



Powering the Solar+ Decade: Trends, Policy Drivers, and Workforce Opportunities

Public Perspectives Series | Voinovich School for Leadership and Public Service

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About SEIA

Building a strong solar industry to power America



Federal, State &
Local Policy



Climate &
Equity



Managing
Growth



Trade, Technology
& Manufacturing



Solar and Storage Industries Institute



SI2 is accelerating the transition to carbon-free electricity through clean energy research and analysis

THE SOLAR+ DECADE

The Goal: Solar energy will comprise 20%
of all U.S. electricity generation by 2030



Solar+ Decade Industry Trends

SOLAR DATA *cheat sheet*

People are currently employed
by the solar industry¹

263,883

155.2 GW

Amount of solar currently
installed in the U.S.

Today, nearly **5%** of U.S.
electricity comes from solar
energy, almost **11** times its
share a decade ago

Carbon emissions reduced:

175 million

metric tons annually, equivalent to:



39 million
vehicles off the road



20 billion
gallons of gas not used



2.8 billion
trees planted



Shuttering 47
coal-fired plants

4,437,750

Number of solar energy
systems installed in the U.S.



15%

of U.S. homes will have a
solar PV system by 2030

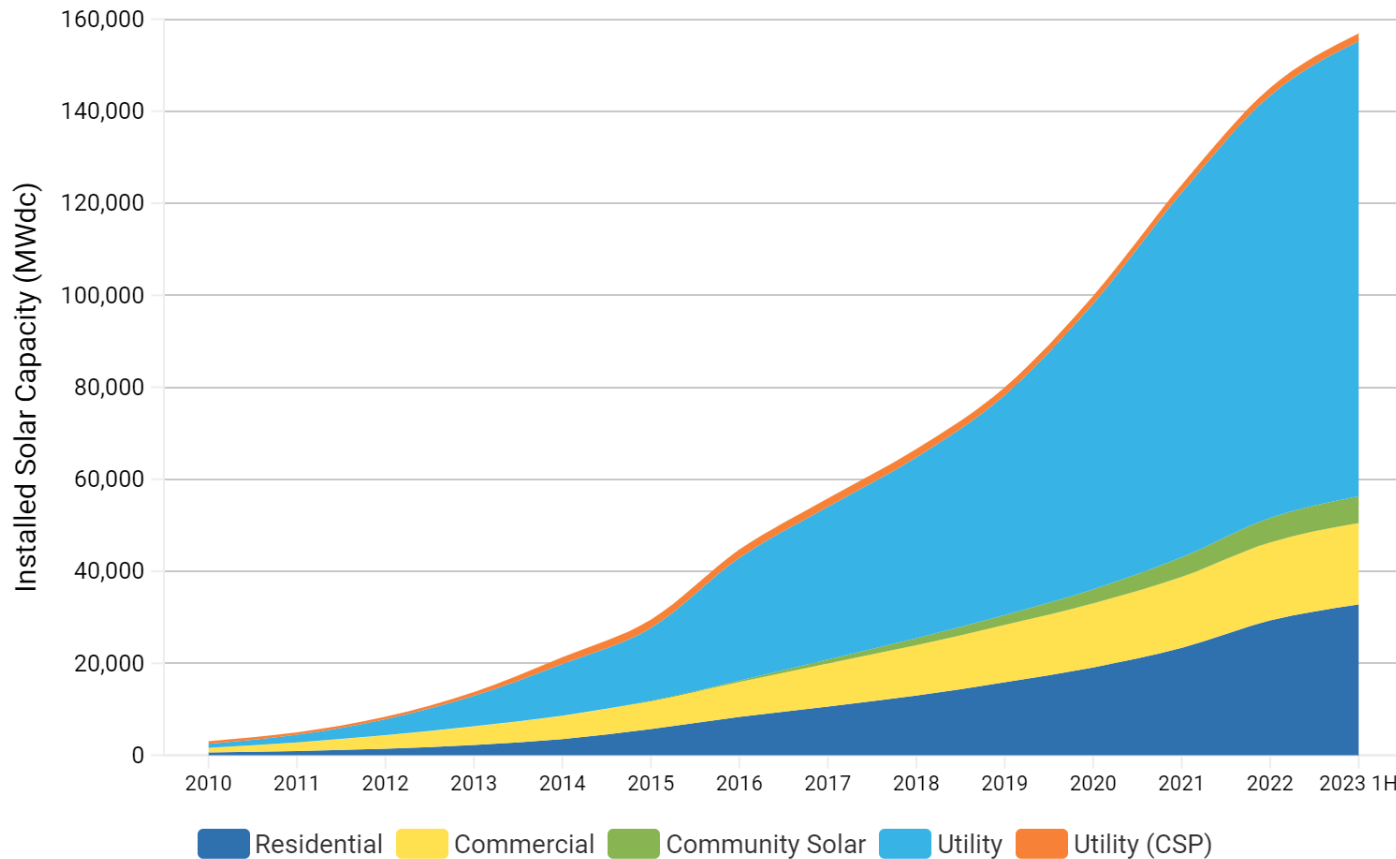
In the first half of 2023,
solar comprised

