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Welcome to the

SEIA Finance, Tax and Buyers Seminar

Day 1 | March 30, 2022

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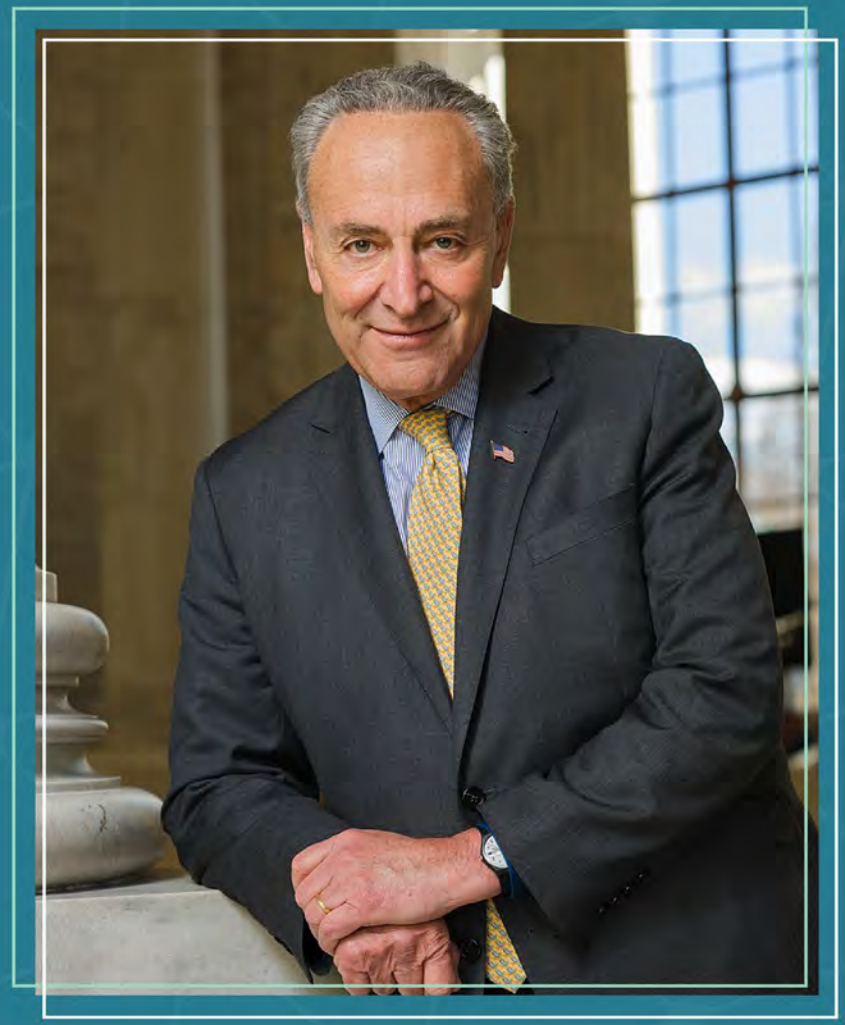
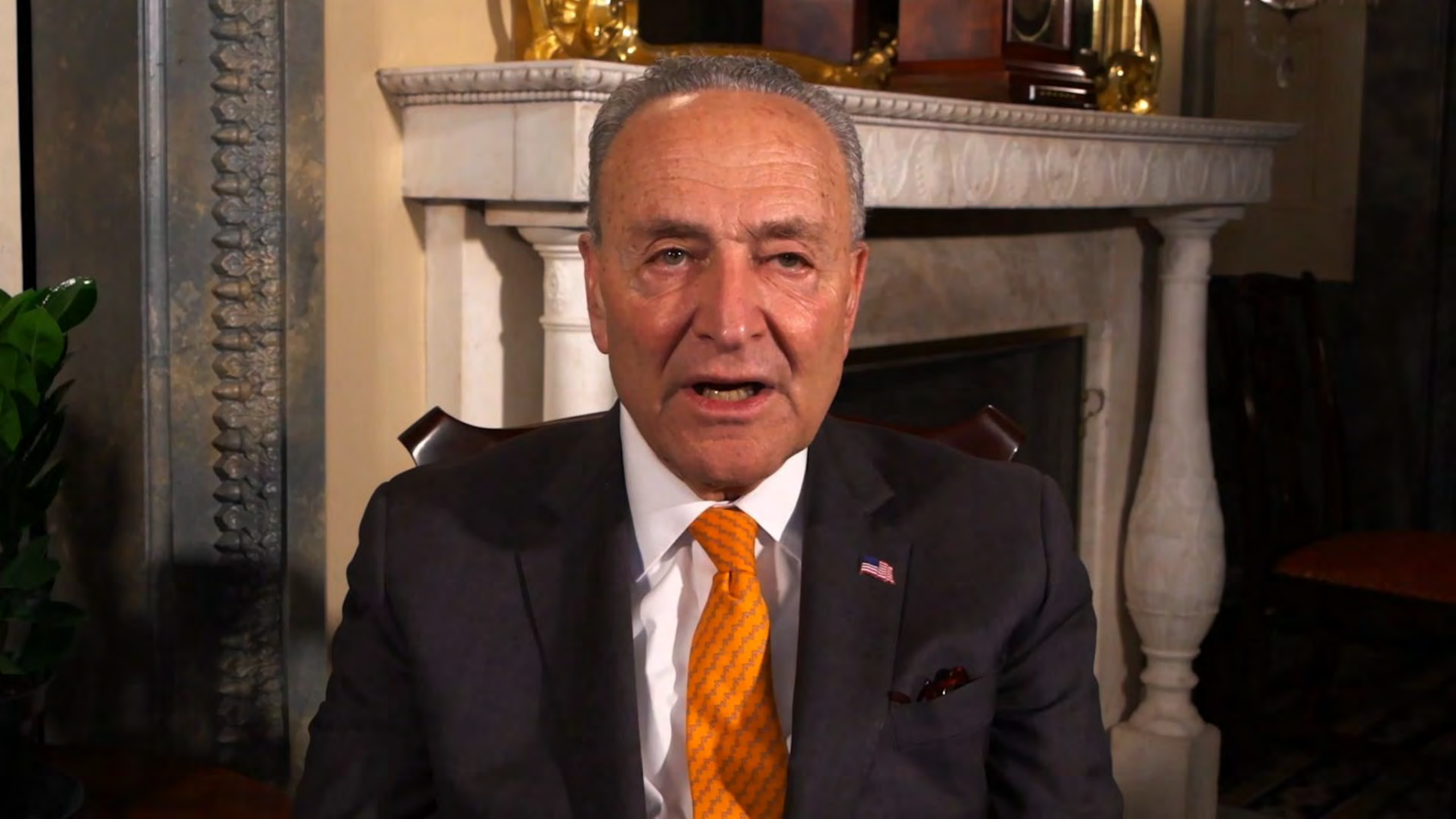
Virtual Opening Keynote

Senator Charles Schumer

U.S. Senate
Majority Leader (D-NY)





Fireside Chat

Democratizing Access to Clean Energy

Abigail Ross Hopper

President and CEO

Solar Energy Industries Association

Doreen M. Harris

President and CEO

New York State Energy Research and Development Authority (NYSERDA)

Climate Spending and Where We Go From Here

1:30 PM - 2:30 PM

Erin Duncan

Vice President of
Congressional Affairs

Solar Energy
Industries Association

Darren Van't Hof

Managing Director
of Environmental Finance

U.S. Bank

Meghan Nutting

EVP of Government
and Regulatory Affairs

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Solar Market Trends and The Corporate Renewables Procurement Landscape

