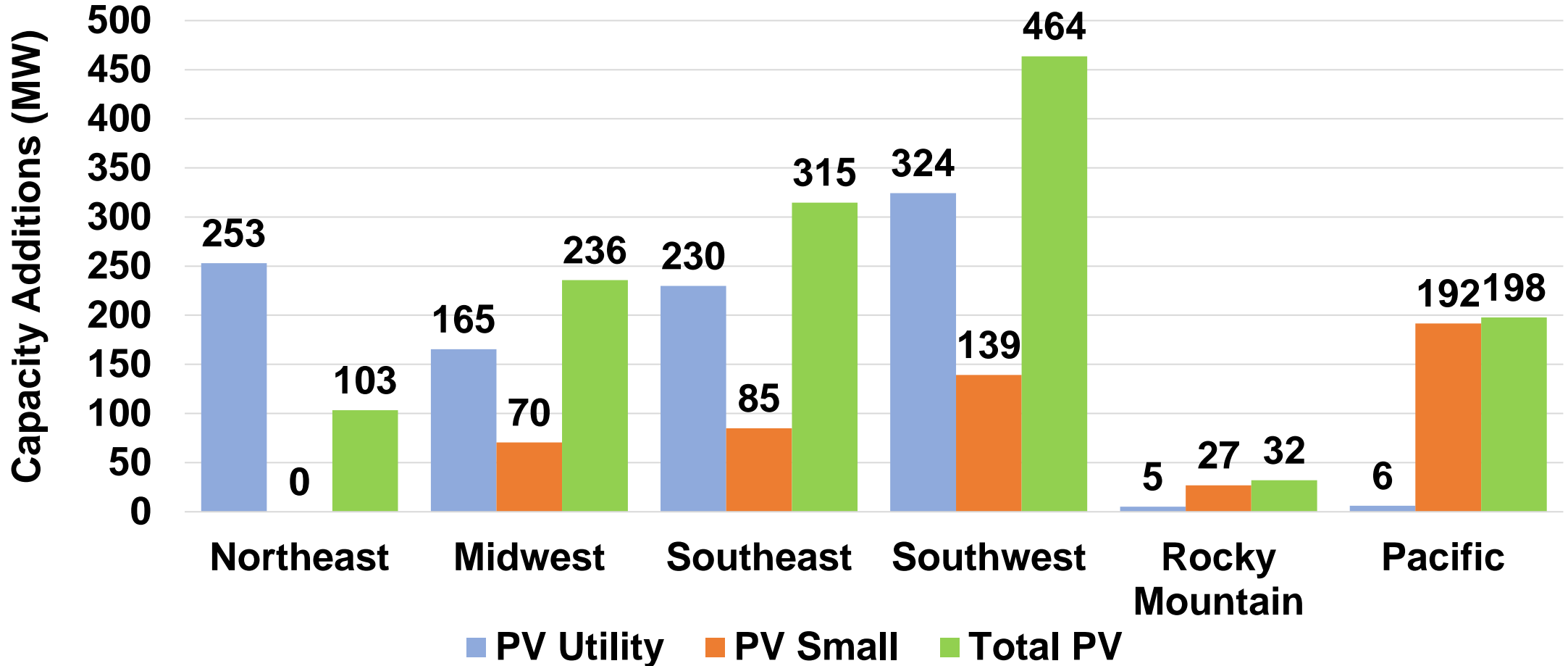
U.S. PV and Wind Monthly Net Capacity Additions 2023 (through November)



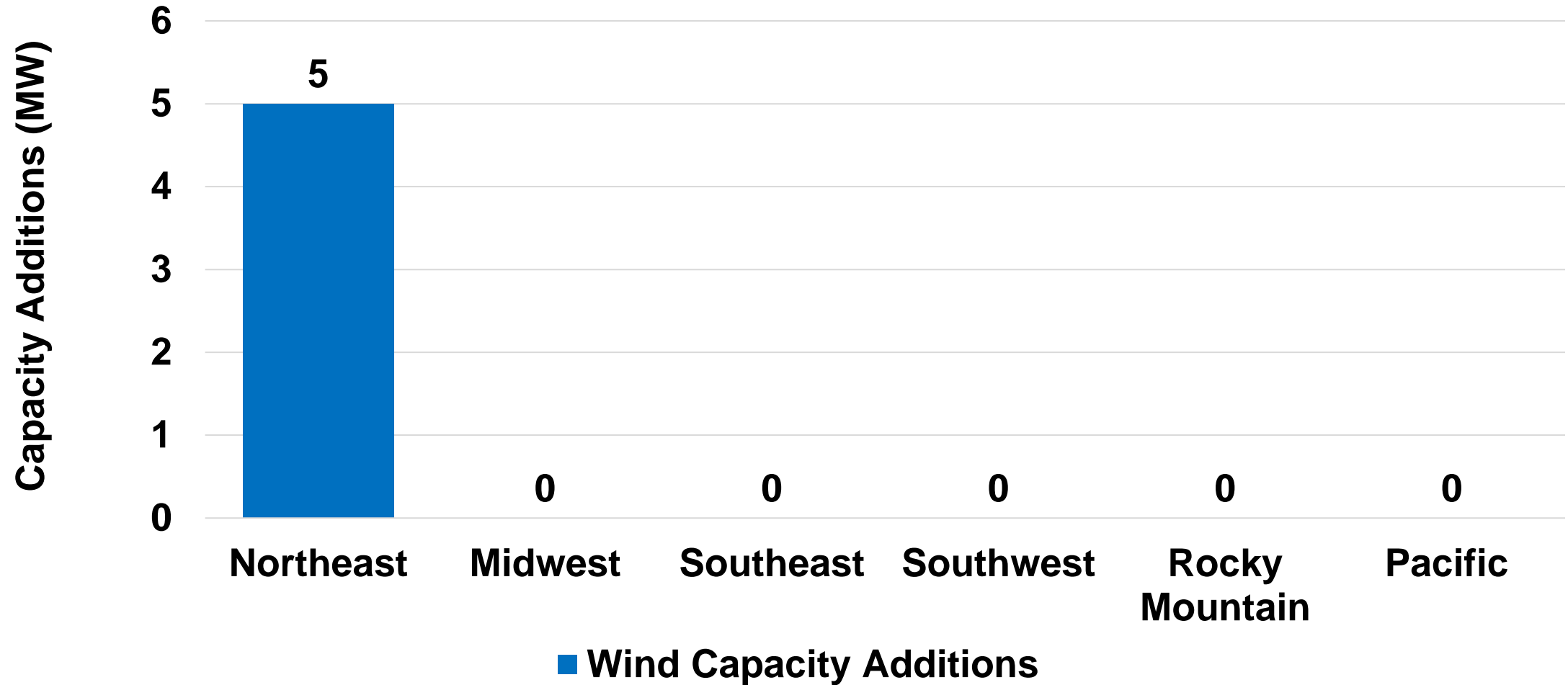
Monthly Utility and Small PV Net Capacity Additions 2023 (through November)



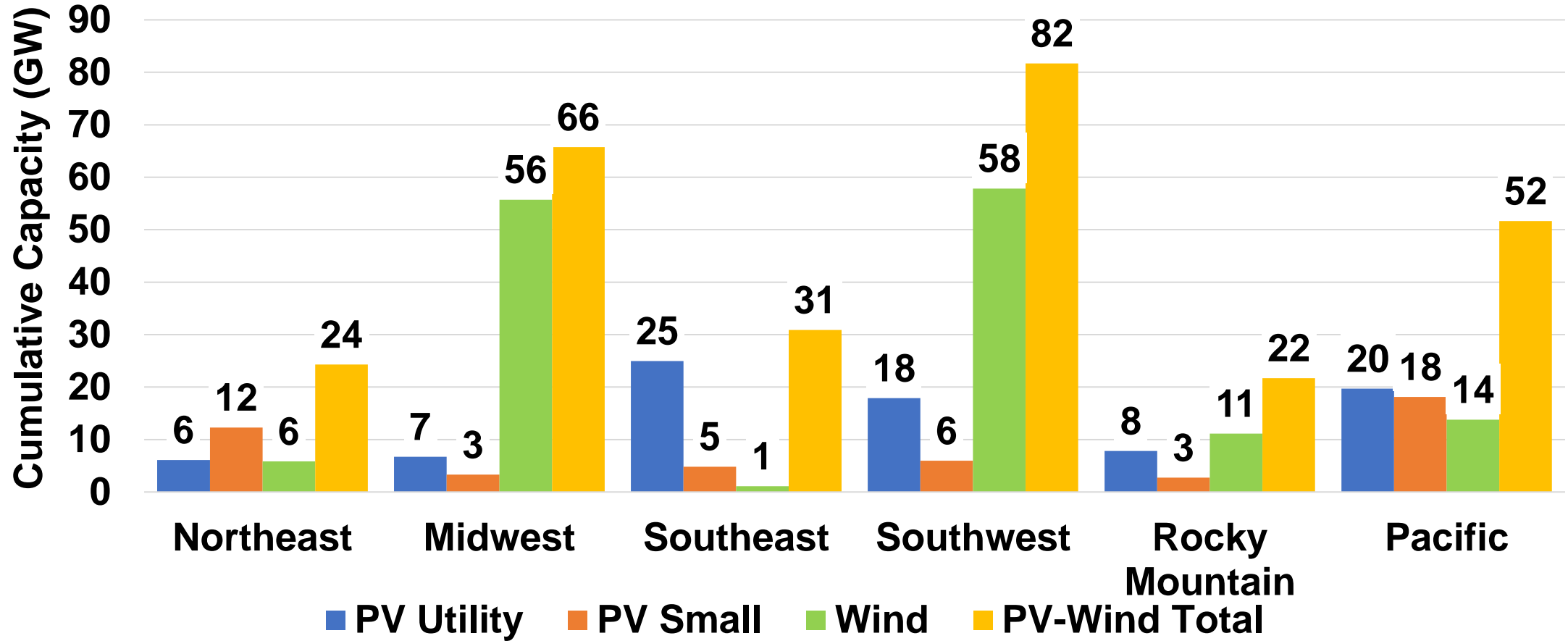
Regional PV Capacity Additions November 2023



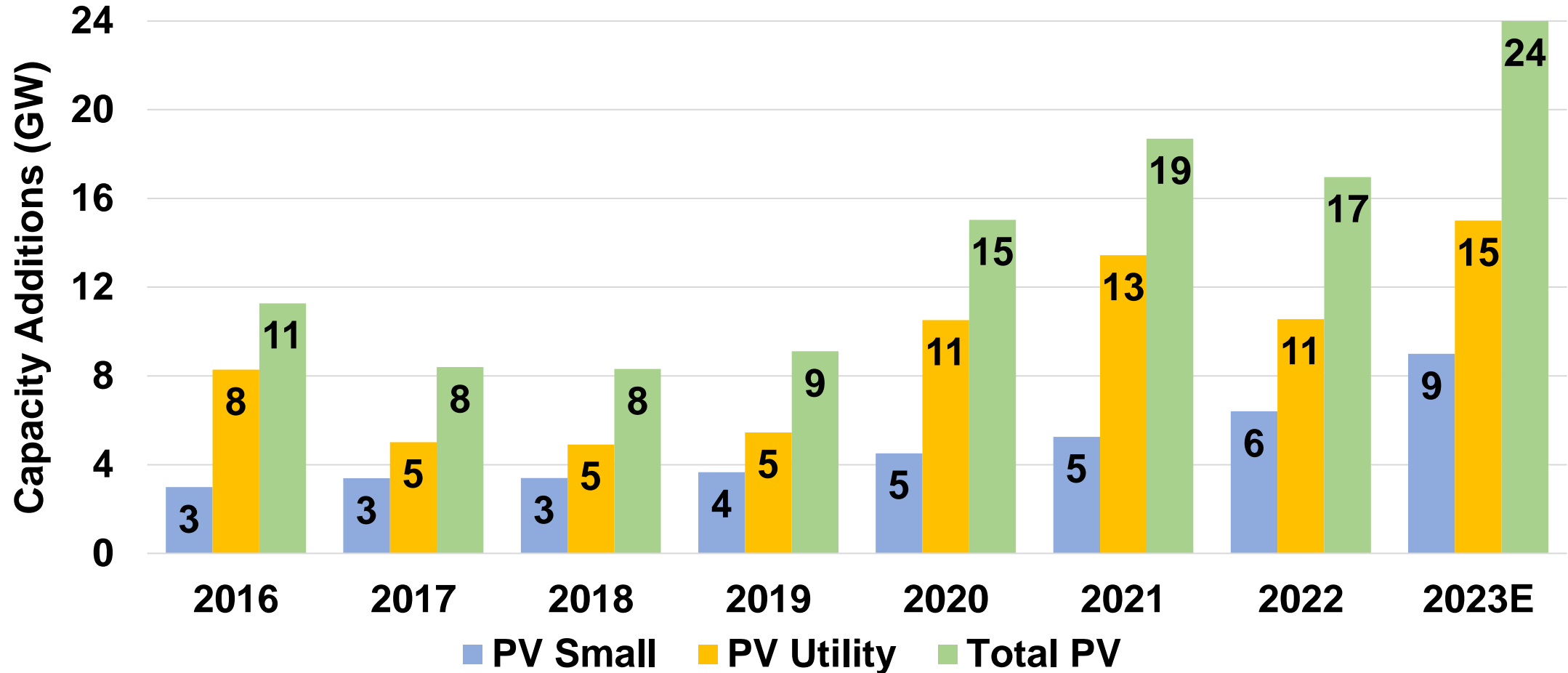
Regional Wind Net Capacity Additions November 2023



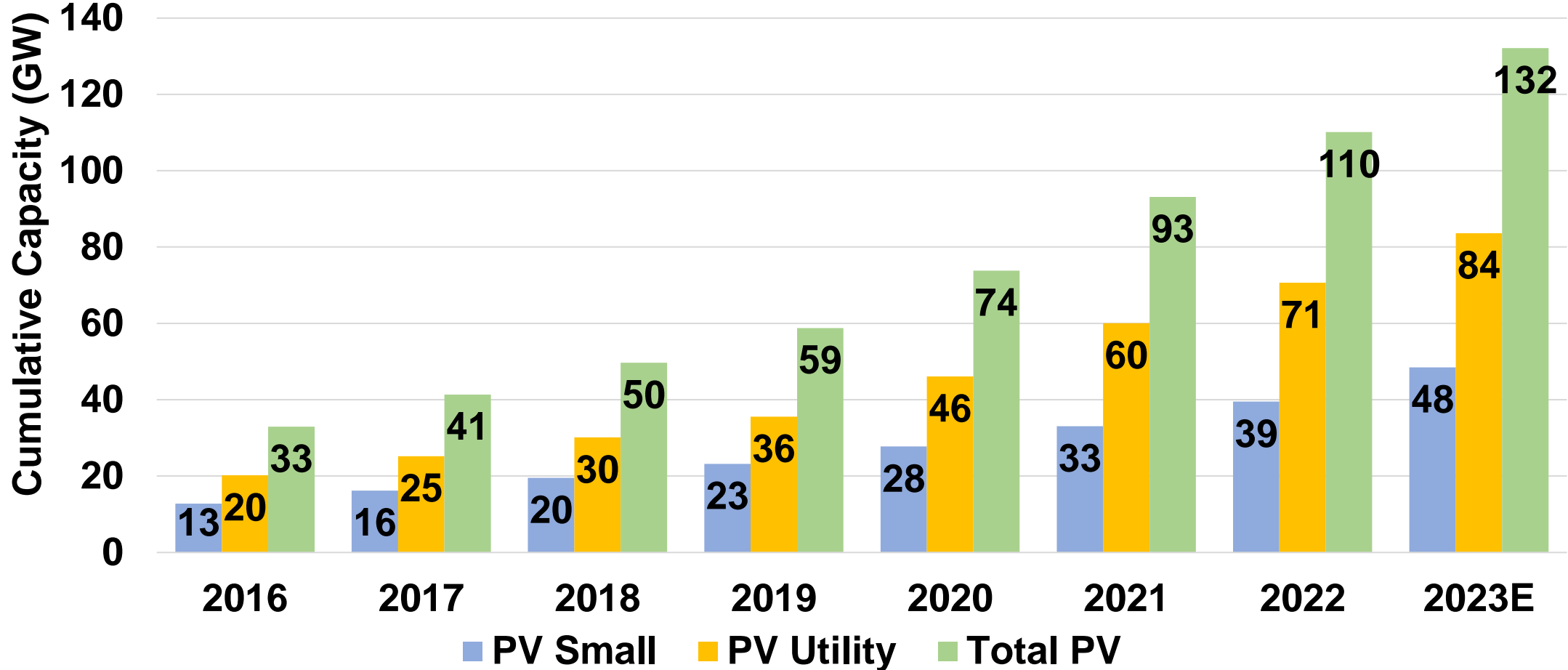
PV and Wind Cumulative Capacity by Region November 2023