45%

of all new generating capacity

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

Cumulative U.S. Solar Installations



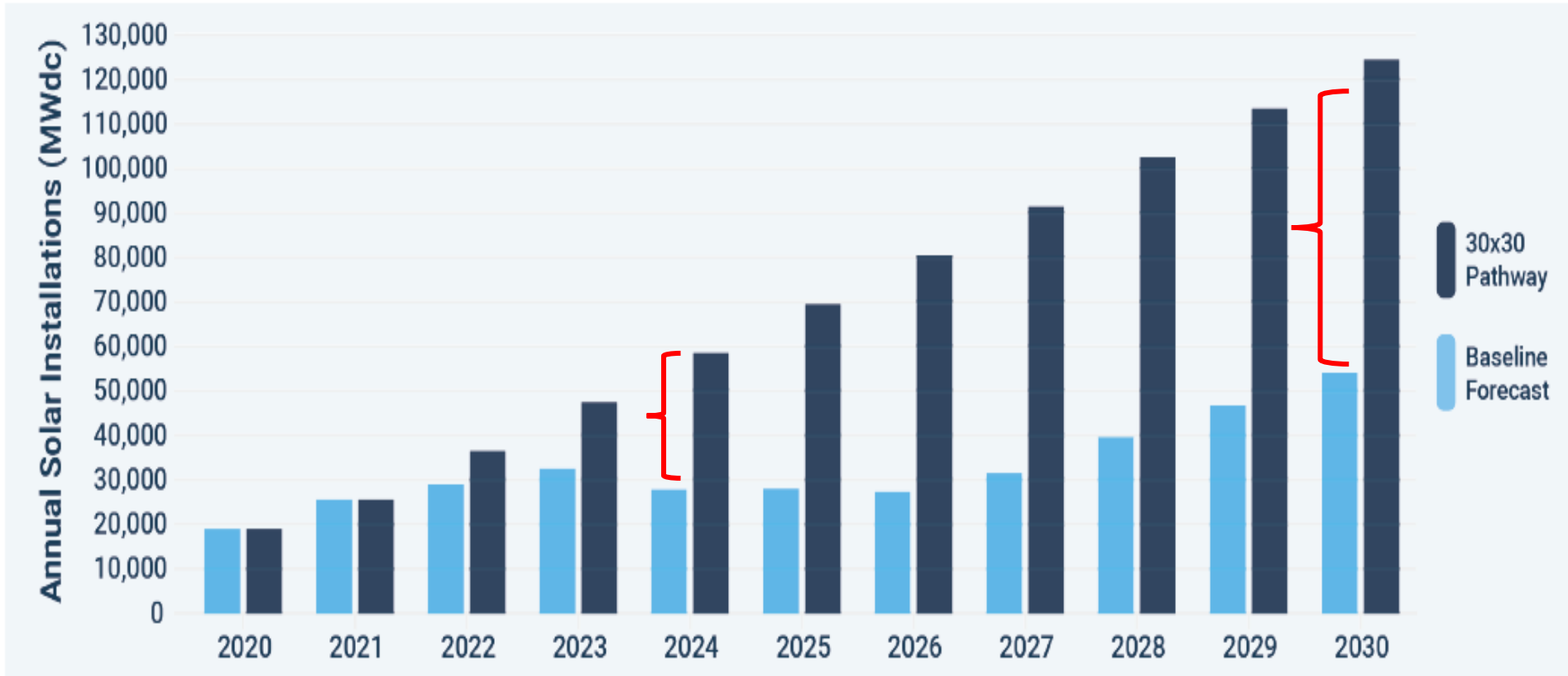
In the last decade alone, solar has experienced an **average annual growth rate of 24%**. Thanks to strong federal policies like the solar Investment Tax Credit, rapidly declining costs, and increasing demand across the private and public sector for clean electricity, there are now more than 155 gigawatts (GW) of solar capacity installed nationwide, **enough to power 27 million homes.**

Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Q3 2023



Strategy: Working Backward from 2030

Figure 1: Annual Solar Installations (GW) Required to Reach 30% of Generation by 2030

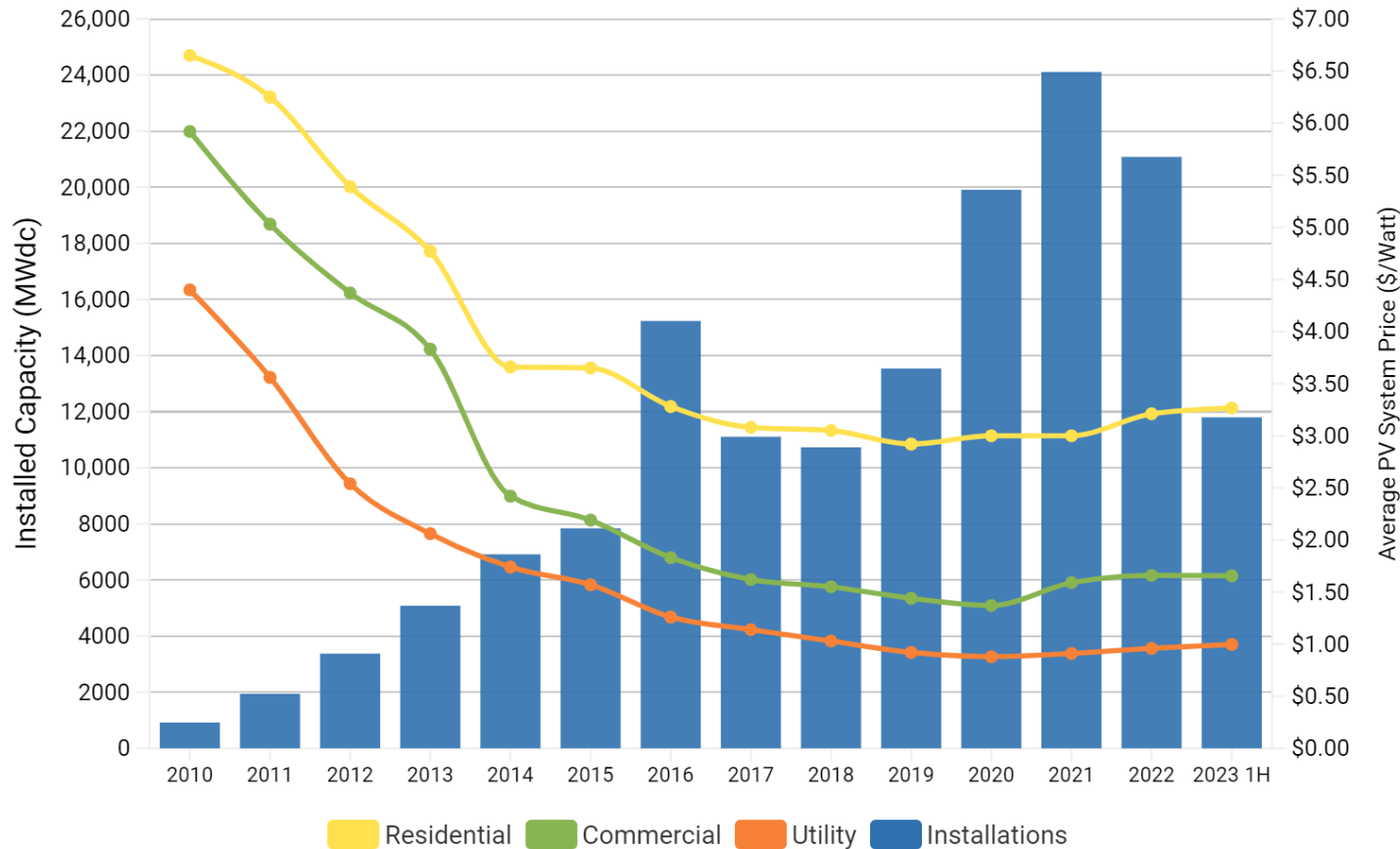


- Started by asking what are the barriers to from Baseline Forecast to 2030 Pathway?
- Then considered the barriers between Baseline Forecast and 2024 Pathway deployment for implementation period.
- Focused on the long game.