2:45 PM - 3:30 PM

Justin Baca

Vice President of Market and Research

Solar Energy Industries Association

Shawn Rumery

Senior Director of Research

Solar Energy Industries Association

U.S. Solar Market Overview & Trends

March 2022

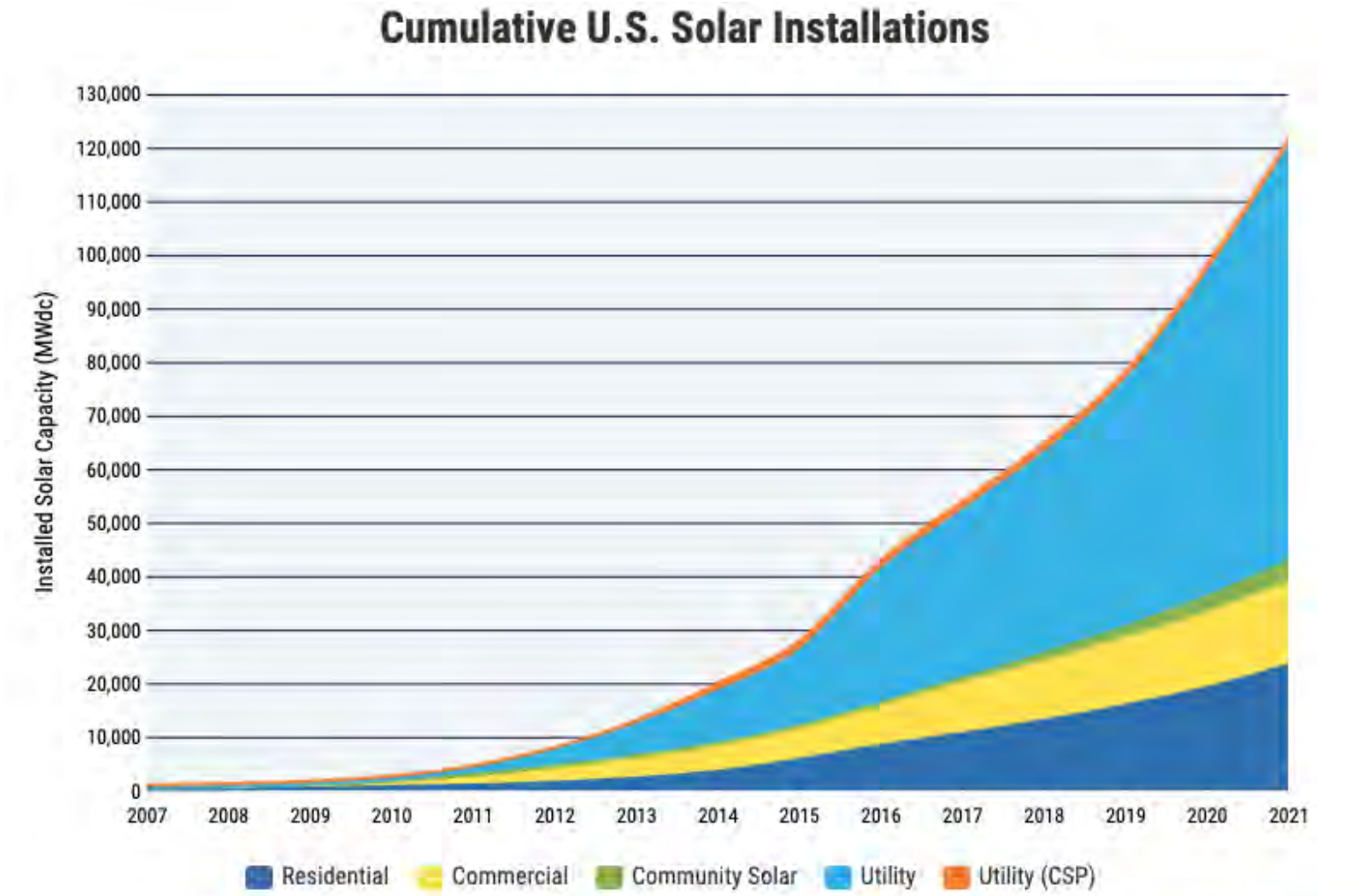
Solar Energy Industries Association

Justin Baca, VP of Markets & Research

SEIA Solar Energy Industries Association®

Powering the Solar+ Decade

Massive Growth Since 2000 Sets the Stage for the Solar+ Decade

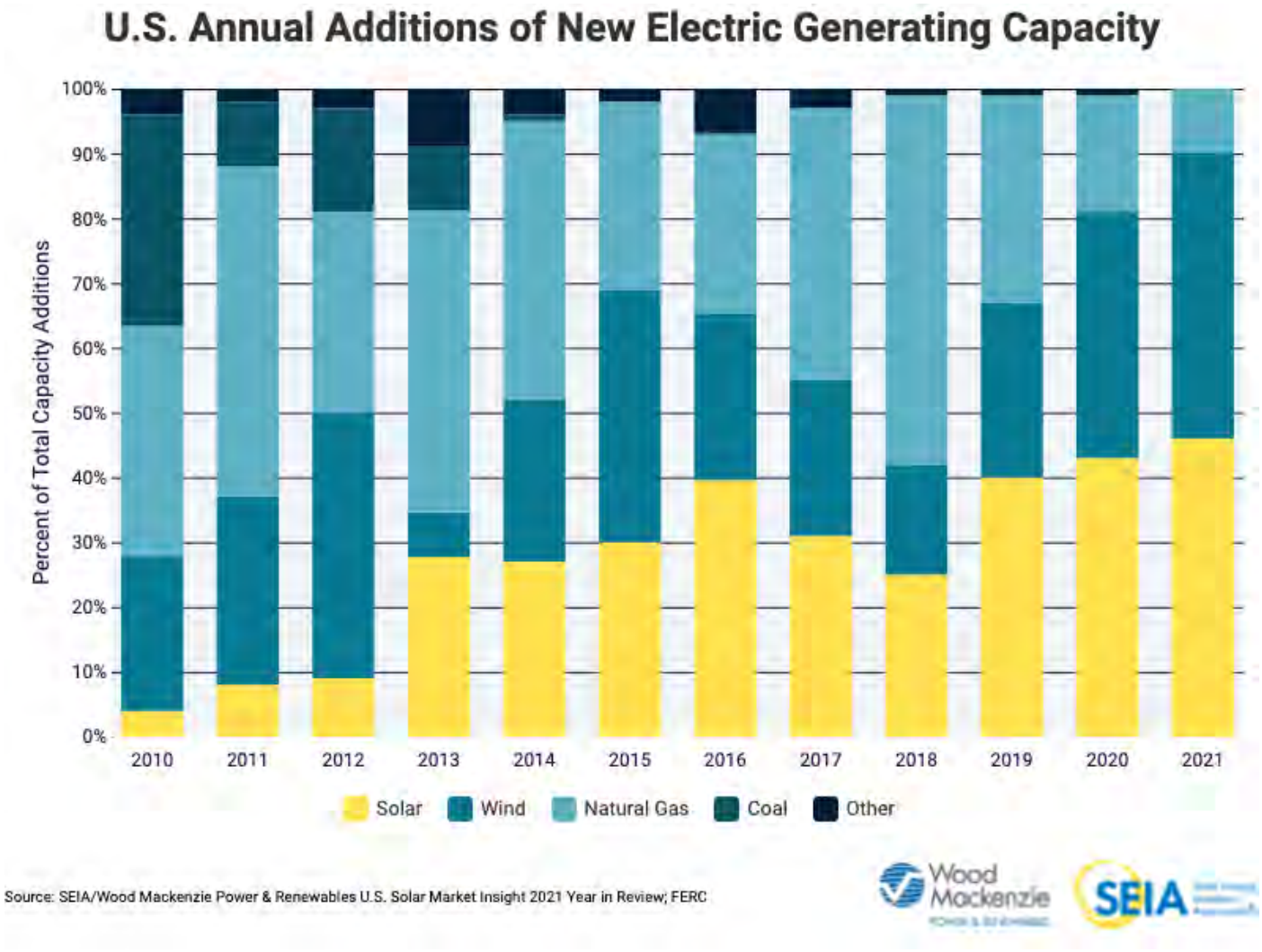


Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2021 Year in Review

In the last decade alone, solar has experienced an average annual growth rate of 33%. Thanks to strong federal policies like the solar Investment Tax Credit, rapidly declining costs, and increasing demand across the private and public sector for clean electricity, there are now more than 121 gigawatts (GW) of solar capacity installed nationwide, enough to power 23.3 million homes.

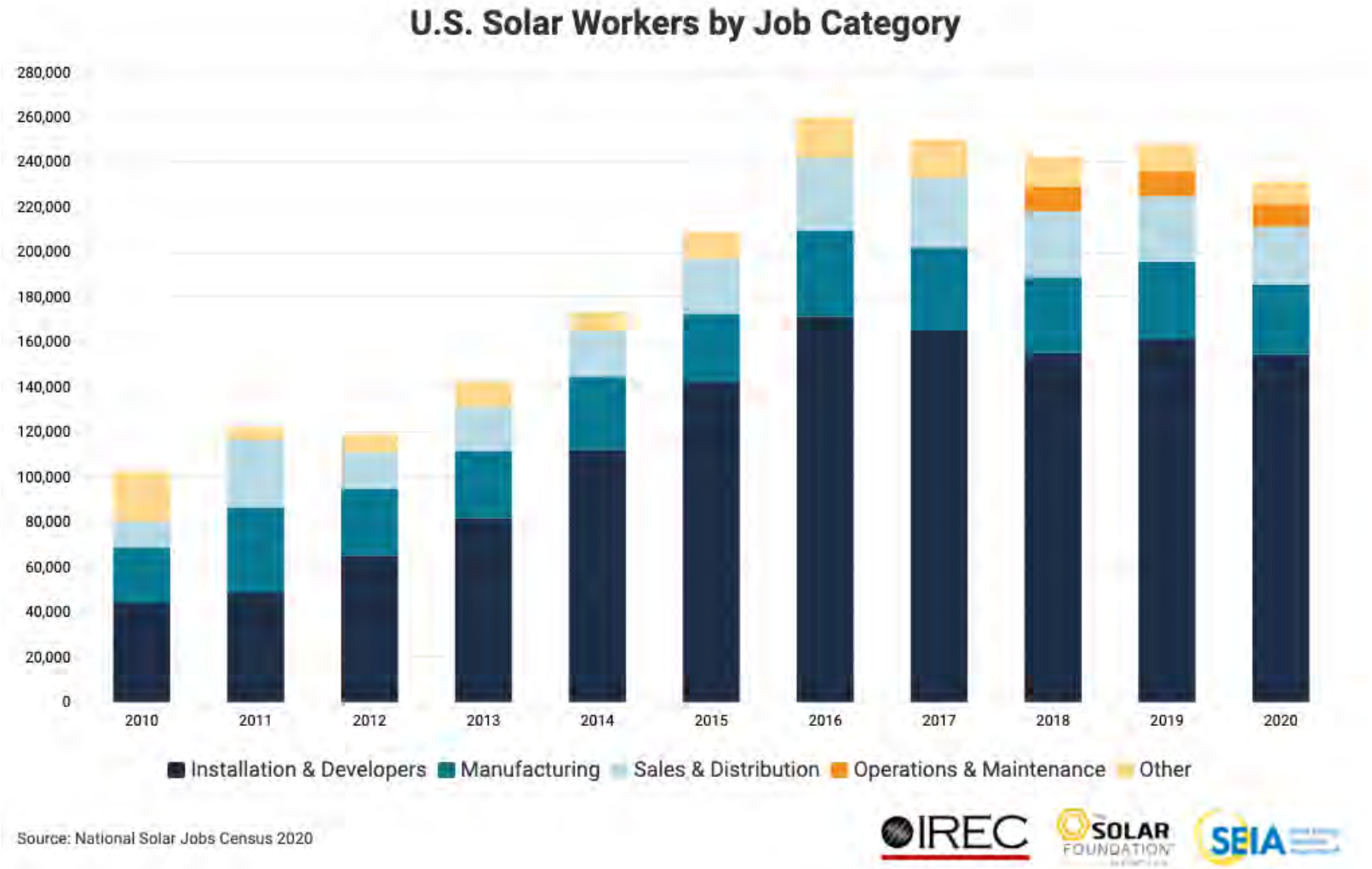
Solar's Share of New Capacity Has Grown Rapidly

Solar has ranked first or second in new electric capacity additions in each of the last 9 years. In 2021, 46% of all new electric capacity added to the grid came from solar, the largest such share in history and the third year in a row that solar added the most generating capacity to the grid. Solar's increasing competitiveness against other technologies has allowed it to quickly increase its share of total U.S. electrical generation - from just 0.1% in 2010 to nearly 4% today.

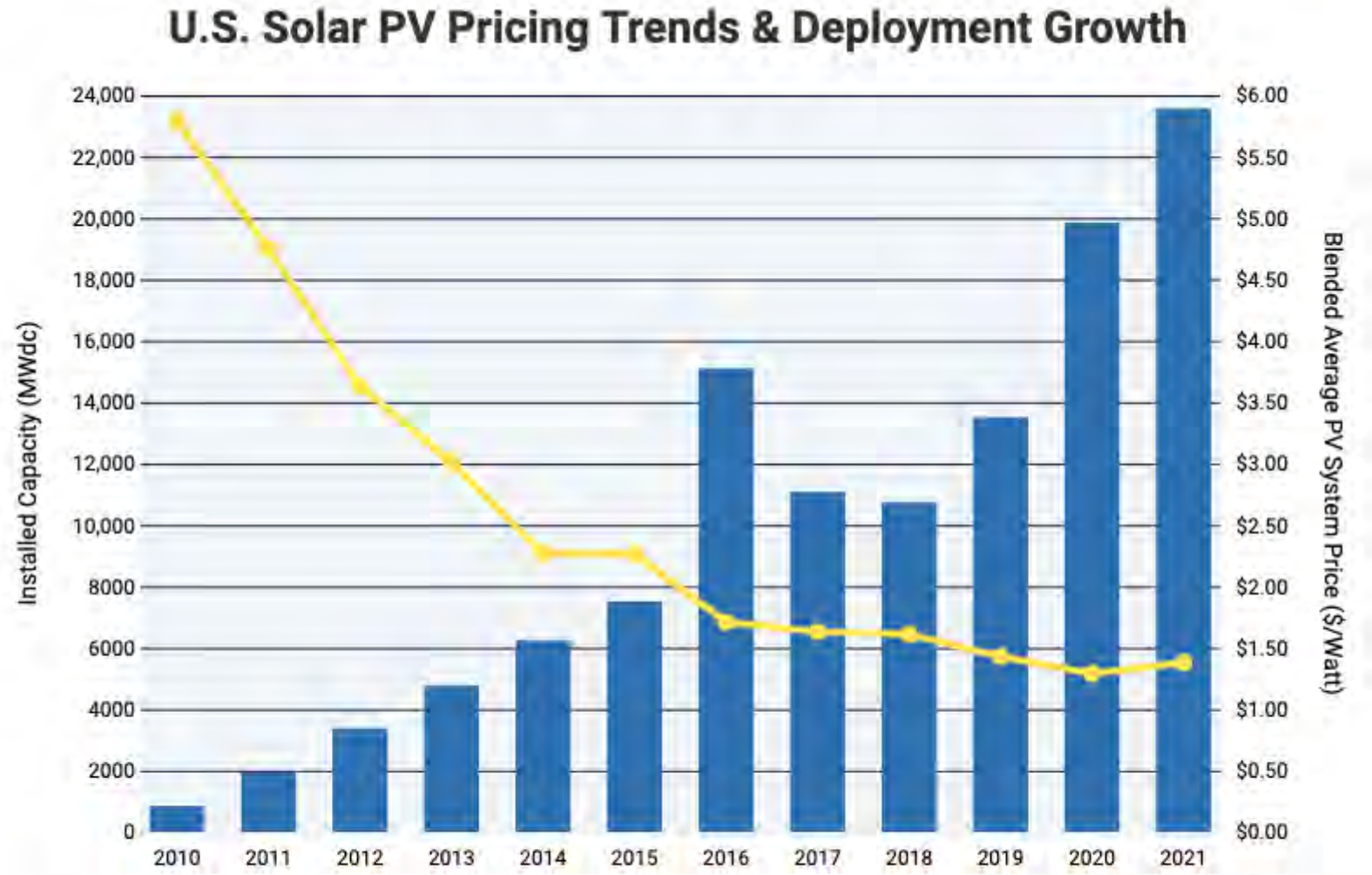


Solar as an Economic Engine

As of 2020, more than 230,000 Americans work in solar at more than 10,000 companies in every U.S. state. In 2021, the solar industry generated nearly $33 billion of private investment in the American economy.