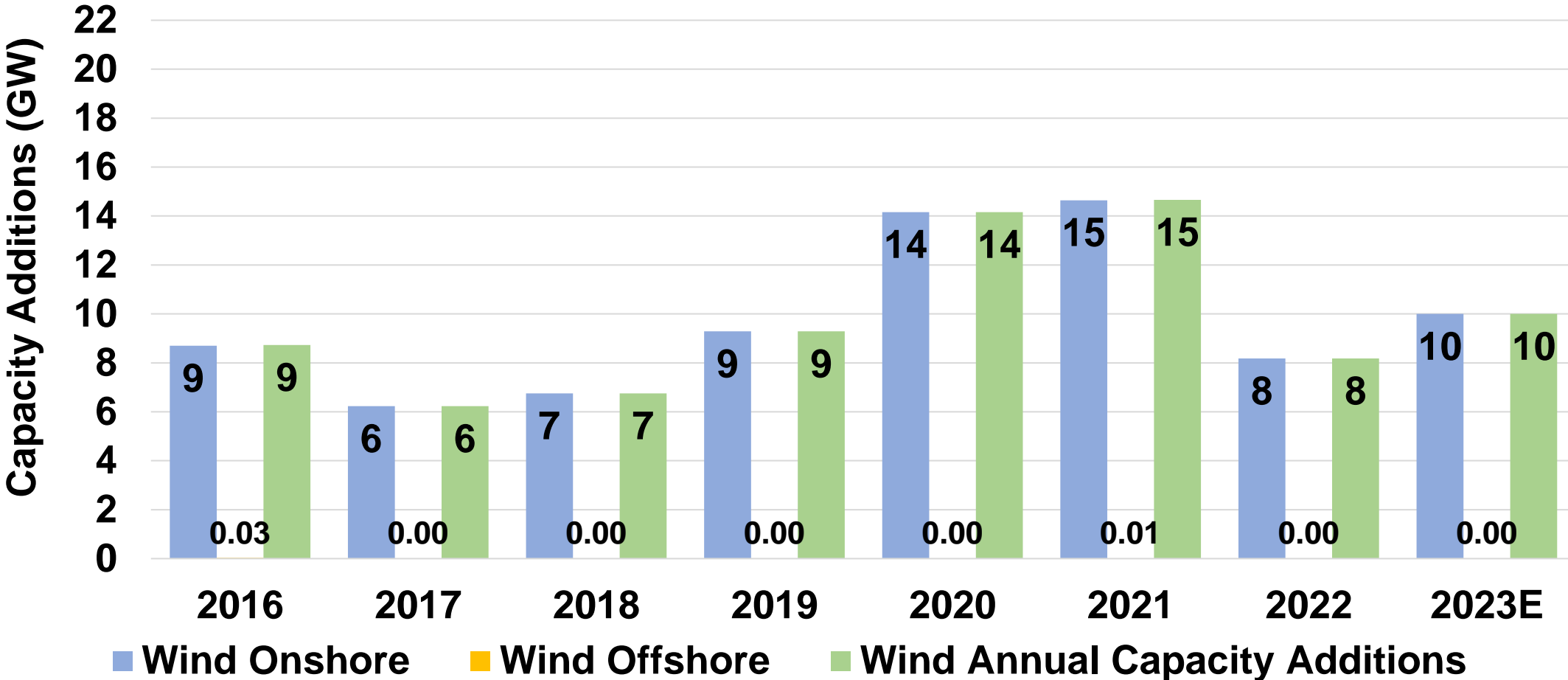
PV Annual Capacity Additions 2023 Forecast



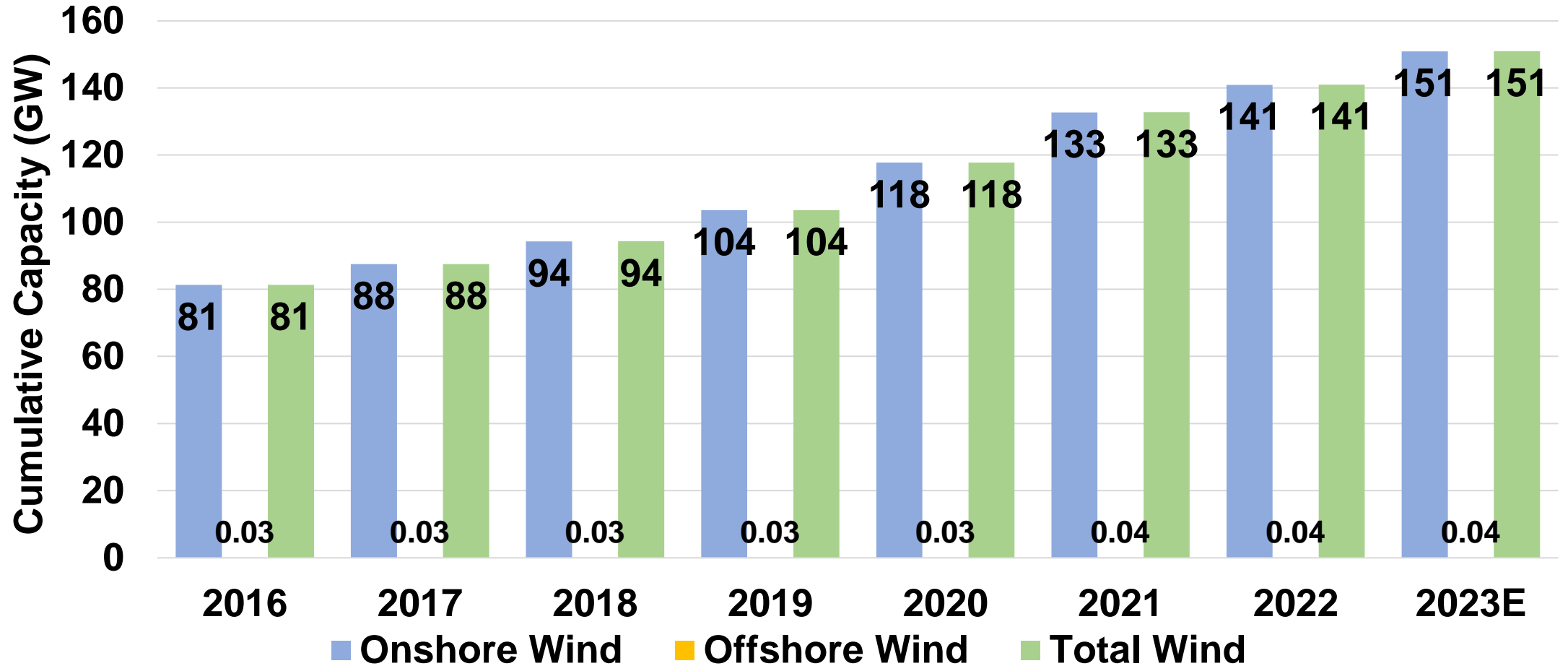
PV Annual Cumulative Capacity 2023 Forecast



Wind Annual Capacity Additions 2023 Forecast



Wind Annual Cumulative Capacity 2023 Forecast

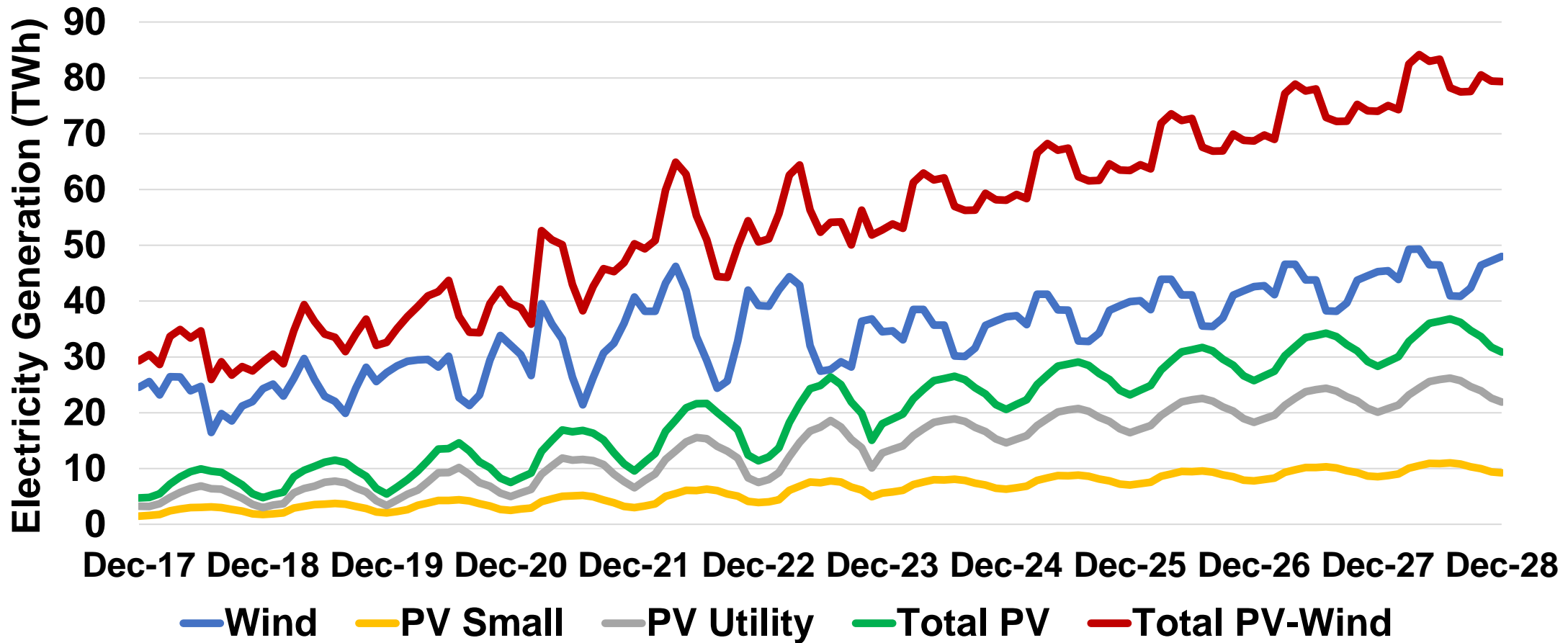




U.S. PV and Wind Electricity Generation

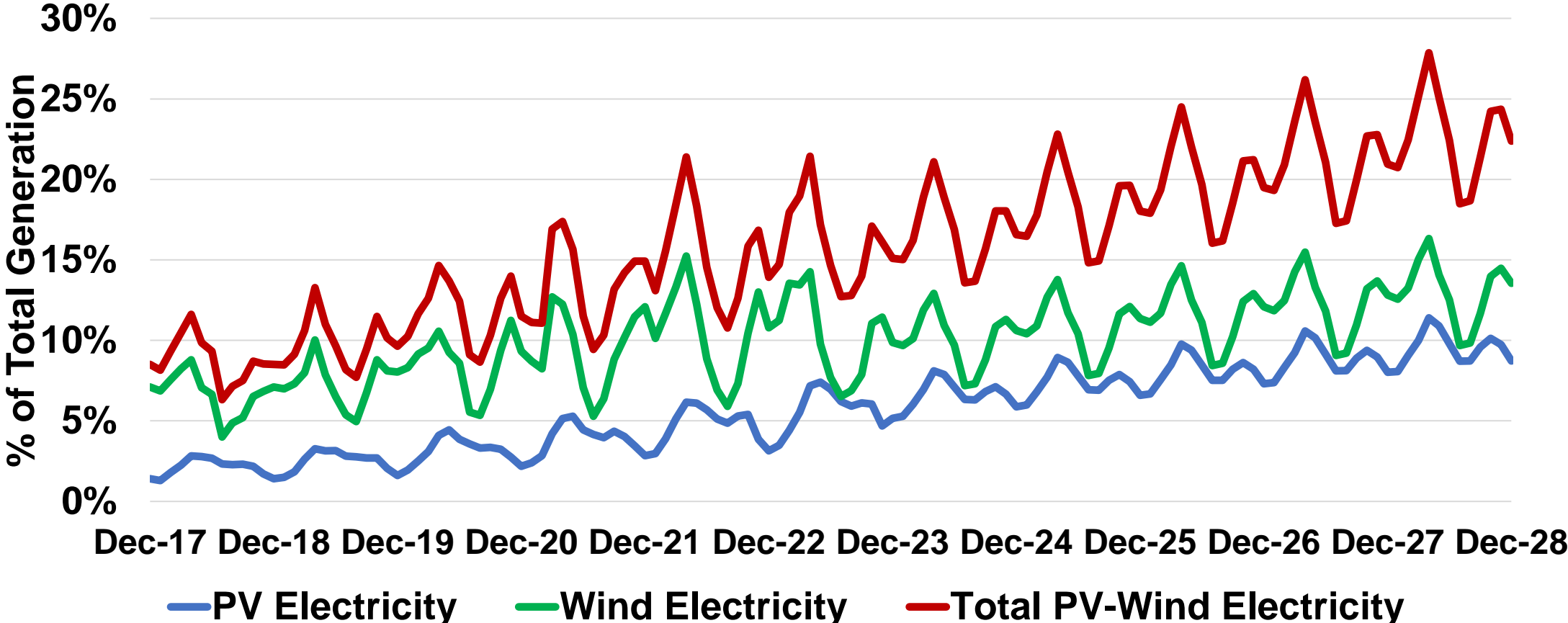
U.S. PV & Wind Monthly Electricity Generation (2018-2028)

Actual through November 2023; Forecast through Dec. 2028



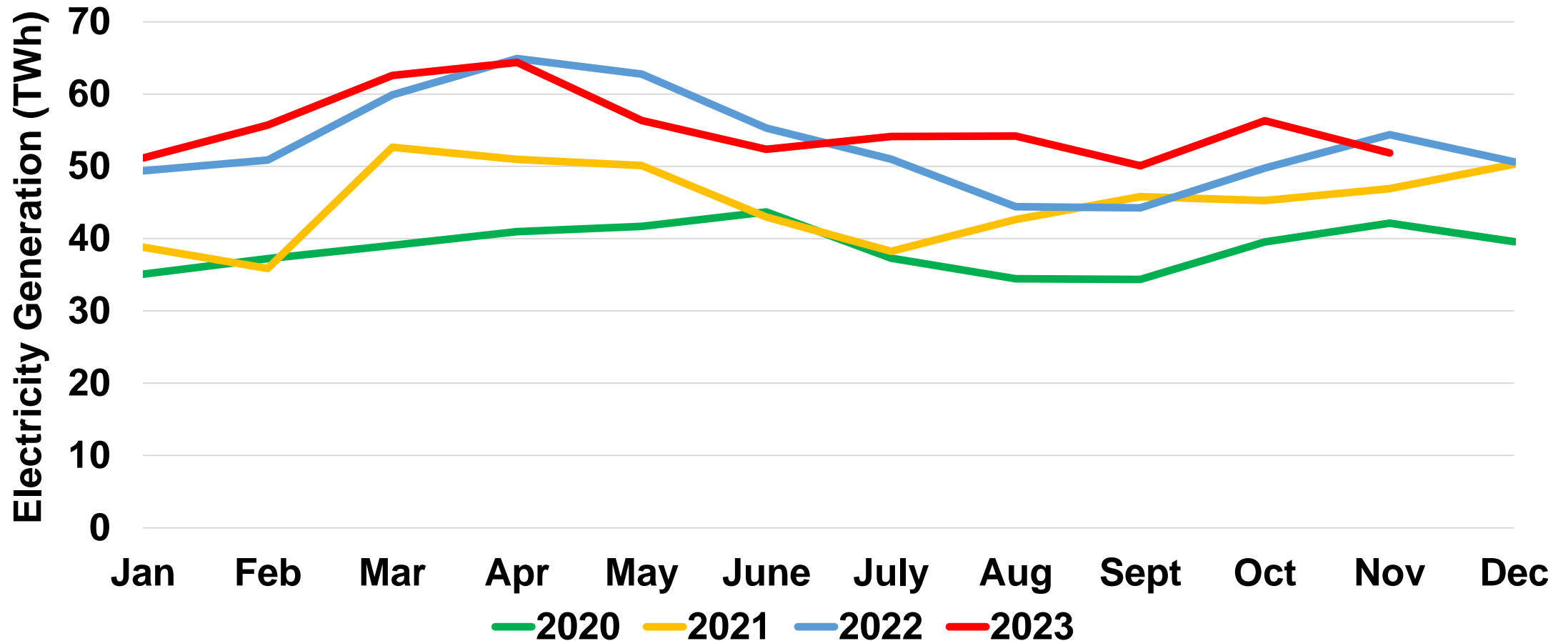
Note: PV Small is less than 1.0 MW; PV Utility is 1.0 MW and greater

U.S. PV & Wind Electricity as % of Total Generation Actual through November 2023; Forecast through Dec. 2028

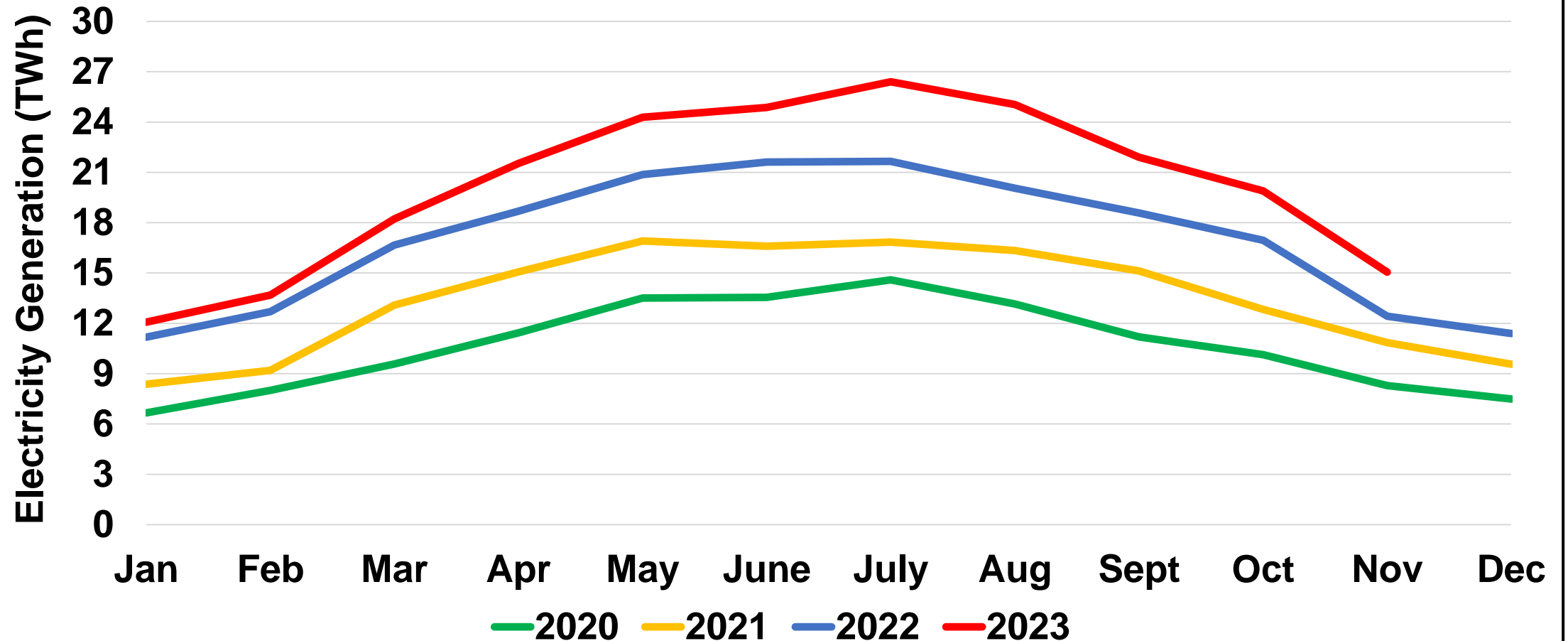


Note: Fossil fuel electricity generation was 60% of total 2022 electricity generation.