Source: SEIA Solar+Decade Roadmap 2021

Growth in Solar is Led by Falling Prices

U.S. Solar PV Pricing Trends & Deployment Growth



The cost to install solar has dropped by more than 40% 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 \$25,000 today, while recent utility-scale prices range from \$16/MWh - \$35/MWh, competitive with all other forms of generation.

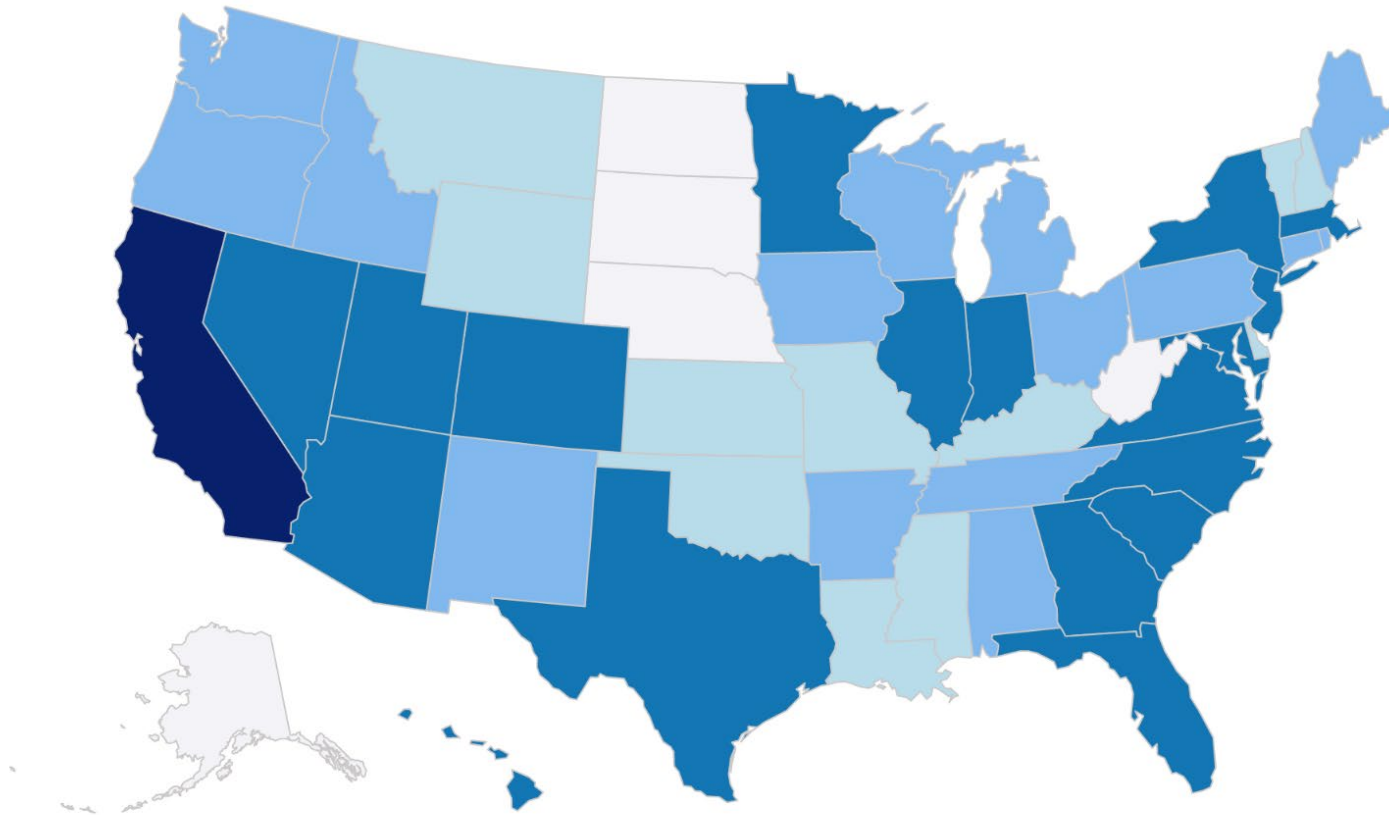
Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Q3 2023



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

Cumulative U.S. Solar Installations by State

< 100 100 - 500 500 - 1,500 1,500 - 20,000 35,000+



While California has traditionally dominated the U.S. solar market, other markets are continuing to expand rapidly. States like Texas, Florida, and New York all saw major growth in 2022. In addition, now half of U.S. states have installed 1 GW or more of solar, compared to only 3 a decade ago. As demand for solar continues to grow, new state entrants will grab an increasing share of the national market.

Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2022 Year in Review



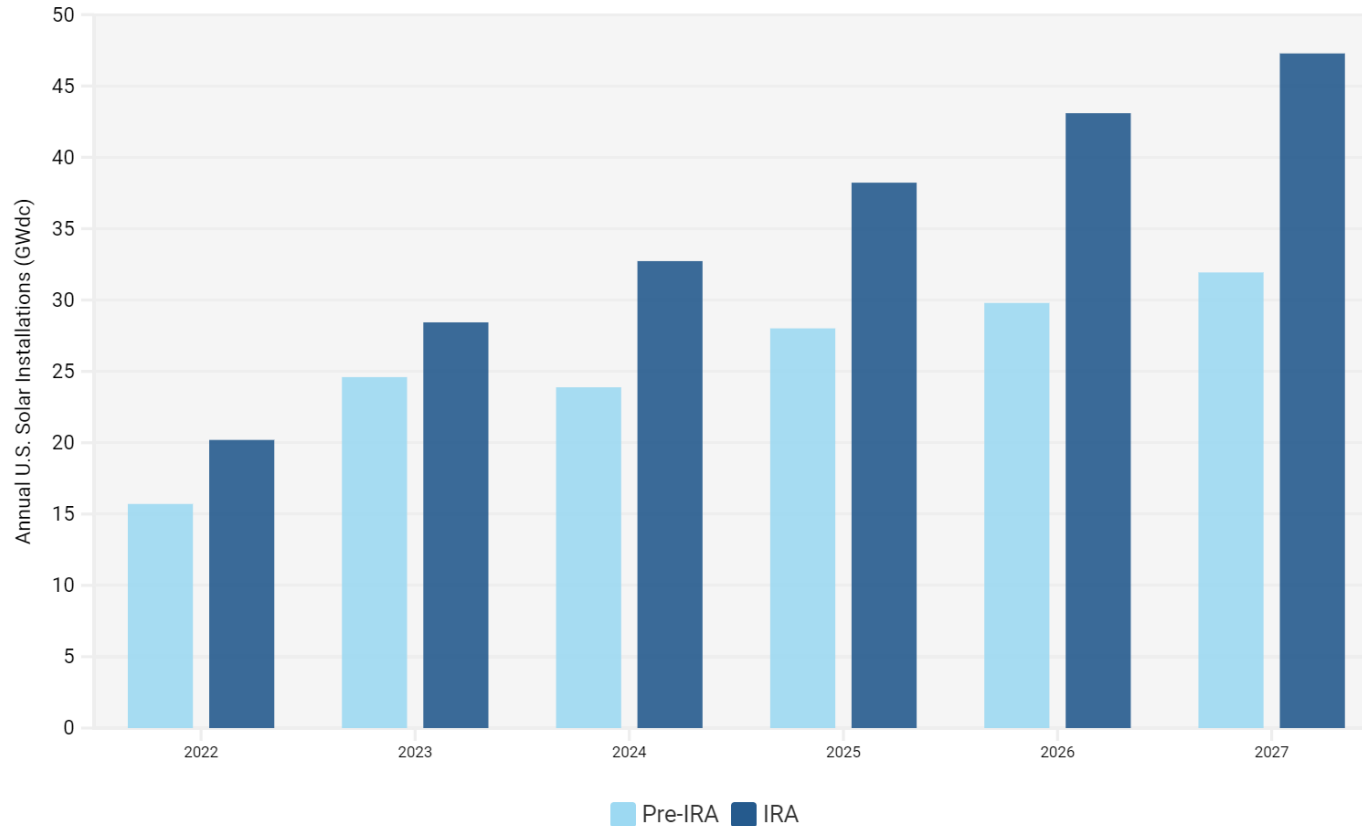


Solar+ Decade Policy Drivers



Inflation Reduction Act Boosts Solar Outlook

U.S. Solar Market Forecasts Before and After the Inflation Reduction Act



The passage of the Inflation Reduction Act has drastically improved baseline projections for the solar industry over the next five years.

In the next half decade, the long-term tax incentives and manufacturing provisions in the IRA provide the market certainty needed to boost expected solar deployment by over 40% compared to pre-IRA projections.

