



ASAP

(American Solar Action Plan)

PV-Wind Monthly Data Slideshow

March 2023

ASAP

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Highlights for December 2022



- PV and wind capacity additions were a respectable 2,908 MW for PV and 1,677 MW for wind.
 - MW = megawatts; GW = gigawatts (1000 MW); TW = terawatts (1000 GW)
- For the full year of 2022, PV capacity additions were 23% below ASAP's forecast, and wind capacity additions were 45% below ASAP's forecast.
- For the fourth consecutive month, the value of U.S. PV panel imports top \$1.0 billion, which supports robust PV capacity additions in 2023.
- For the month of February, TAN ETF (solar) share prices were down 8.1%, and FAN ETF (wind) share prices were down 4.6%.
- Polysilicon inventories are increasing in China with large declines in polysilicon and c-Si PV prices. China commissioned over 500 MT of new polysilicon production in 2022.

Slideshow Objectives

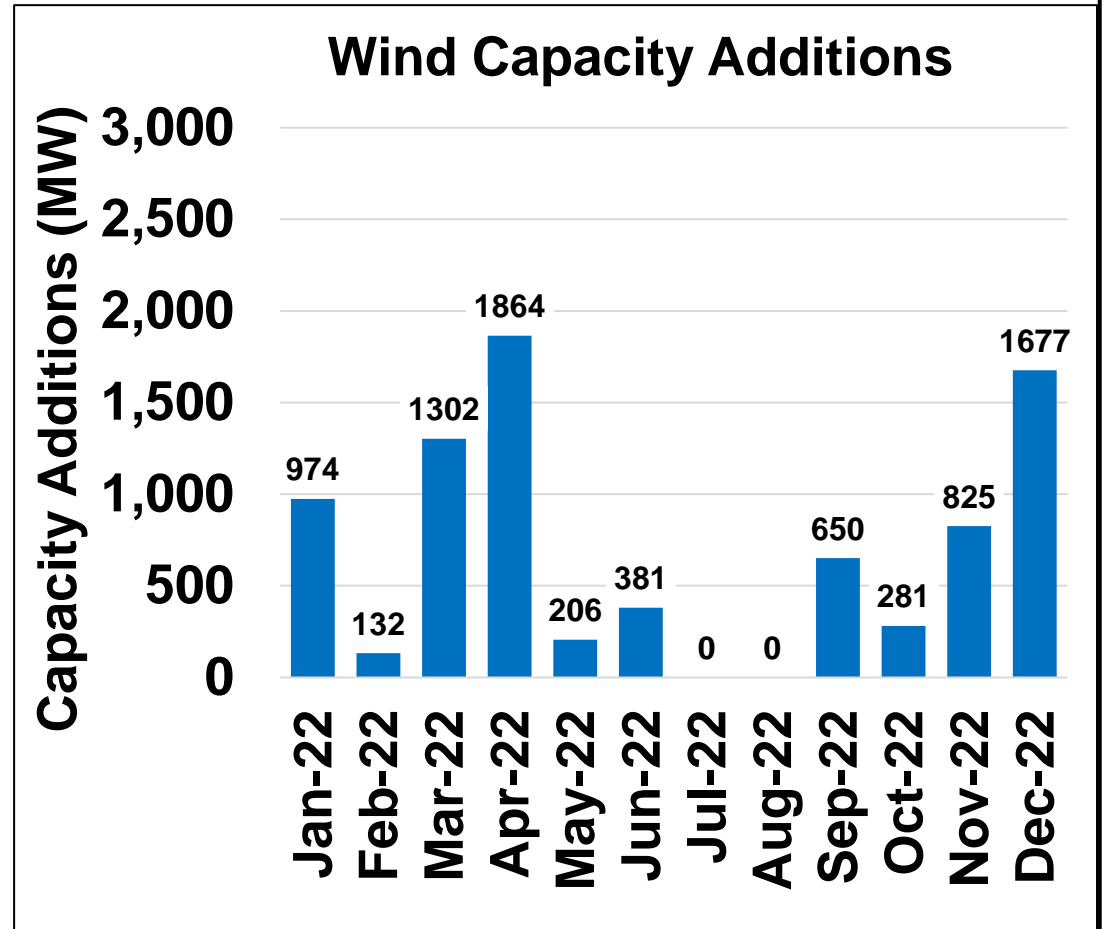
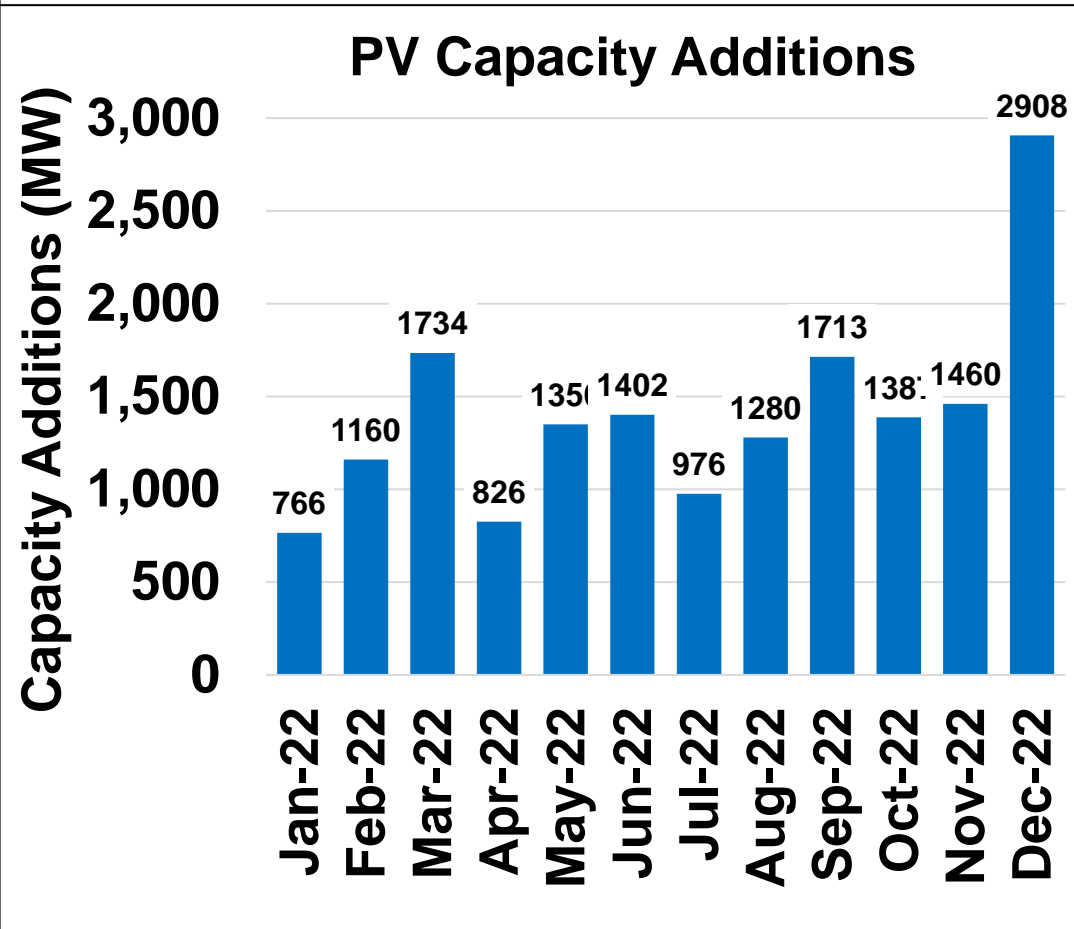


- To Document Monthly and Annual Growth in PV and Wind Capacity and Electricity Generation
 - MW = megawatts; GW = gigawatts; TW = terawatts; MT = thousand metric tons (polysilicon)
- PV and Wind Capacity Additions
 - The Graphs Show Current and Past Year Monthly PV and Wind Capacity Additions
 - For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

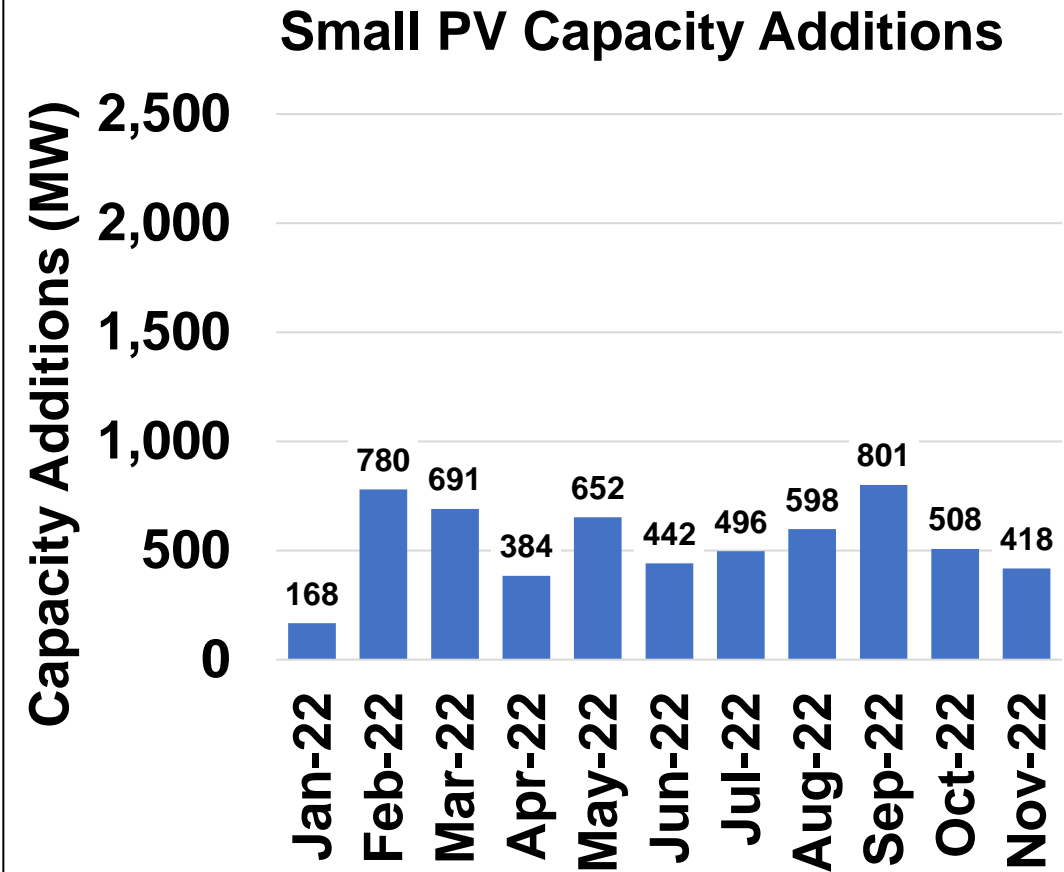
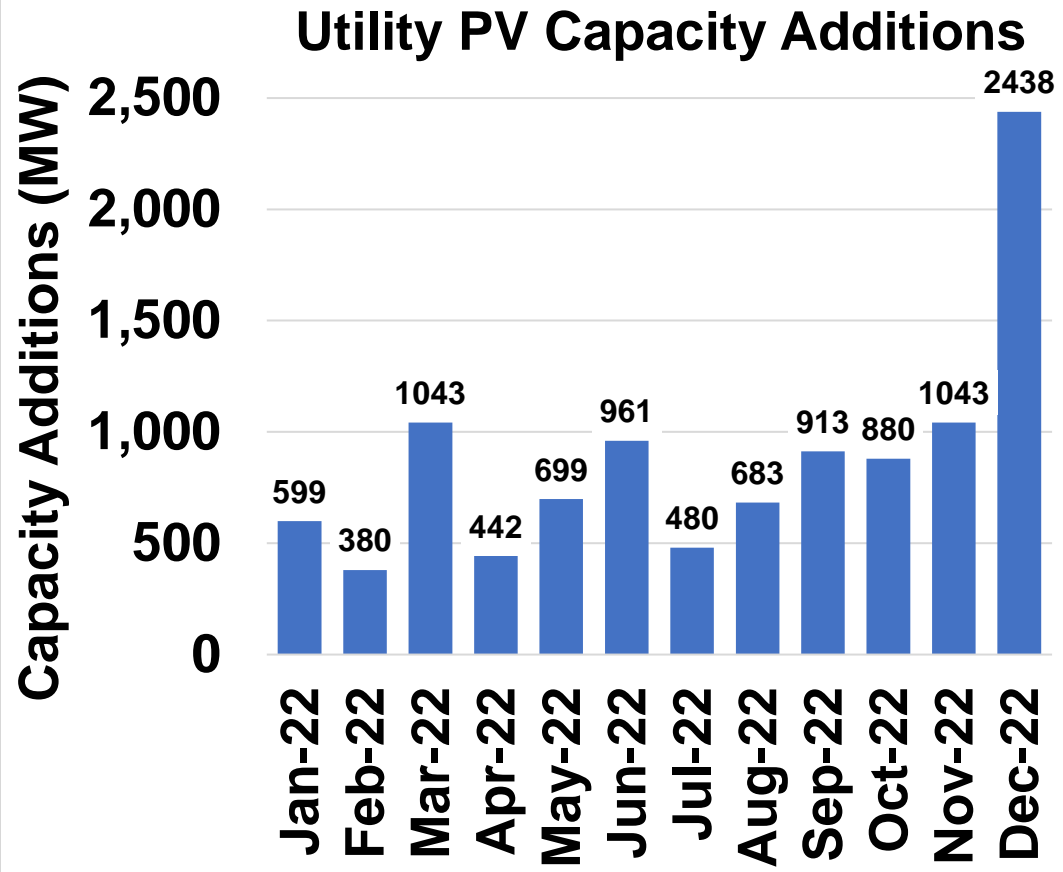


U.S. PV and Wind Capacities

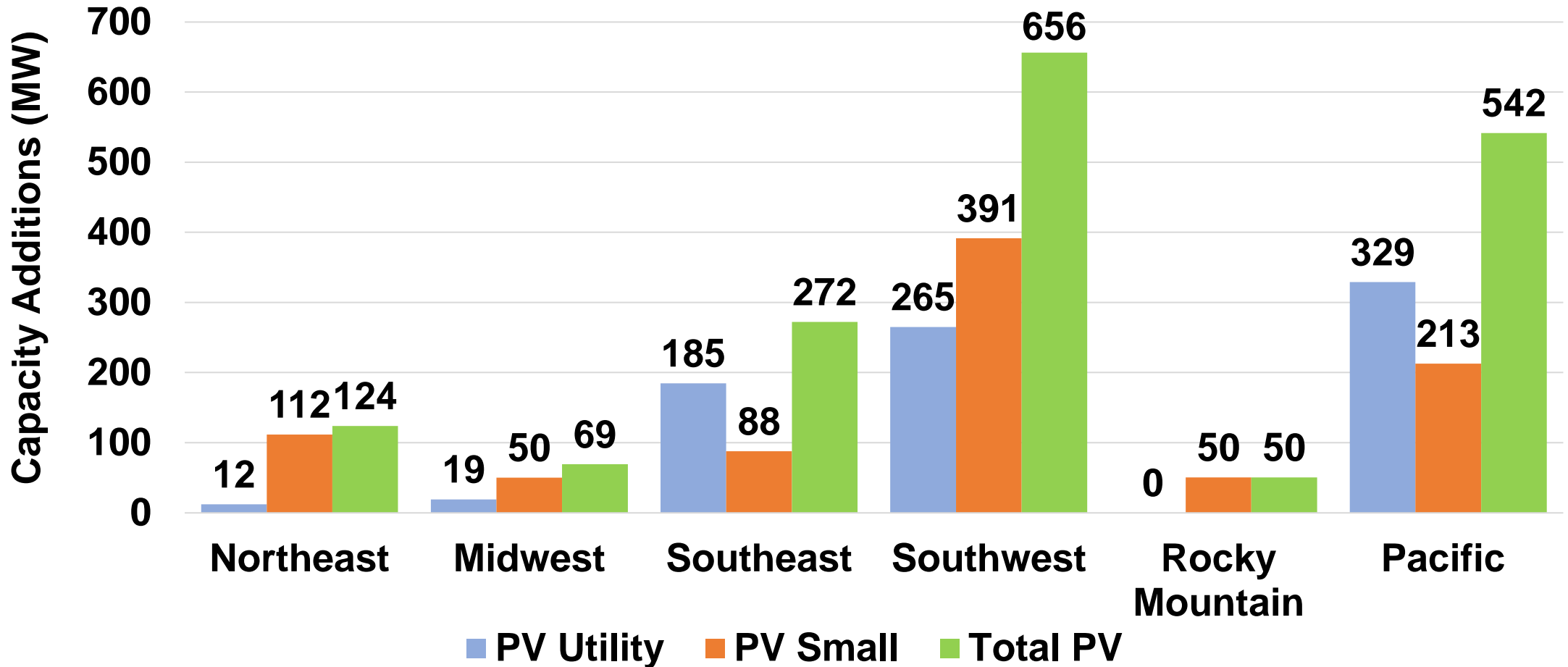
U.S. PV and Wind Monthly Net Capacity Additions 2022 (through December)



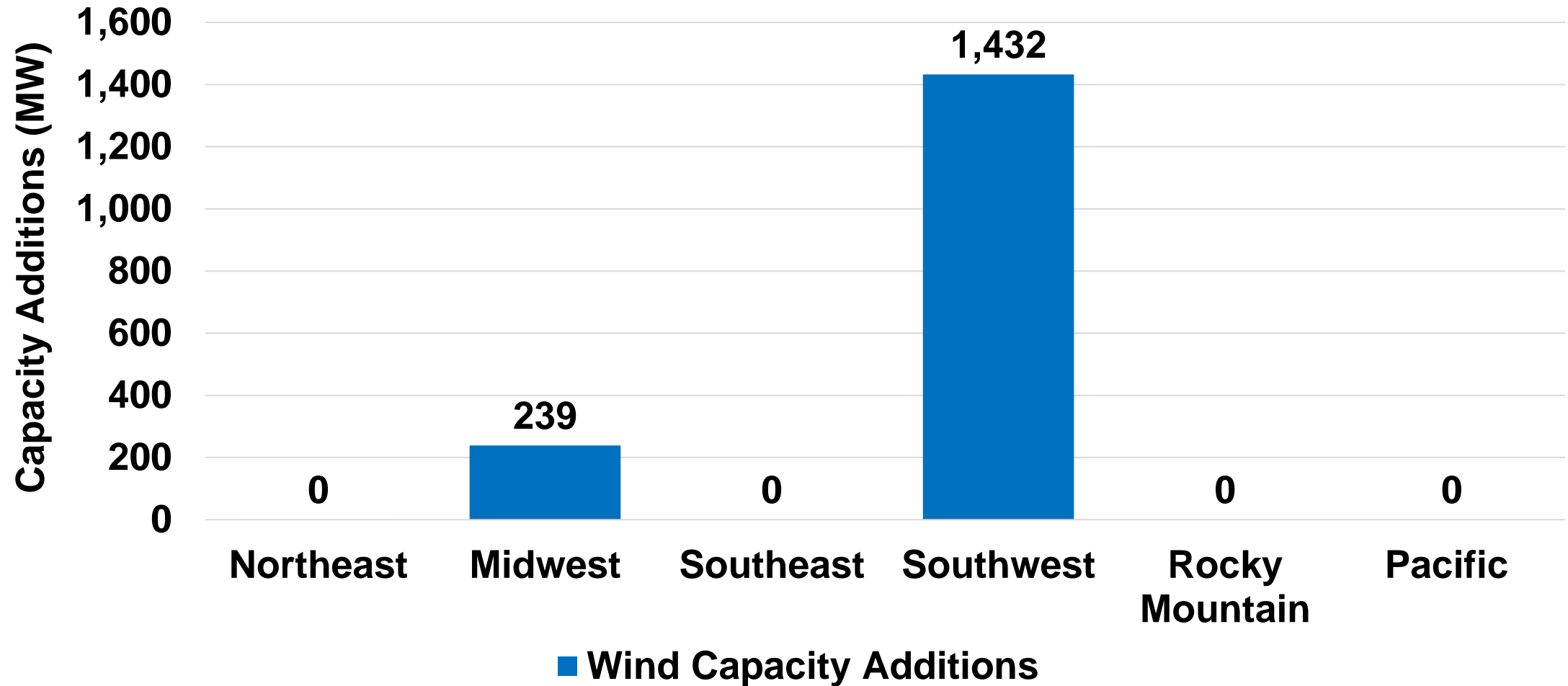
Monthly Utility and Small PV Net Capacity Additions 2022 (through December)