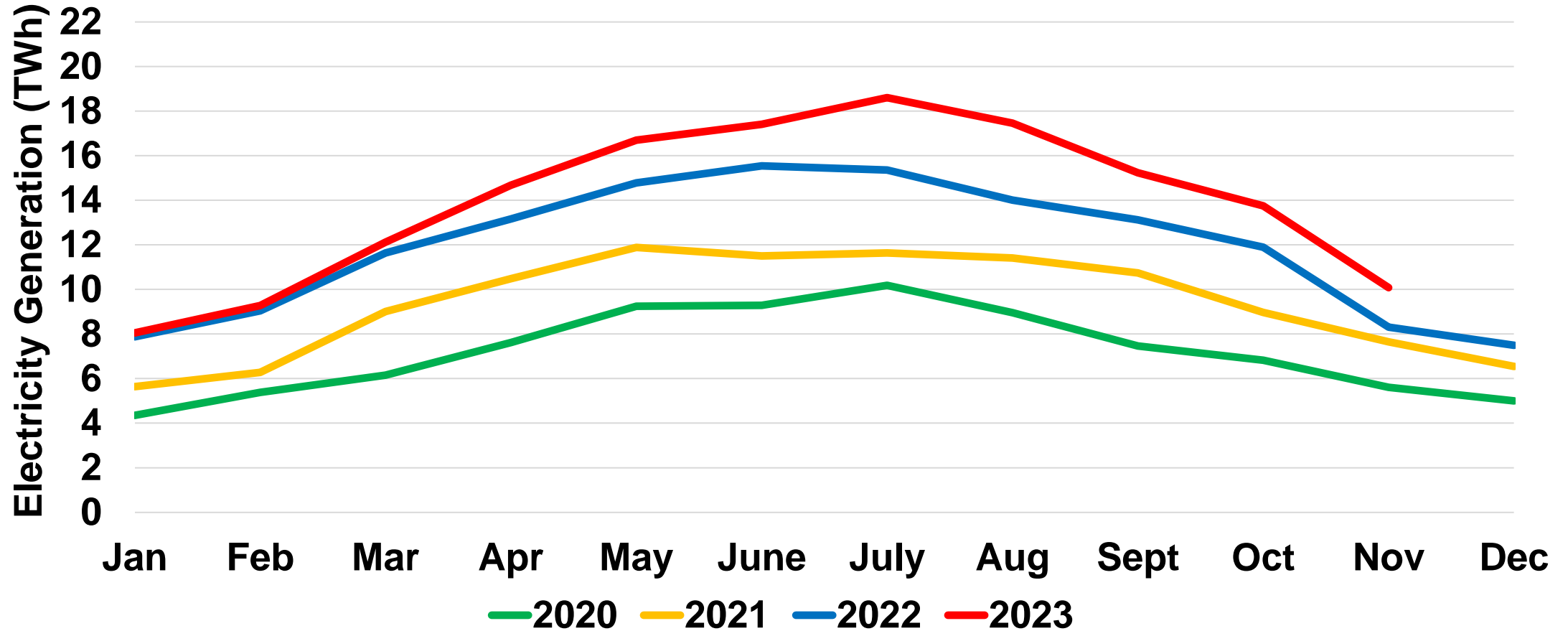
Combined PV and Wind Electricity Generation Year-on-Year (through November 2023)



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

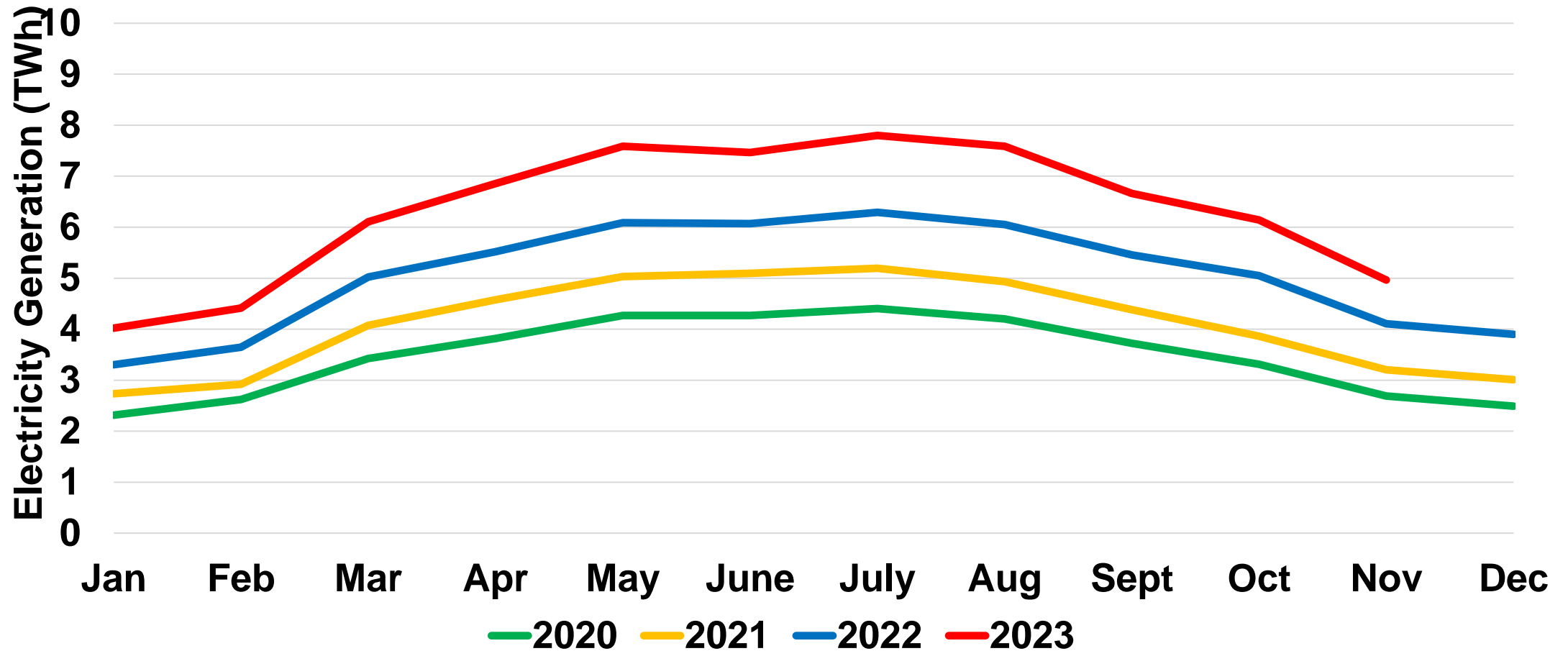


Utility PV Electricity Generation Year-on-Year (through November 2023)

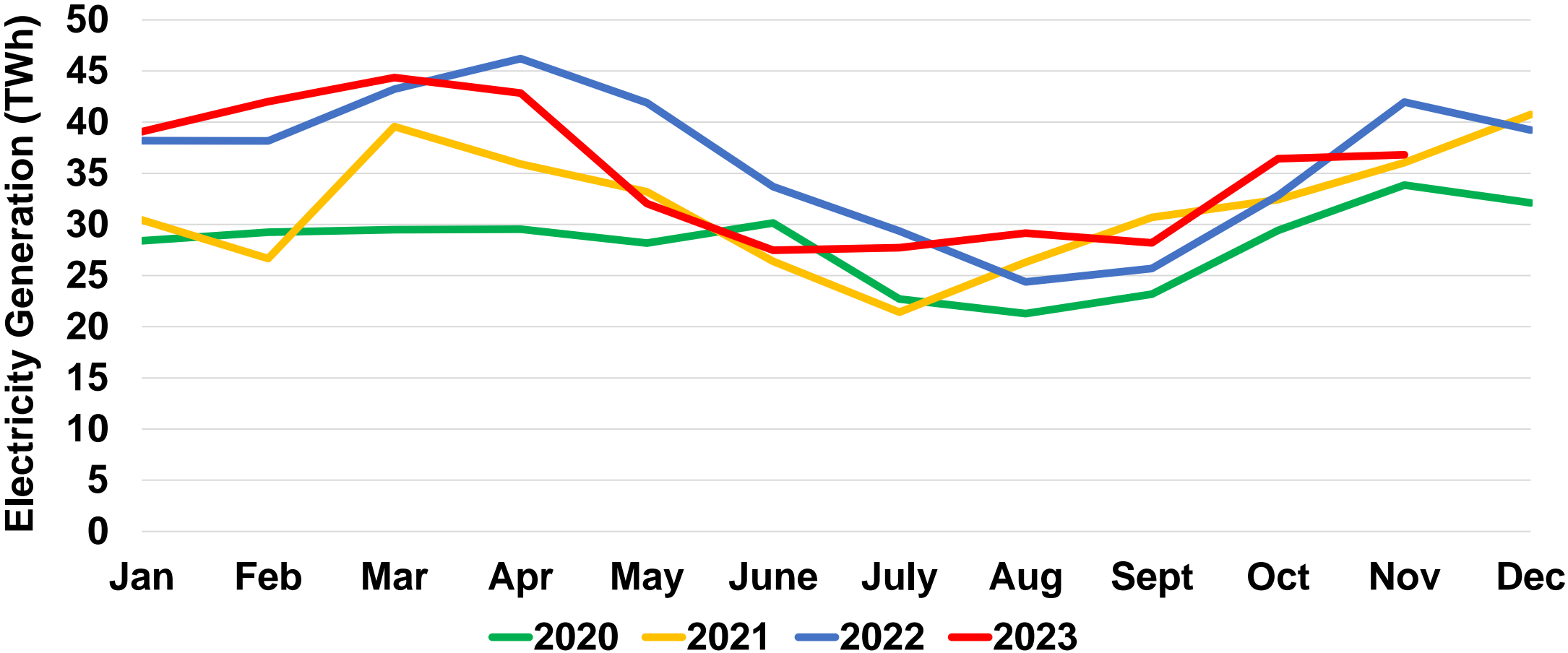


Note: PV Utility is greater than 1.0 MW

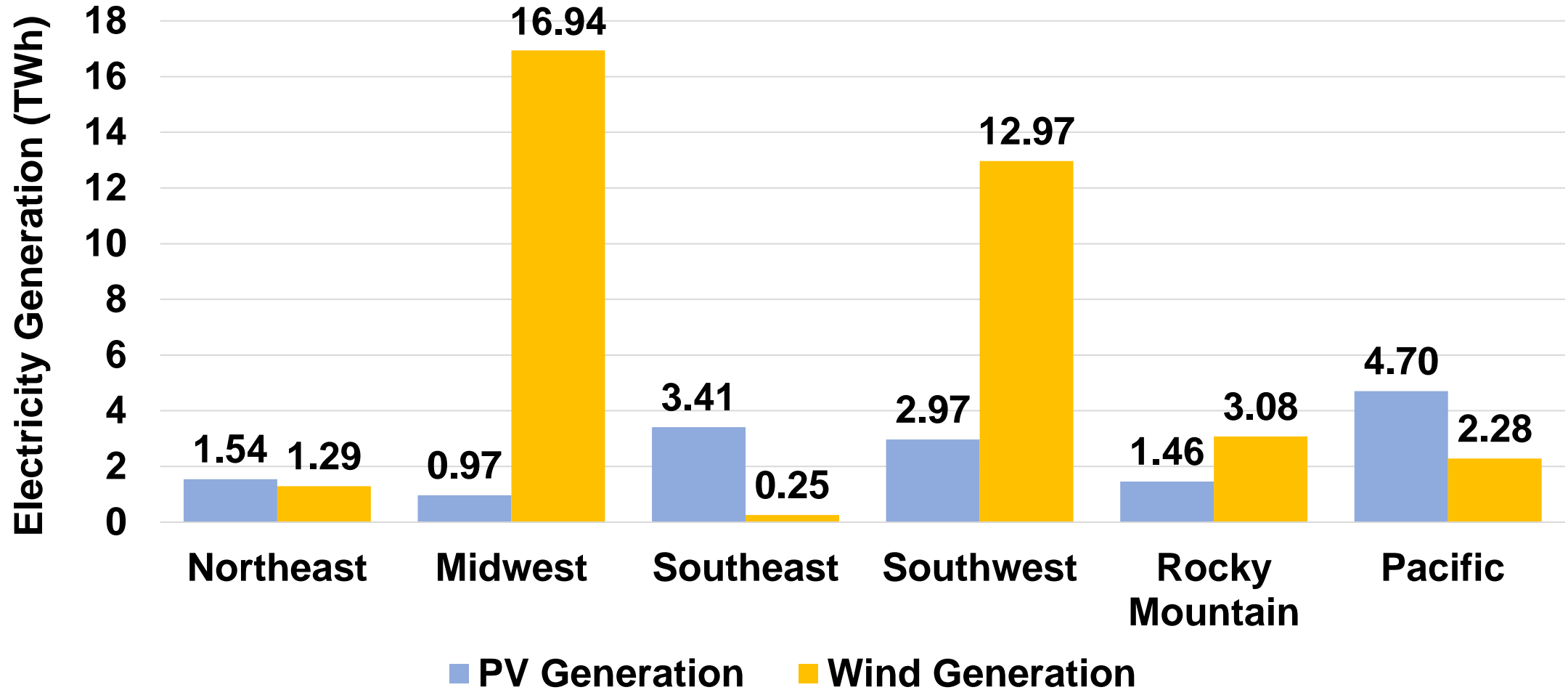
Small PV Electricity Generation Year-on-Year (through November 2023)



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



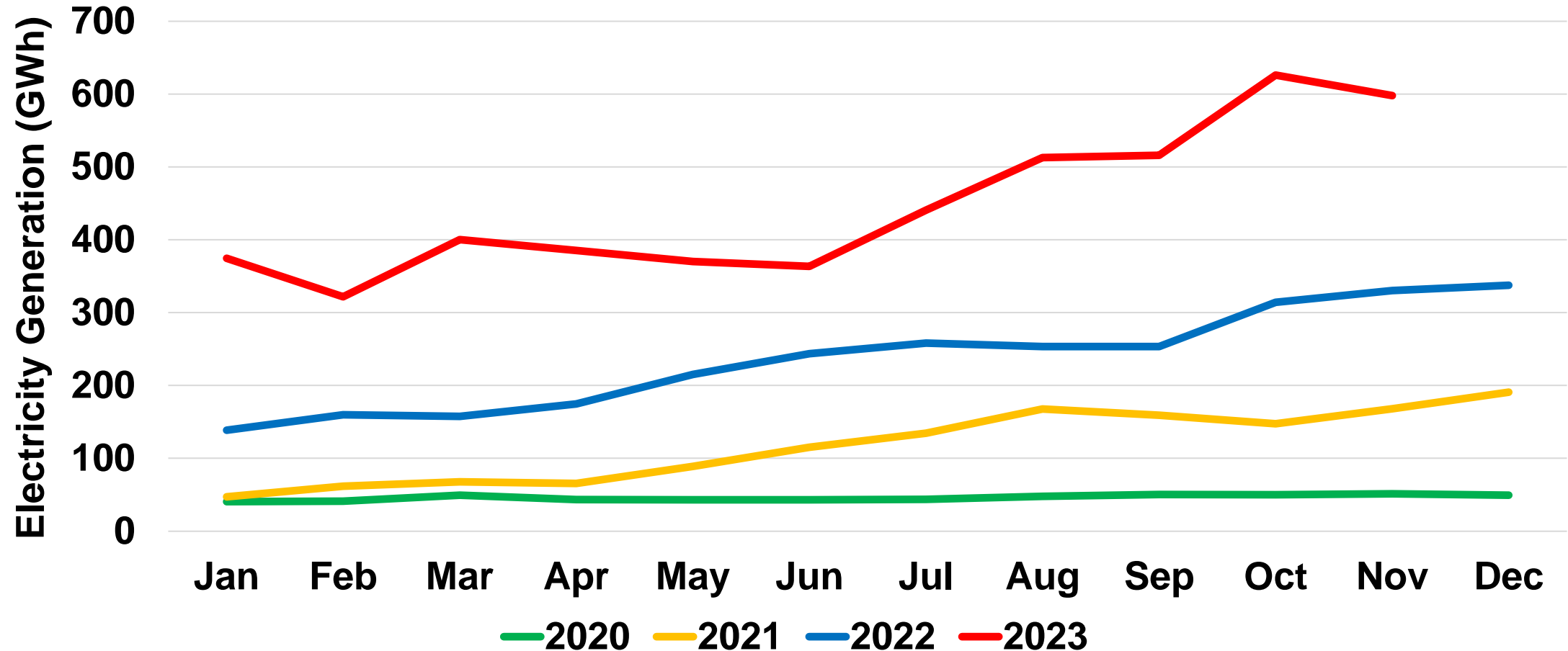
Regional PV & Wind Electricity Generation November 2023