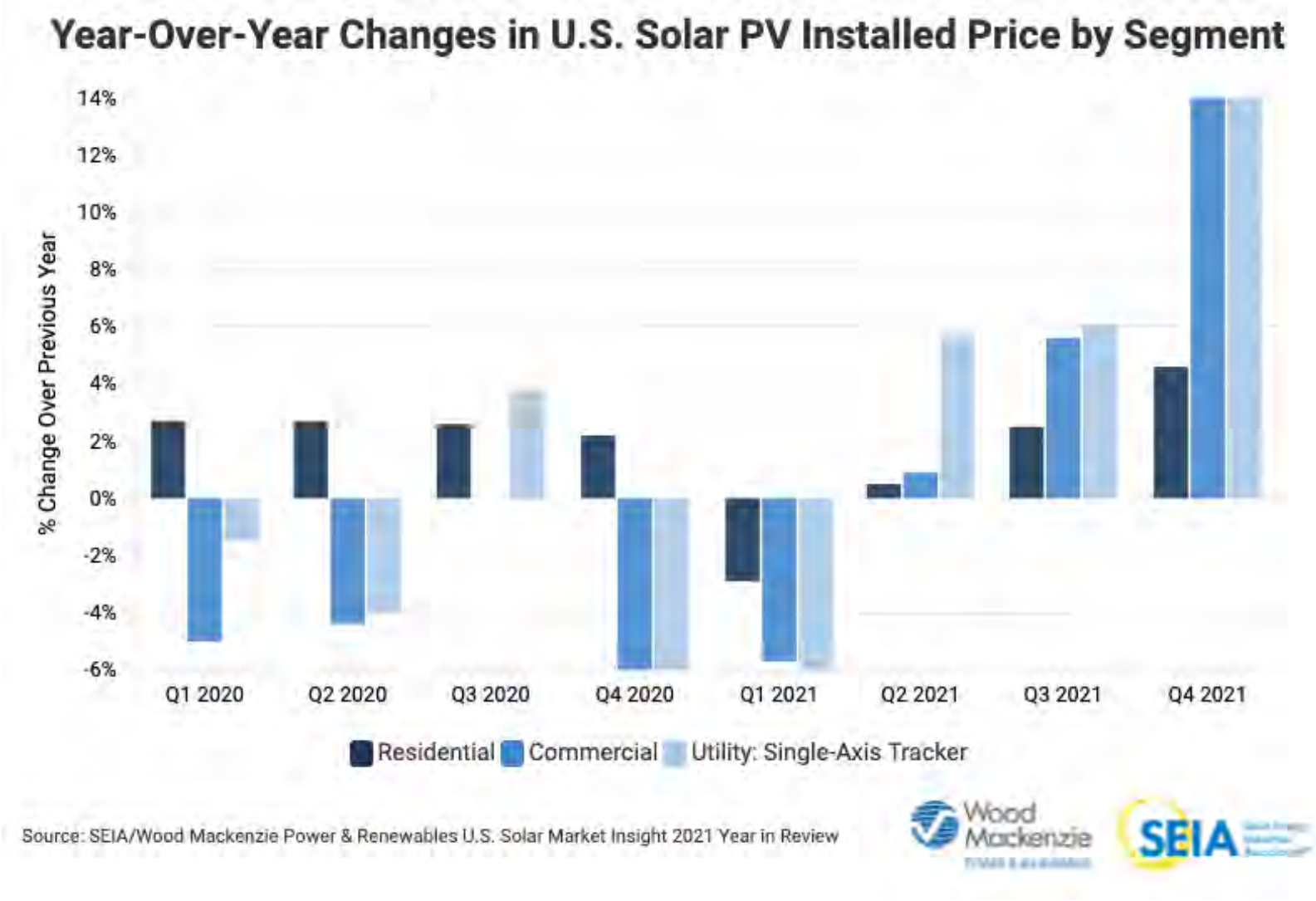


Growth in Solar is Led by Falling Prices



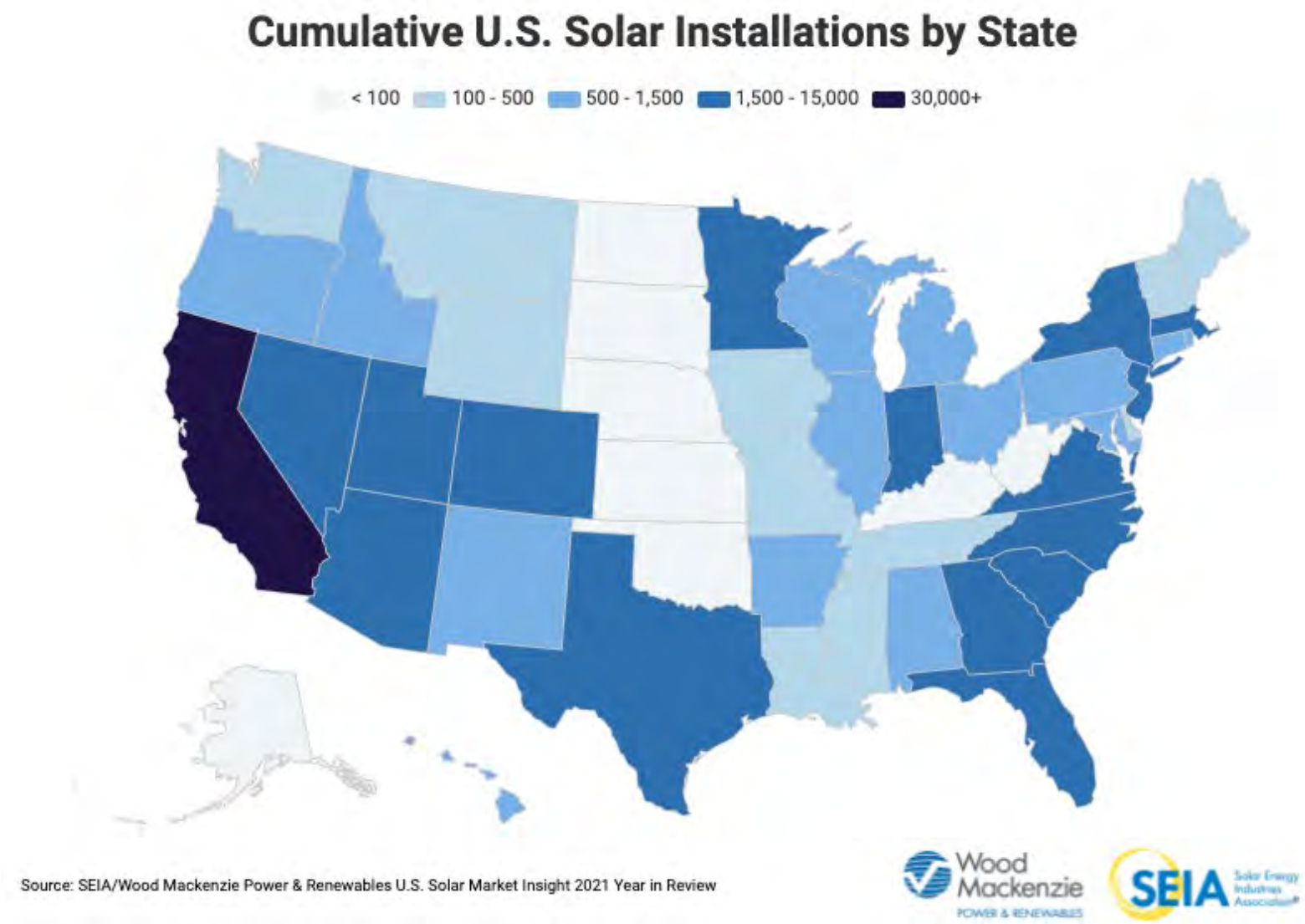
The cost to install solar has dropped by more than 60% over the last decade, leading the industry to expand into new markets and deploy thousands of systems nationwide. An average-sized residential system has dropped from a pre-incentive price of $40,000 in 2010 to roughly $20,000 today, while recent utility-scale prices range from $16/MWh - $35/MWh, competitive with all other forms of generation.

Supply Chain Constraints Lead to Price Increases



However, over the last 9 – 12 months, shipping constraints and other supply chain challenges stemming from the global pandemic and trade instability have led to price increases across the U.S. solar industry. For the first time since Wood Mackenzie began modeling solar system price data in 2014, year over year prices have increased across all market segments for three consecutive quarters, leaving utility-scale solar prices 18% higher than they were a year ago. Price increases have impacted deployment, with 1/3rd of Q4 2021 projects delayed a quarter or more, and 13% of expected 2022 projects delayed by a year or more or canceled outright.

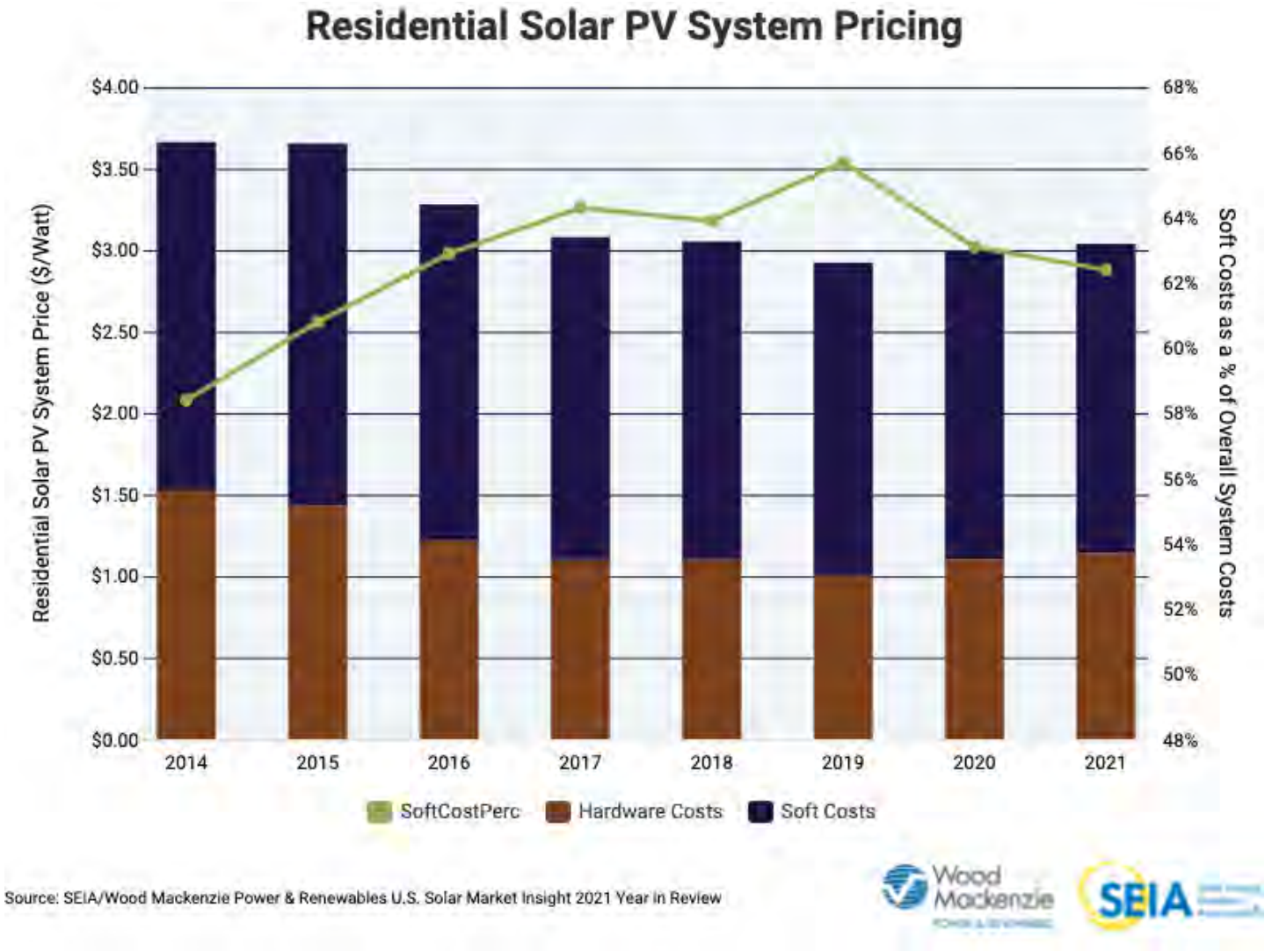
The U.S. Solar Industry is a 50-State Market