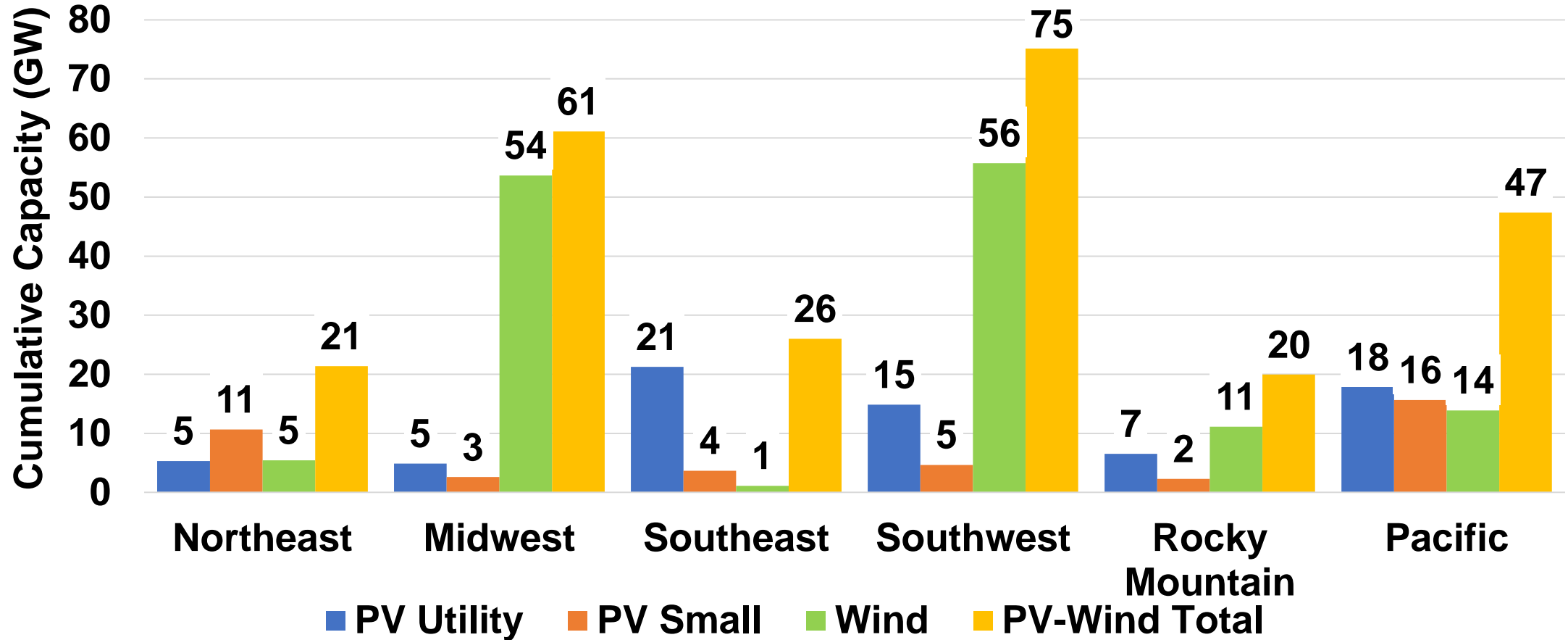
Regional PV Net Capacity Additions December 2022



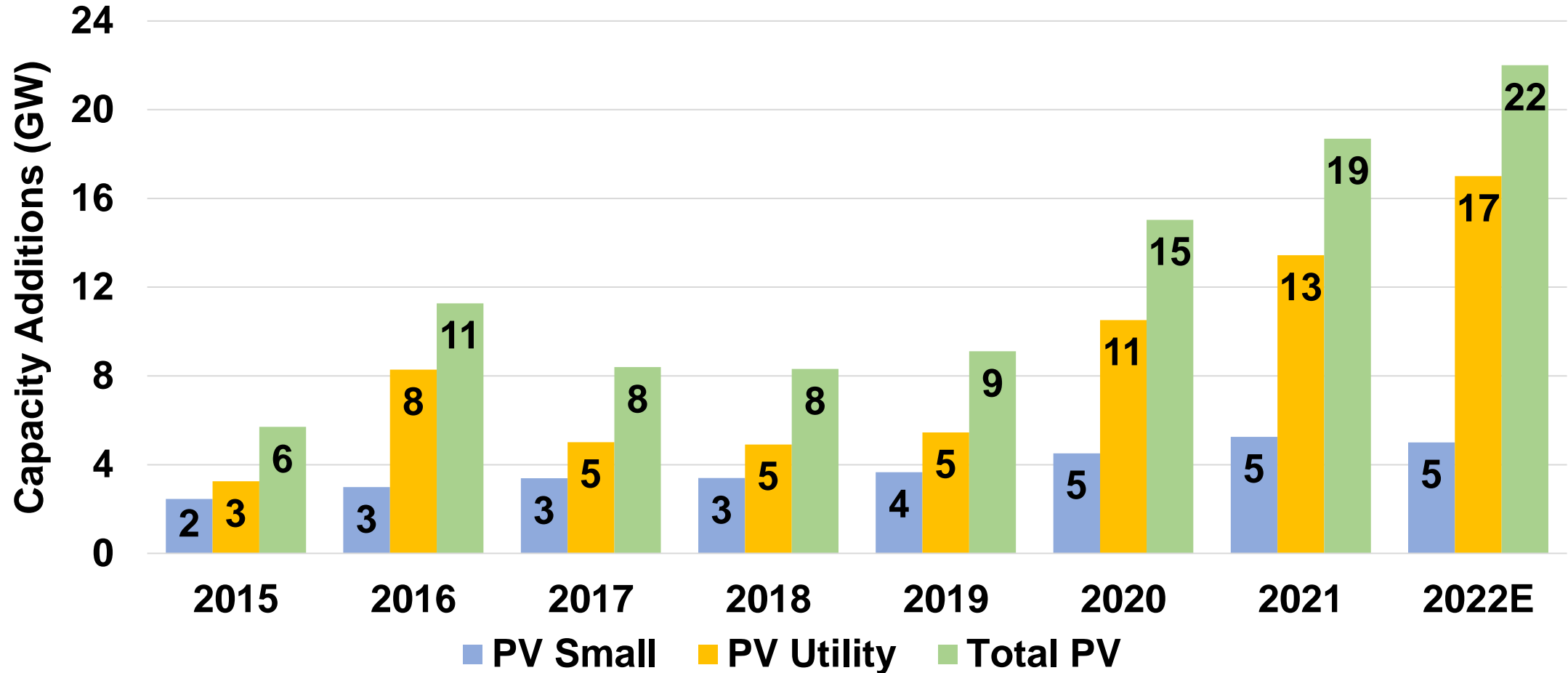
Regional Wind Net Capacity Additions December 2022



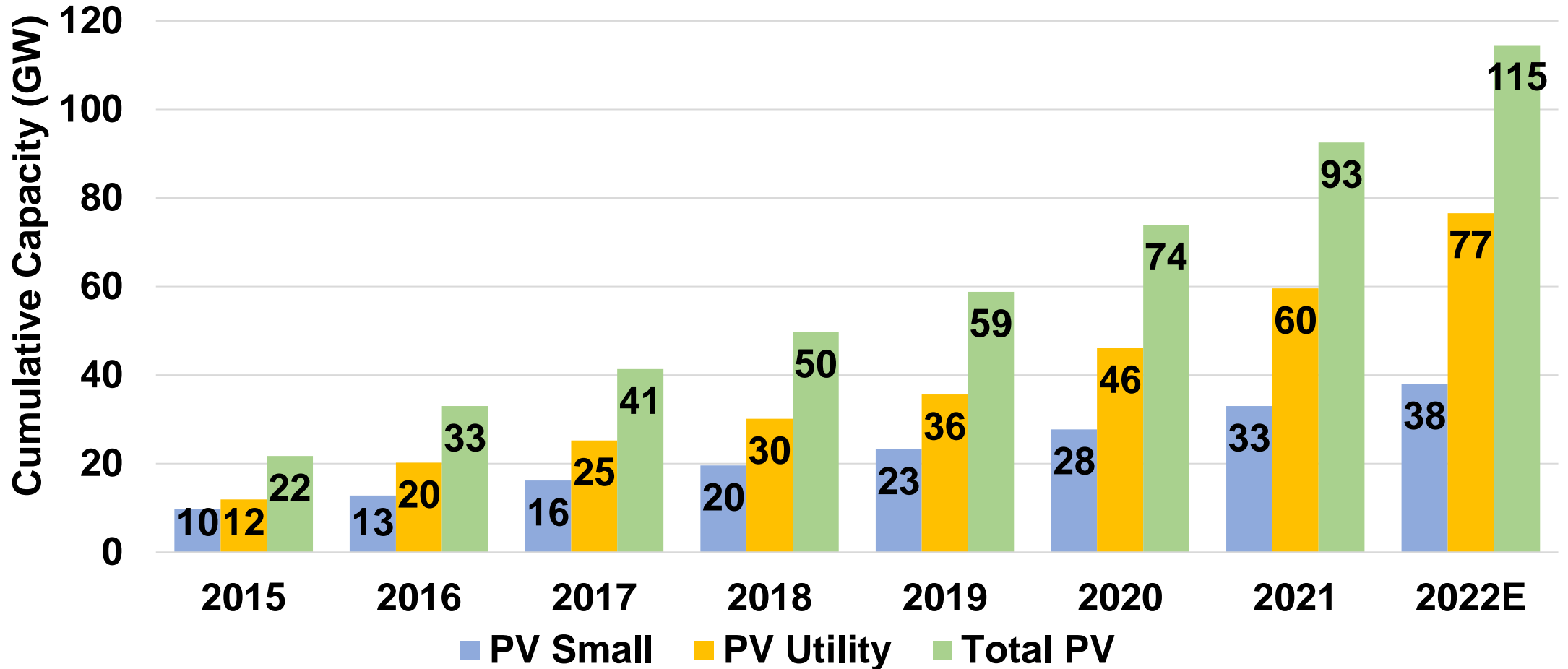
PV and Wind Cumulative Capacity by Region December 2022



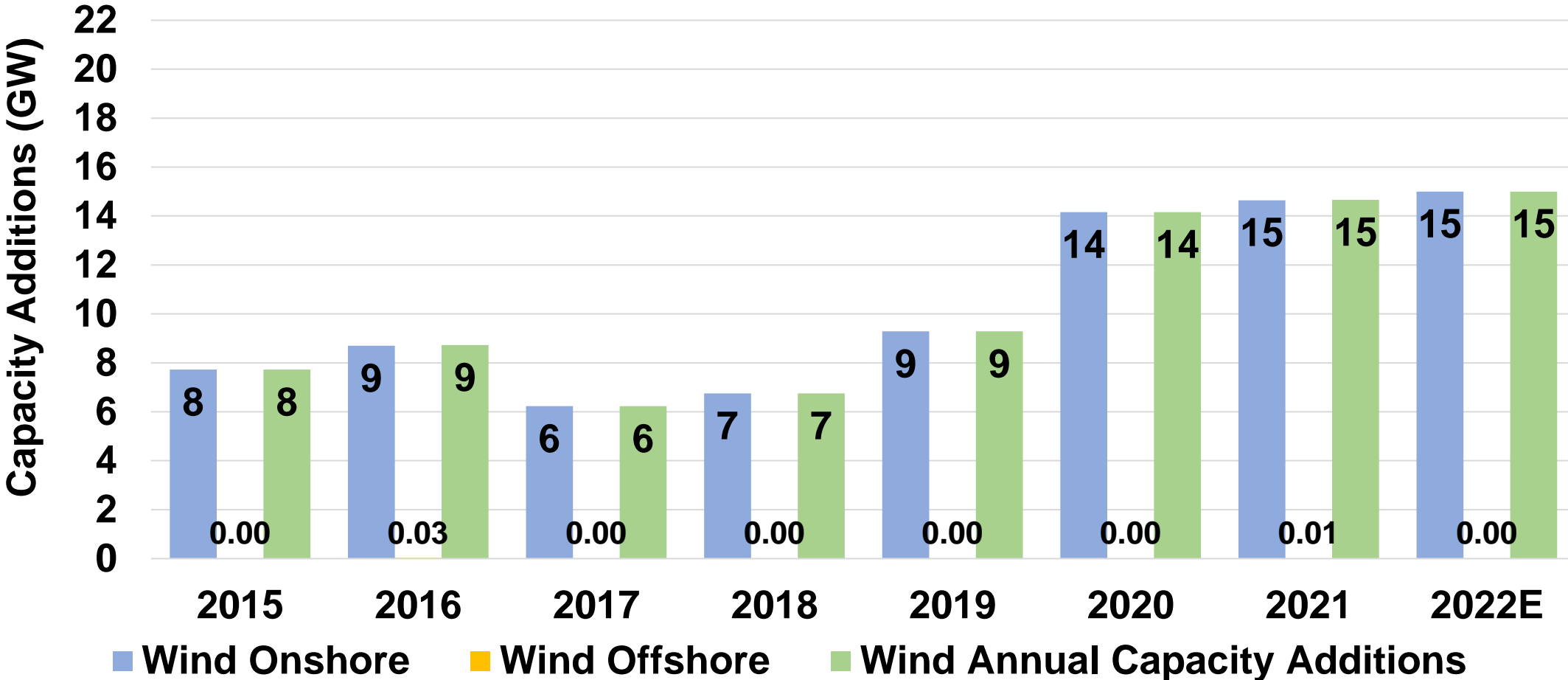
PV Annual Capacity Additions 2022 Forecast



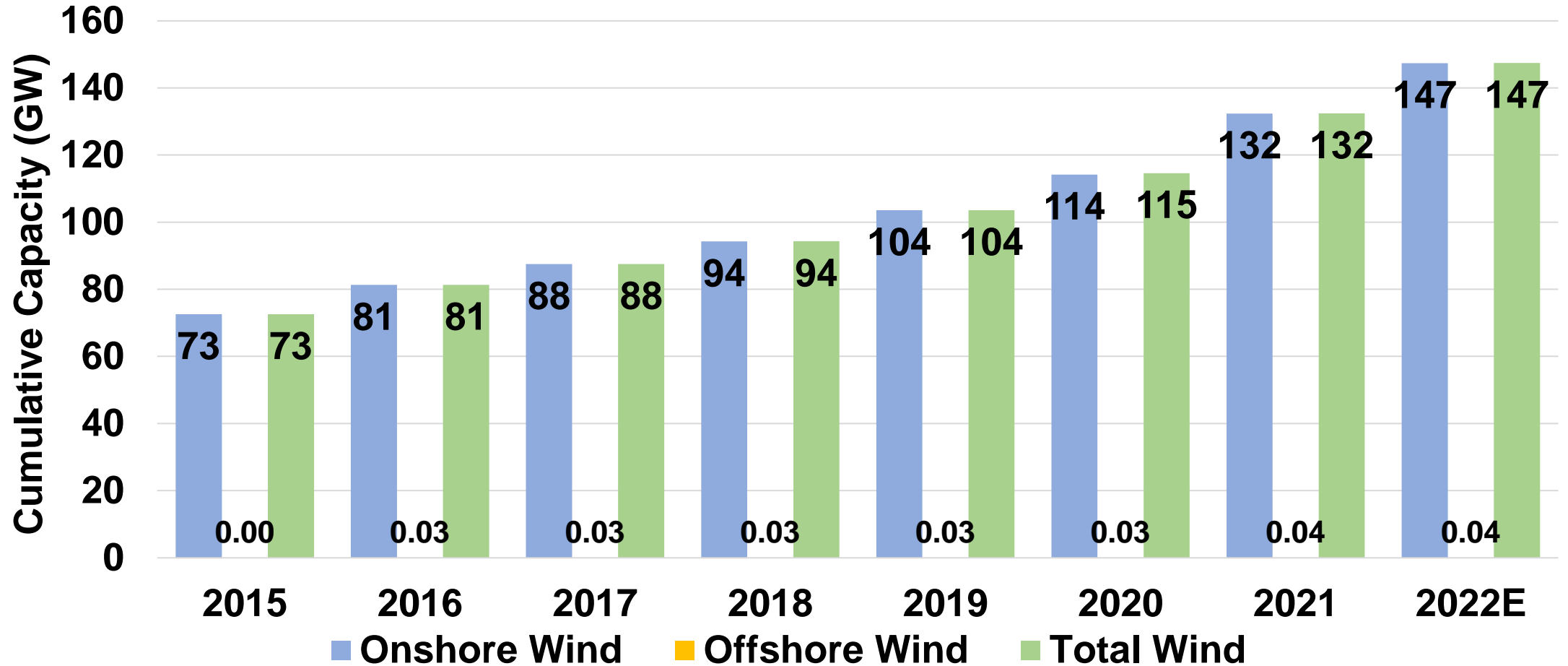
PV Annual Cumulative Capacity 2022 Forecast



Wind Annual Capacity Additions 2022 Forecast



Wind Annual Cumulative Capacity 2022 Forecast

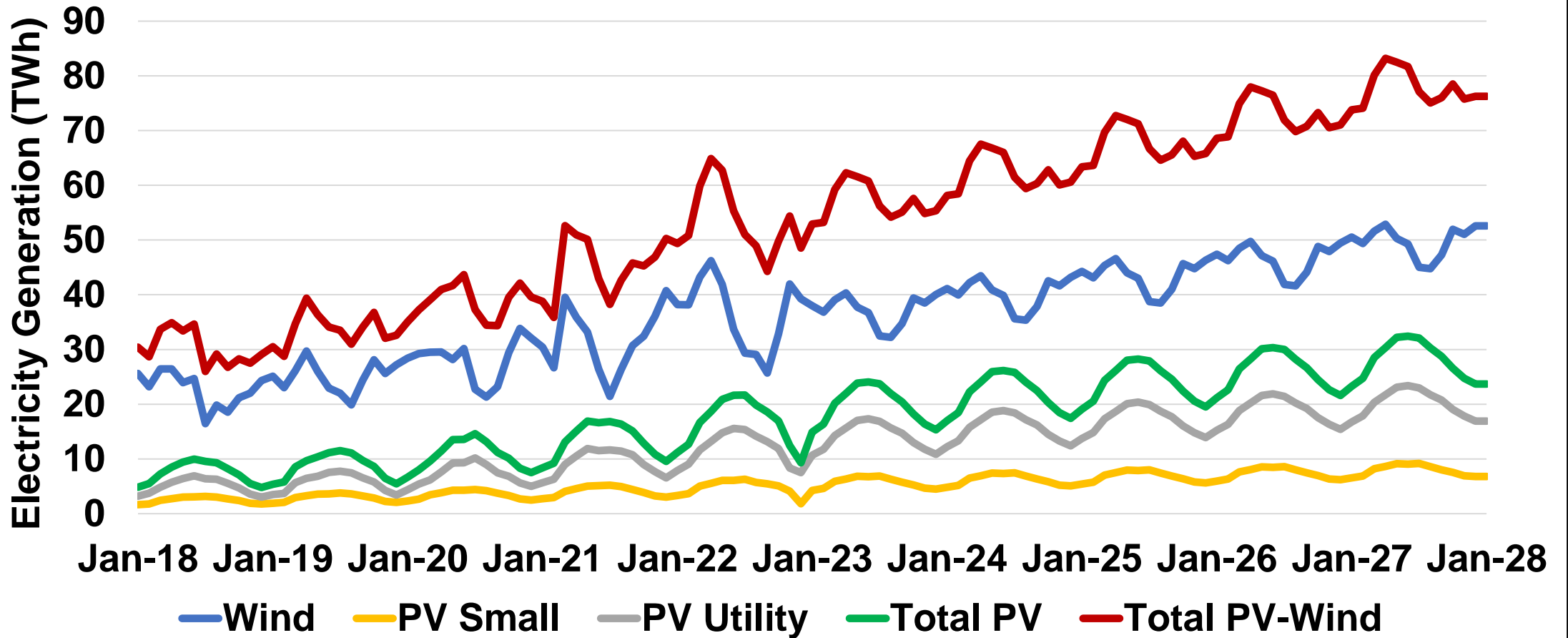




U.S. PV and Wind Electricity Generation

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

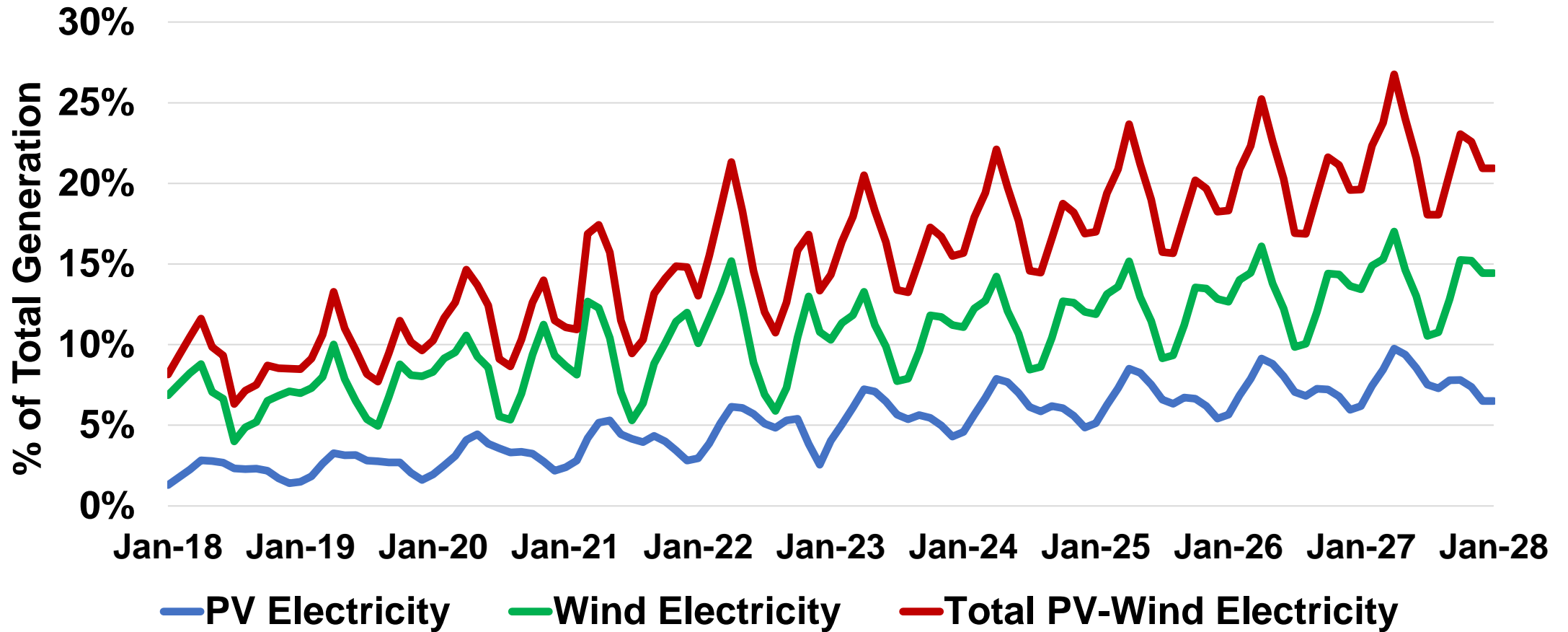
Actual through December 2022; Forecast through Dec. 2027