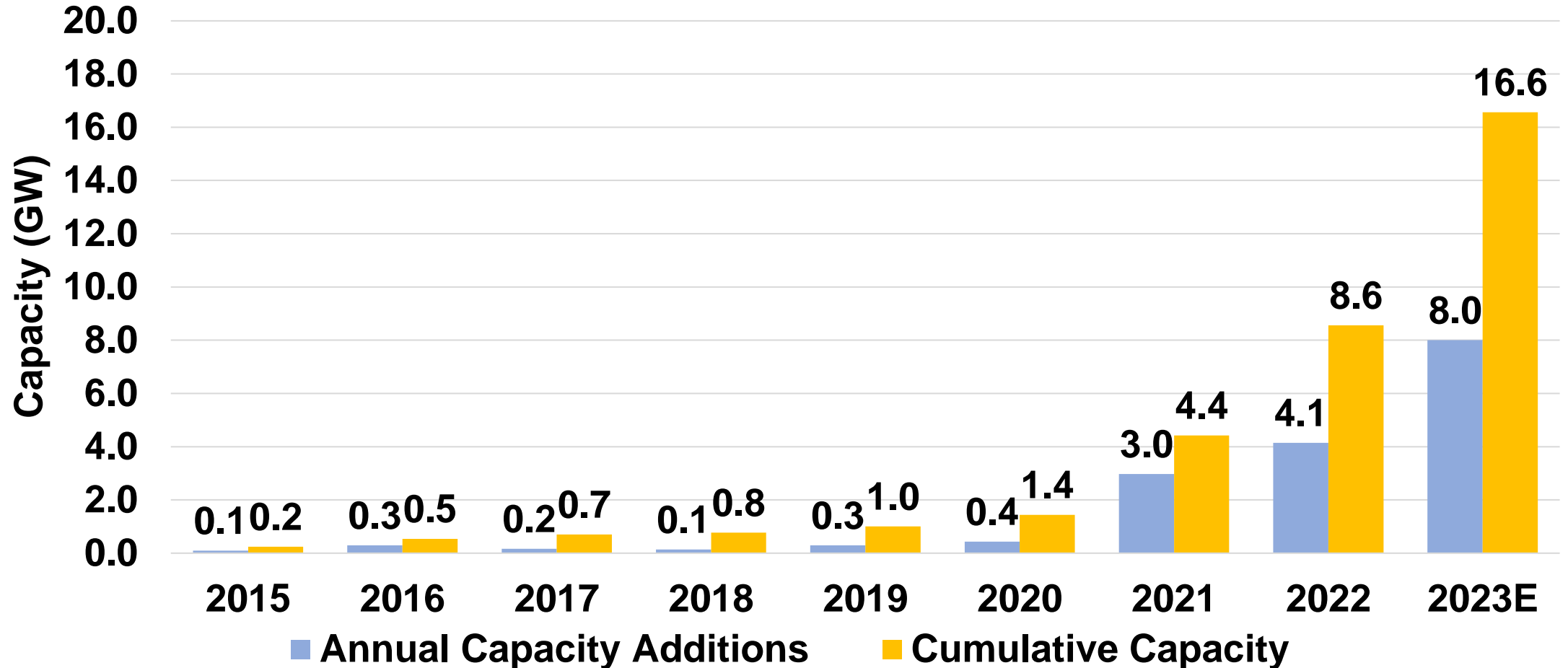
U.S. Battery Storage

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



Battery Storage Forecast 2023

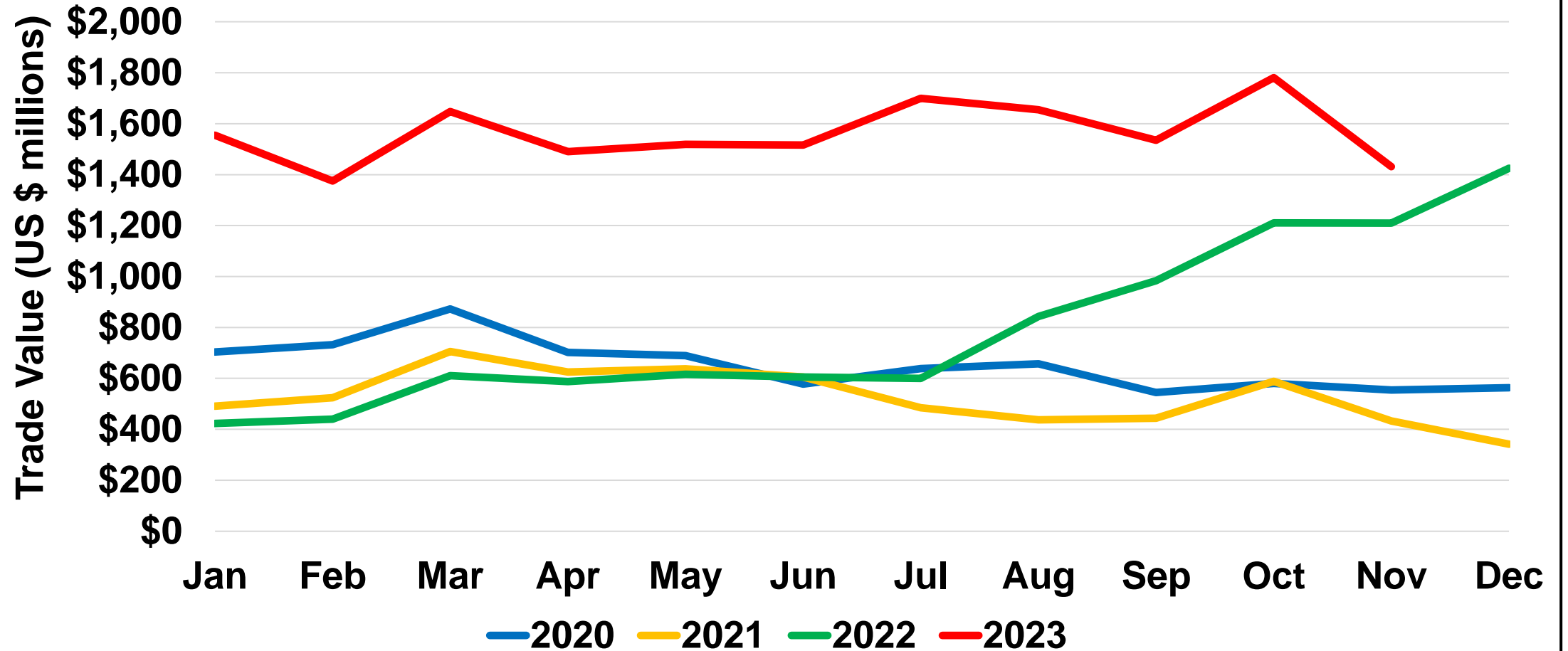
Annual Capacity Additions and Cumulative Capacity



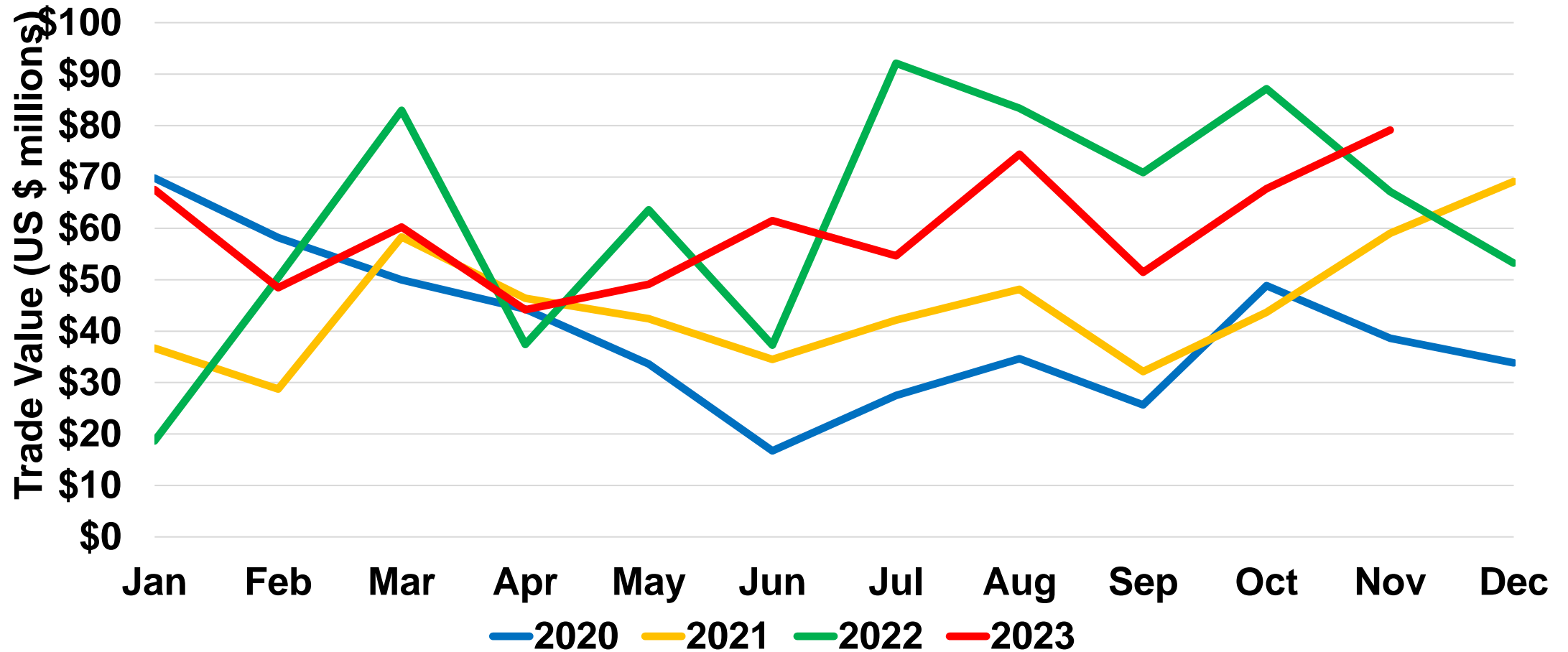


U.S. PV Trade (Cells and Modules)

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



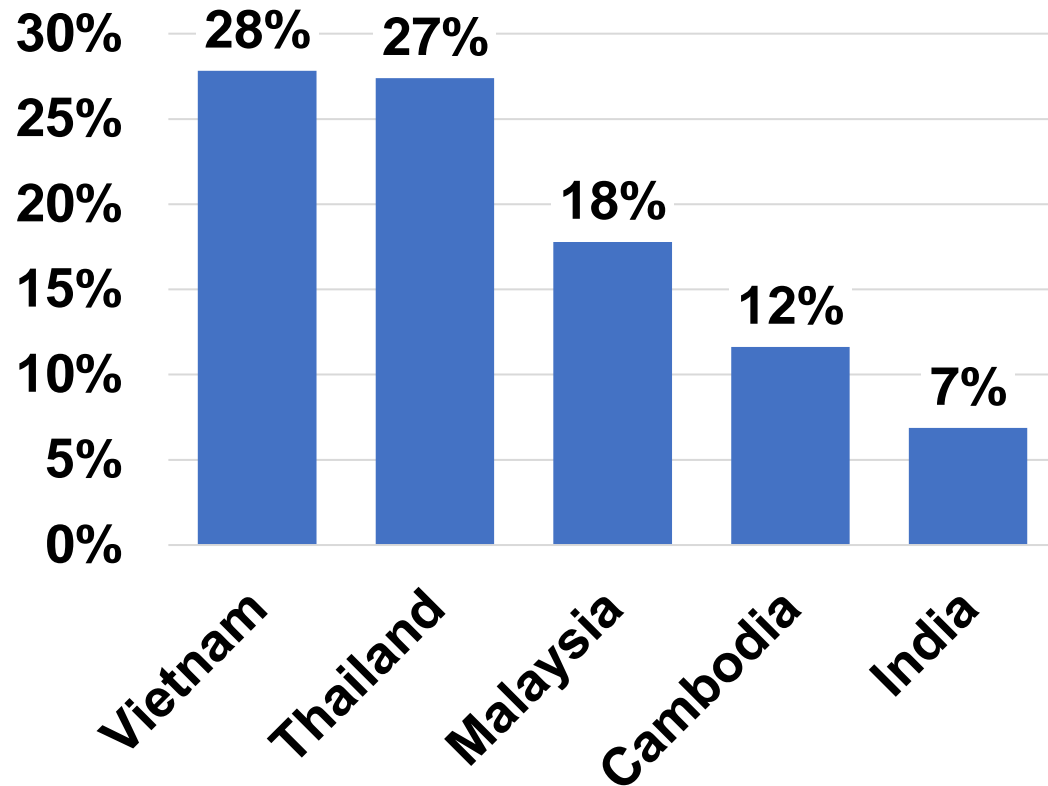
U.S. Year-on-Year PV Cell Imports (through November 2023)



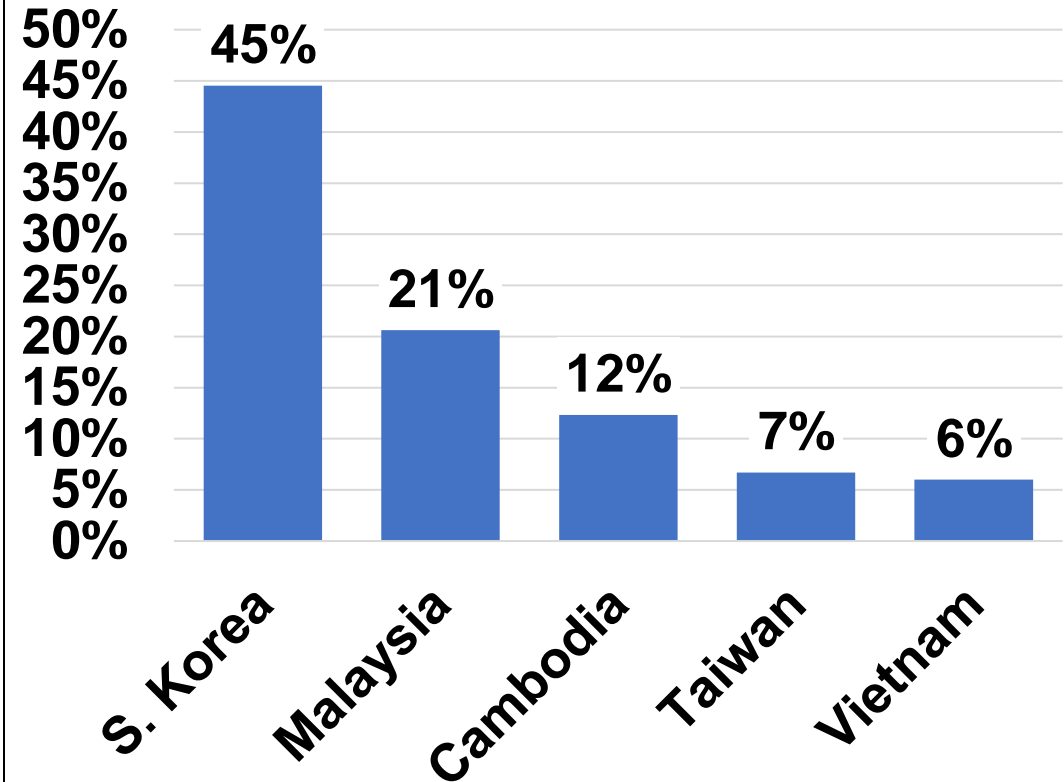
Monthly U.S. PV Panel and Cell Imports by Country November 2023