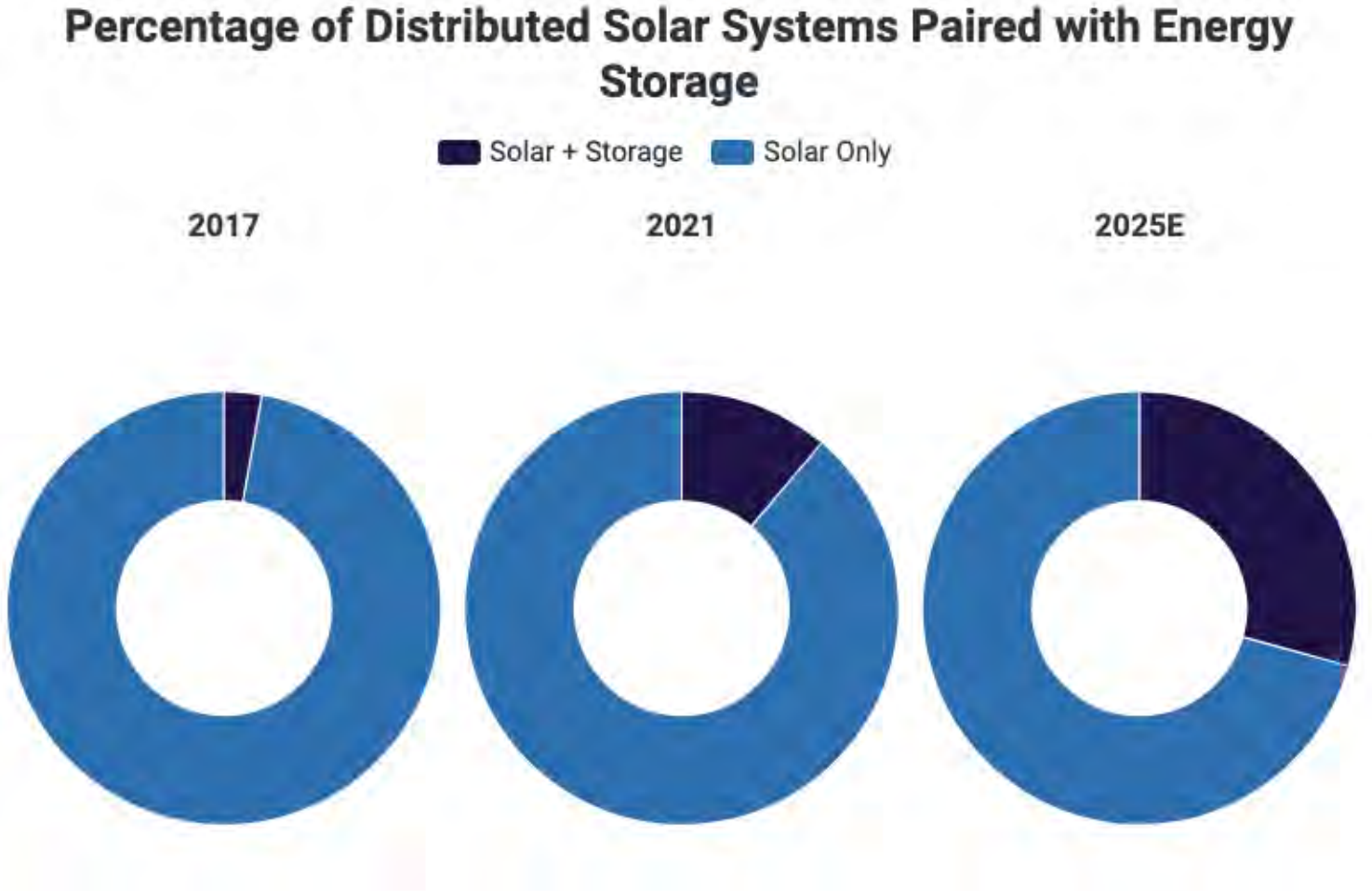
While California has traditionally dominated the U.S. solar market, other markets are continuing to expand rapidly. In 2021, states outside of California made up their largest share of the market in the last decade, led by rapid growth in Florida and Texas. As demand for solar continues to grow, new state entrants will grab an increasing share of the national market.

Prices Decline for Rooftop Solar, but Higher Soft Costs Remain

The biggest cost-decline opportunity in residential and small commercial solar exists in soft costs, which includes installation labor, customer acquisition, and permitting/inspection/interconnection. While the soft cost share of total system costs has stabilized in recent months due to increased customer demand, rising hardware costs and pandemic-related improvements to permitting practices, U.S. solar soft costs continue to be much higher than those of other developed solar markets around the world. Through programs like Solar Automated Permit Processing (SolarAPP) and SolSmart, SEIA and our partners are working to reduce local barriers to going solar.



Storage is Increasingly Paired with All Forms of Solar

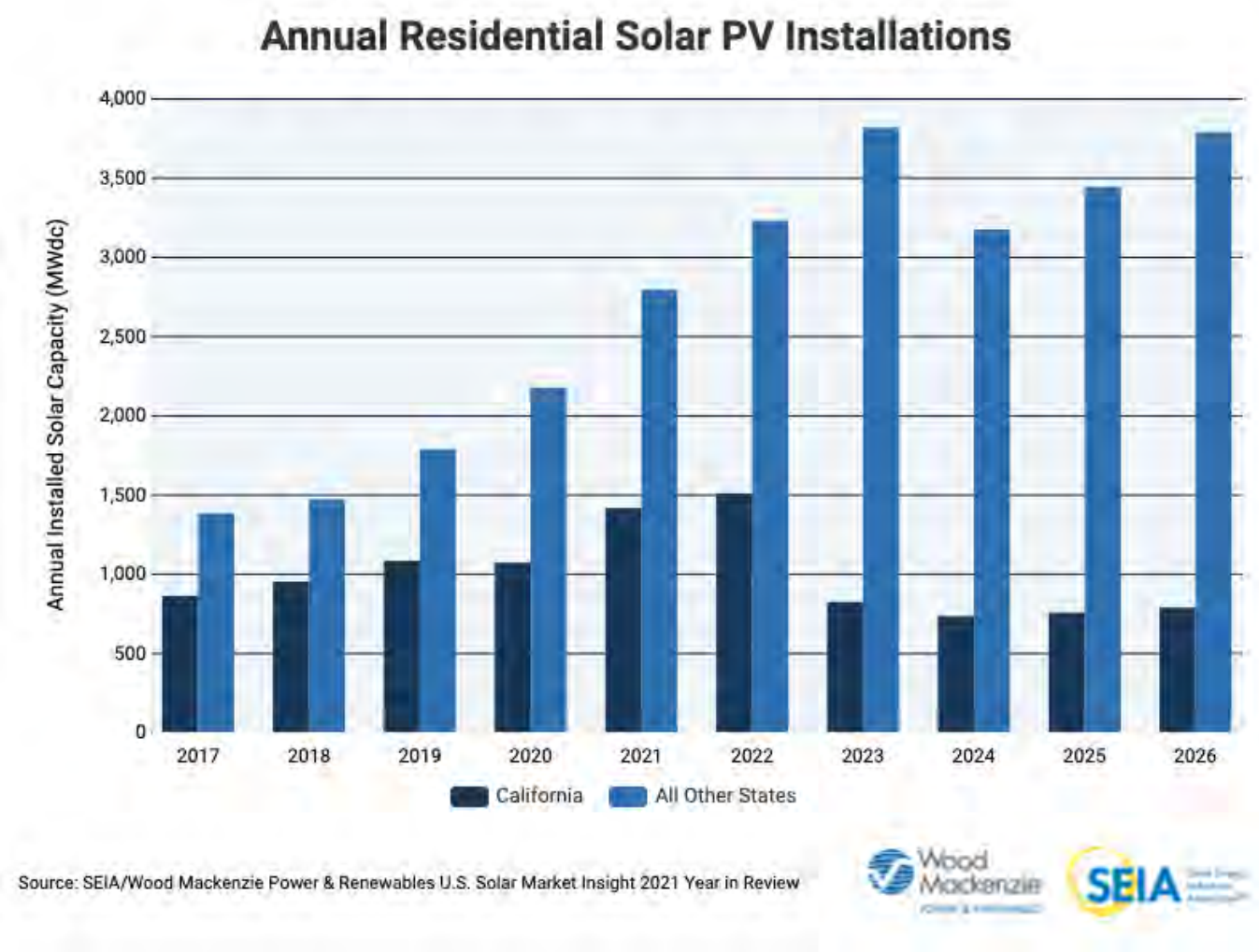


Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2021 Year in Review

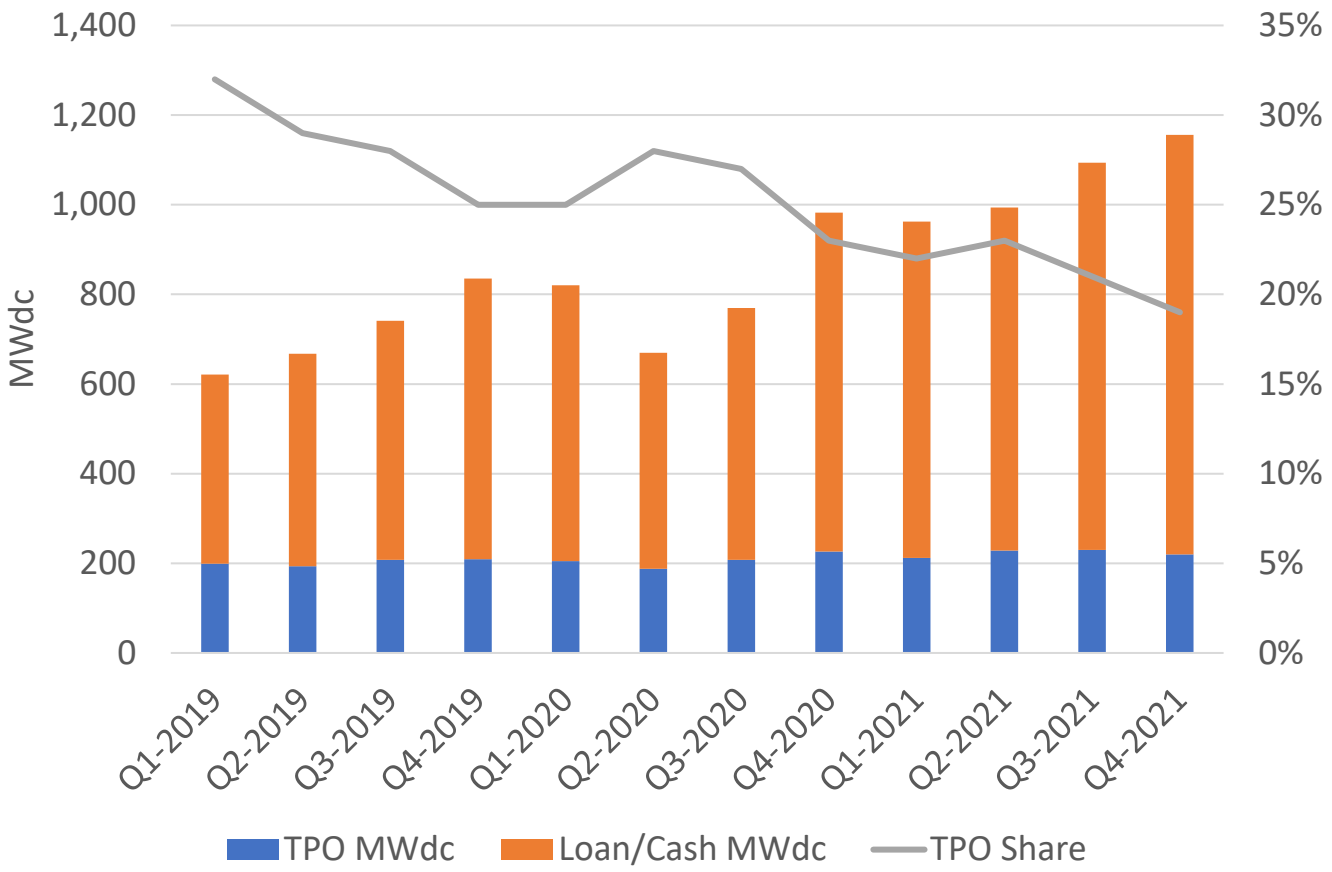
Homeowners and businesses are increasingly demanding solar systems that are paired with battery storage. While this pairing is still relatively new, the growth over the next five years is expected to be significant. By 2025, over 29% of all new behind-the-meter solar systems will be paired with storage, compared to under 11% in 2021. The utility-scale market is also recognizing the benefits of pairing solar with storage, with over 45 GW of commissioned or announced projects paired with storage, representing over 50 GWh of storage capacity.

Residential Market Continues to Diversify

The residential solar market experienced its 5th consecutive record year in 2021, growing 30% over 2020 with 4.2 GW installed. Customers continue to be motivated by increasing household electricity bills brought on by the pandemic, power outages and low financing costs. That growth is threatened however, by proposed changes to Net Metering rules in multiple states. In California's NEM 3.0 case, the proposed decision issued by the Public Utilities Commission could cut the California market in half by 2024. Details on future NEM 3.0 proposals are forthcoming.