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

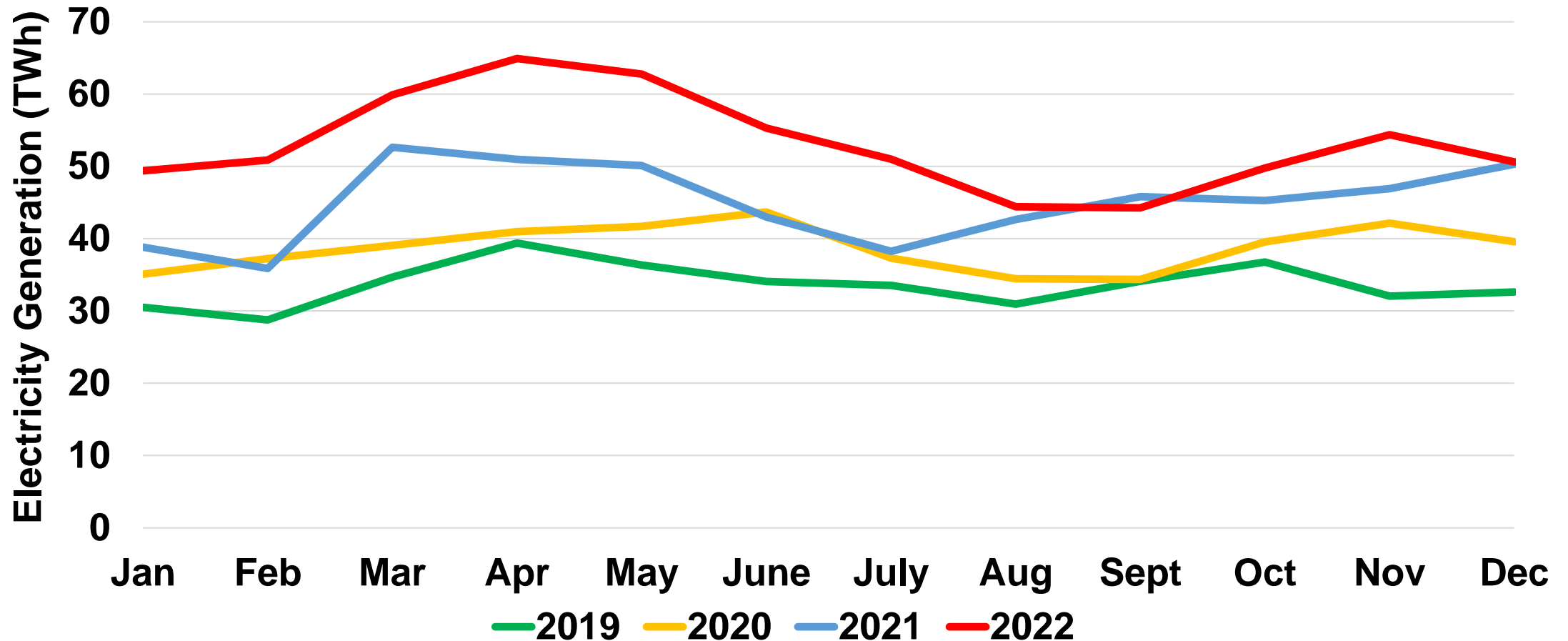
U.S. PV & Wind Electricity as % of Total Generation

Actual through December 2022; Forecast through Dec. 2027

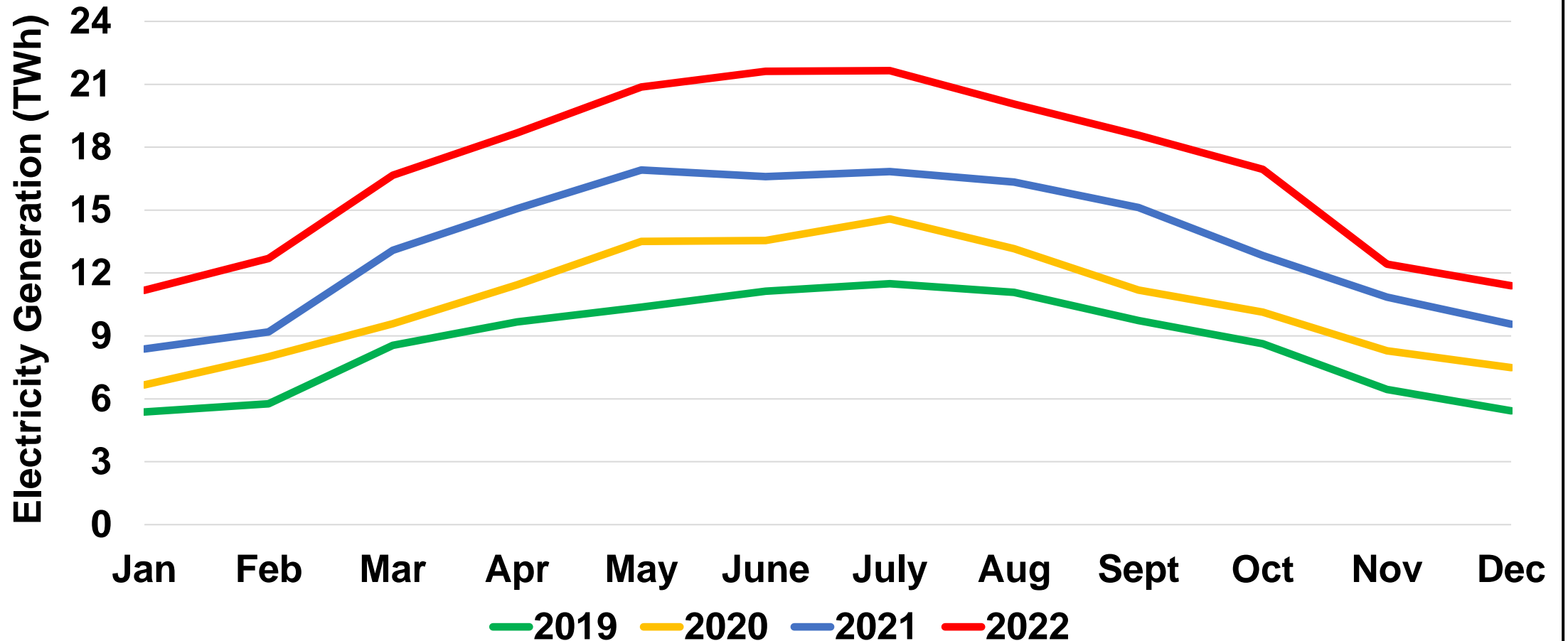


Note: Fossil fuel electricity generation was 60% of total 2020 electricity generation.

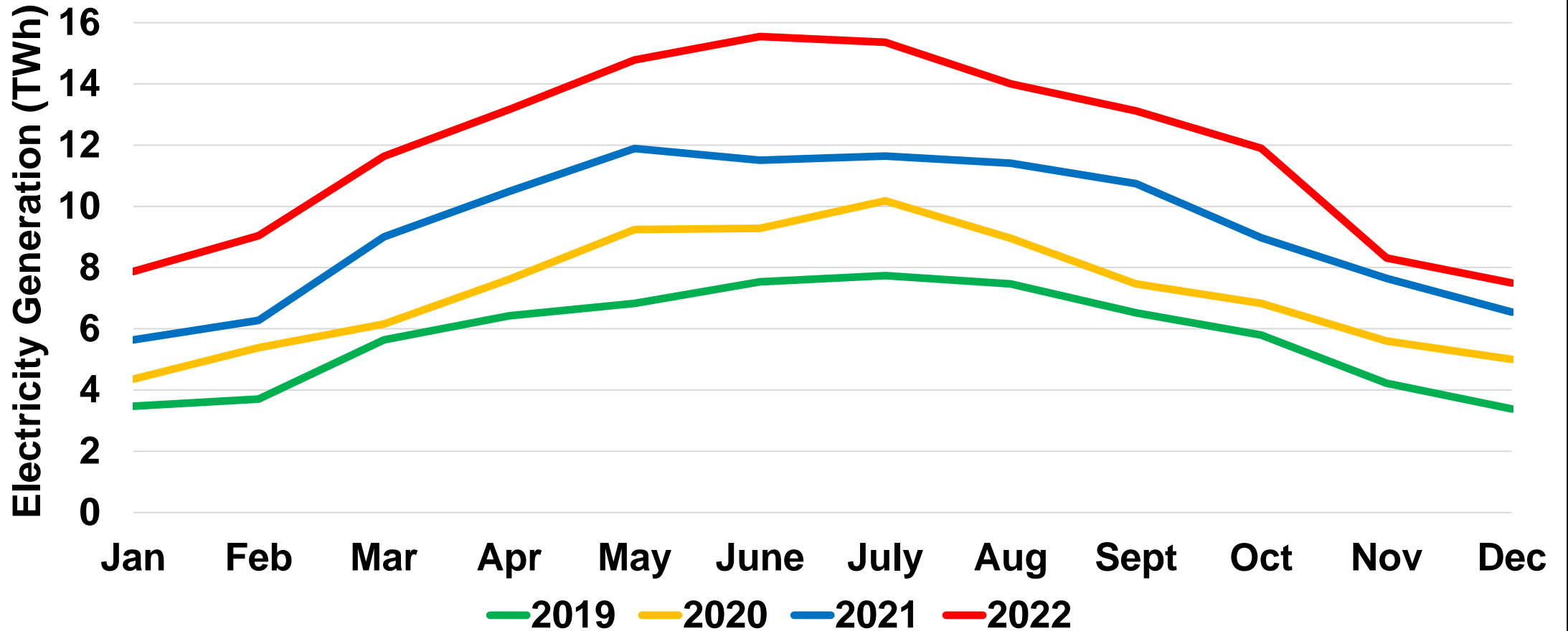
Combined PV and Wind Electricity Generation Year-on-Year (through December 2022)



PV Electricity Generation Year-on-Year (through December 2022)

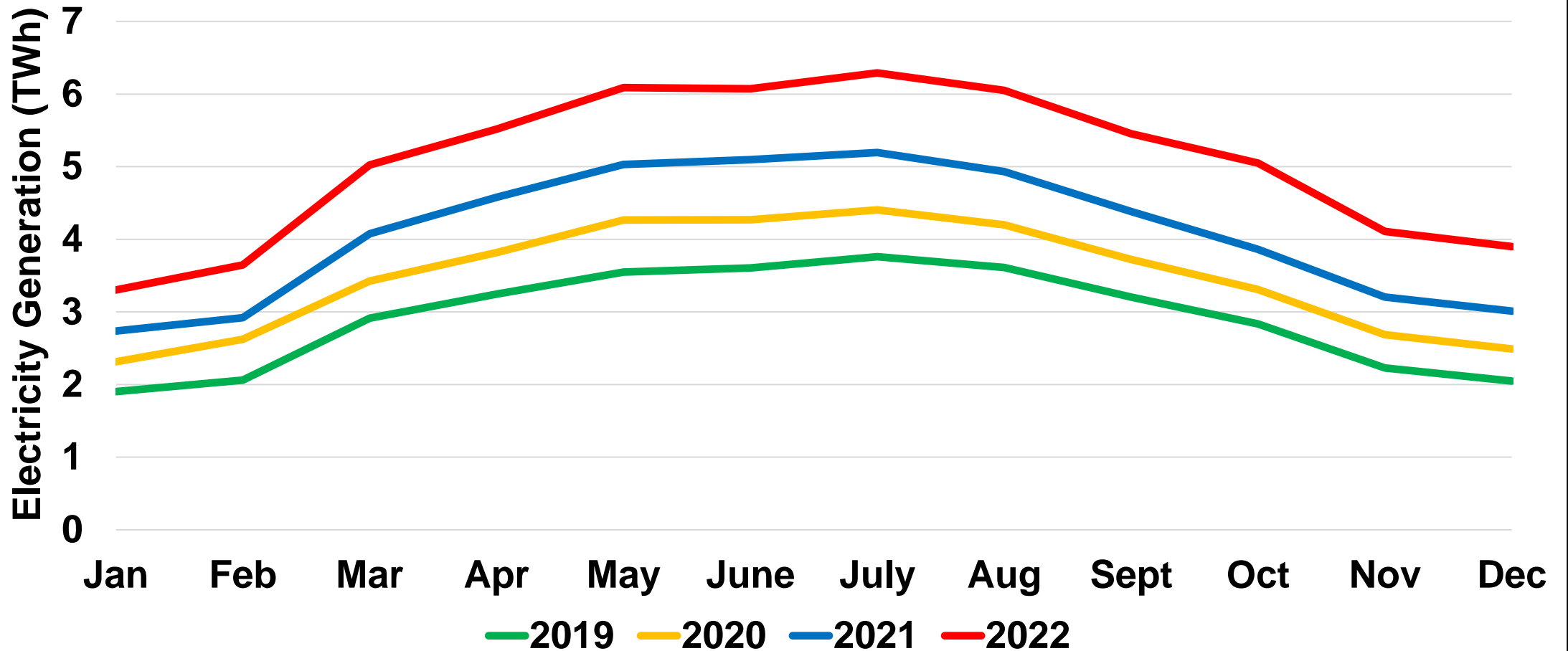


Utility PV Electricity Generation Year-on-Year (through December 2022)

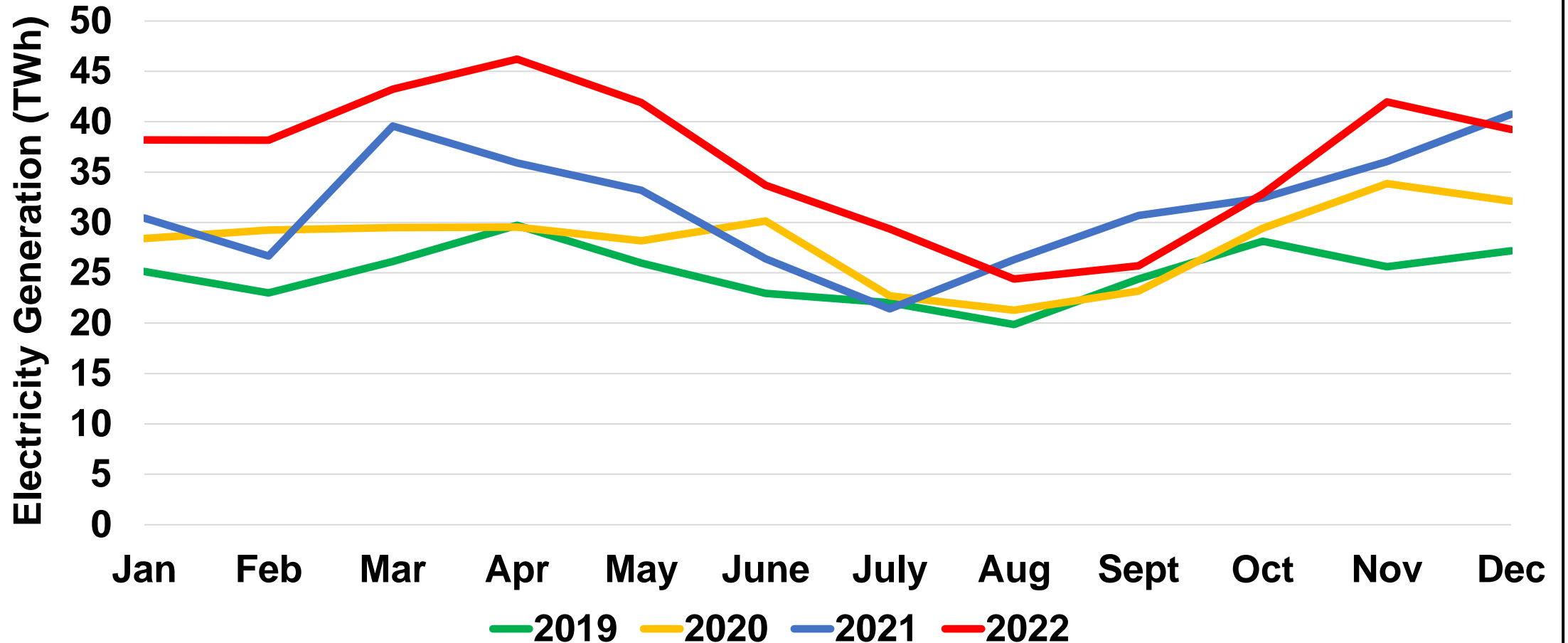


Note: PV Utility is greater than 1.0 MW

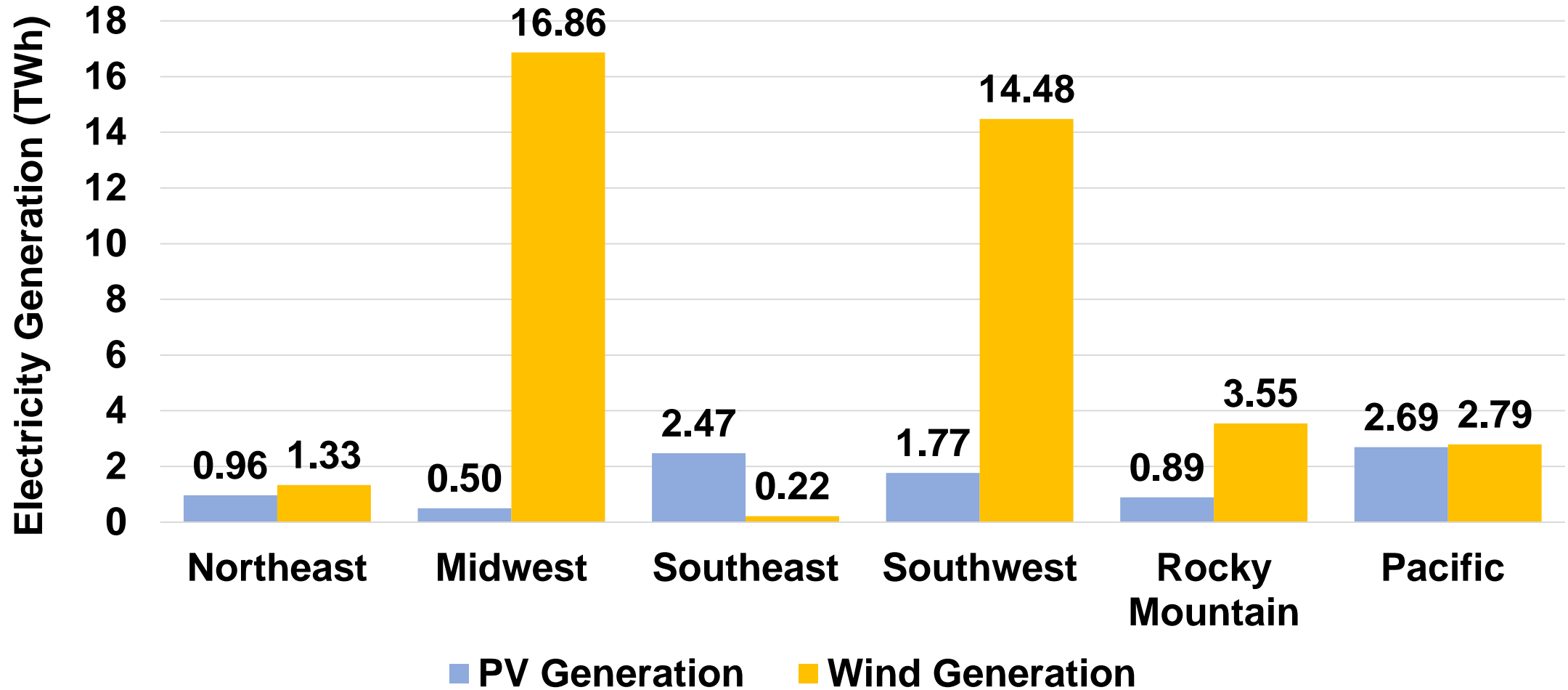
Small PV Electricity Generation Year-on-Year (through December 2022)