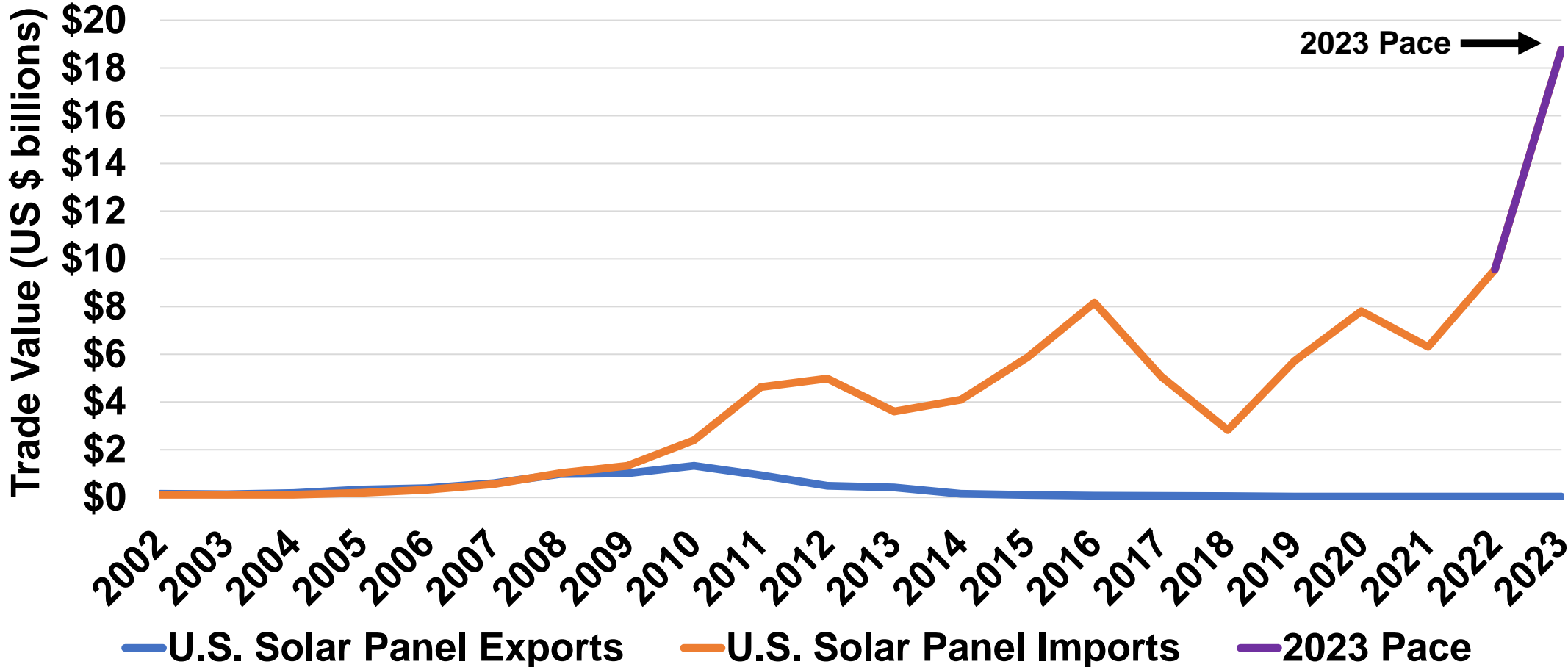
U.S. PV Panel Imports by Country



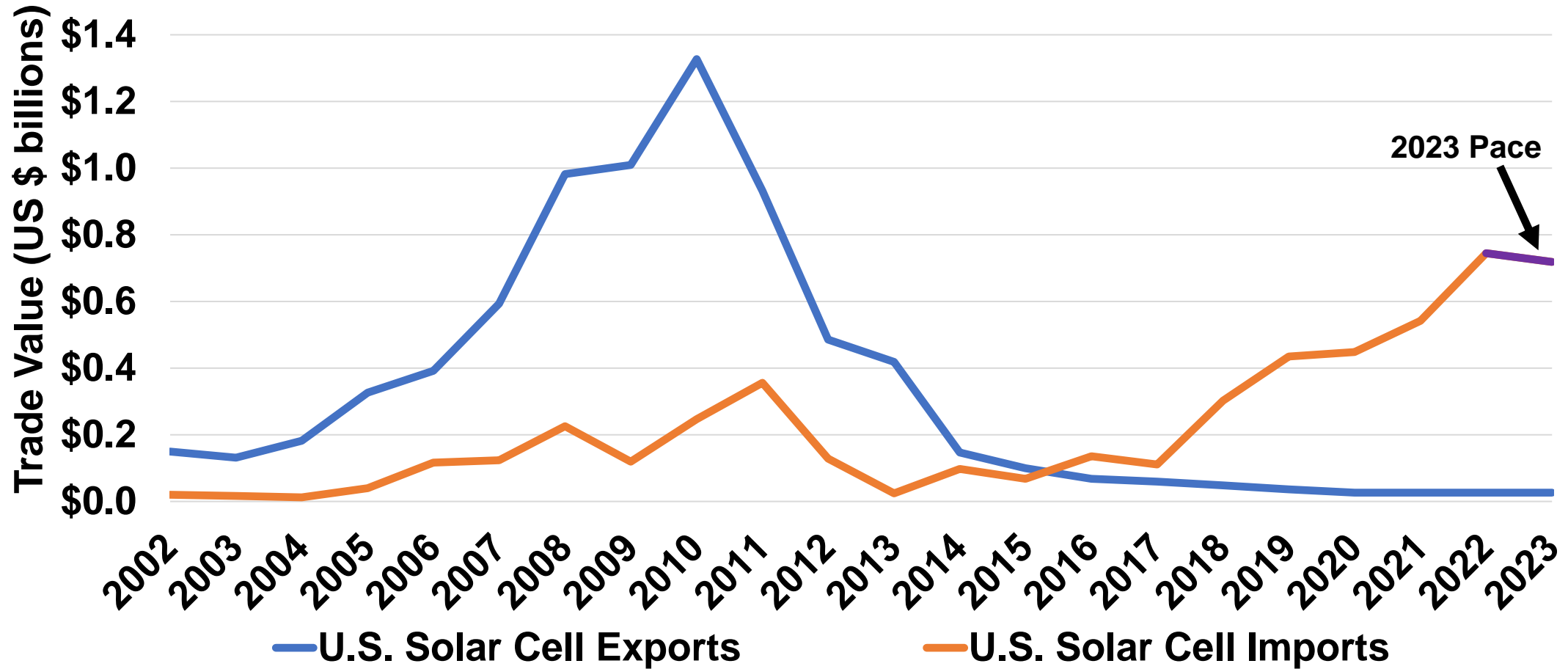
U.S. PV Cell Imports by Country



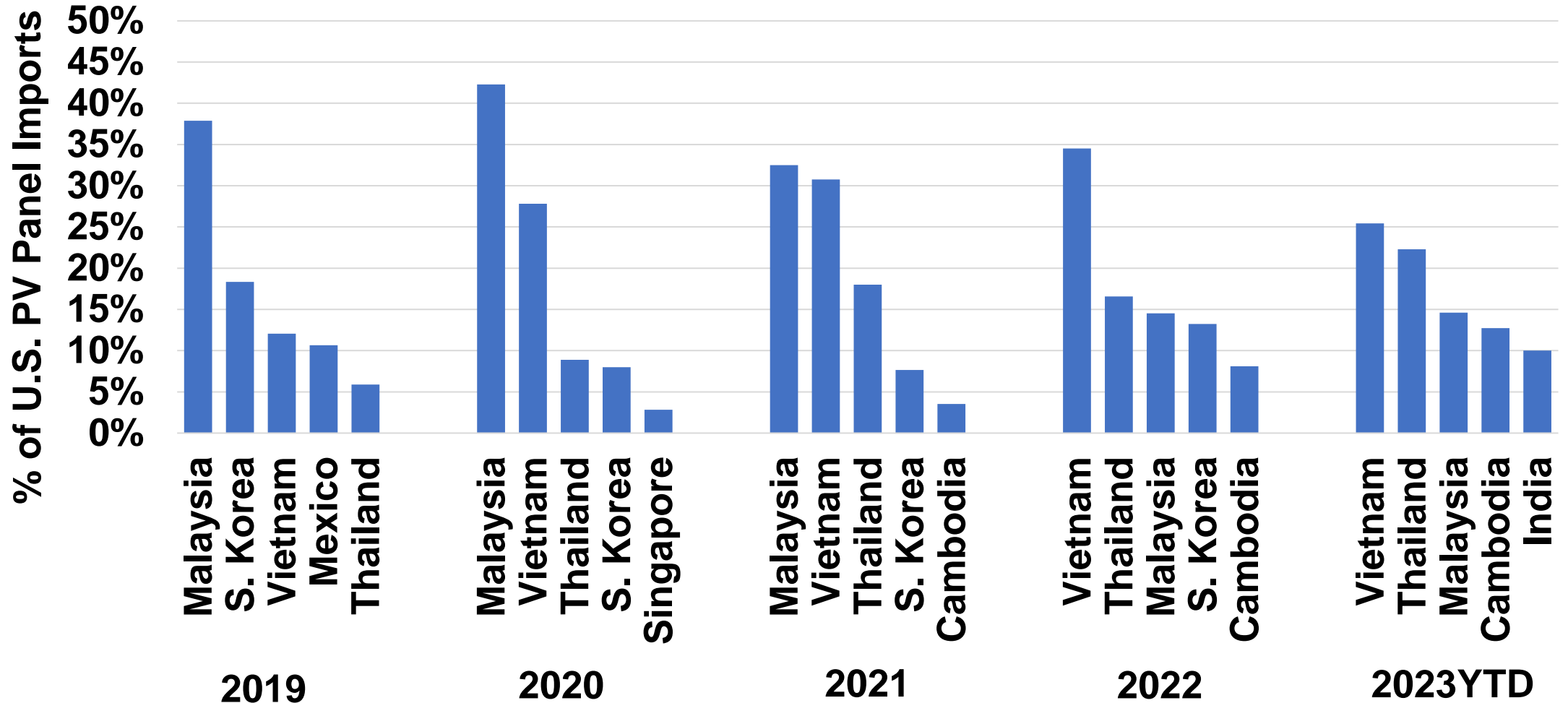
Annual U.S. PV Panel Trade through November 2023



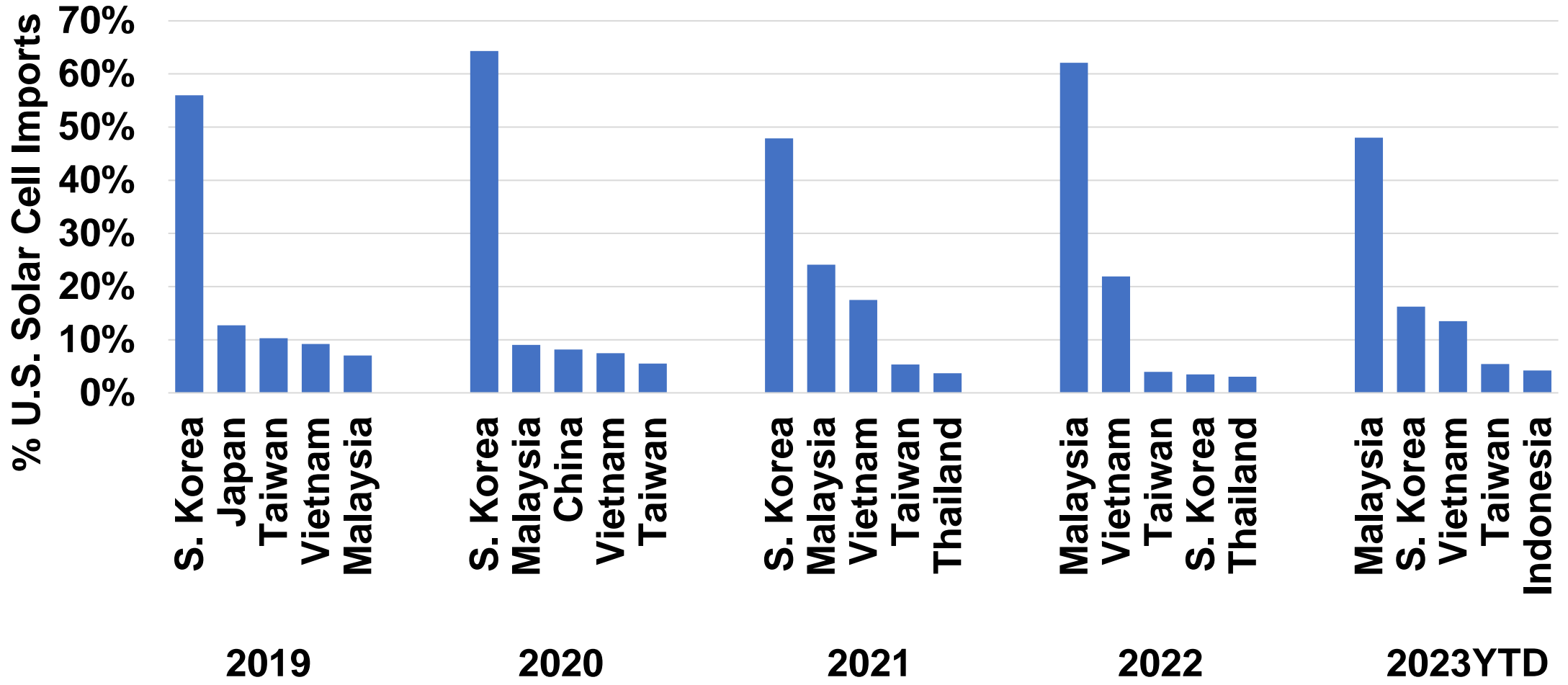
Annual U.S. PV Cell Trade through November 2023



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



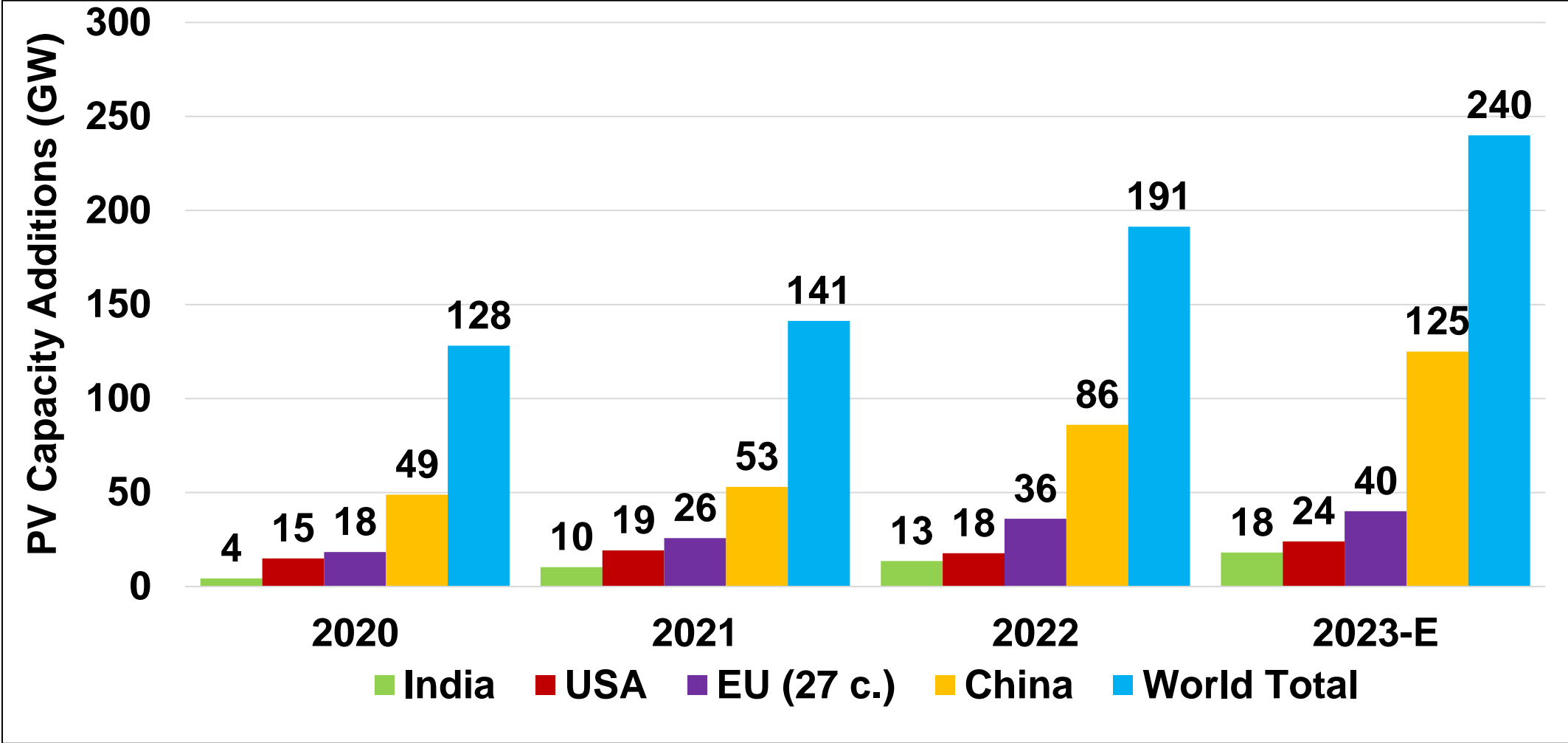
Annual U.S. PV Cell Imports Rank Order of Countries Year-to-Date through November 2023