Residential Finance Trends



Third-Party Ownership, Loans and Cash

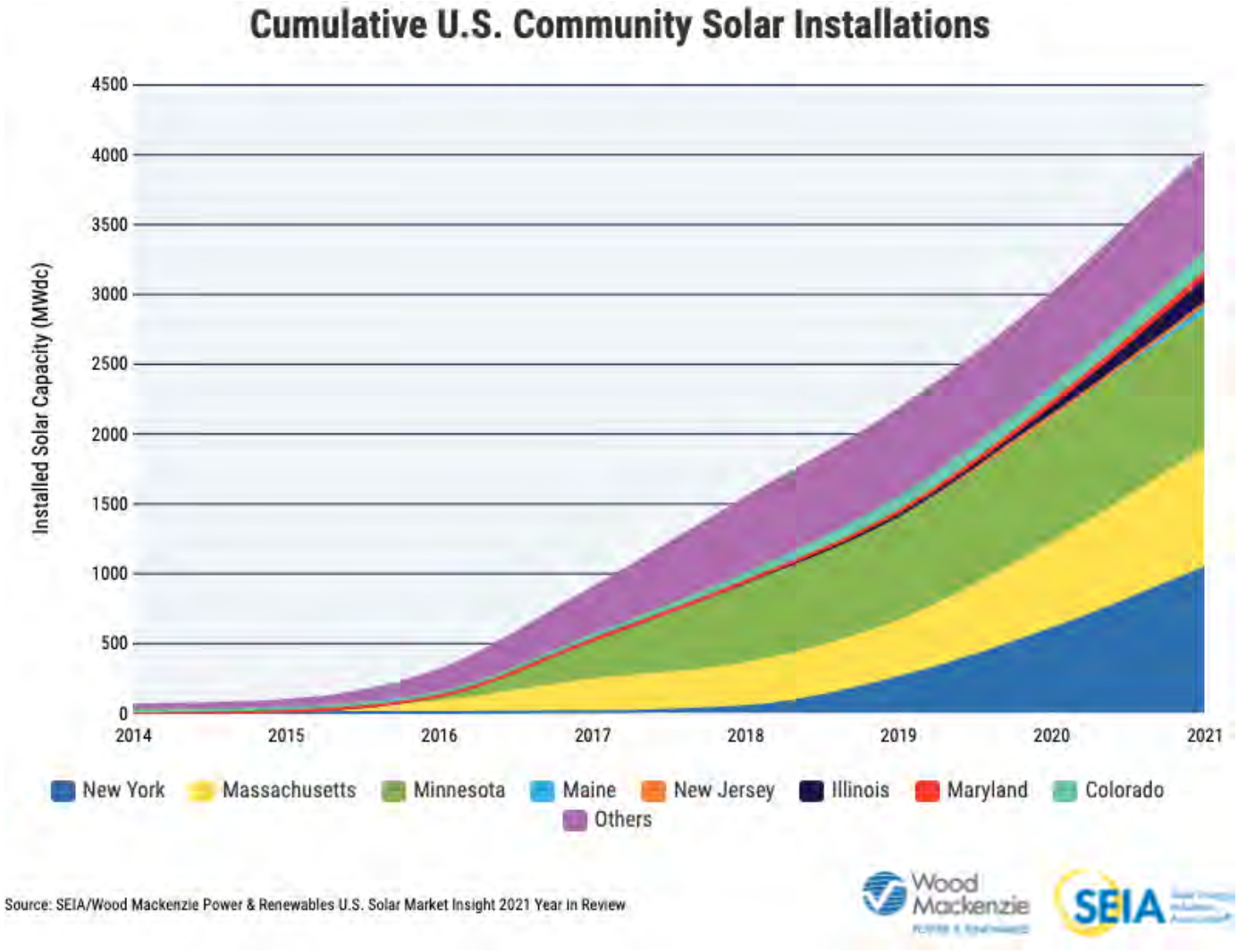
Residential market is growing fast enough for all options to grow.

Significant growth in loan financing.

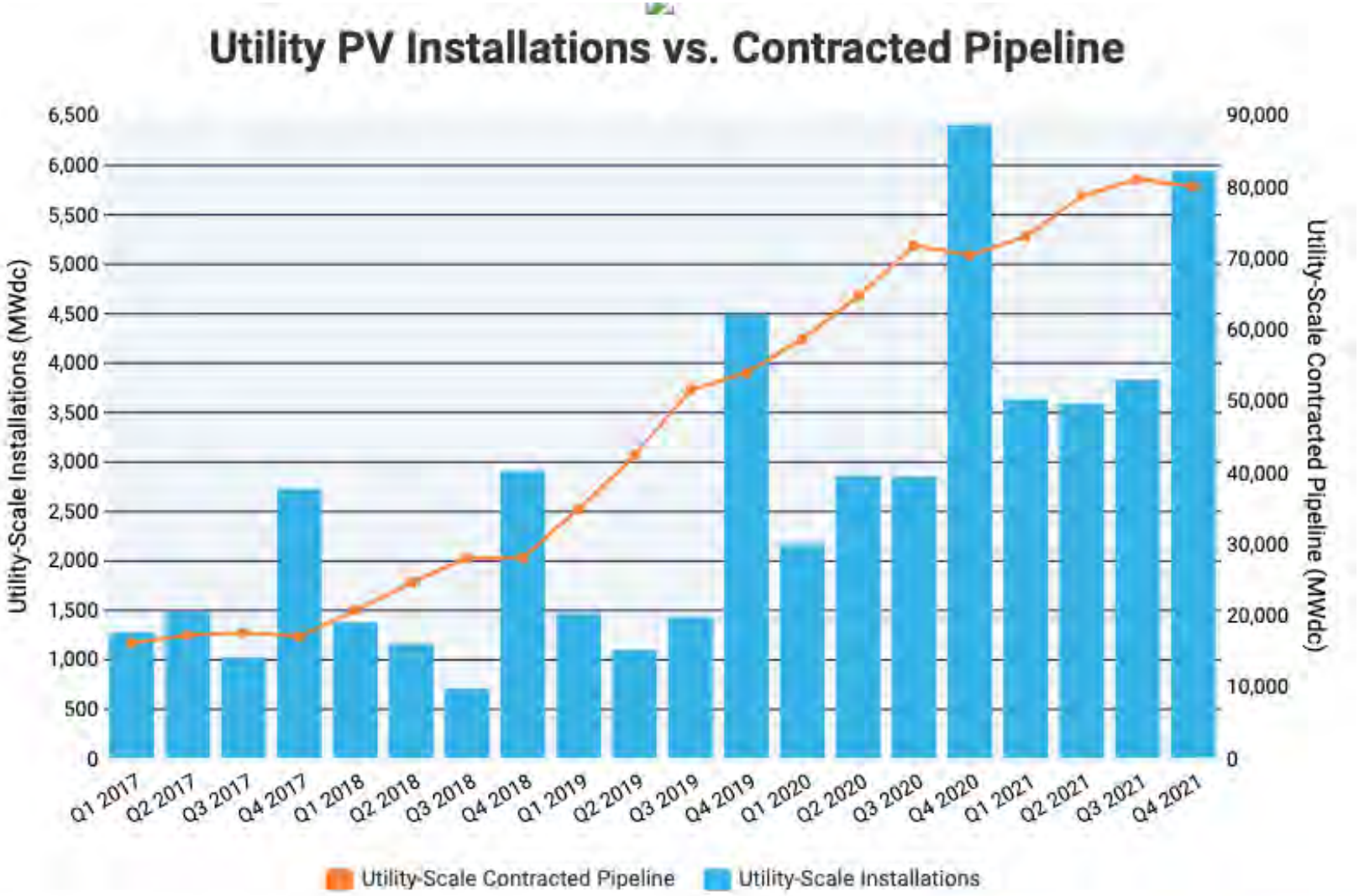
2021 TPO sales were up over 2019 and 2020.

New State Entrants Help Fuel Community Solar Growth

While early growth for community solar installations was led primarily by three key markets - New York, Minnesota, and Massachusetts - a growing list of states with community solar programs have helped diversify the market, creating large pipelines set to come to fruition over the next several years. Continued growth in state community solar programs and improvements to state and regional interconnection processes are imperative to ensure solar access for all types of homeowners and businesses.



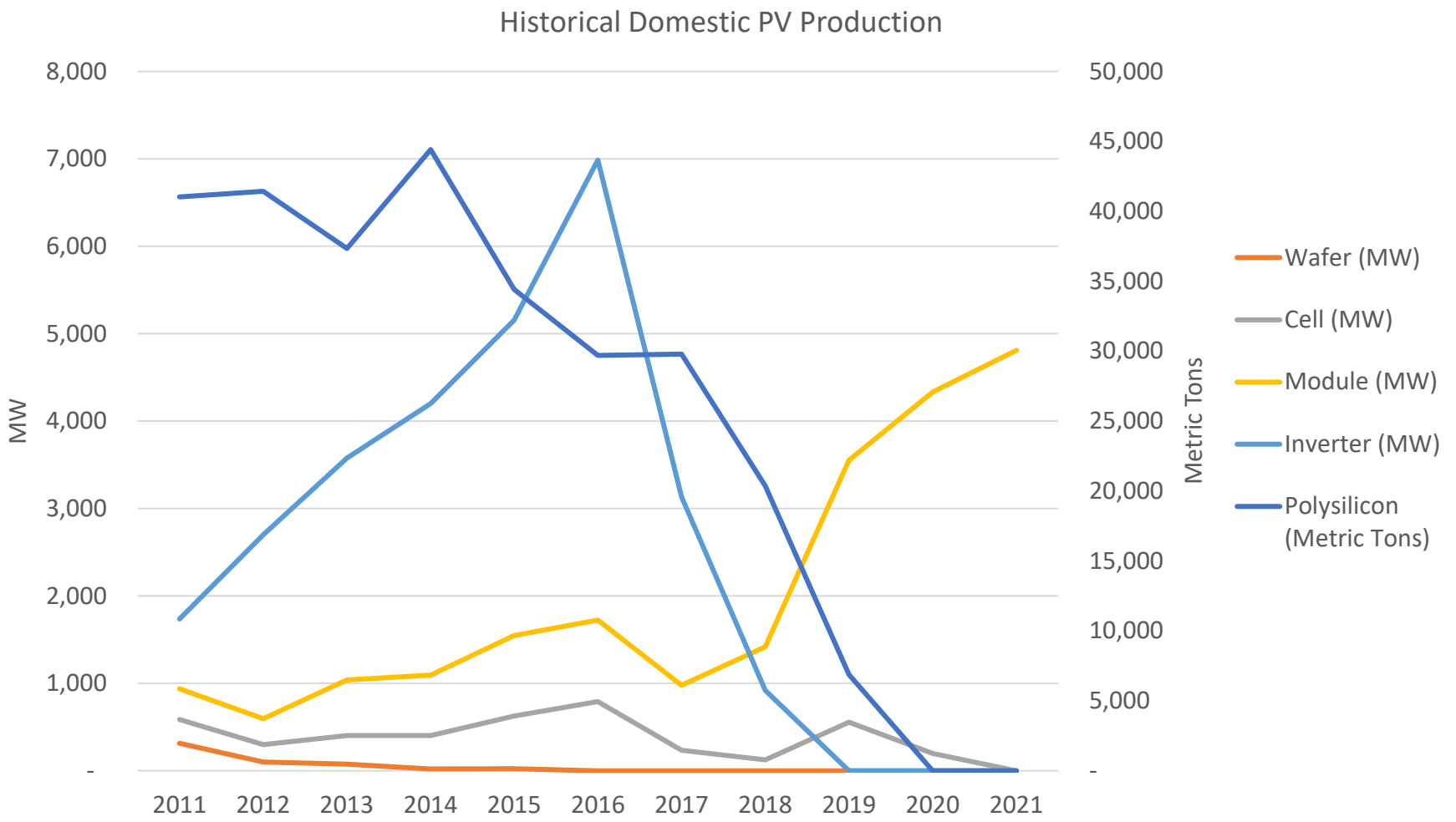
Large Utility-Scale Pipeline Outpaces Installs



Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2021 Year in Review

The utility scale solar market faced a host of challenges in 2021 as the pandemic wreaked havoc on international supply chains and labor availability, pushing prices to their highest levels in three years. Multiple circumvention petitions seeking to prohibit module imports from certain countries have further exacerbated supply chain challenges and if adopted could have devastating impacts on the industry. The combination of headwinds has resulted in delays and cancelations for many projects, resulting in a 19% reduction in utility-scale deployment forecasts in 2021/2022 over the last six months. Despite this, demand for utility-scale solar remains strong as increasing numbers of states, utilities and corporations seek to fulfill their clean energy goals.