Wind Electricity Generation Year-on-Year (through December 2022)



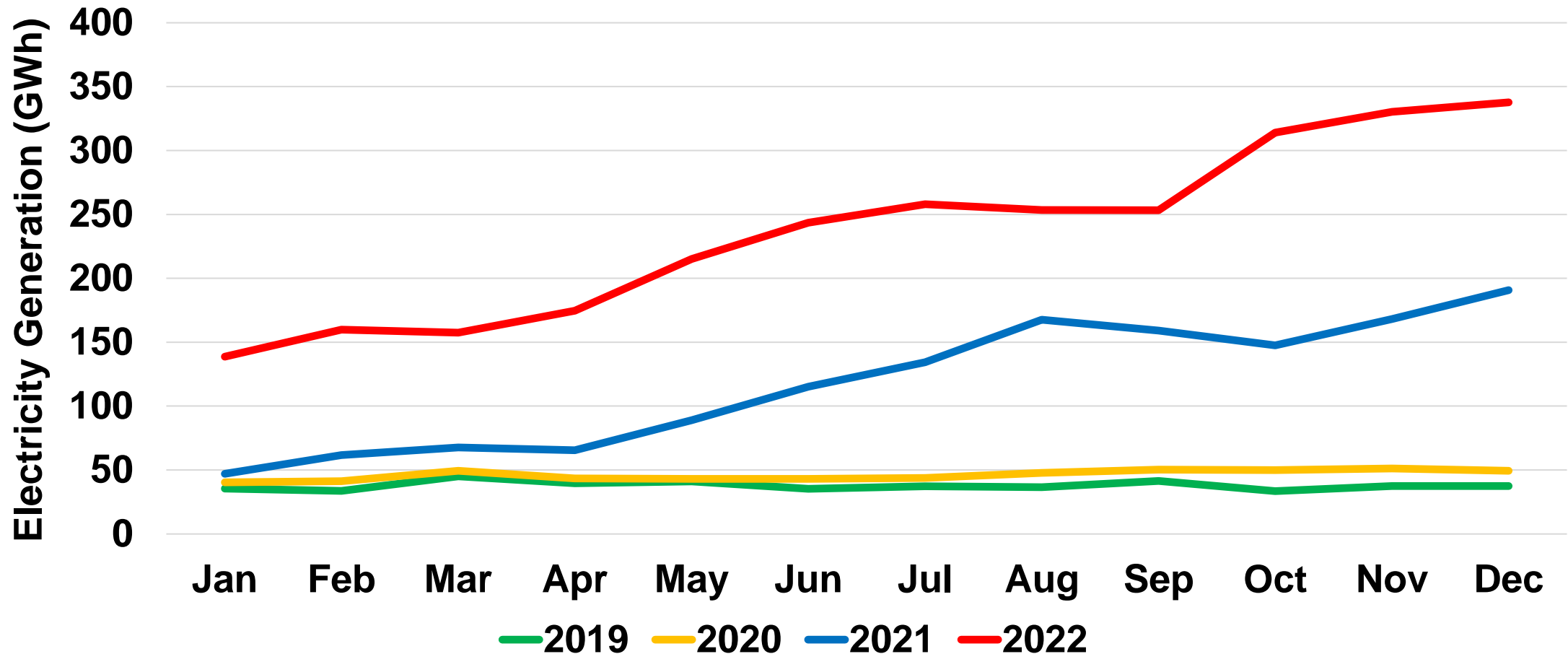
Regional PV & Wind Electricity Generation December 2022





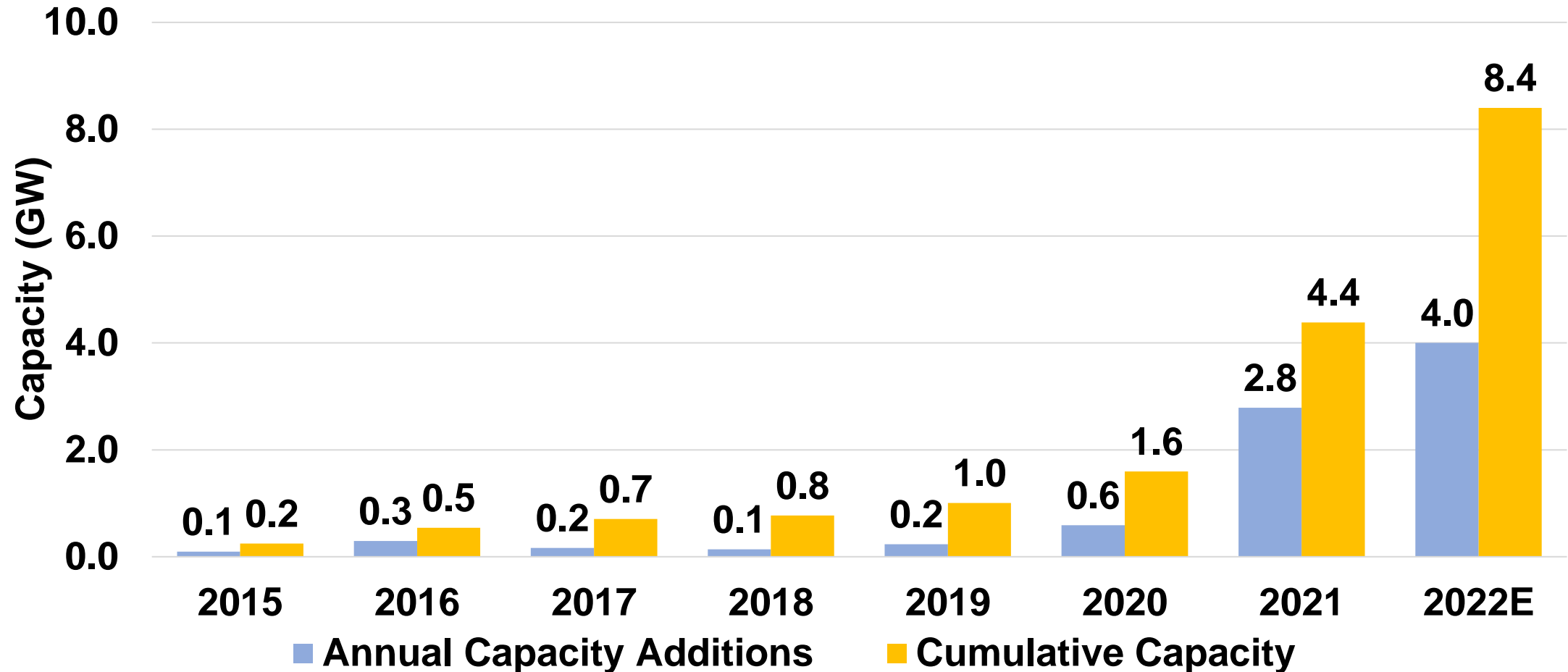
U.S. Battery Storage

Battery Electricity Generation Year-on-Year (through December 2022)



Battery Storage Forecast (2022)

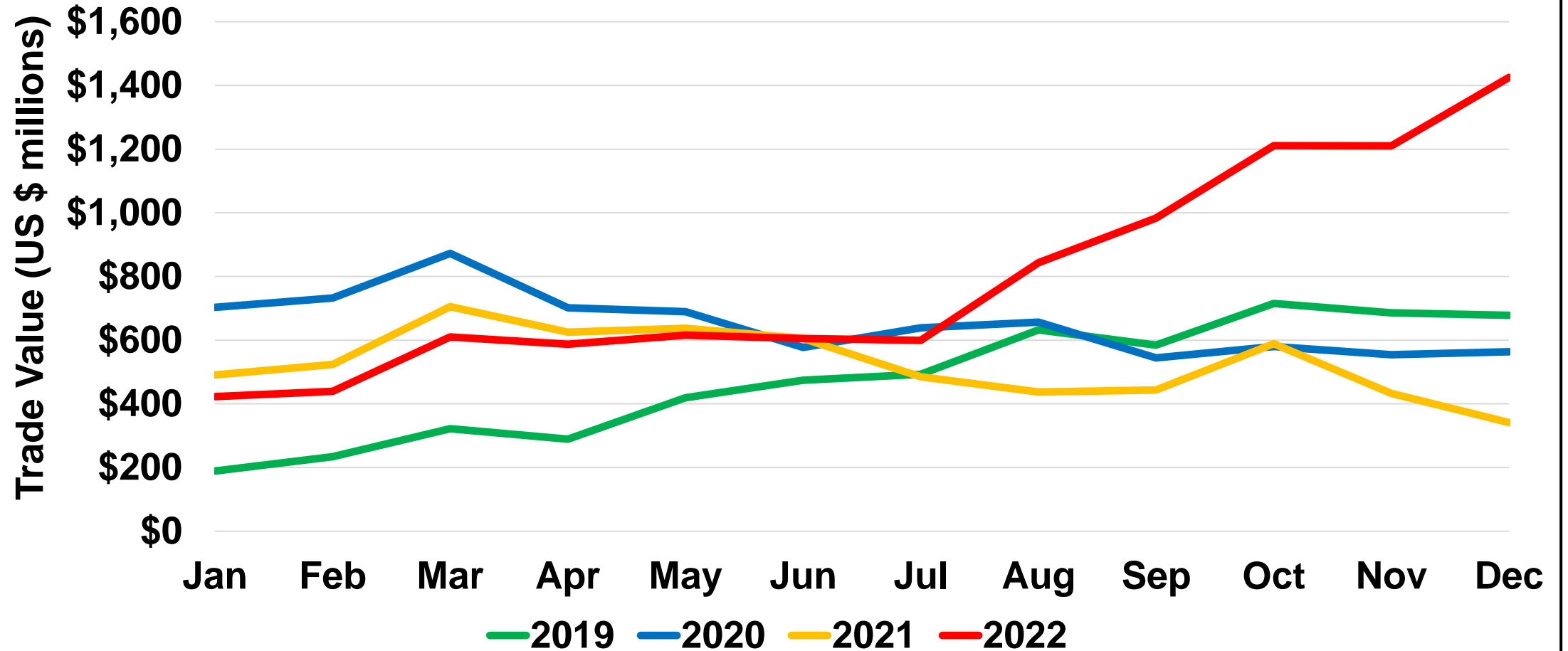
Annual Capacity Additions and Cumulative Capacity



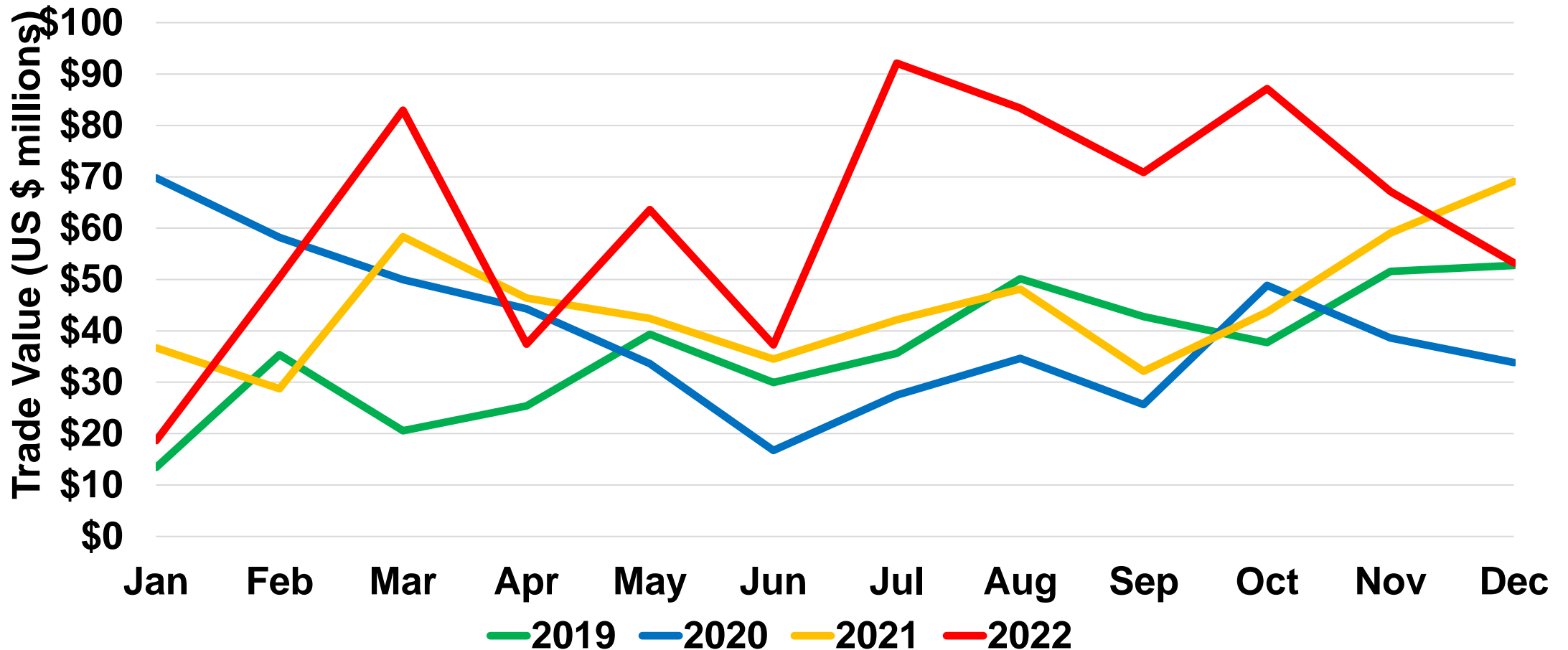


U.S. PV Trade (Cells and Modules)

U.S. Year-on-Year PV Panel Imports (through December 2022)



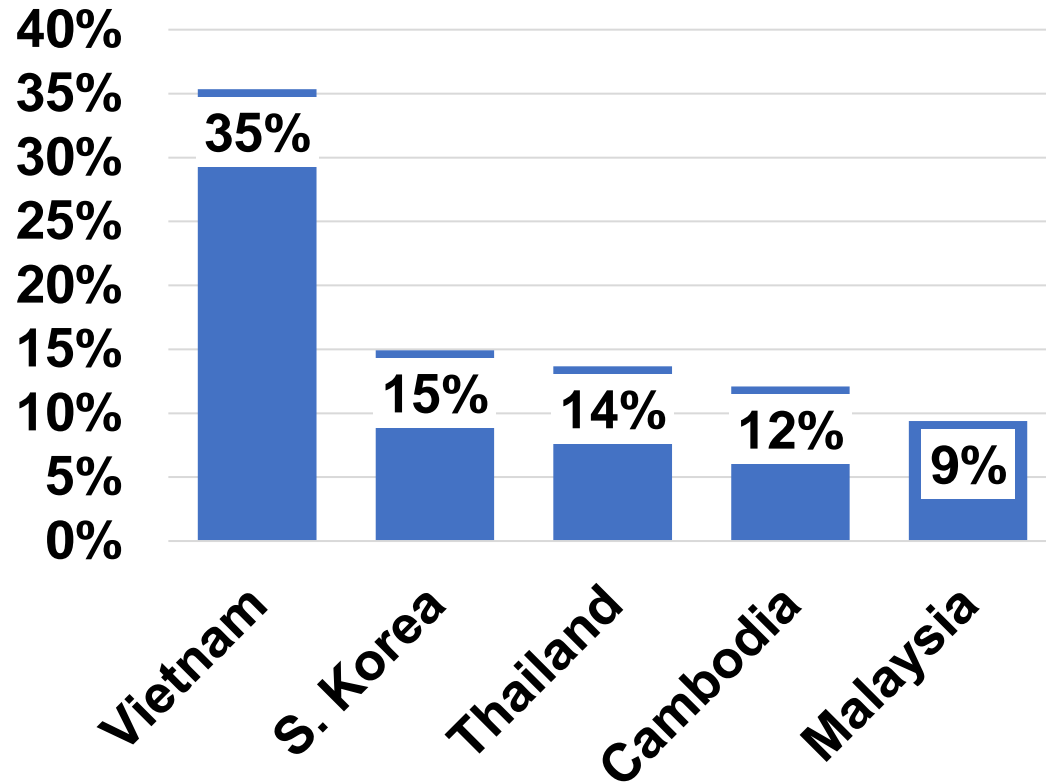
U.S. Year-on-Year PV Cell Imports (through December 2022)



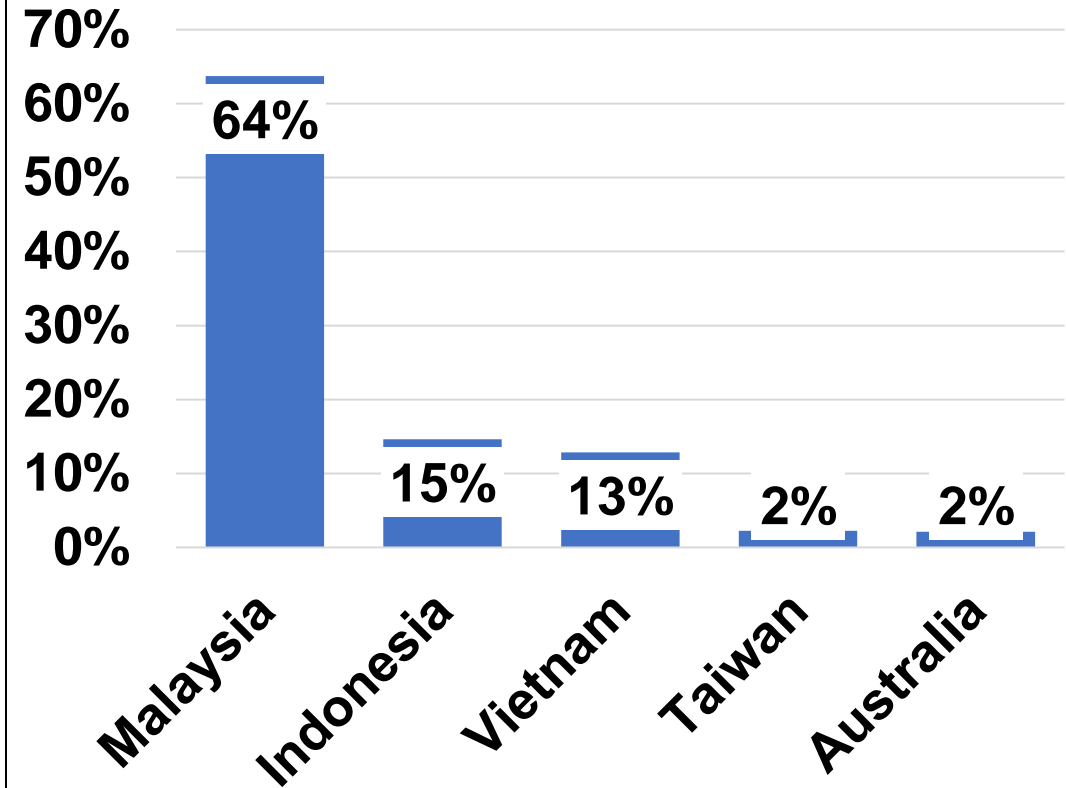
Monthly U.S. PV Panel and Cell Imports by Country December 2022