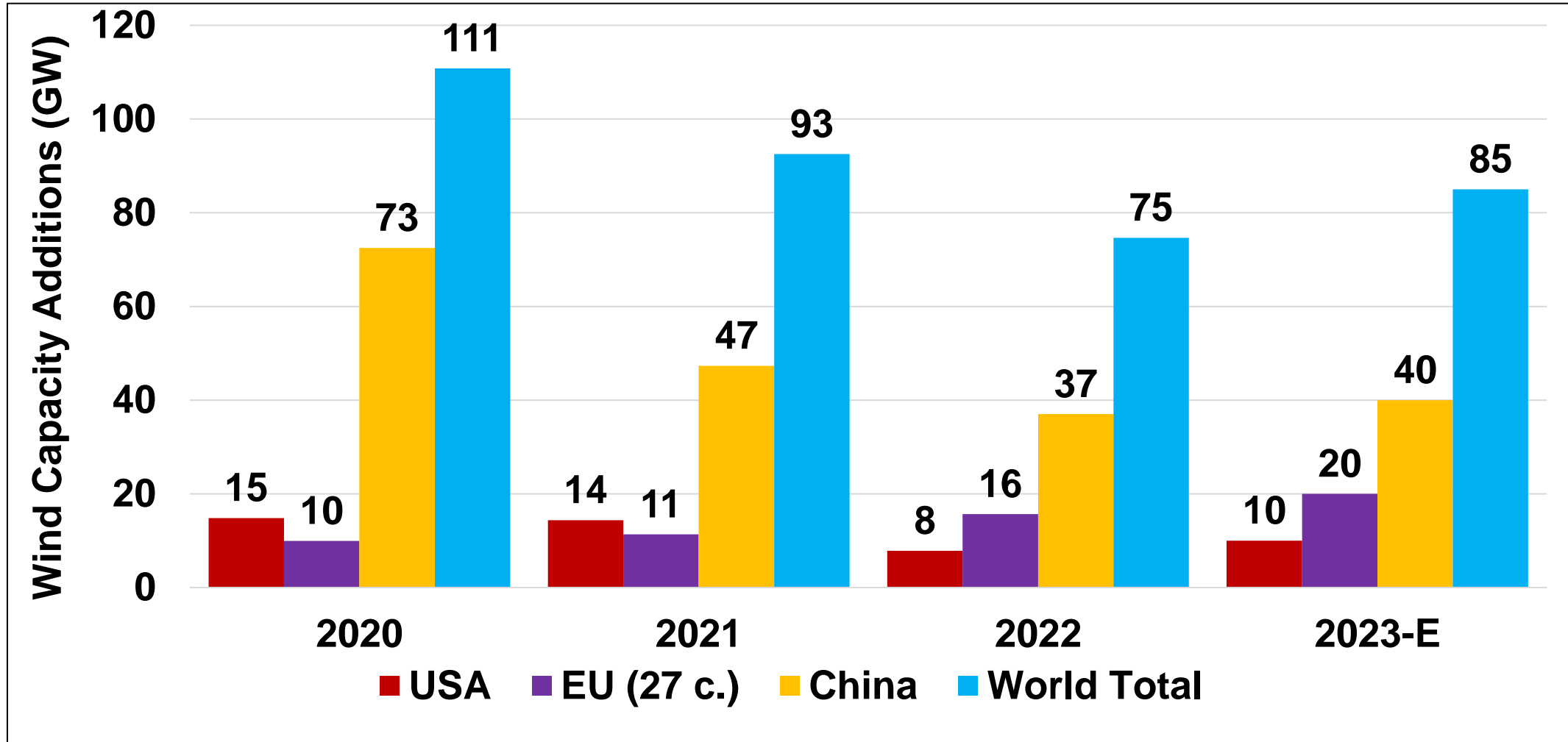


World PV and Wind

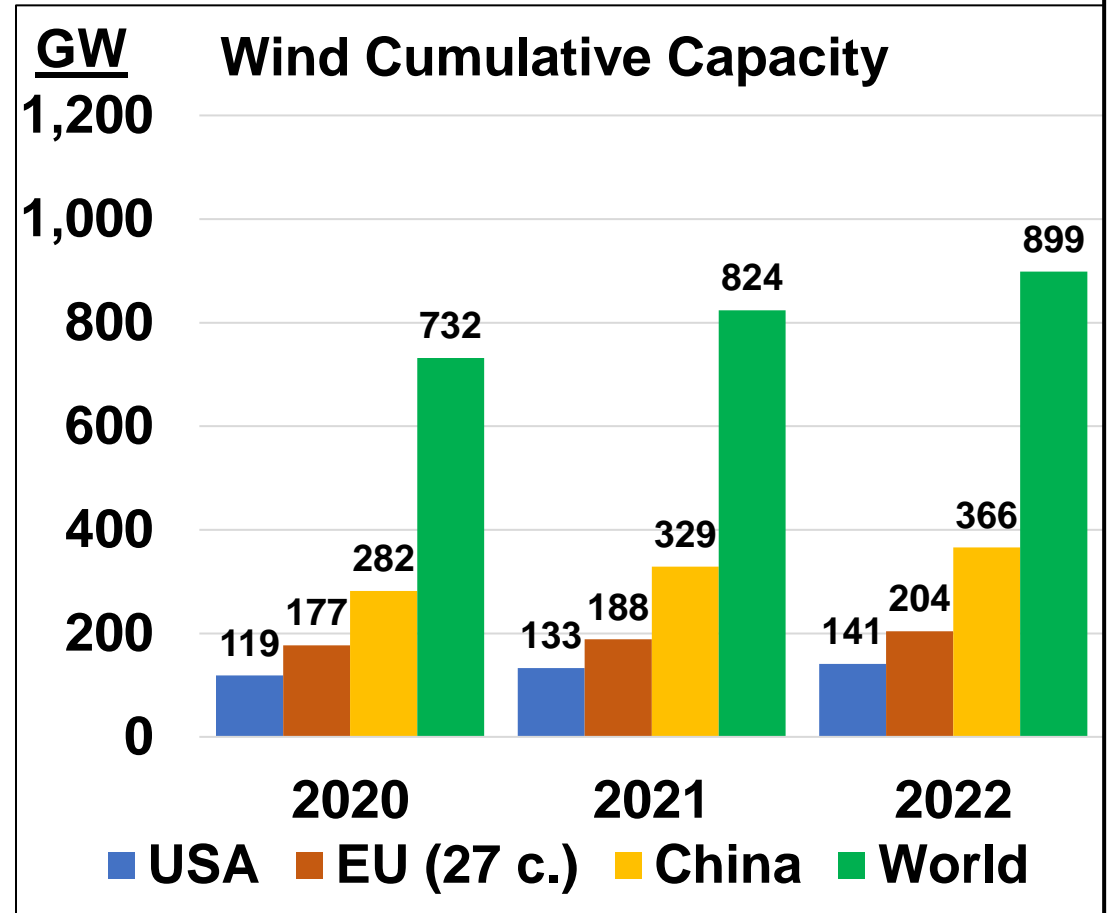
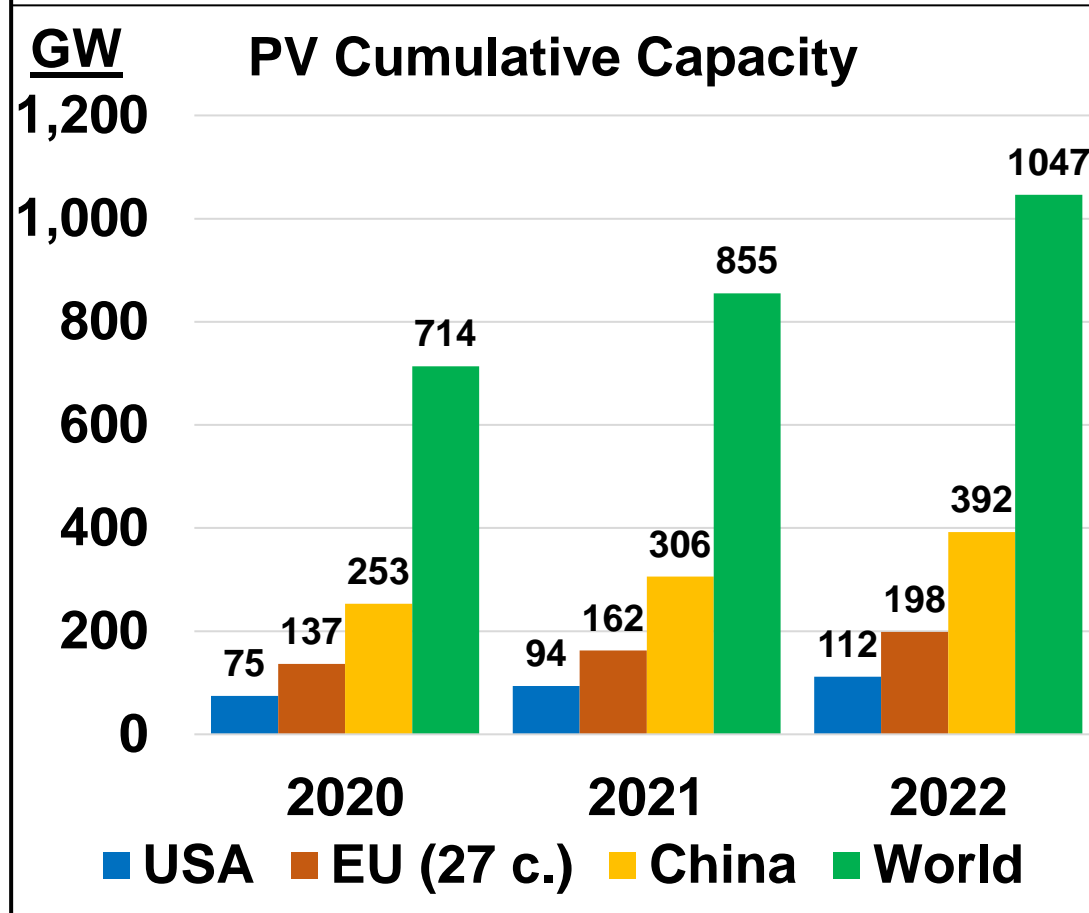
World PV Capacity Additions, 2020-2022 2023 Forecast



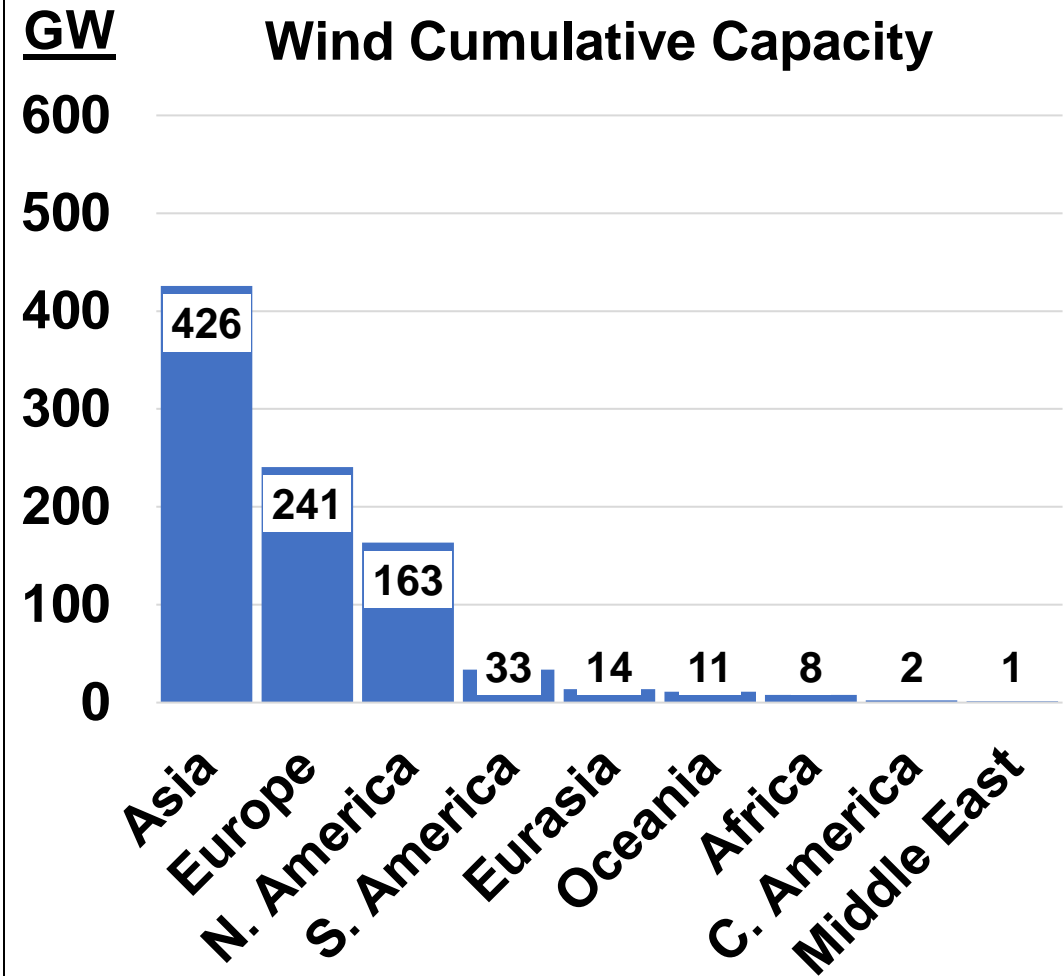
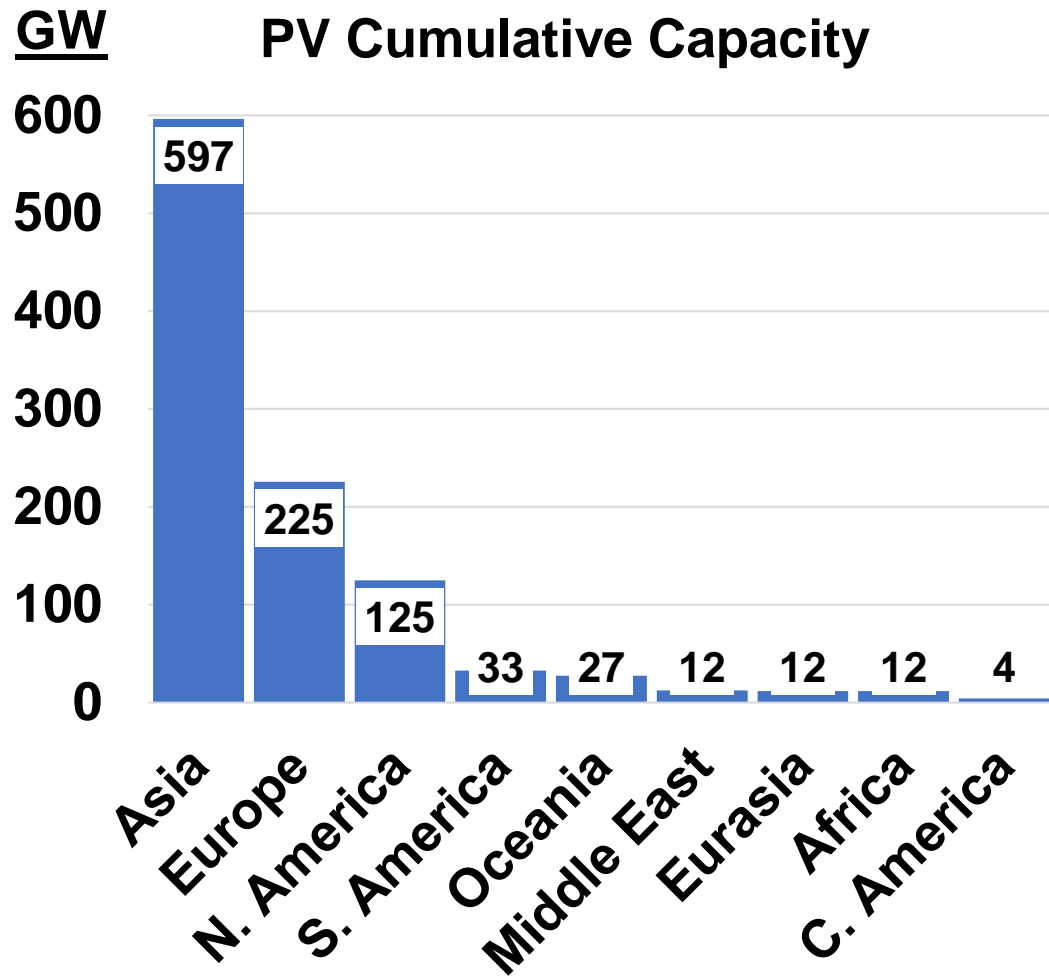
World Wind Capacity Additions, 2020-2022 2023 Forecast