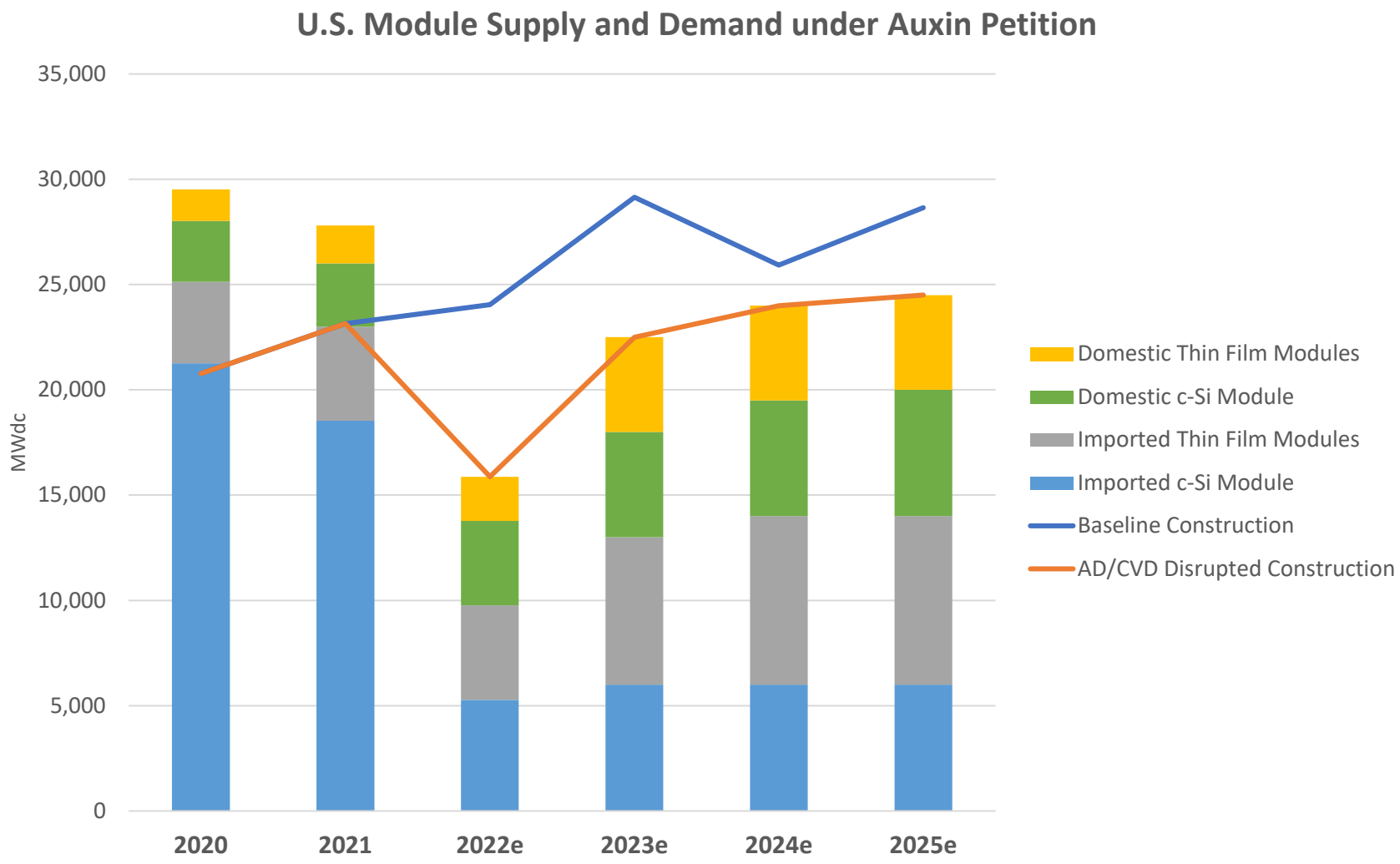
Domestic Module less than 1/4th Demand



- Domestic wafer production has never been significant and has been zero since 2016.
  - →No domestic customers for polysilicon.
- Domestic module production strongest and should be helped by raising cell TRQ.
- To increase domestic content, need domestic glass and frame production.
- 20 GW of new manufacturing capacity announced, depends on SEMA

Sources: SEIA/Woodmac U.S. *Solar Market Insight 2021 Year in Review*

New Trade Dispute Threatens Growth



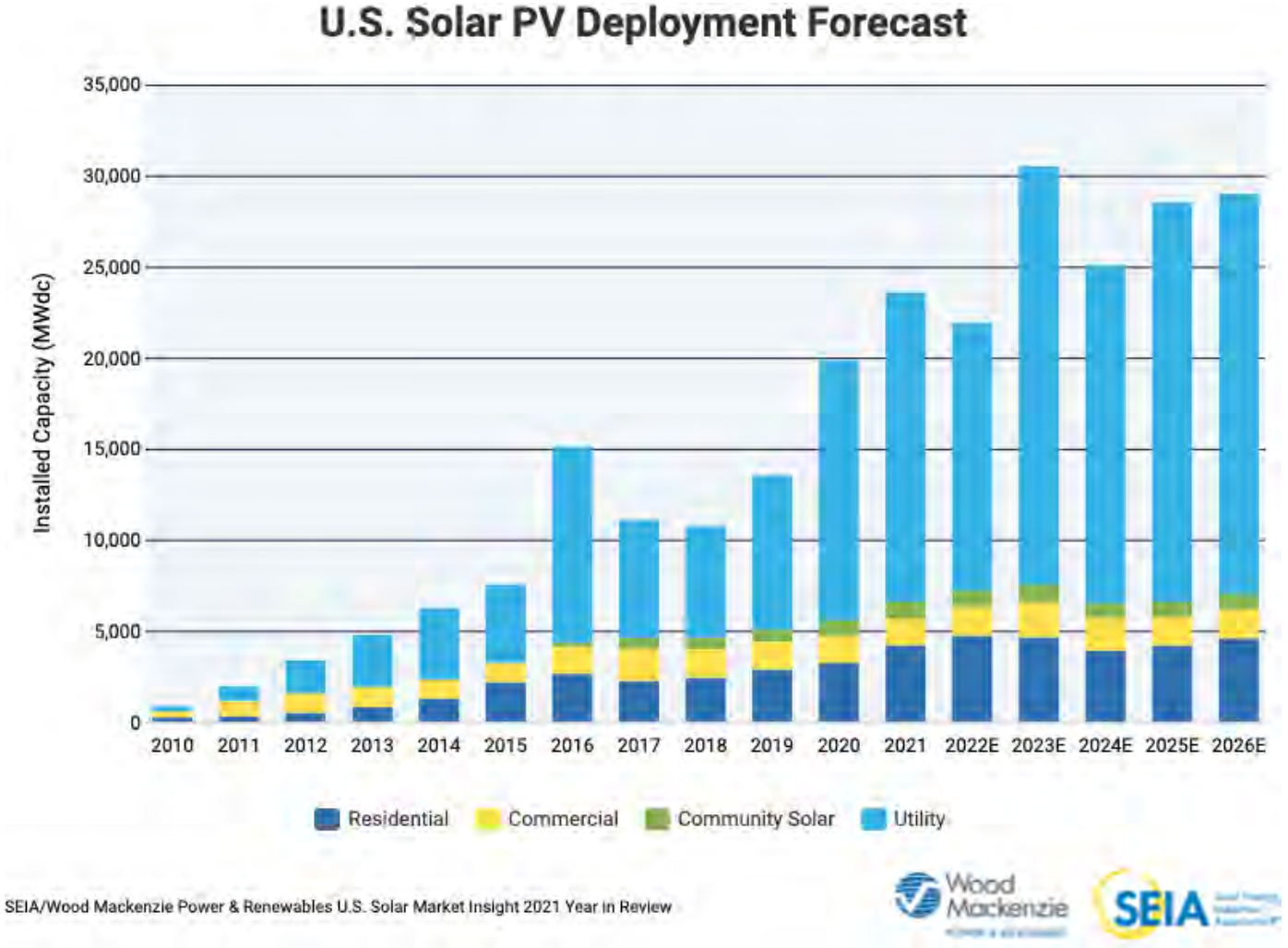
Department of Commerce initiating investigation of imports from Cambodia, Malaysia, Thailand and Vietnam.

Crystalline silicon modules from these four countries represent 65% of all module imports. There is insufficient non-Chinese capacity elsewhere to cost-effectively supply U.S. demand.

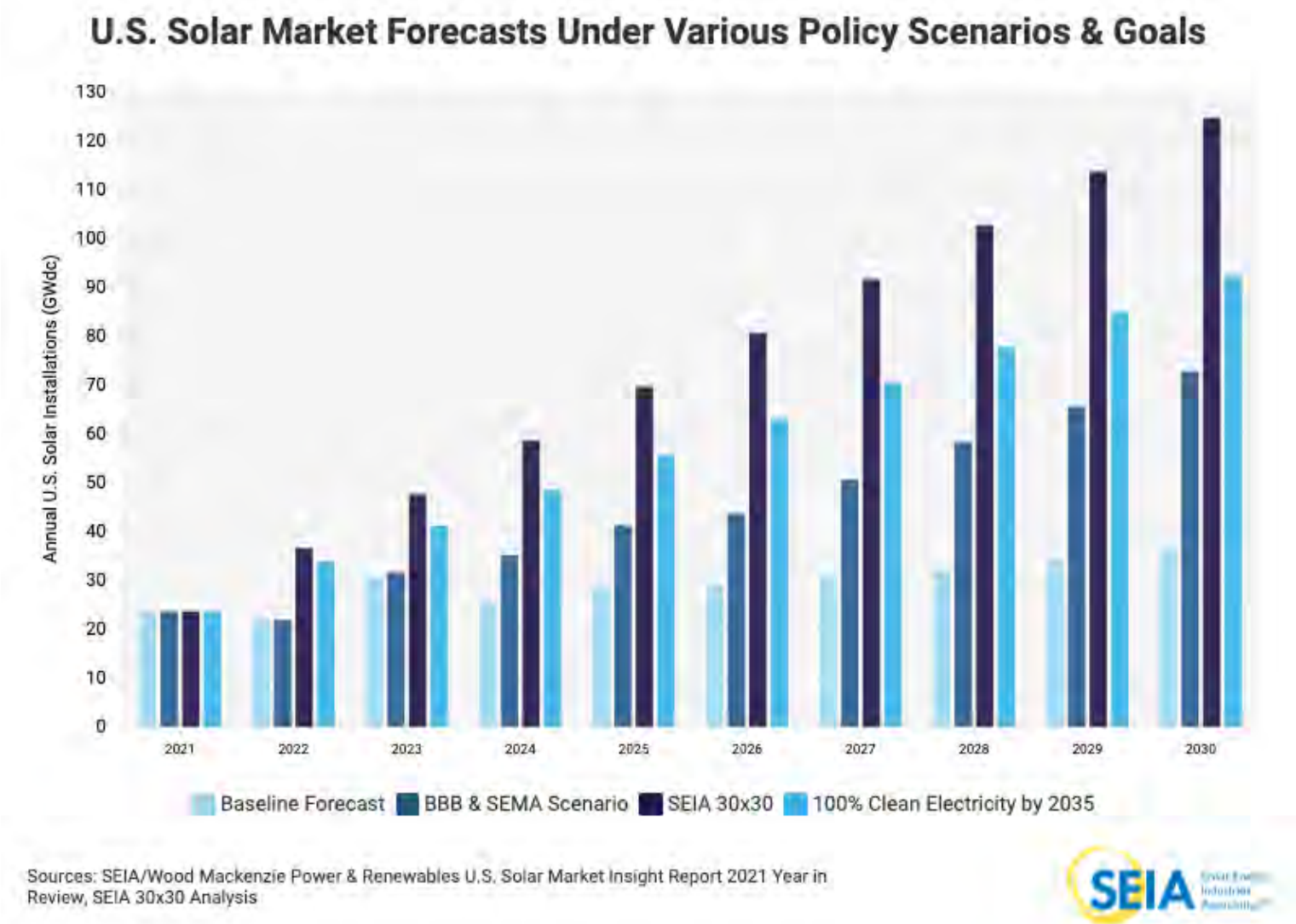
Likely to also disrupt cell imports used for domestic module production.

Solar PV Growth Forecast

The U.S. Solar market installed a record 23.6 GW in 2021, despite supply chain challenges brought on by the pandemic and trade disputes. Pricing and procurement challenges will continue to impact deployment in 2022, leading to the first annual decline in the market in 4 years. Assuming supply chain recovery and no major trade barriers, growth should resume in 2023 ahead of Investment Tax Credit step down in 2024. Barring new policy developments at the state and federal levels, industry growth through the end of the decade is premised on continued price declines and growing demand from utilities, states, corporations, and distributed solar customers.



More Aggressive Growth Needed to Reach Climate Goals



Sources: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Report 2021 Year in Review, SEIA 30x30 Analysis

While projected growth over the next 10 years puts the solar market in reach of ambitious clean energy goals set by the industry and the Biden administration, more work is needed to achieve the pace required for a 100% clean energy electricity system. Annual installs will need to grow from less than 20 GW in 2020 to more than 90 GW by 2030, with cumulative totals nearing 700 GW by the end of the decade. A combination of private sector innovation and stable, long-term public policy will set the solar industry on a path to achieving these more aggressive goals to address climate change and decarbonize the economy.

Indicative construction periods

Based on Chinese and SE Asian public filings, we believe project construction times are approximately:

	Most typical construction period (months)	Common range of construction periods (months)
Polysilicon	18	12 - 24
Ingot/Wafer	12 - 18	12 - 36
Wafer only	9 - 12	9 - 18
Cell	9 - 12	6 - 24
Module	9 - 12	6 - 24

These ranges include some very large multi-phase projects. Construction periods for single-phase projects may be at the shorter end of any range, although individual project timescales will be highly dependent on the specifics of site selection, permitting, required infrastructure, etc.