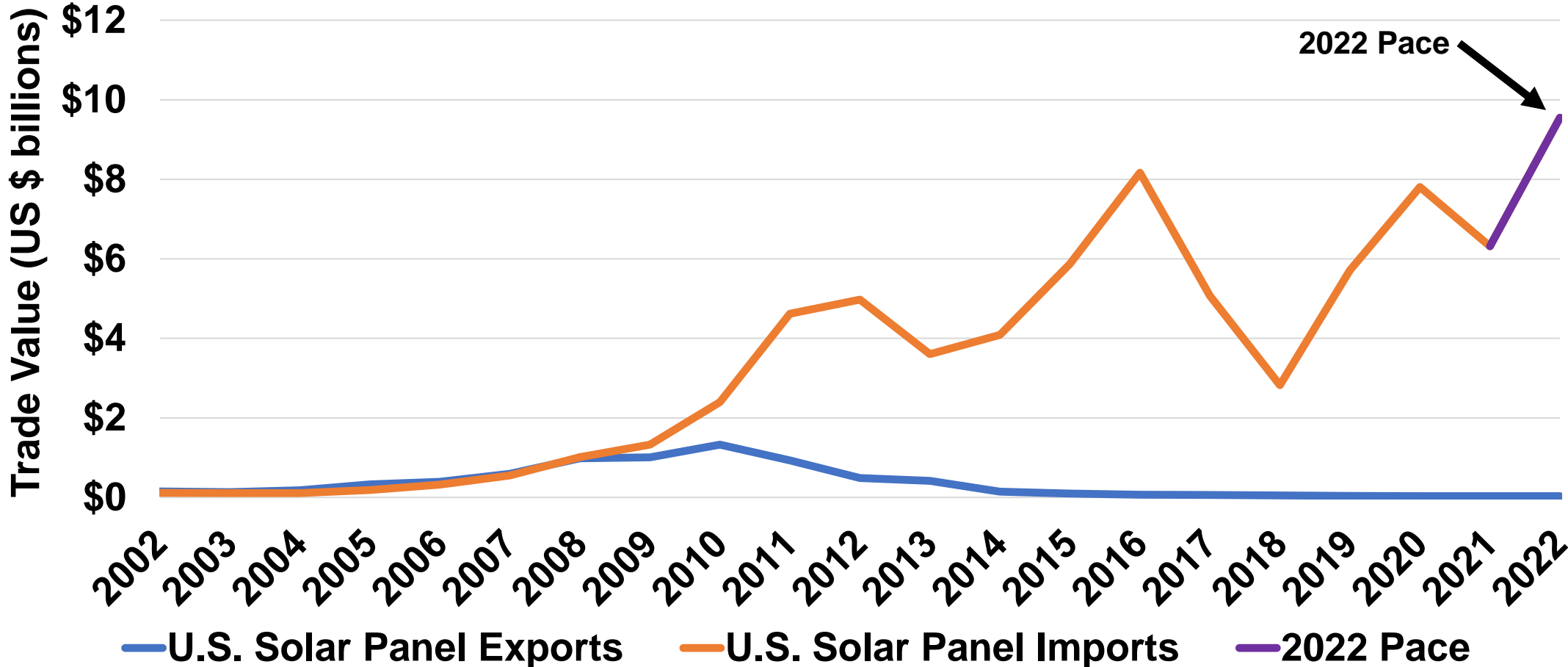
U.S. PV Panel Imports by Country



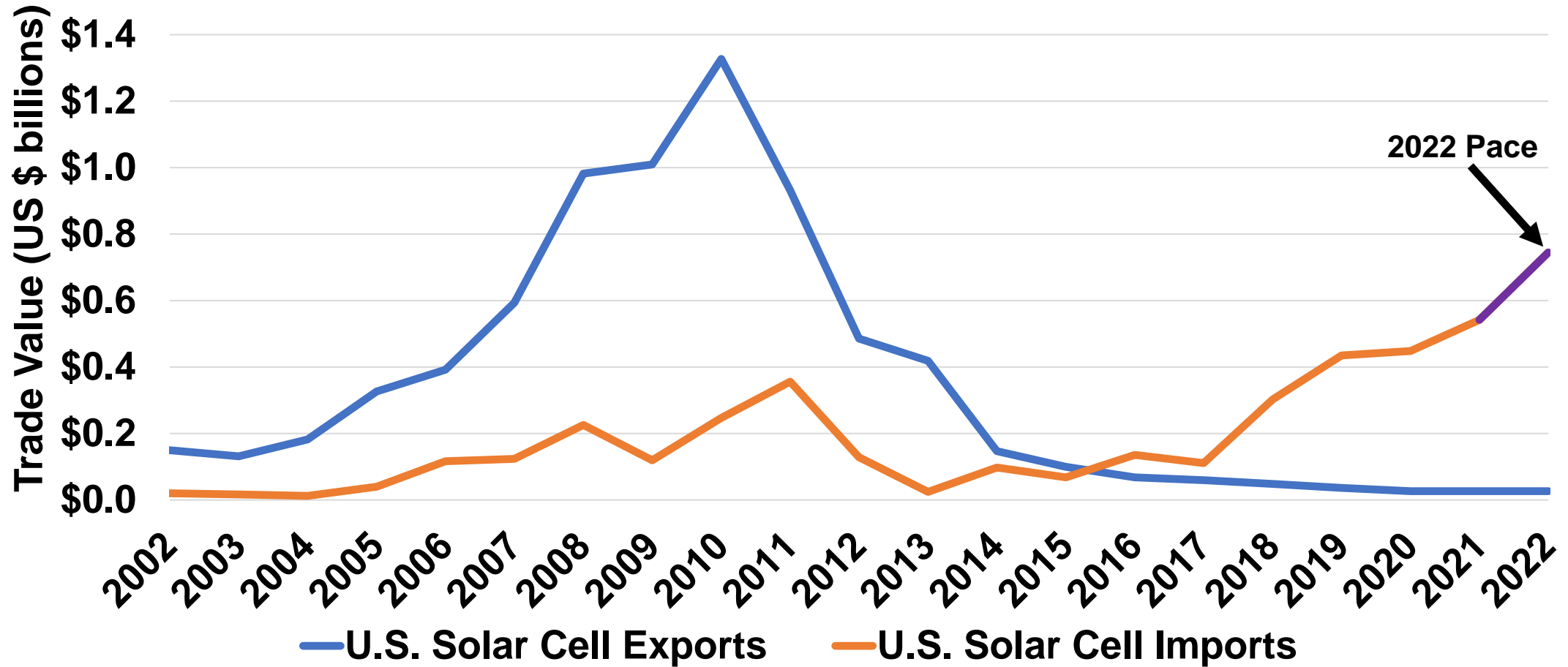
U.S. PV Cell Imports by Country



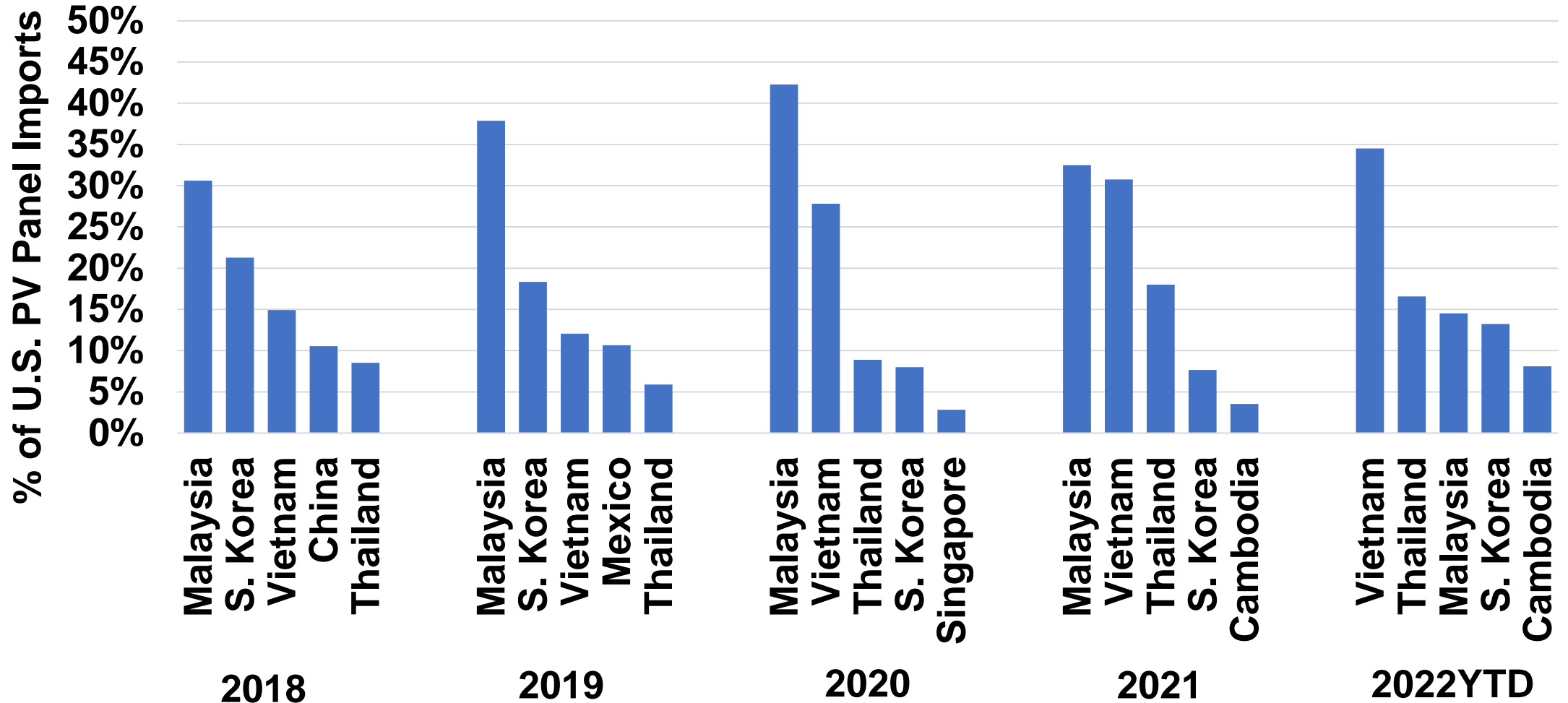
Annual U.S. PV Panel Trade through December 2022



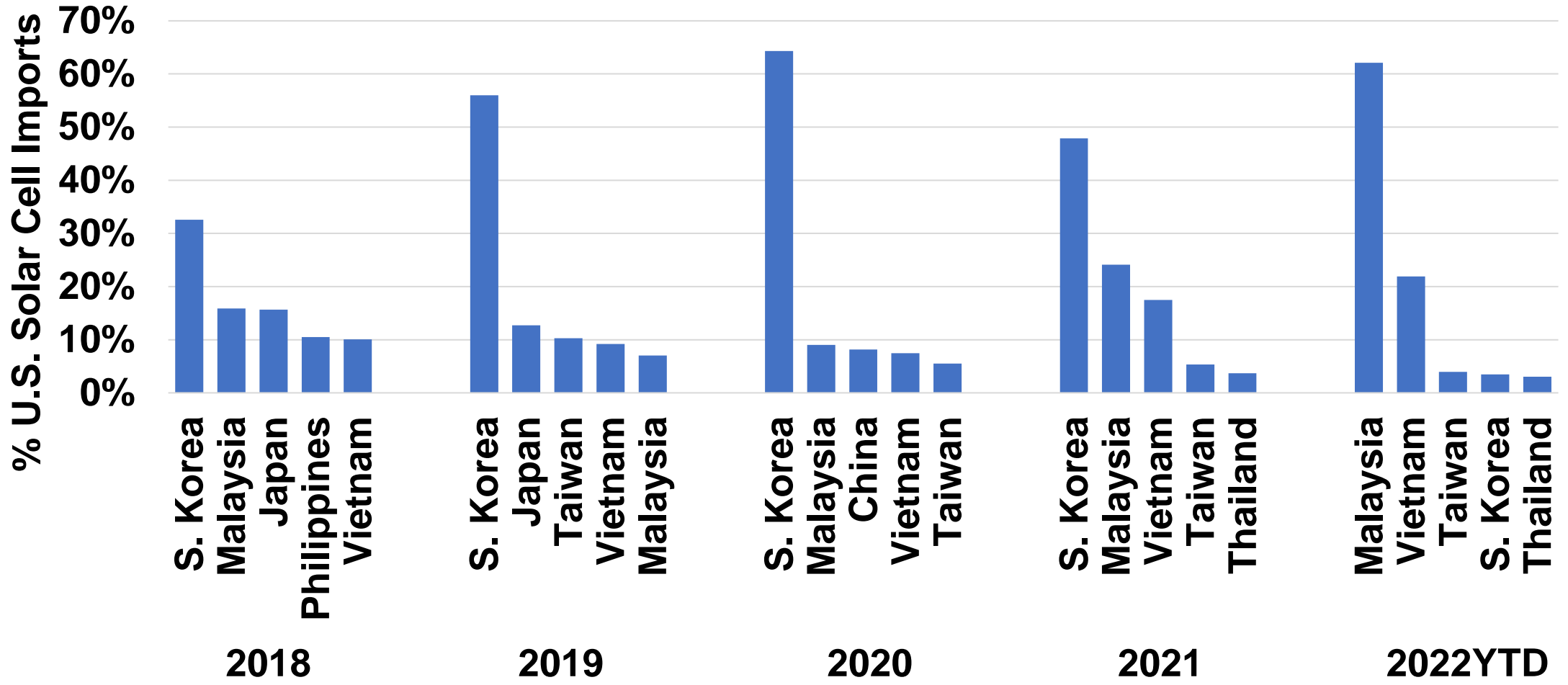
Annual U.S. PV Cell Trade through December 2022



Annual U.S. PV Panel Imports Rank Order of Countries Year-to-Date through December 2022



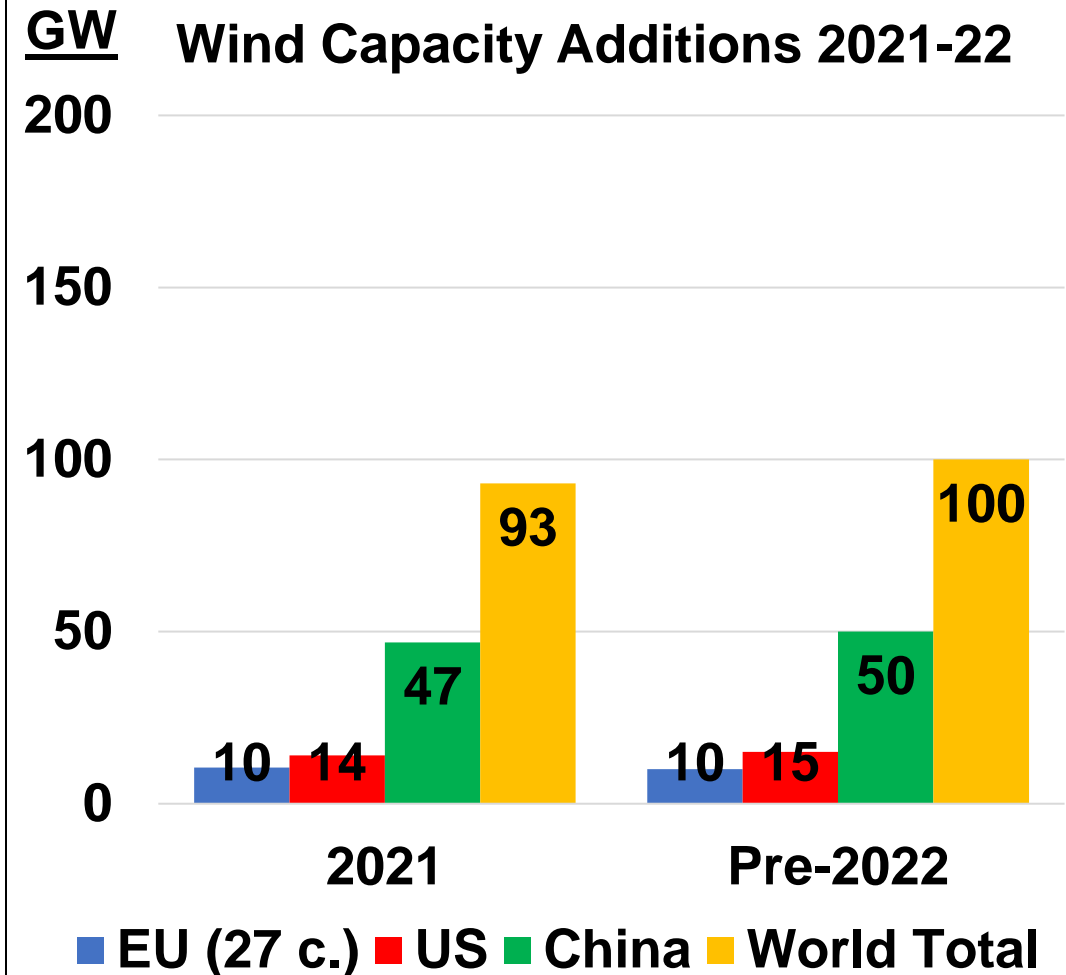
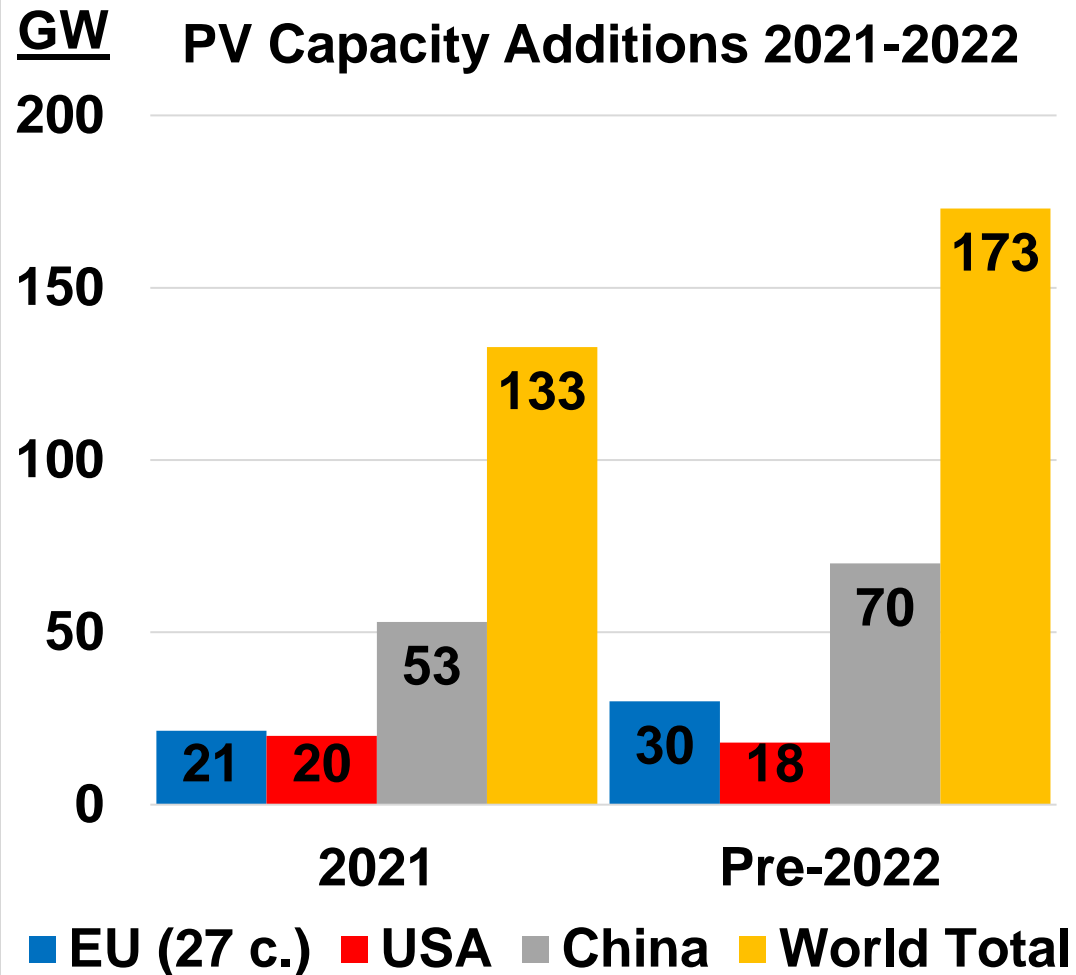
Annual U.S. PV Cell Imports Rank Order of Countries Year-to-Date through December 2022