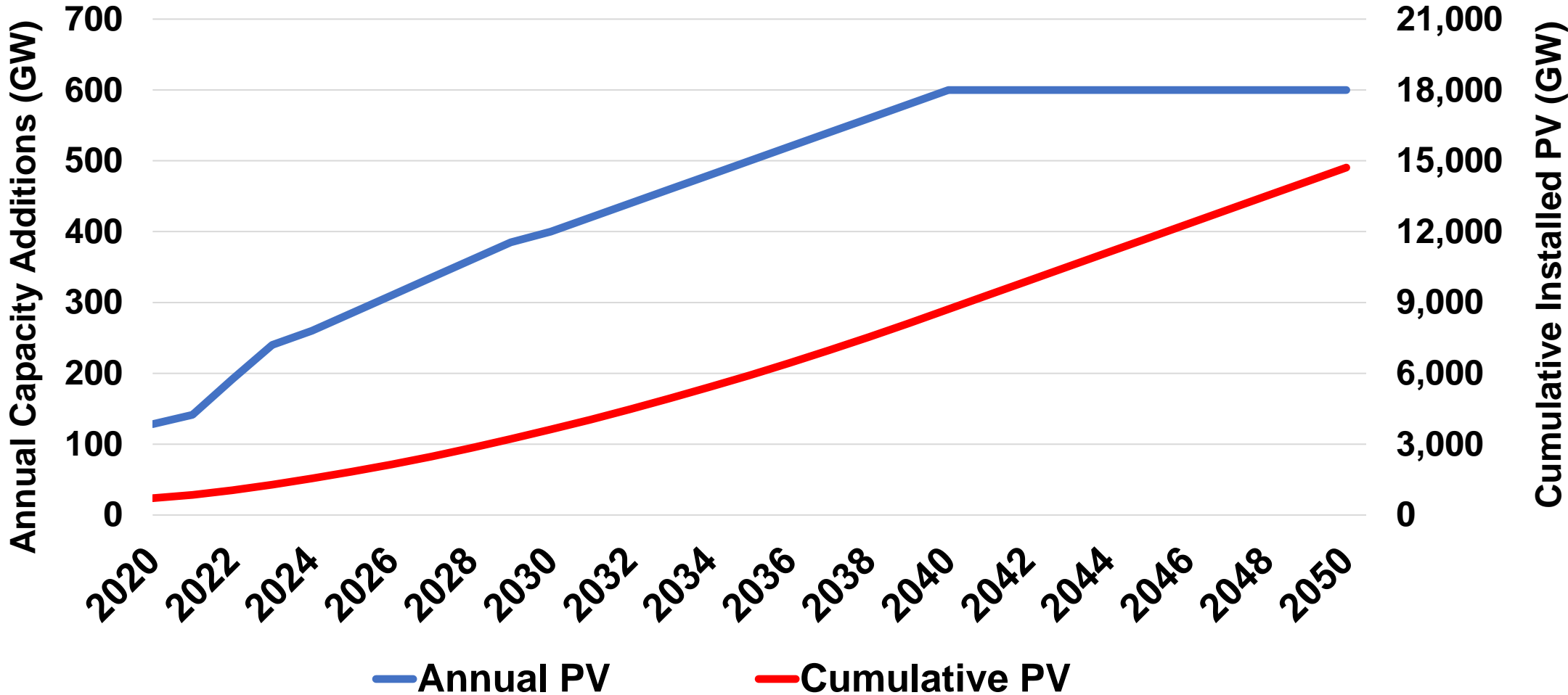
PV and Wind World Cumulative Capacity



2022 World Regional PV and Wind Cumulative Capacity



ASAP's World PV Forecast through 2050

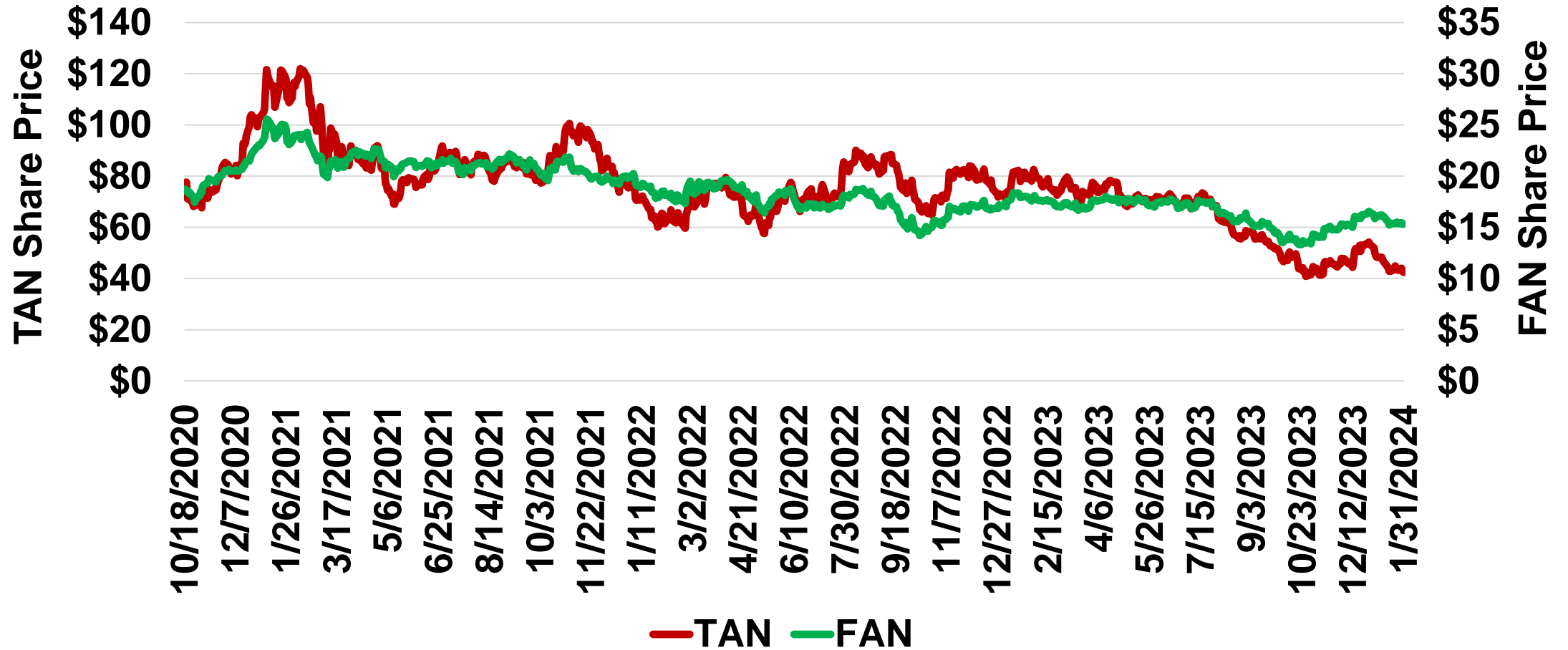




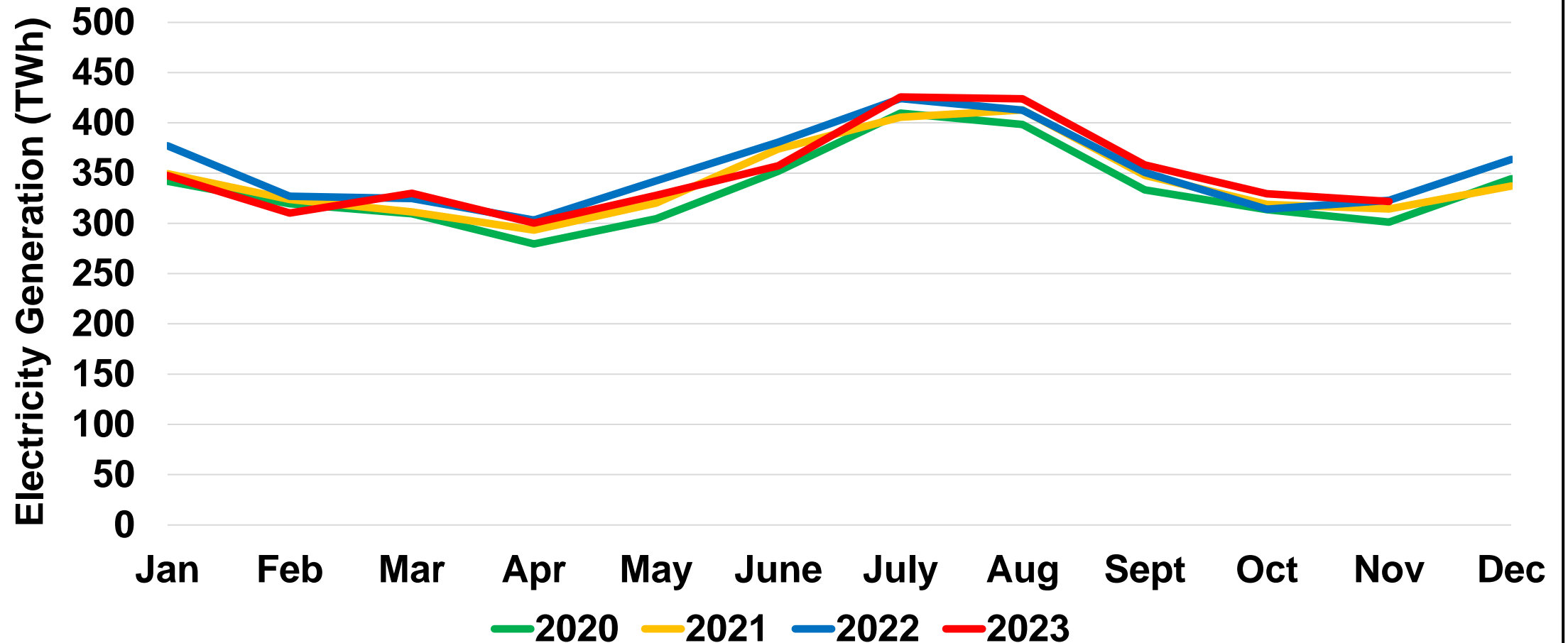
U.S. Electricity Market Overview

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

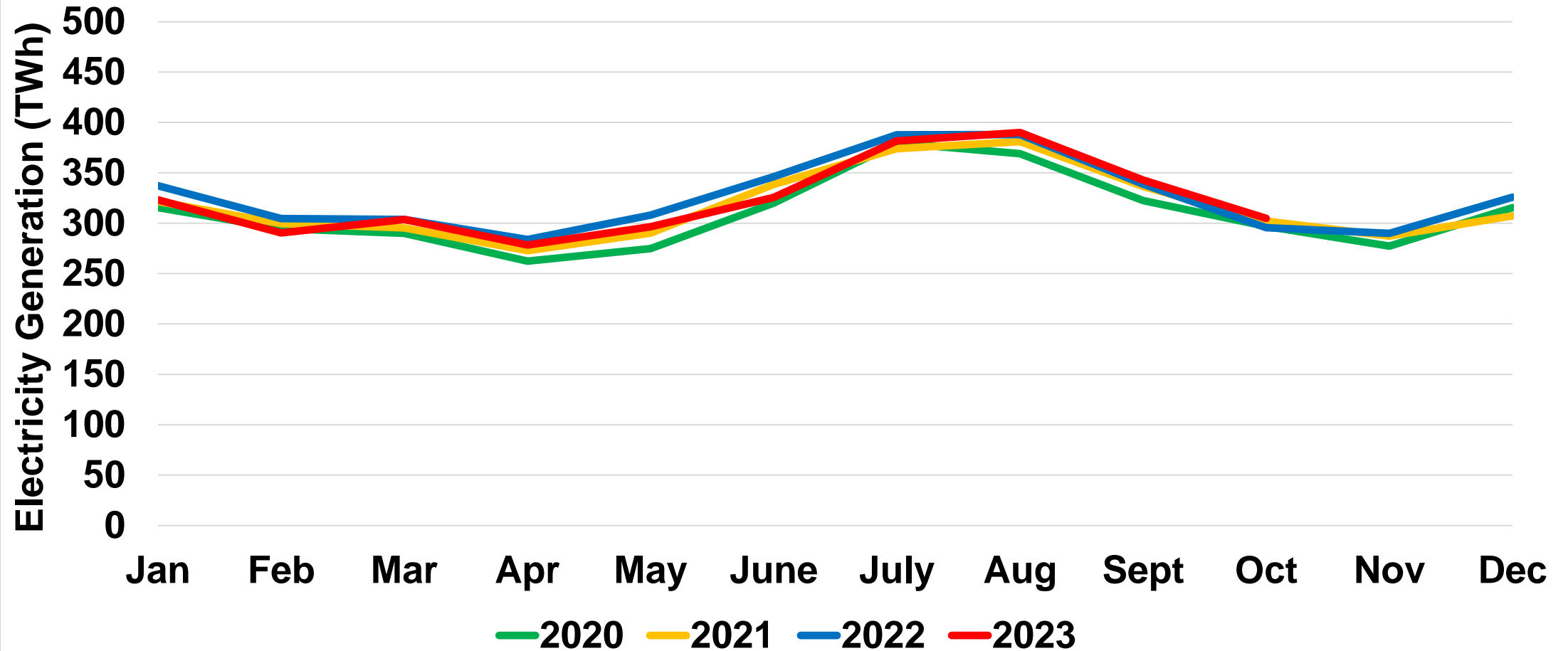
TAN (Solar) and FAN (Wind) ETF Share Prices (Adjusted Close Prices through January 31, 2024)



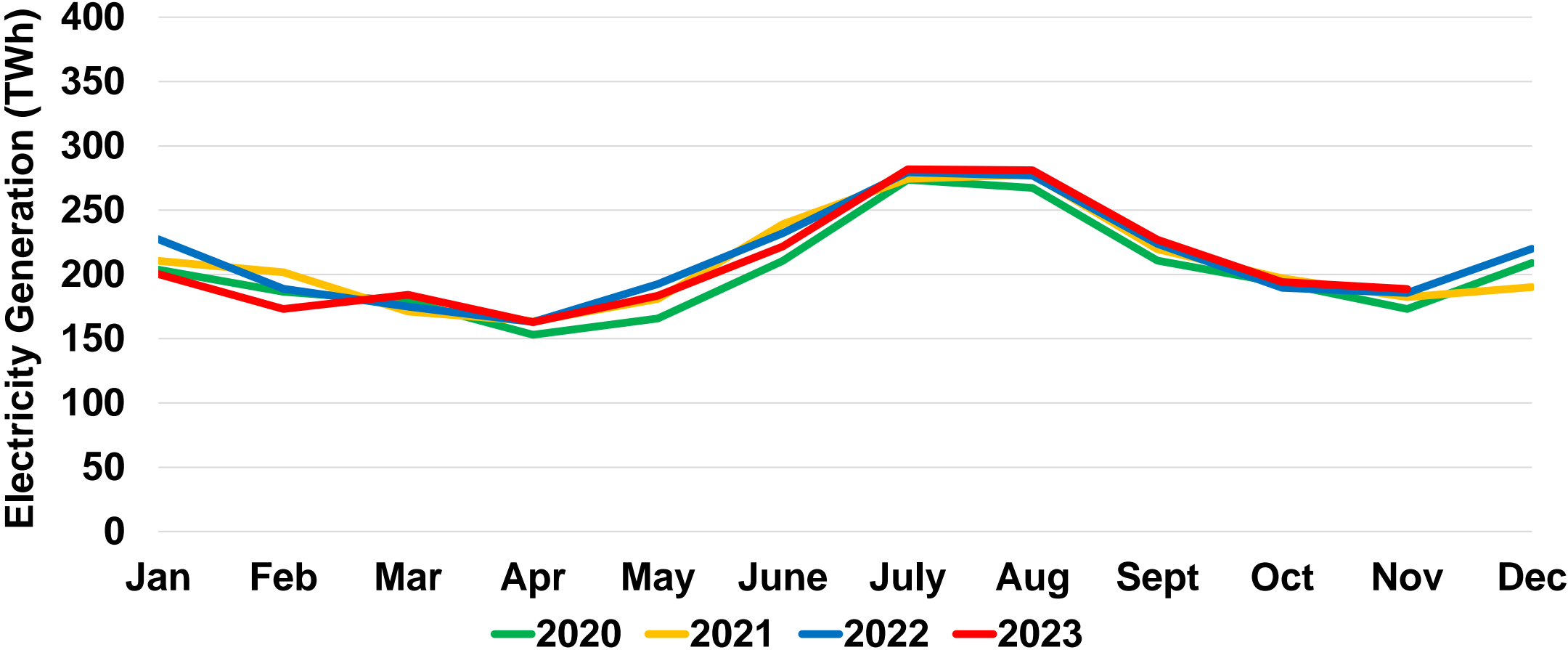
U.S. Total Electricity Generation Year-on-Year (through November 2023)



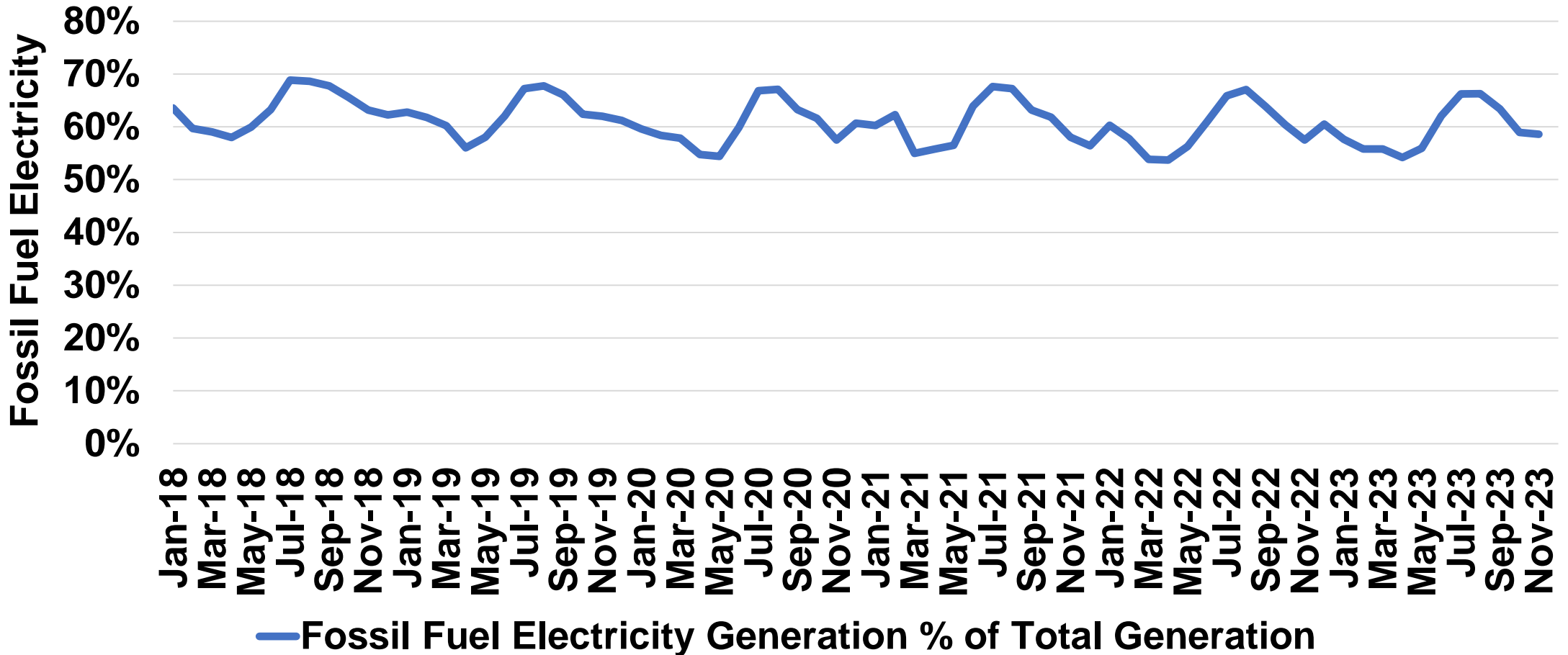
U.S. Total Electricity Demand (Retail Sales) Year-on-Year (through November 2023)