The following slides present example project timelines based on projects due online from 2022-2024

These timelines do not cover some prerequisite stages such as siting (and likely some permitting)

Trends in Corporate Renewables Procurement

March 2022

Solar Energy Industries Association
Shawn Rumery, Sr. Director of Research

SEIA Solar Energy Industries Association®

Powering the Solar+ Decade

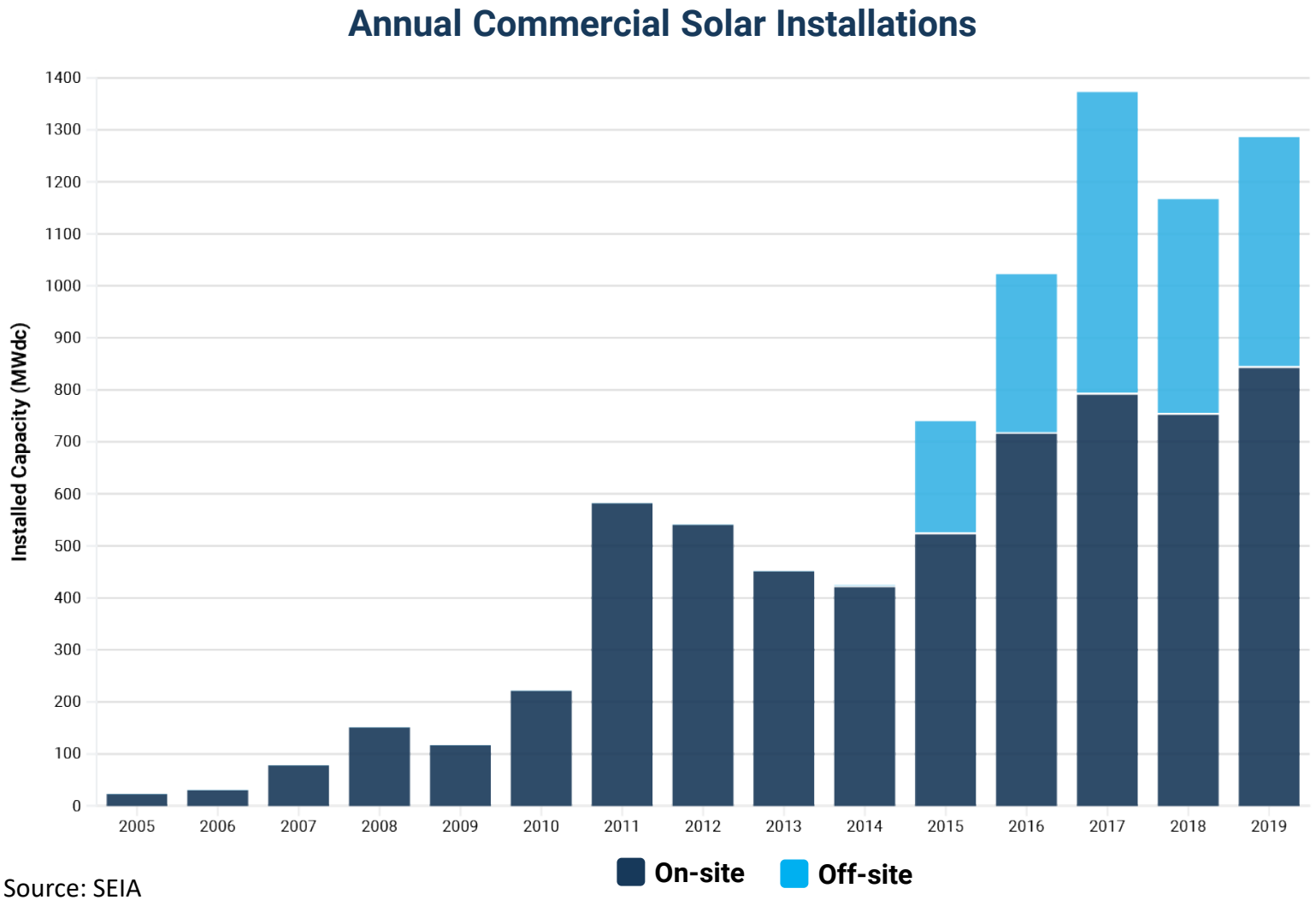
About SEIA's Solar Means Business Report

Top 10 Corporate Solar Users through 2019

1	Apple	398.3 MW
2	Amazon	369.8 MW
3	Walmart	331.0 MW
4	Target	284.4 MW
5	Google	245.3 MW
6	Kaiser Permanente	181.8 MW
7	Switch	179.0 MW
8	Prologis	133.7 MW
9	Facebook	119.5 MW
10	Solvay	81.4 MW

- Semi-annual report tracking corporate adoption of solar, both on-site and off-site
- Last released in 2020; currently prepping 9th edition of report due for release later this spring
- Data comes from system owners/hosts, installers/developers and publicly available sources
- Invaluable advocacy resource
- SEIA Member Benefit
  - 2020 report included data on 38,000 commercial systems
- Contact srumery@seia.org to contribute data

Commercial Solar Adoption Over Time

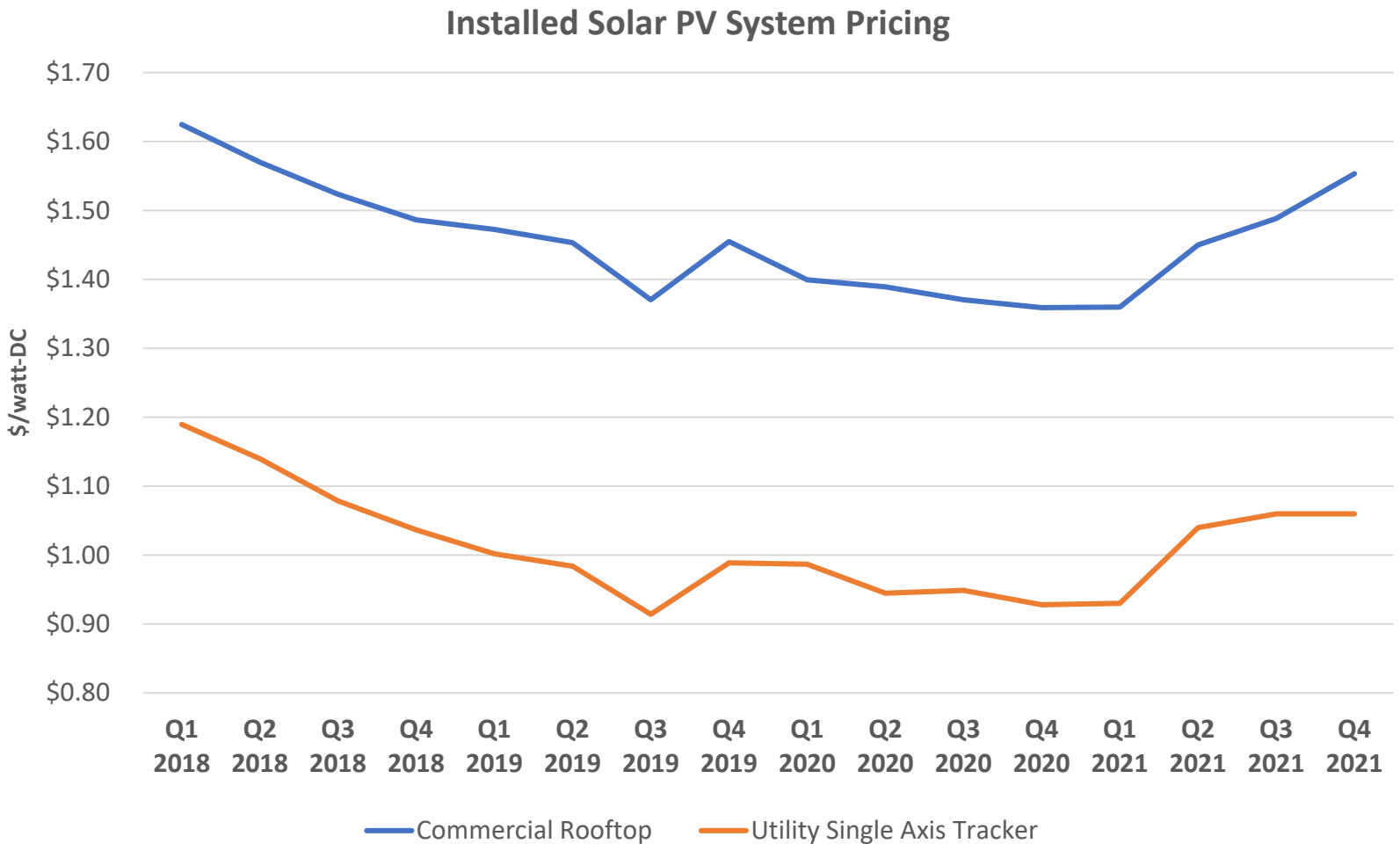


Source: SEIA

- 2020 report found over 8 GW of corporate solar deployment, with 2019 installs up 10% from 2018 to roughly 1,300 MWdc
- Since 2019, on-site growth has remained relatively flat, while off-site growth has exploded
- Through 2019, roughly 2 GW of offsite solar was installed
- **Over last 2 years, as much as 13 GW of off-site corporate solar has been completed**, representing 30 – 40% of all utility-scale capacity

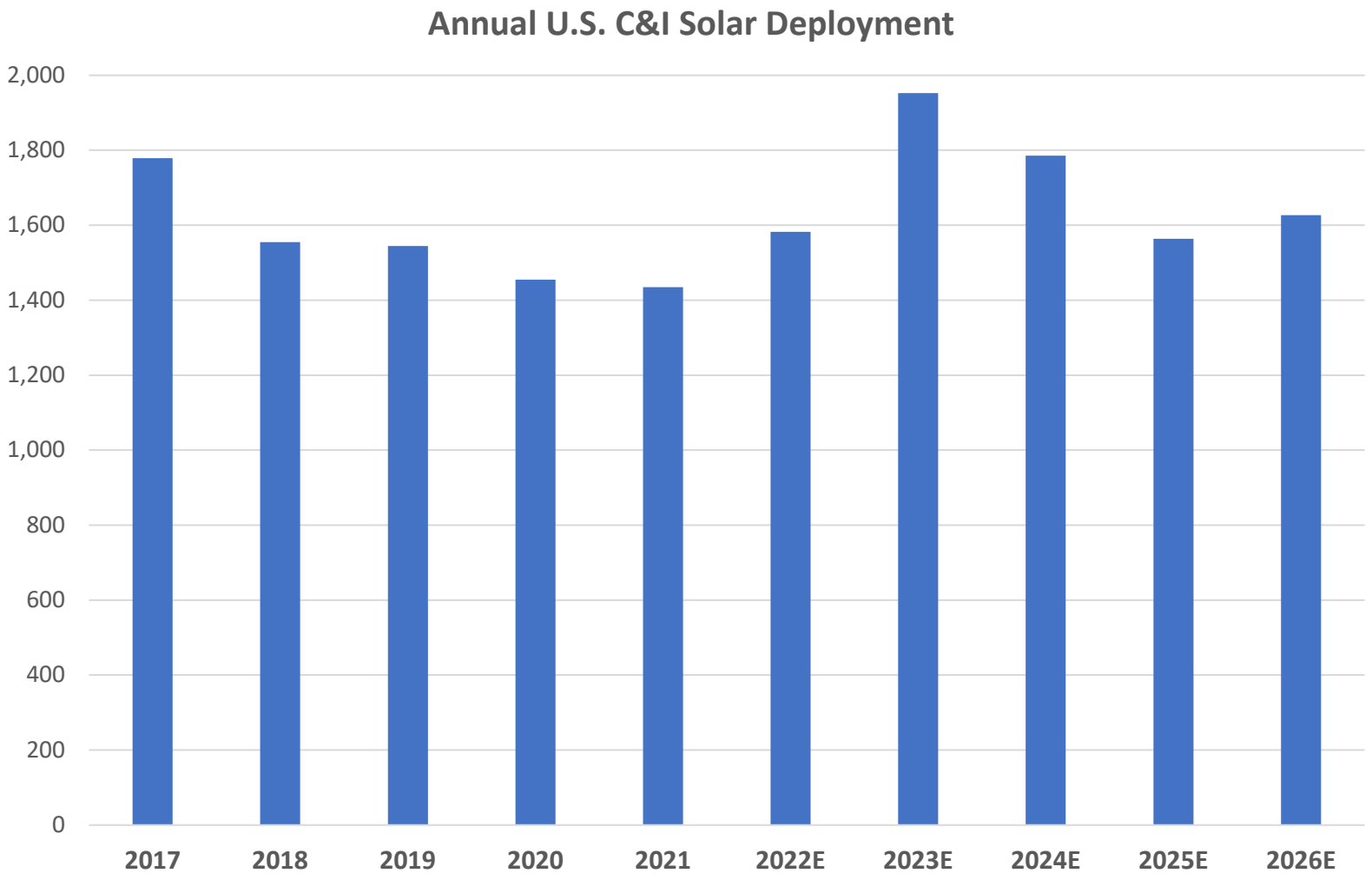
Pricing Trends and Consequences

- Prices have increased over 14% in the past year.
- Prices now stand at highest level since mid 2018
- Caused by materials shortages, increased shipping costs and international trade issues
- Wood Mackenzie forecasts prices not returning to 2020 levels until 2024 at earliest.
- Forcing all projects with signed PPAs to determine if projects can pencil at higher pricing
- Creating general uncertainty, but clean energy goals remain