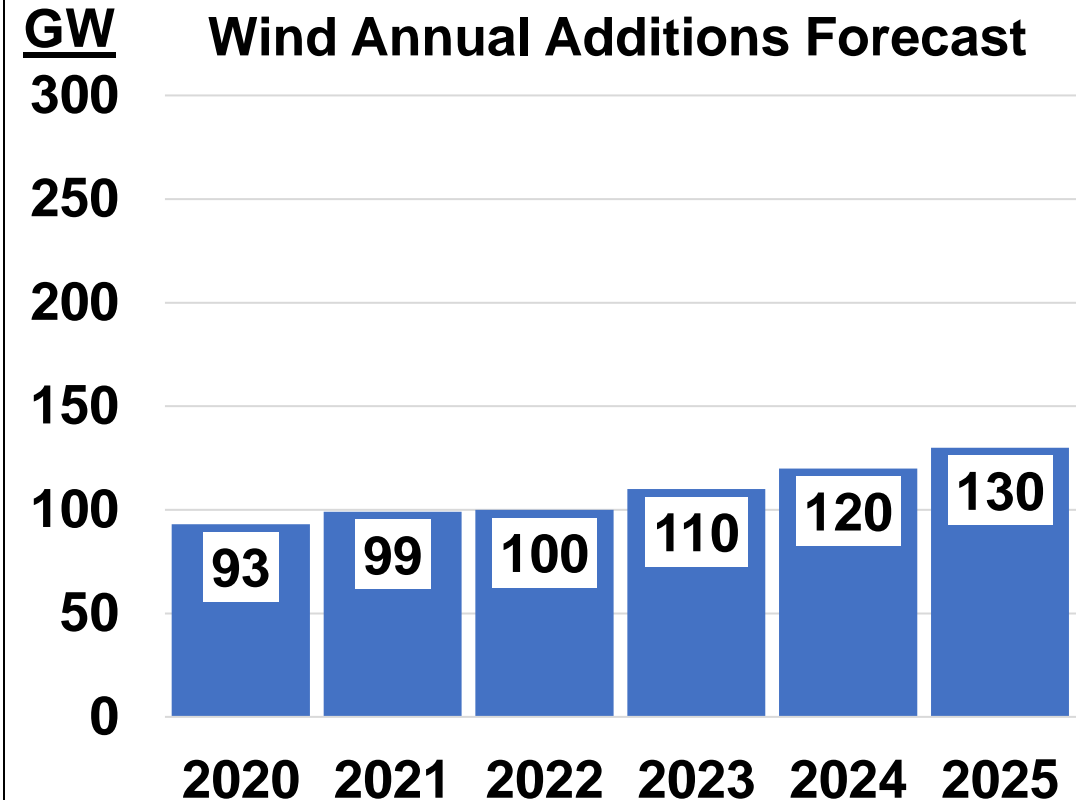
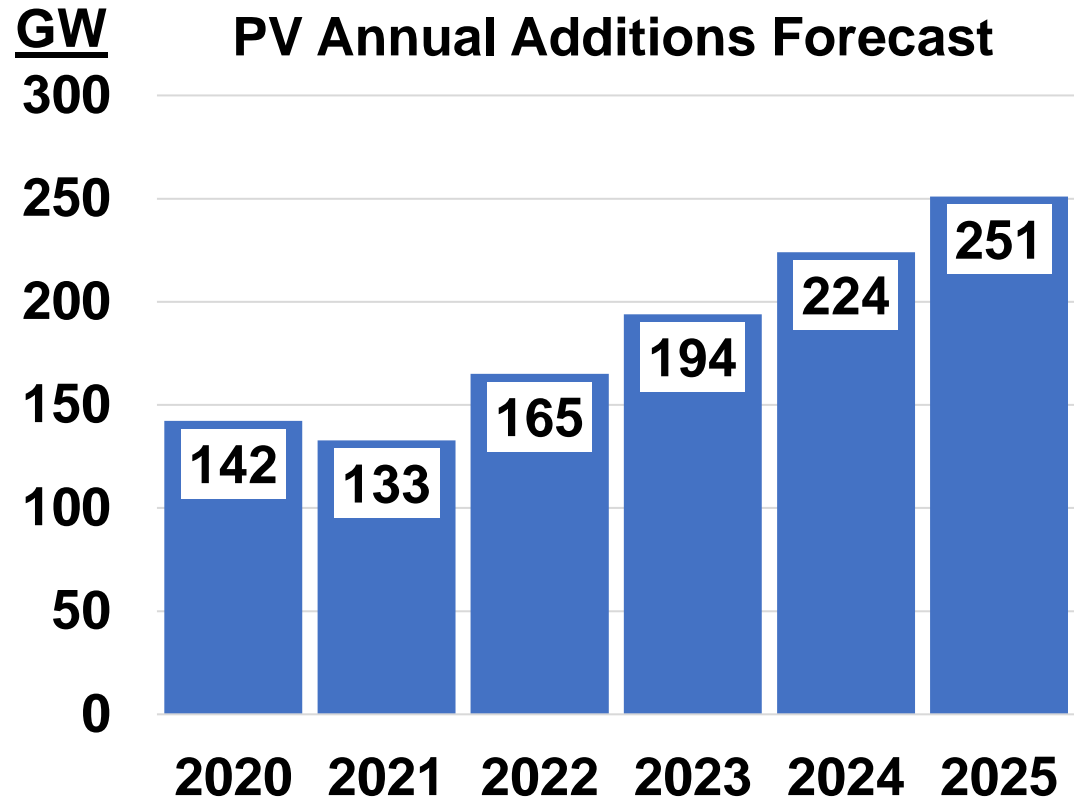
World PV and Wind

2021-2022 World PV and Wind Capacity Additions



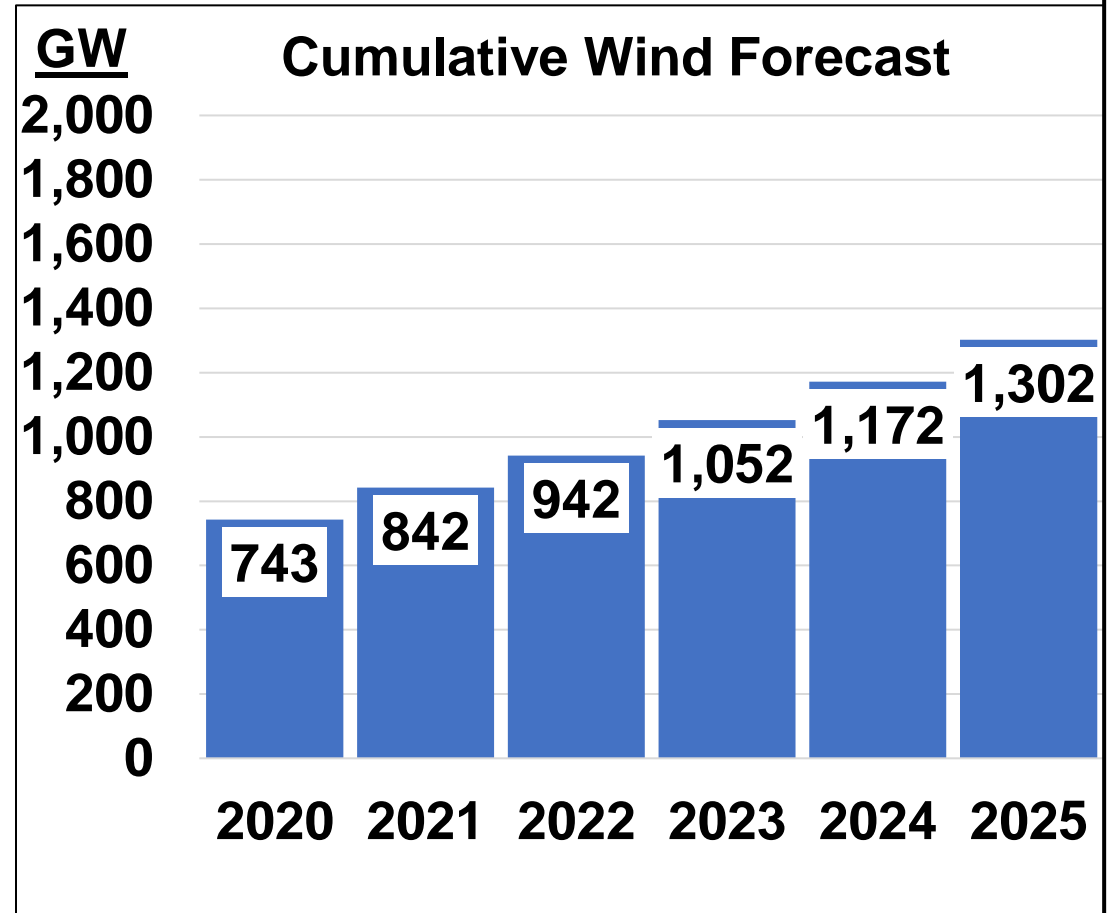
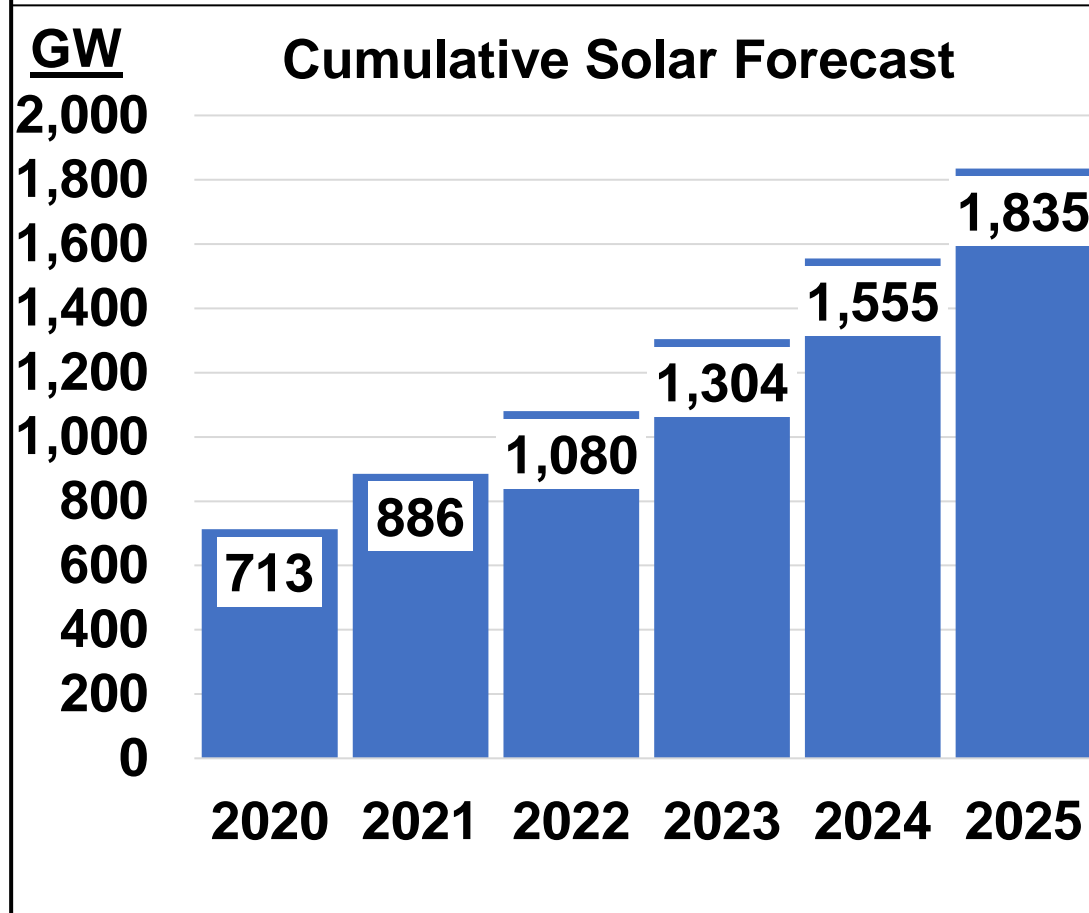
World PV and Wind Annual Capacity Additions

Actual through 2021; Forecast 2022-2025

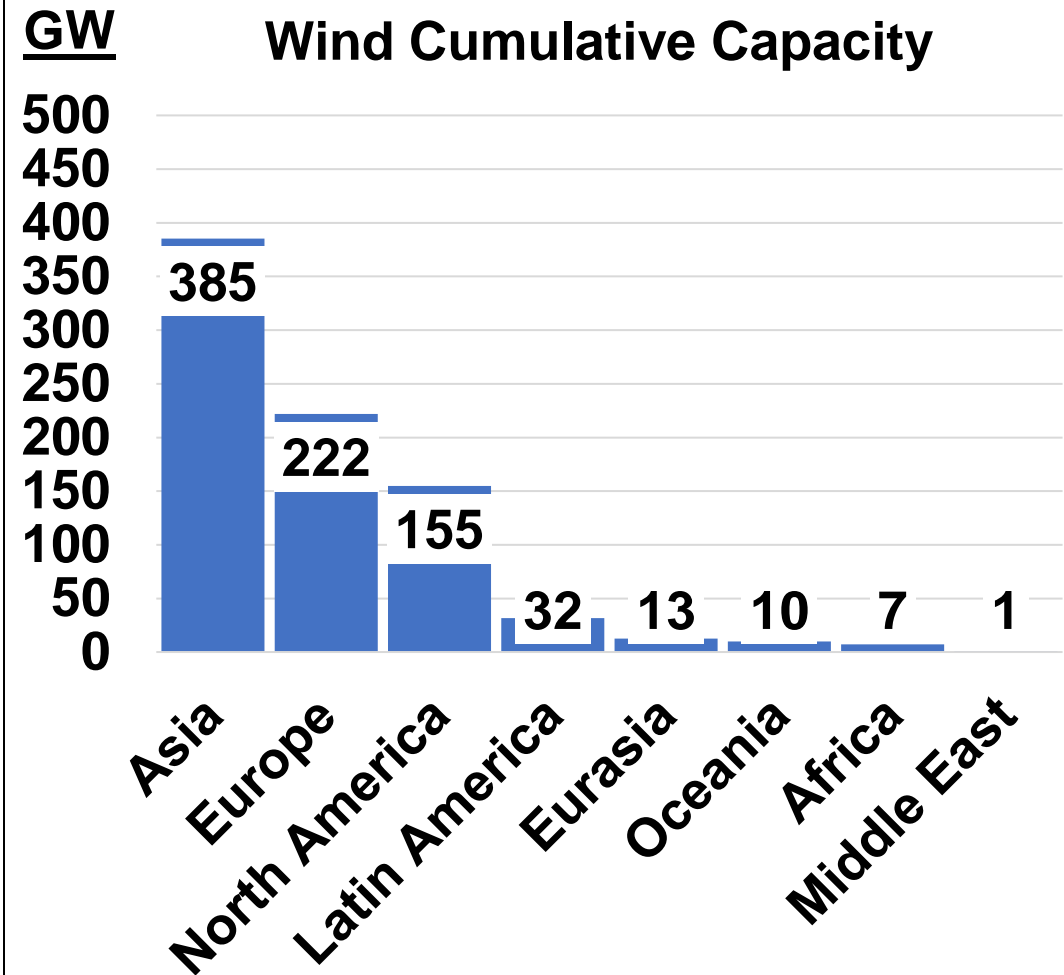
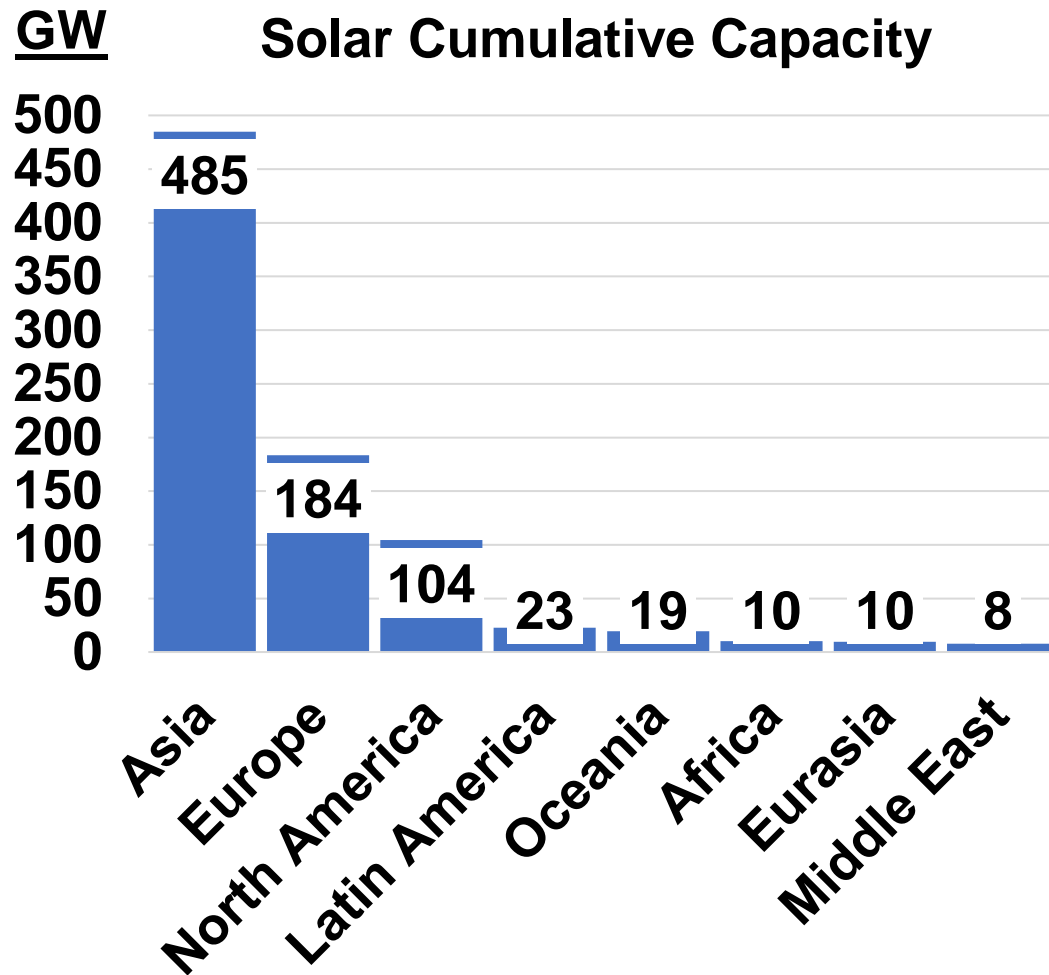