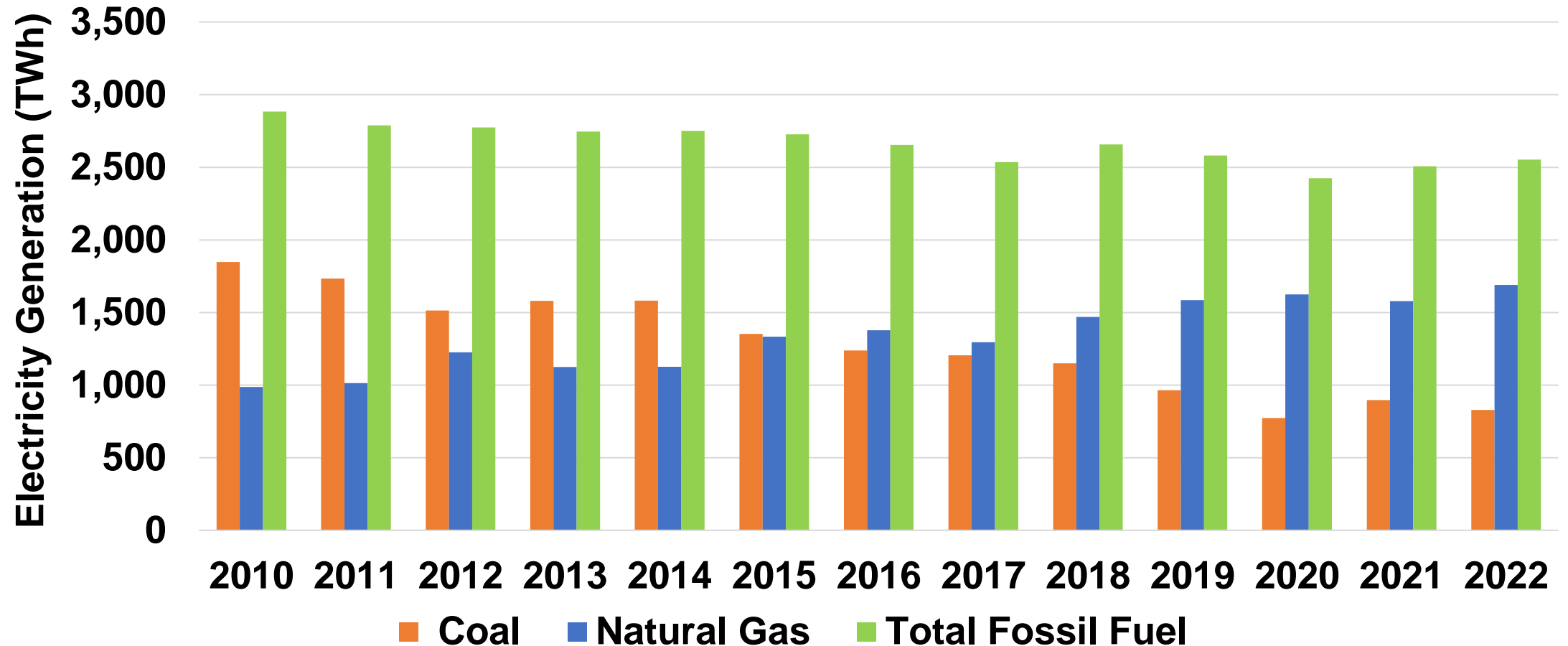
U.S. Fossil Fuel Electricity Generation Year-on-Year (through November 2023)



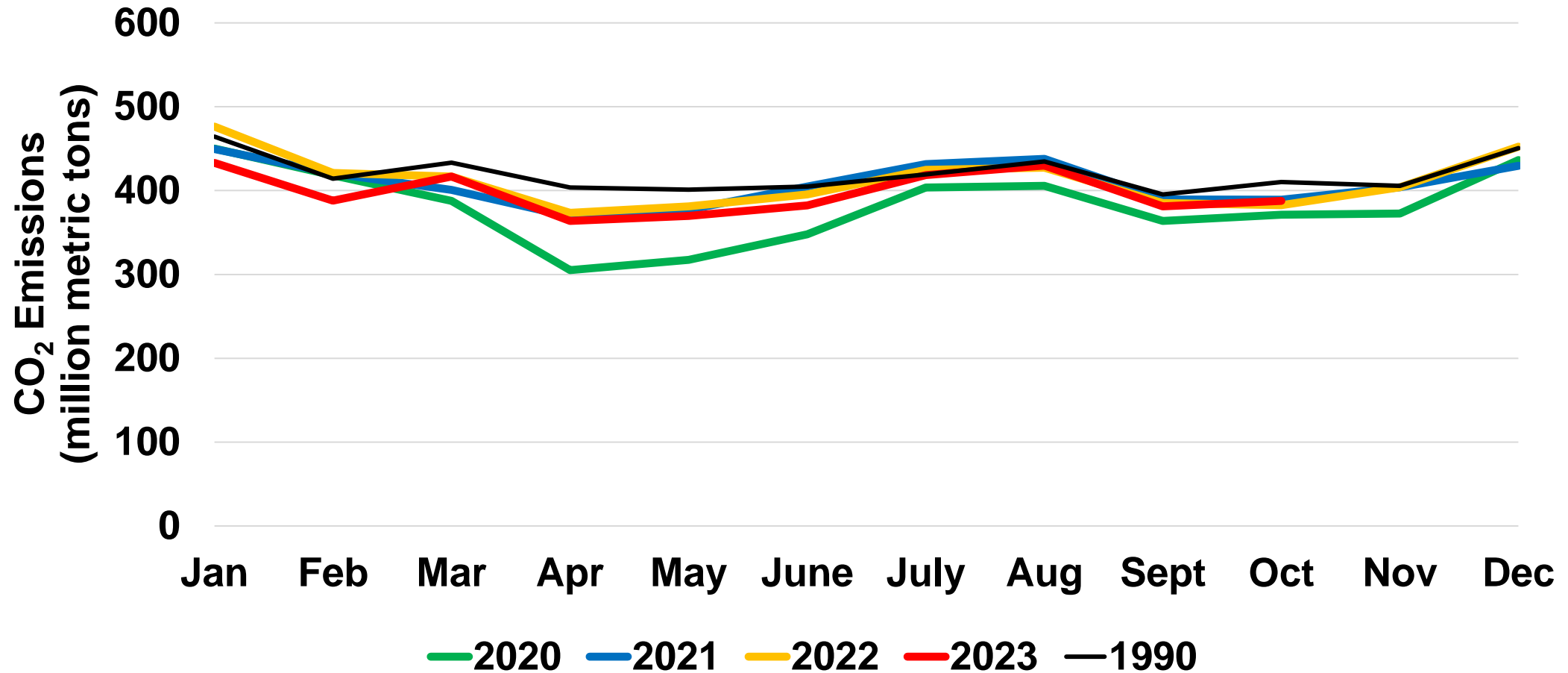
U.S. Fossil Fuel Electricity Generation % of Generation through November 2023



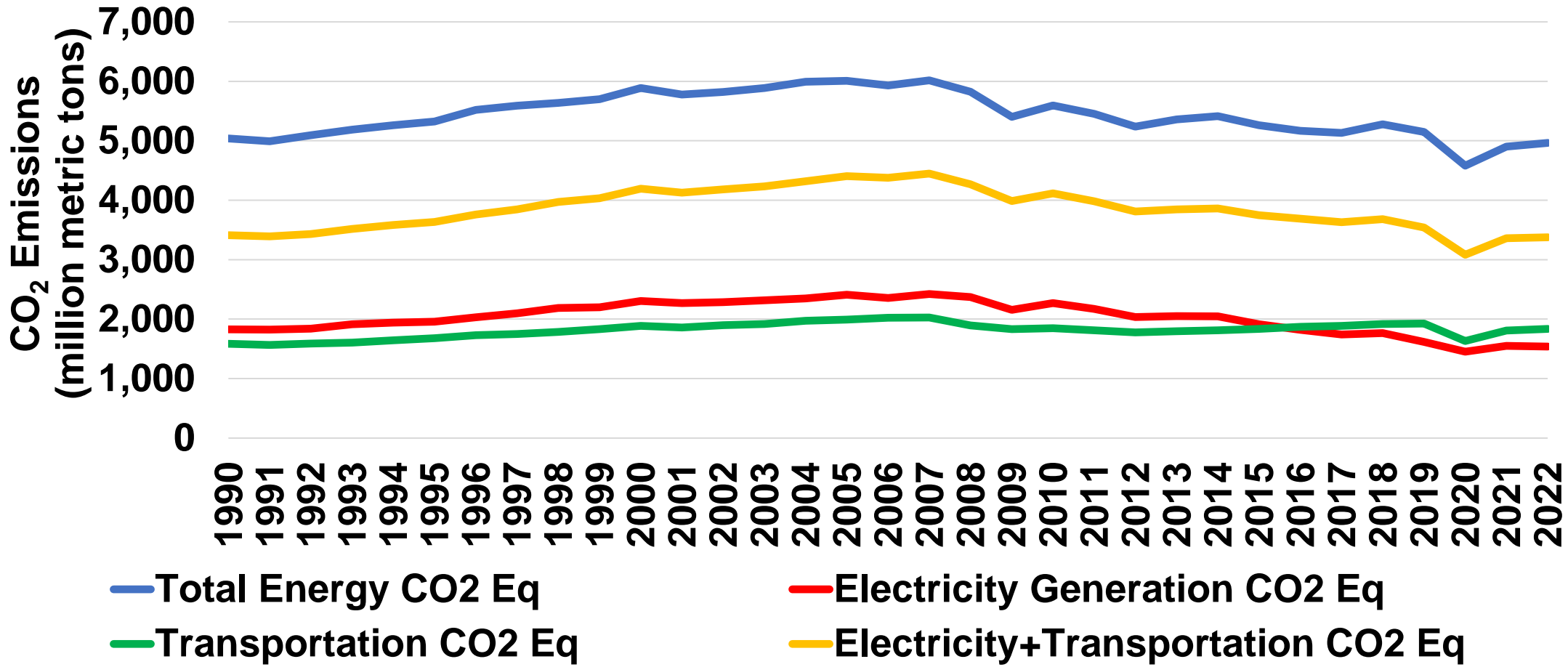
U.S. Annual Fossil Fuel Electricity Generation (2010-2022)



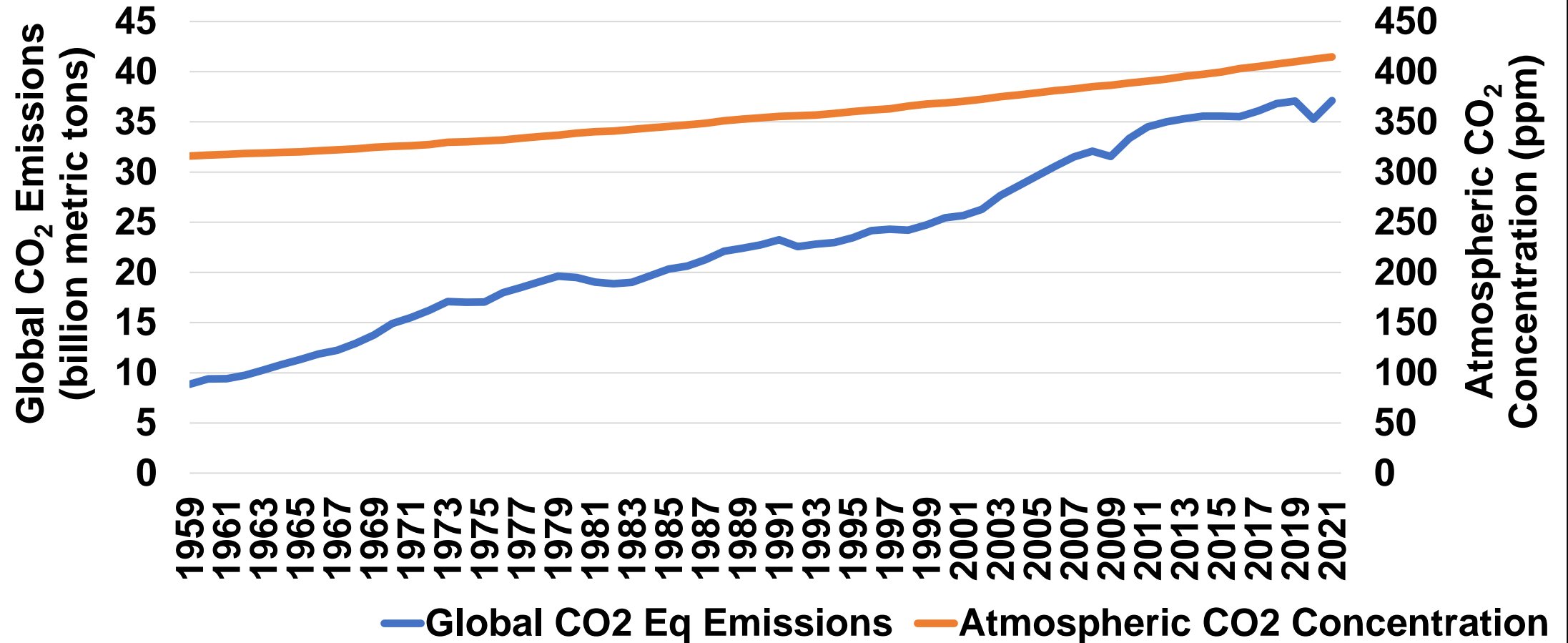
U.S. Monthly Energy Use CO₂ Equivalent Emissions (through October 2023)



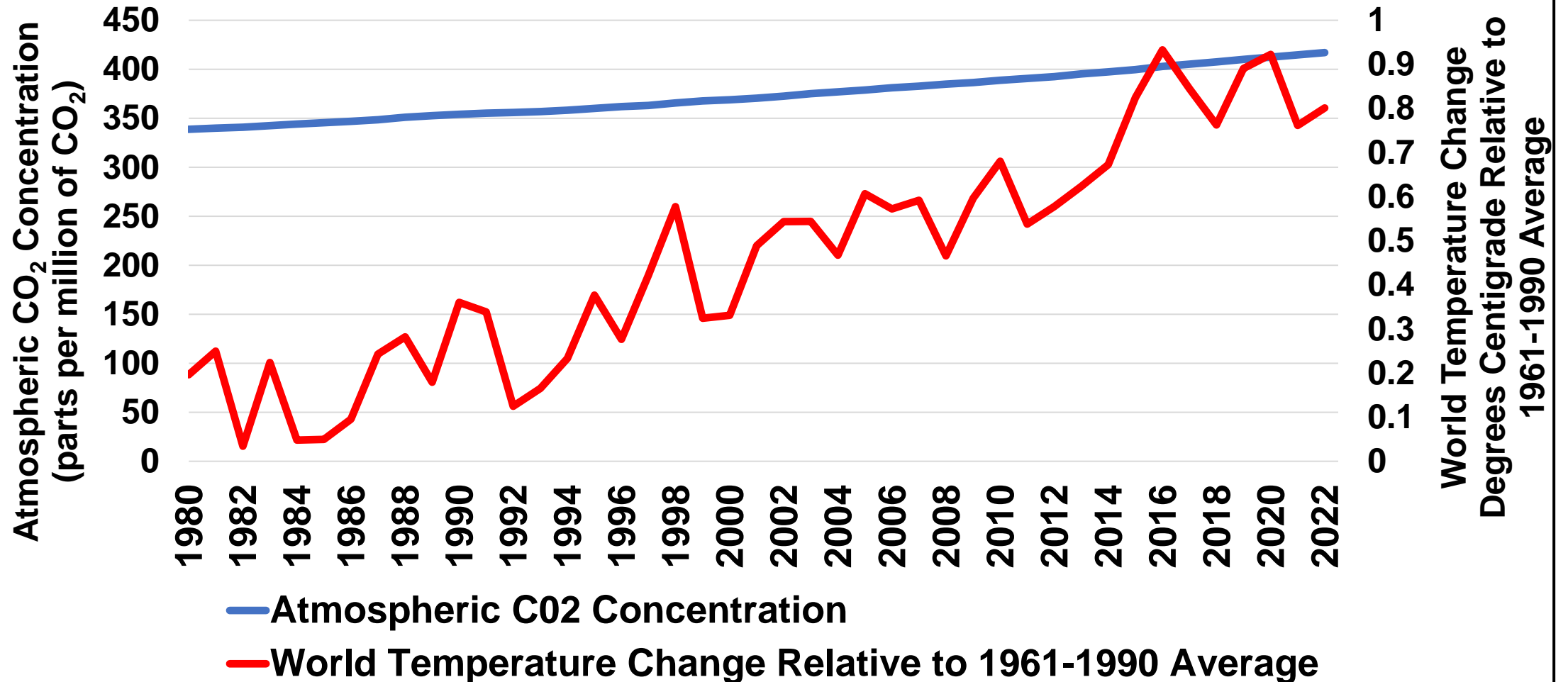
U.S. Fossil Fuel CO₂ Equivalent Emissions (1990-2022)



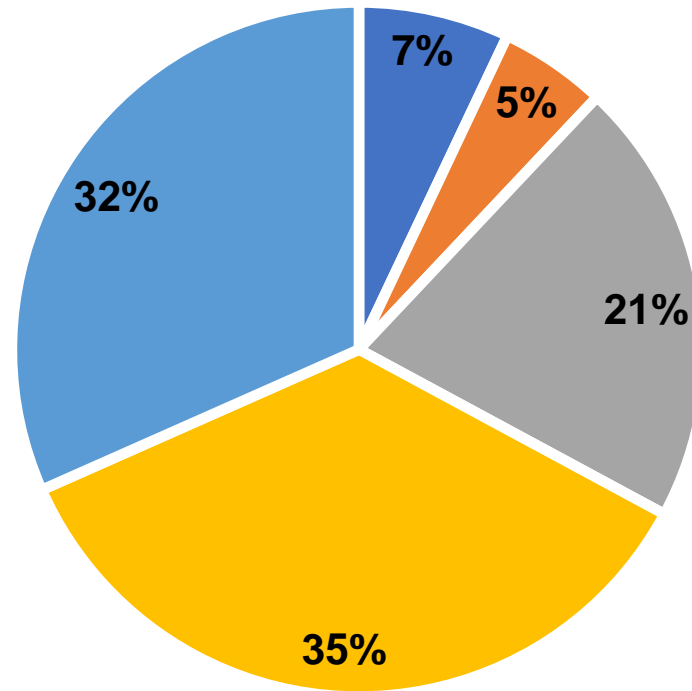
World CO₂ Emissions and Atmospheric CO₂ Concentration (1959-2021)



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