Source: SEIA/Wood Mackenzie *US Solar Market Insight 2021 Year in Review*

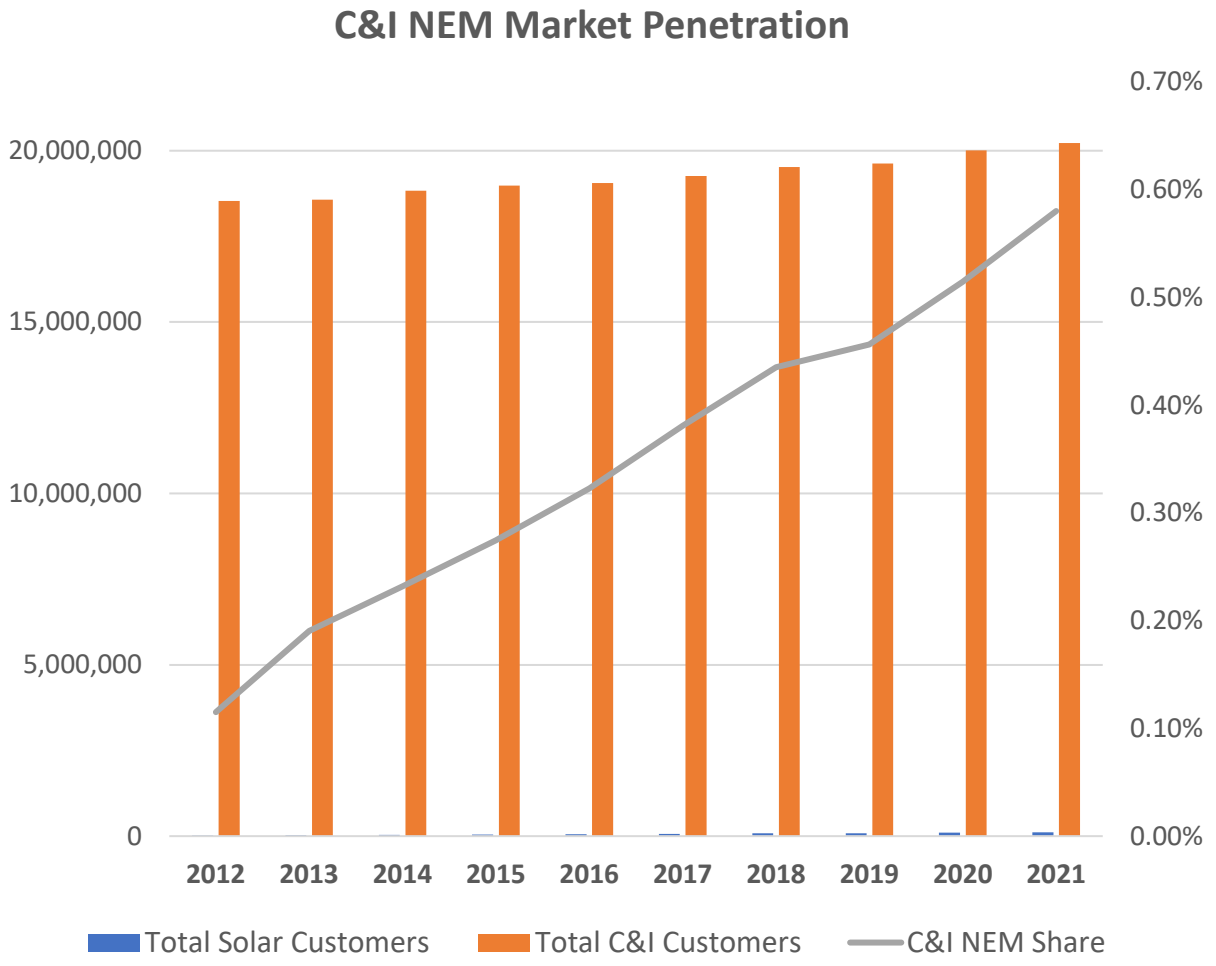
Trends in On-Site Procurement



- Including some MUSH installs, on-site deployment was flat in 2021, continuing recent trend
- Segment is top-heavy, with 60 % of all installs in CA, MA and NJ
- Pipeline buildout, 2021 delays, NEM 3.0 and ITC demand pull-in all serve to push growth in 2022 and 2023
- Reduced system and finance costs, growth of solar+storage and EVs, improved T&D, opening of new state markets all critical to future growth

Source: SEIA/Wood Mackenzie *US Solar Market Insight 2021 Year in Review*

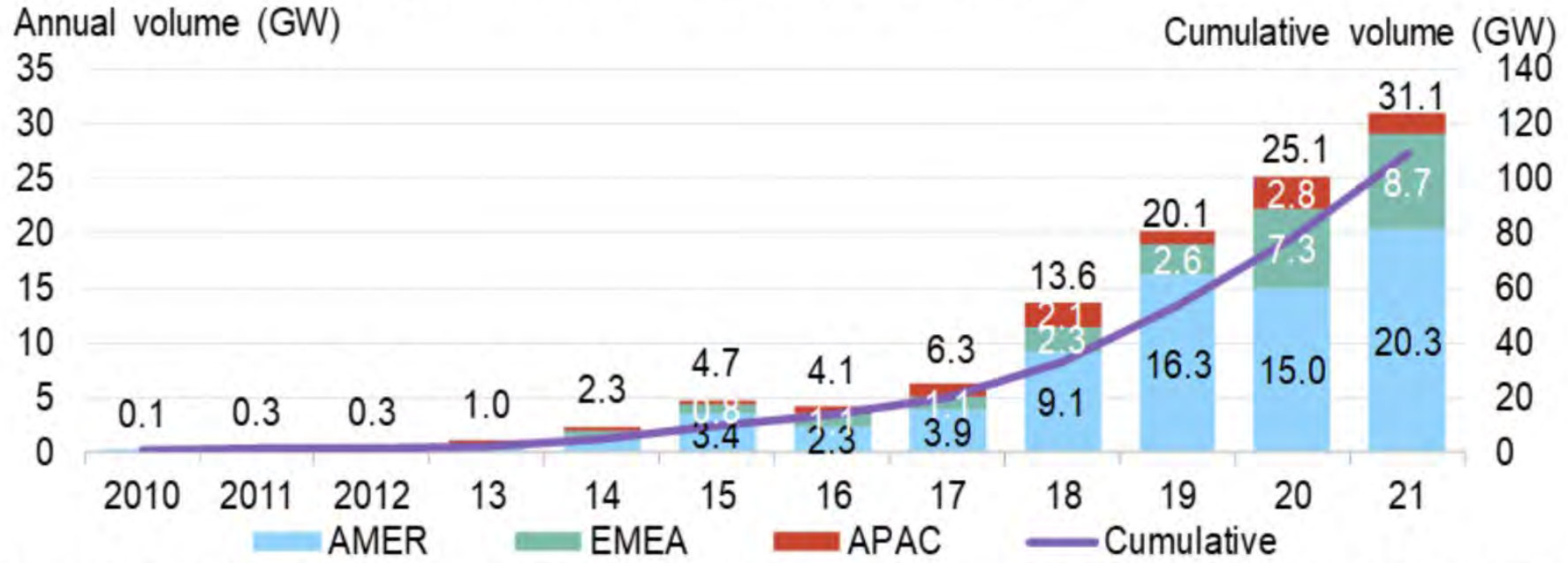
On-site adoption: NEM C&I Market Penetration



Source: EIA Form 861M

Trends in Off-site Corporate Procurement

Figure 1: Global corporate PPA volumes, 2010-2021

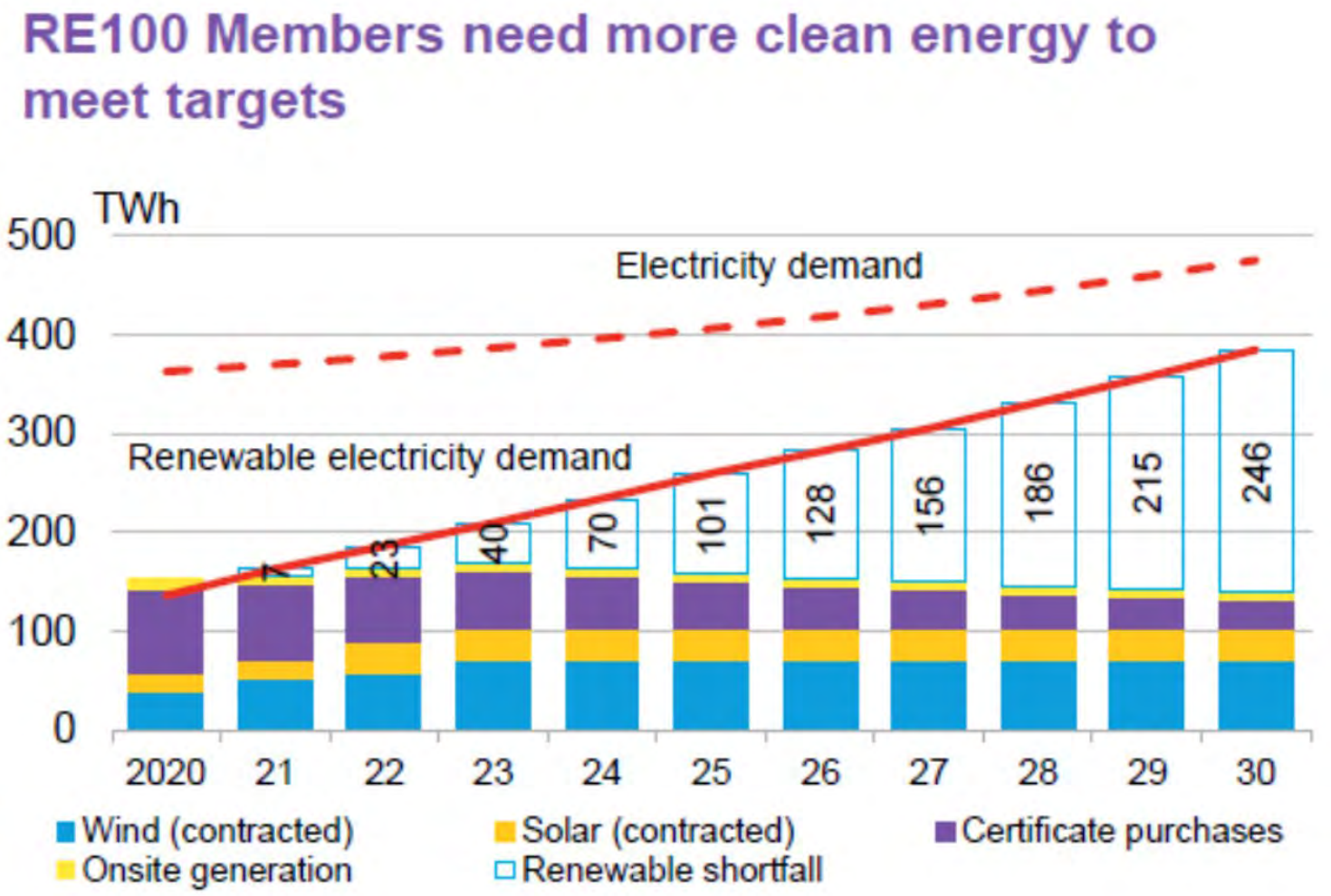


Source: BloombergNEF. Note: Onsite PPAs excluded. APAC volume is an estimate. Pre-reform PPAs in Mexico and sleeved PPAs in Australia are excluded. Capacity is in MW DC.

- Over 25 GW of new corporate off-site renewable PPAs signed in U.S. in last 2 years, mostly solar
- Microsoft, Amazon and Meta alone procured over 9 GW in 2021
- Virtual PPA still primary tool
- Storage increasingly in play
- Growth coming to new state markets as corporates chase 24/7 clean energy

Anticipating Growth in Off-Site Corporate Solar

- RE 100 list continues to grow, from 188 in 2019 to 350+ today
- According to BNEF, RE 100 corporates will need to purchase an additional 246 TWh of renewables globally by 2030 to meet commitments
  - Almost 100 TWh of that will need to be in U.S.
- Only 40 – 50 U.S. corporates signed off-site deals in 2021
  - Many more large companies will make clean energy commitments



Source: Bloomberg NEF

What to Watch For

- Challenges
  - International Trade/Material Supply/Pricing
  - Interconnection/T&D build out
  - Solving on-site financing
  - Utility-Scale Labor
  - State and Federal Policy
- Opportunities
  - Huge addressable market
  - Increasing demand from large corporates
  - Solar + Storage, Solar + EVs
  - Increasing capital flows
  - State and Federal Policy

Thank You

Justin Baca
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Shawn Rumery
Sr. Director of Research, SEIA
srumery@seia.org

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Latest Trends in Renewable Energy Buyer Innovation

3:30 PM - 4:30 PM

Jen Bristol

Senior Director of Communications

SEIA

Andrew Williams

Vice President, Policy and Corporate Affairs

Sol Systems

Kleber Costa

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Dawn James

Global Director IoT Industry Strategy - Energy & Sustainability

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Tax Equity Markets and The Future of Solar Deals

4:30 PM - 5:30 PM

Philip Tingle

Partner

McDermott Will & Emery LLP

Jessie Robbins

VP, Structured Finance and Tax Equity

Generate Capital

Bryen Alperin

Director

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