World Solar and Wind Cumulative Capacity

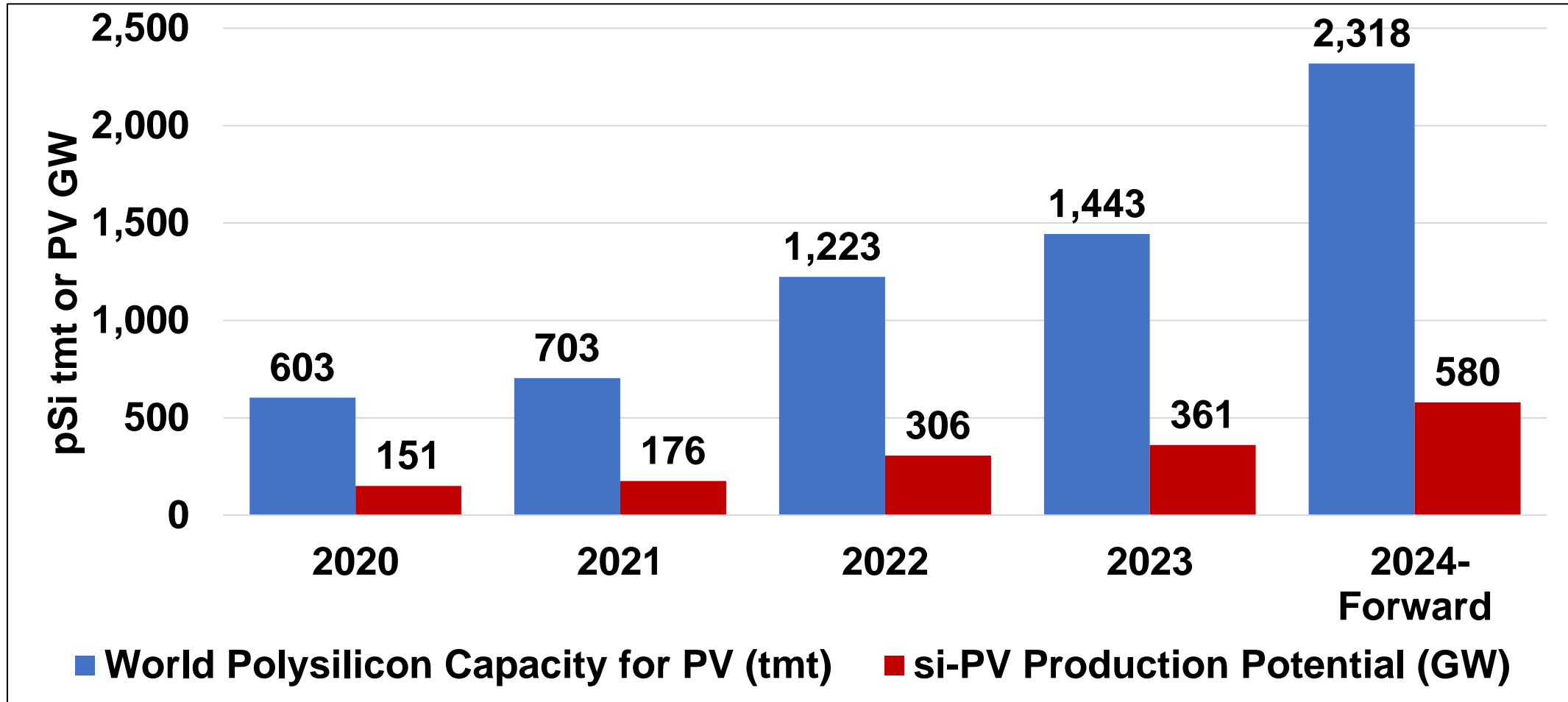
Actual through 2021; Forecast 2022-2025



2021 World Regional Solar and Wind Cumulative Capacity



Polysilicon Production and si-PV Module Production 2020 – 2024 Forward



ASAP's World PV Forecast through 2050

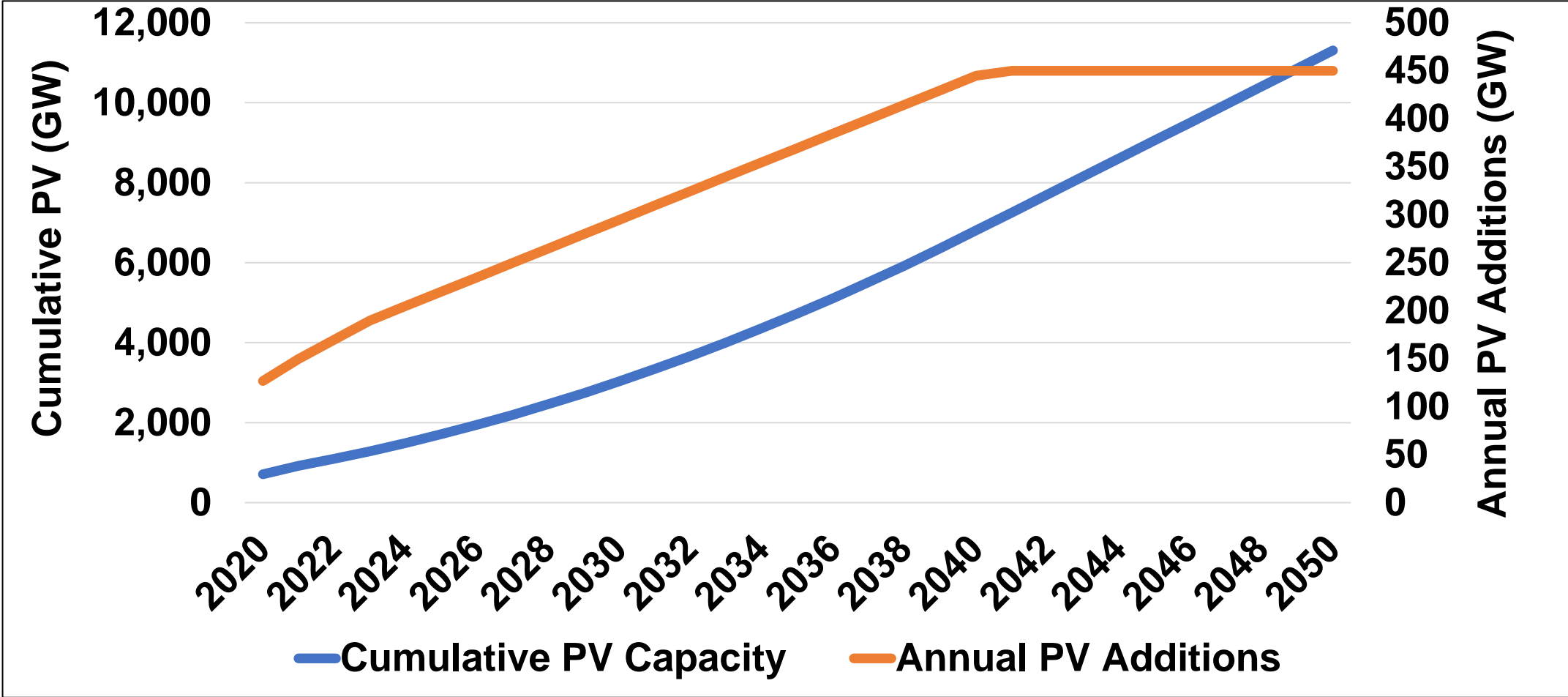
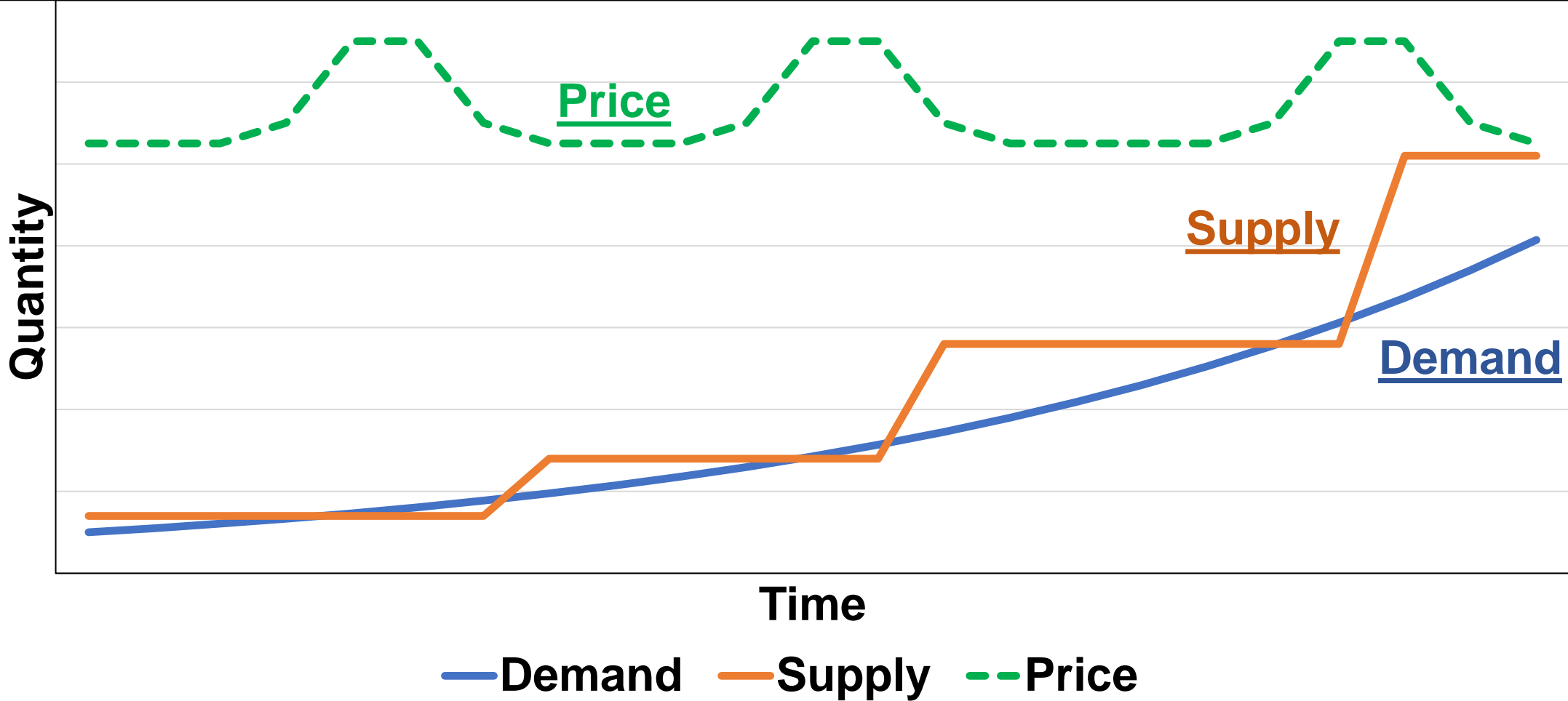


Figure 1. Silicon Supply, Demand and Price Cycles

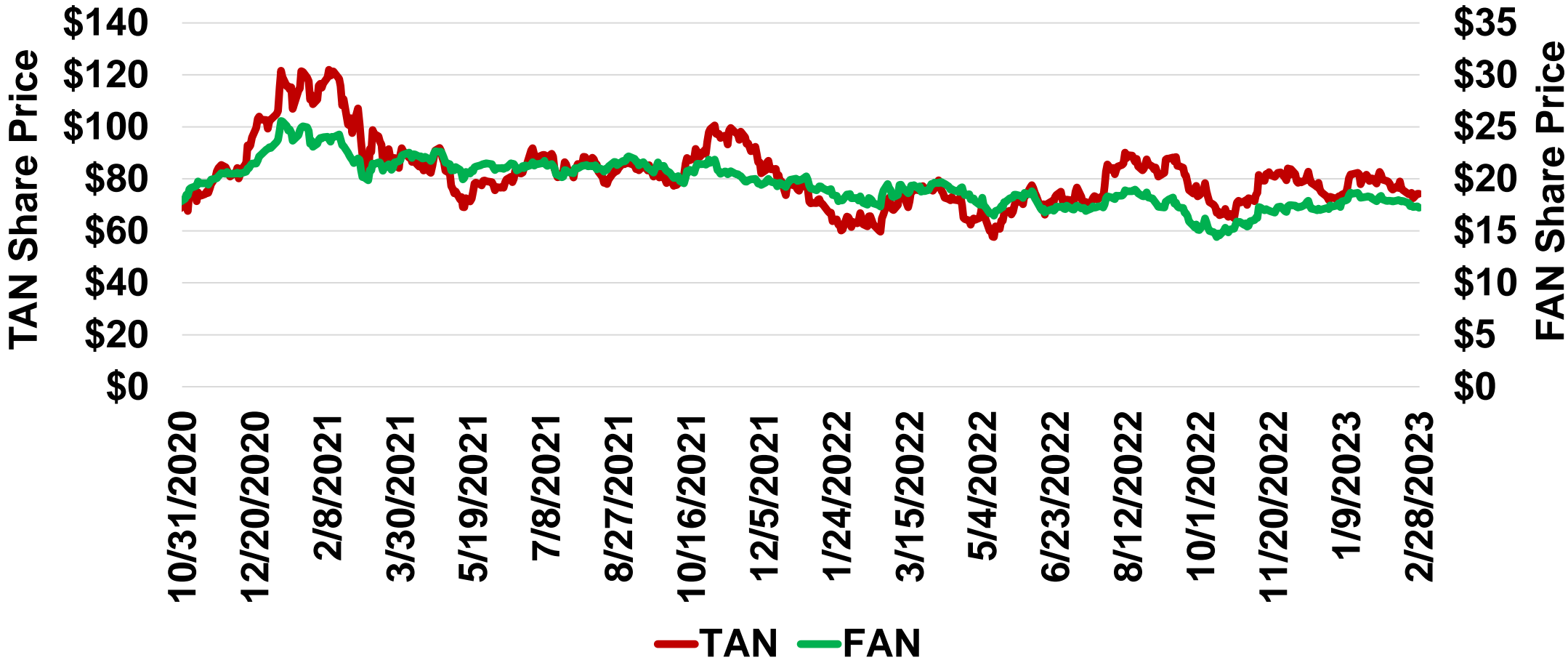




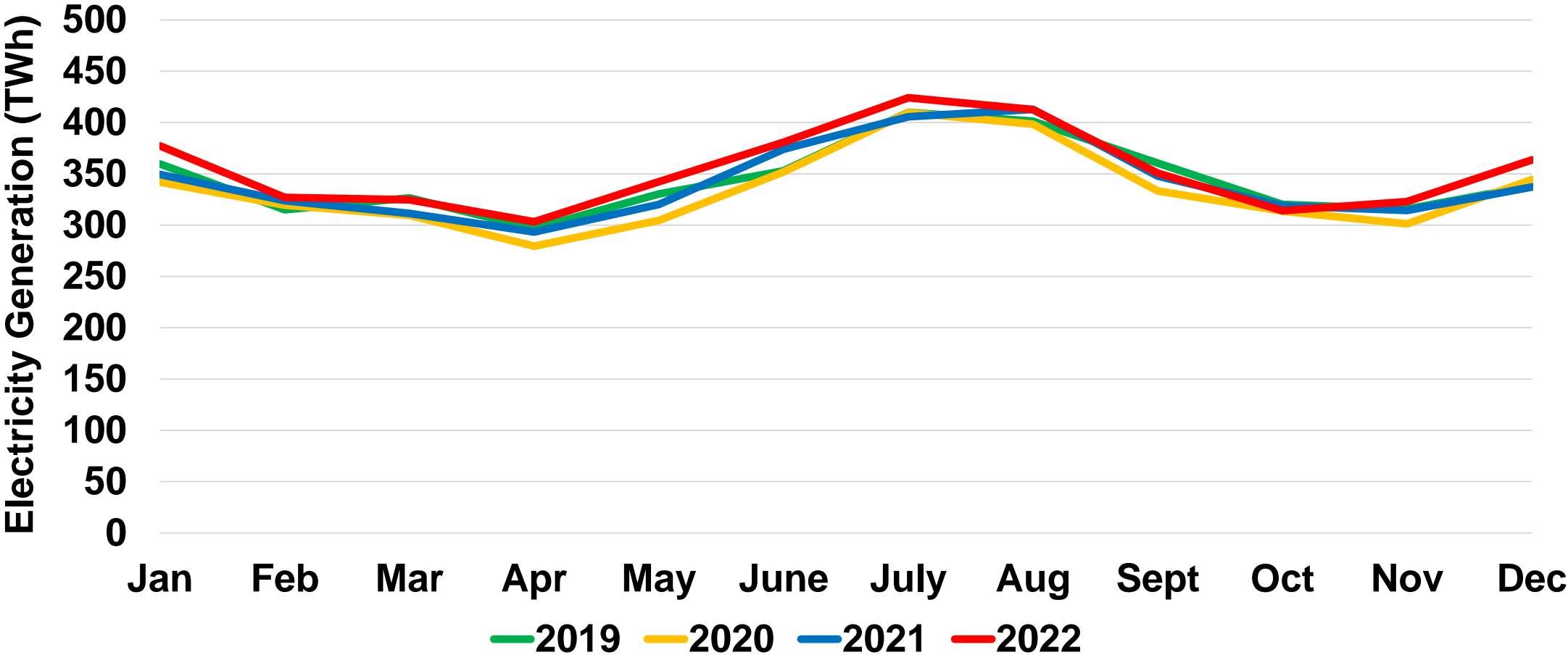
U.S. Electricity Market Overview

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

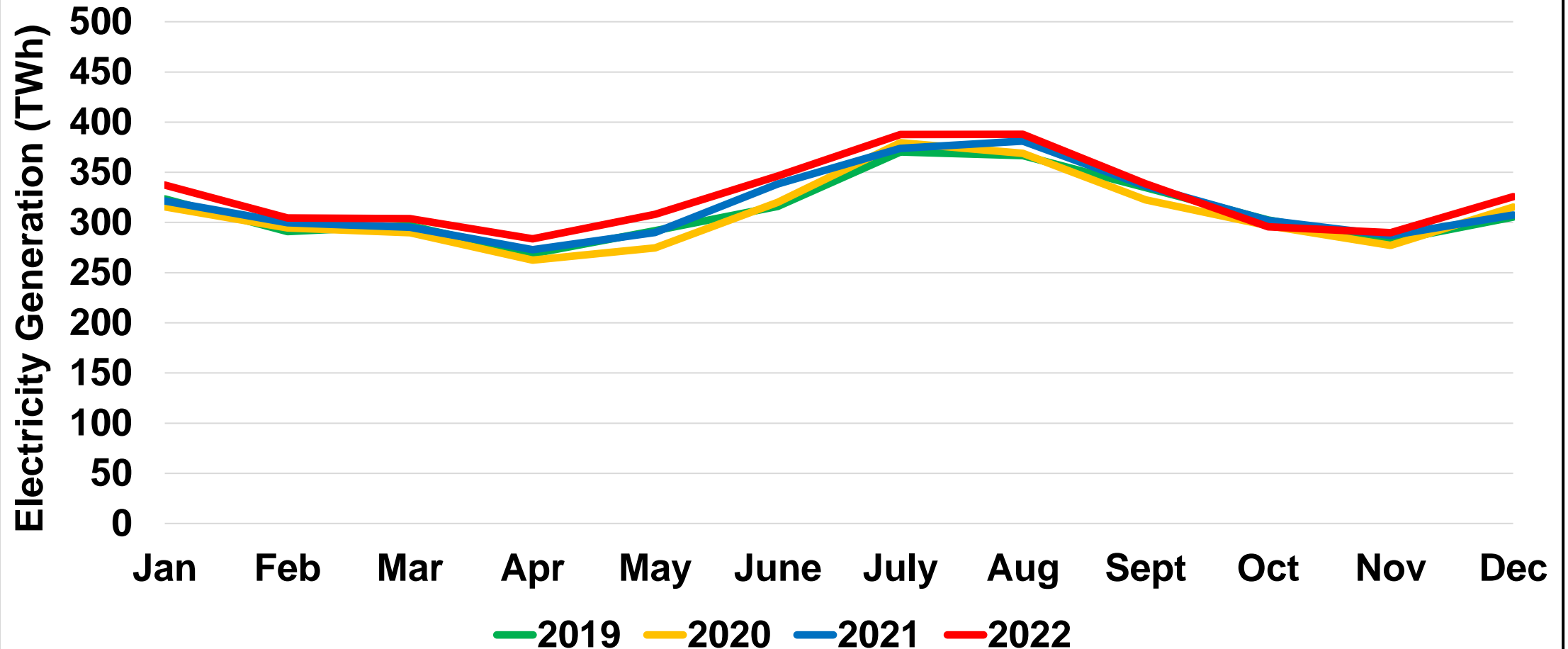
TAN (Solar) and FAN (Wind) ETF Share Prices (Adjusted Close Prices through February 28, 2023)



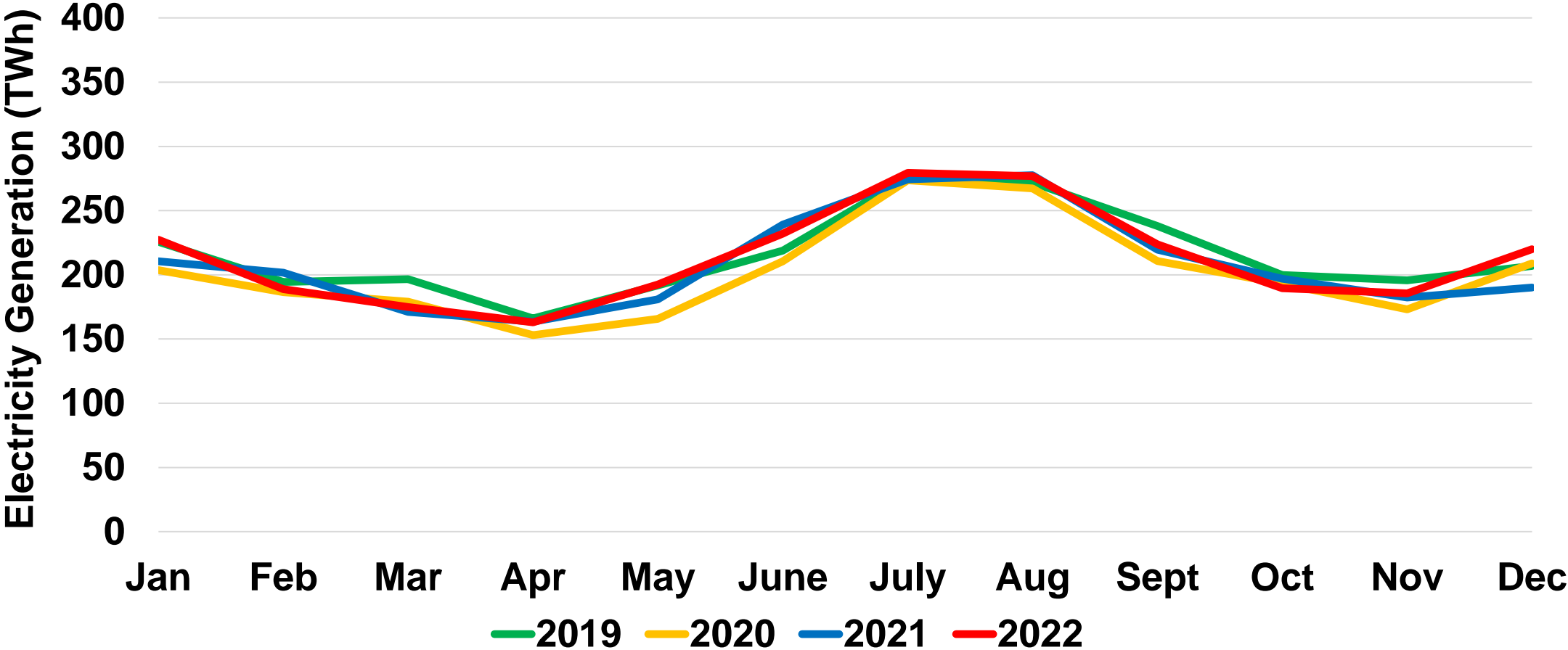
U.S. Total Electricity Generation Year-on-Year (through December 2022)



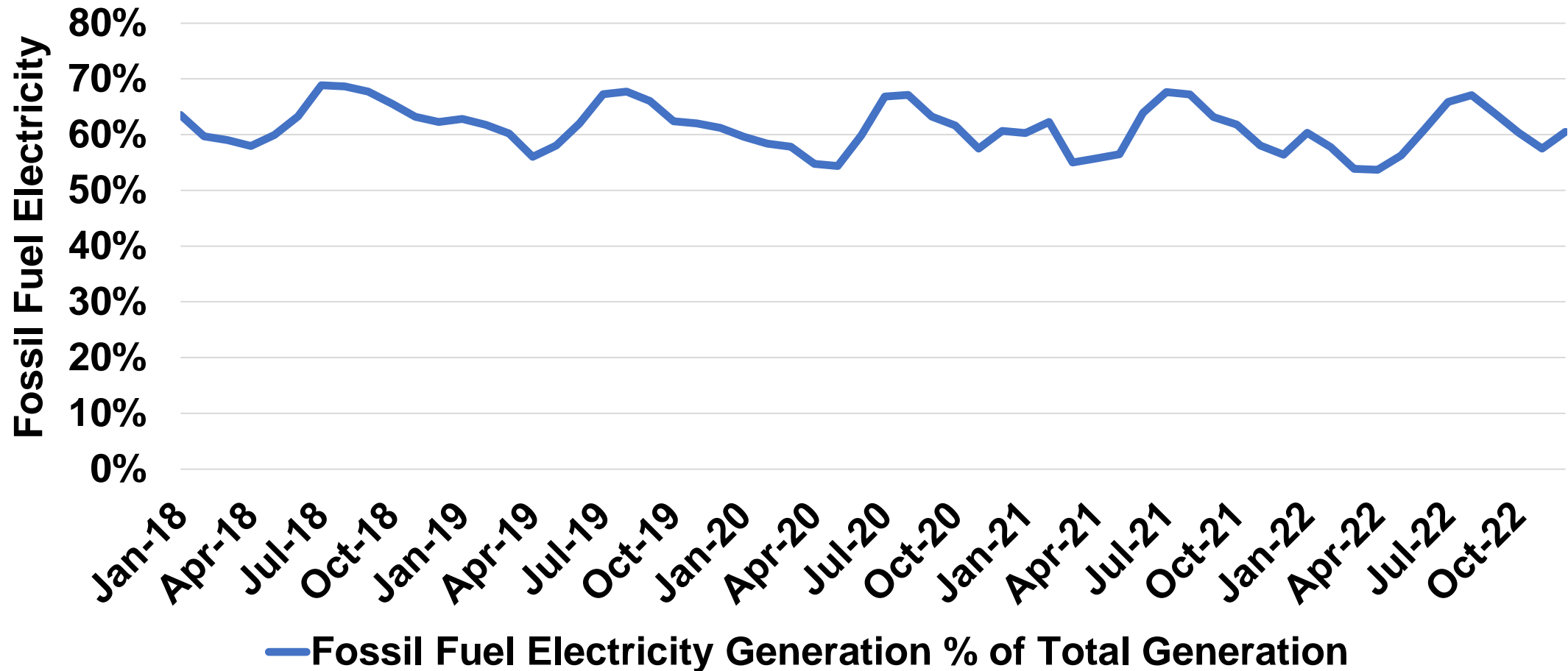
U.S. Total Electricity Demand (Retail Sales) Year-on-Year (through December 2022)



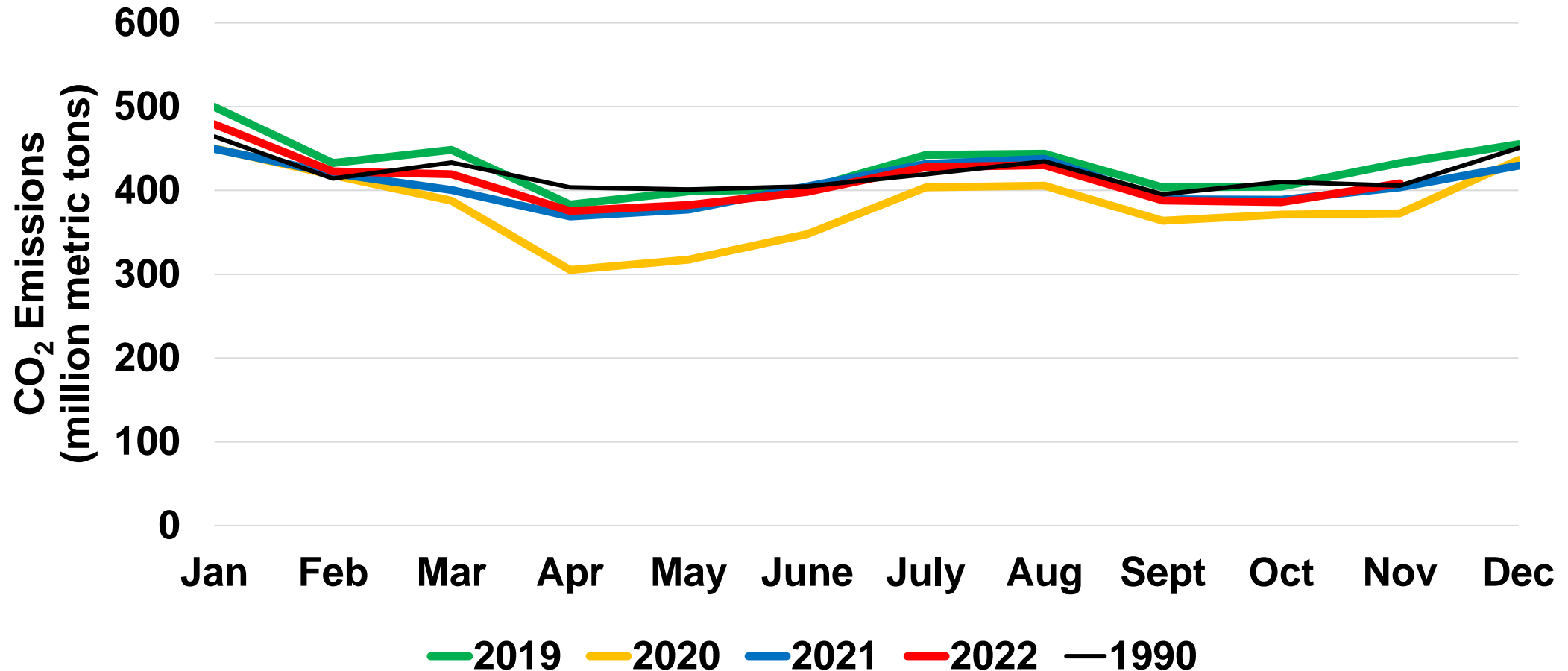
U.S. Fossil Fuel Electricity Generation Year-on-Year (through December 2022)



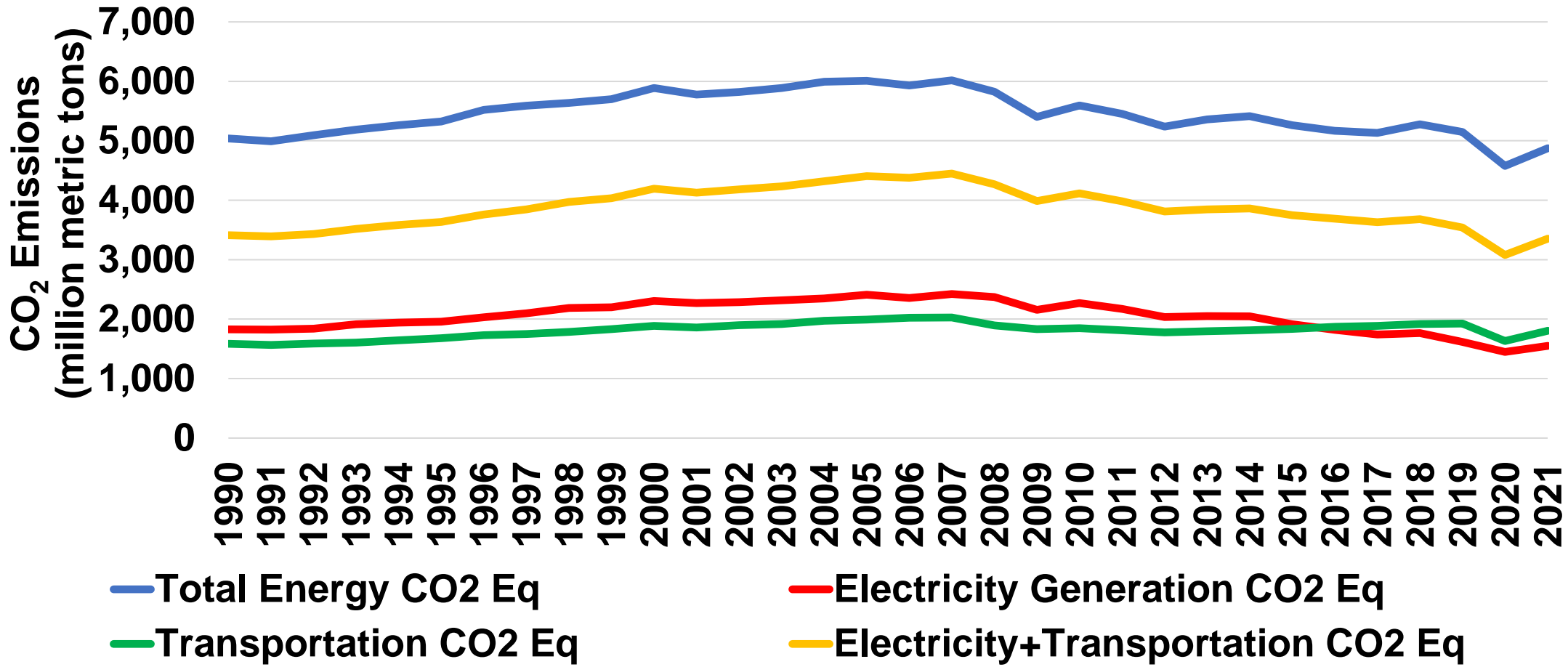
U.S. Fossil Fuel Electricity Generation % of Generation through December 2022



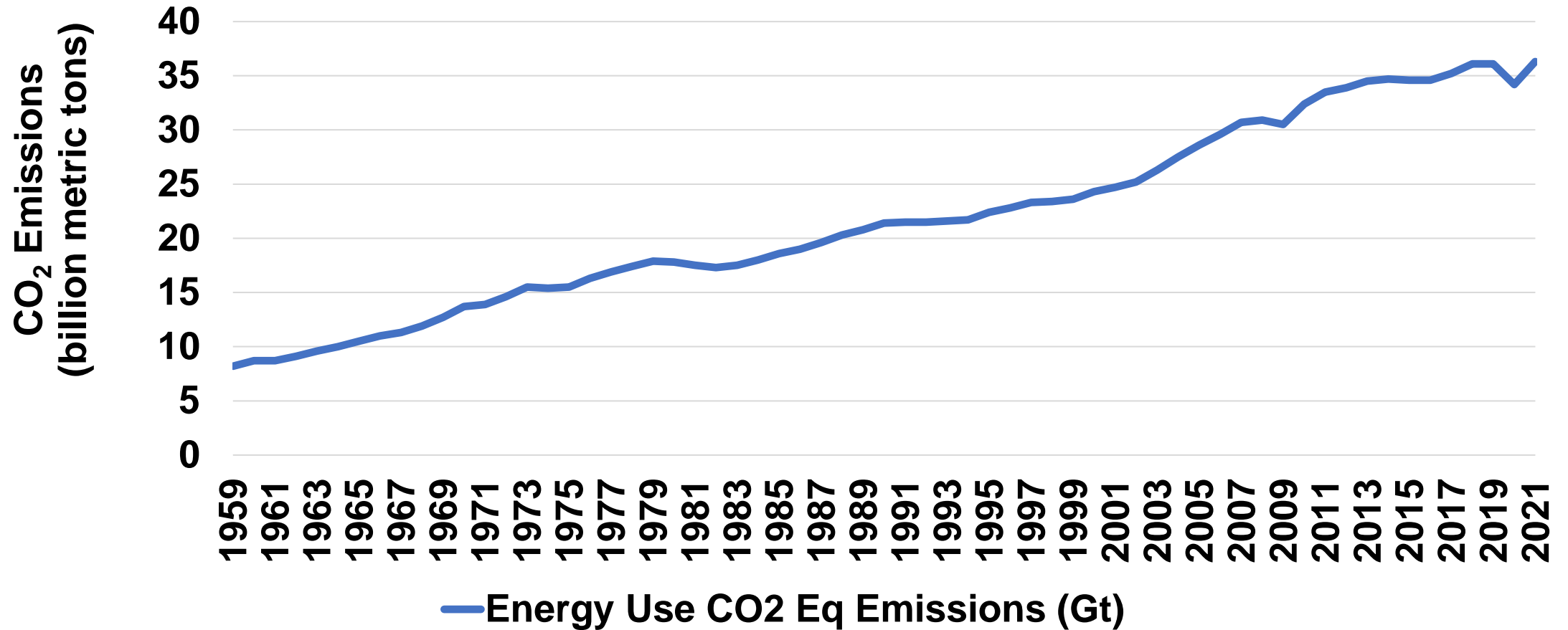
U.S. Monthly Energy Use CO₂ Equivalent Emissions (through November 2022)



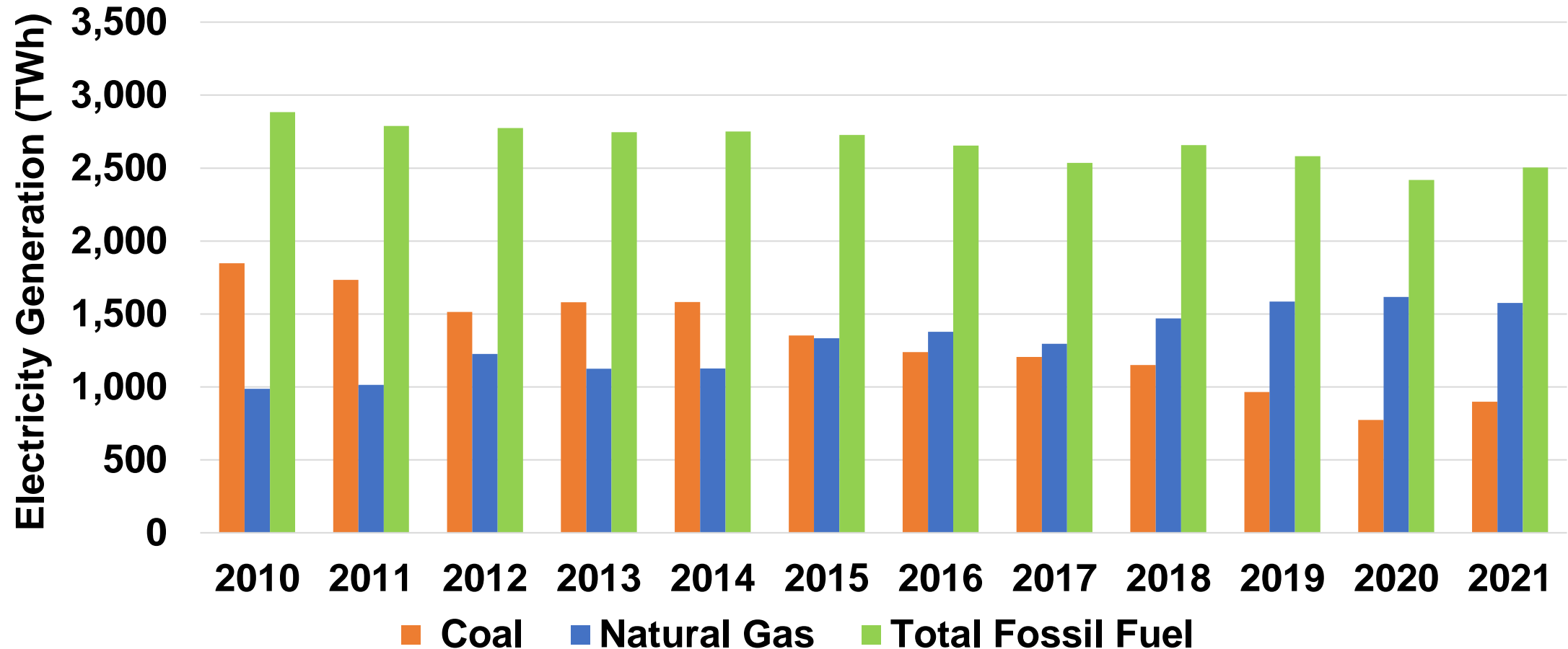
U.S. Fossil Fuel CO₂ Equivalent Emissions (1990-2021)



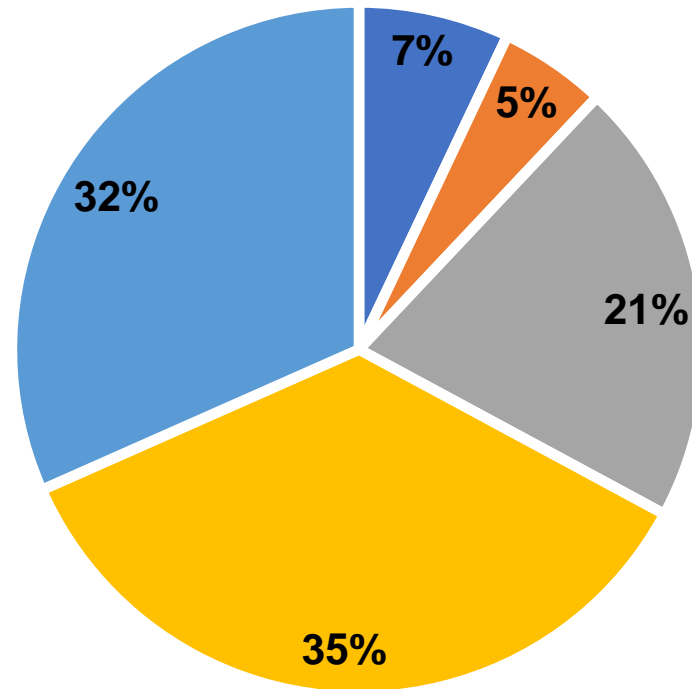
World Energy Use CO₂ Equivalent Emissions (1959-2021)



U.S. Annual Fossil Fuel Electricity Generation (2010-2021)



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



■ Residential ■ Commercial ■ Industrial ■ Transportation ■ Electric Power

ASAP Regional Map