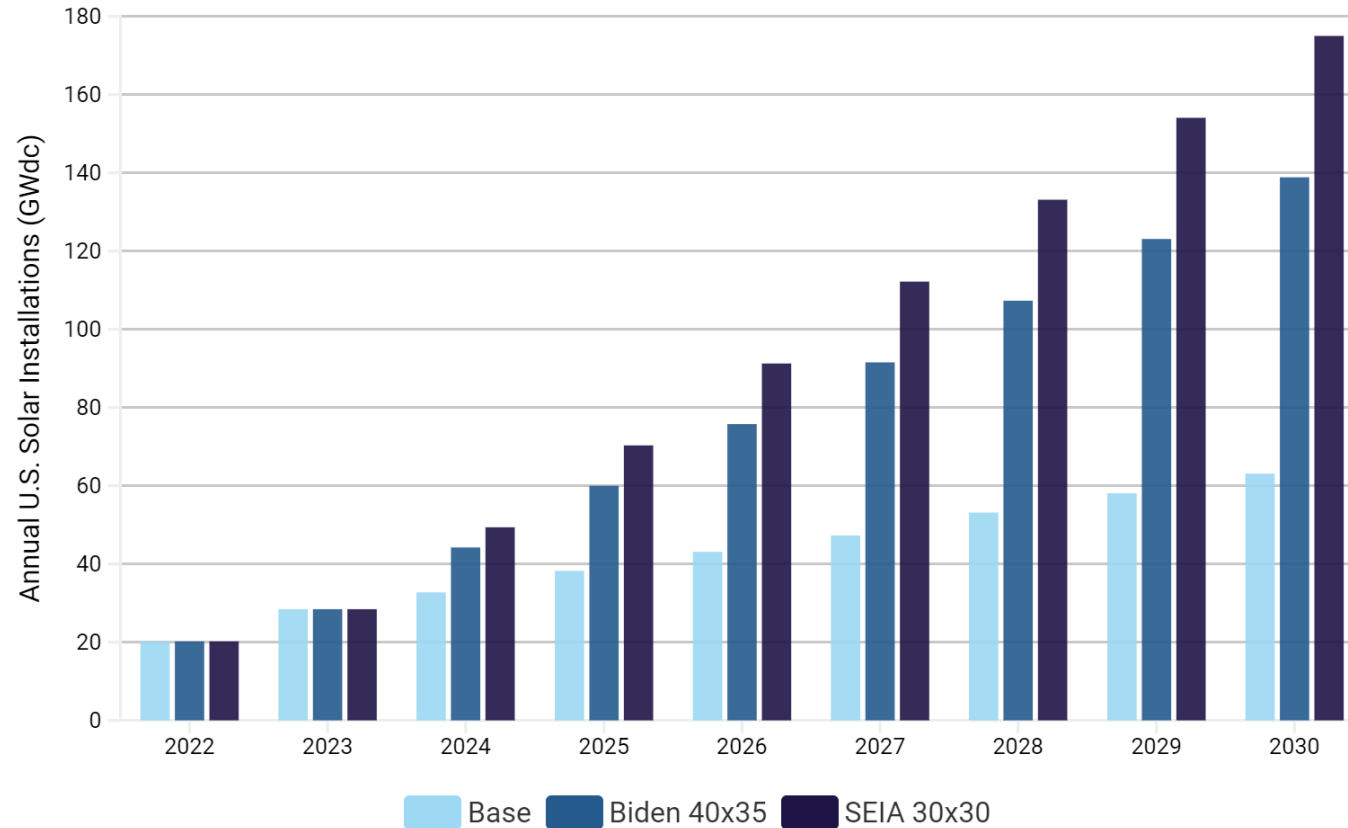
IRA passage creates massive growth potential as new manufacturing capacity comes online and other supply barriers are addressed.

Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2022 Year in Review



IRA is a Game-Changer, but ...

U.S. Solar Market Forecasts Under Various Policy Scenarios & Goals



U.S. Solar Market Forecasts Under Various Policy Scenarios & Goals

The Inflation Reduction Act has significantly closed the gap to the Biden administration 100% clean energy target, but more aggressive growth will be critical.

But from supply chain issues, to interconnection barriers, to siting challenges, there are **headwinds across the board** and realizing these IRA-based forecasts will be difficult without work in different arenas.

Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Report 2022 Year in Review, SEIA 30x30 Analysis



The Headwinds

Top issues facing the solar and storage industry in 2023 and beyond

**Land
Use/Siting/
Permitting**

**Interconnection
& Transmission**

Misinformation

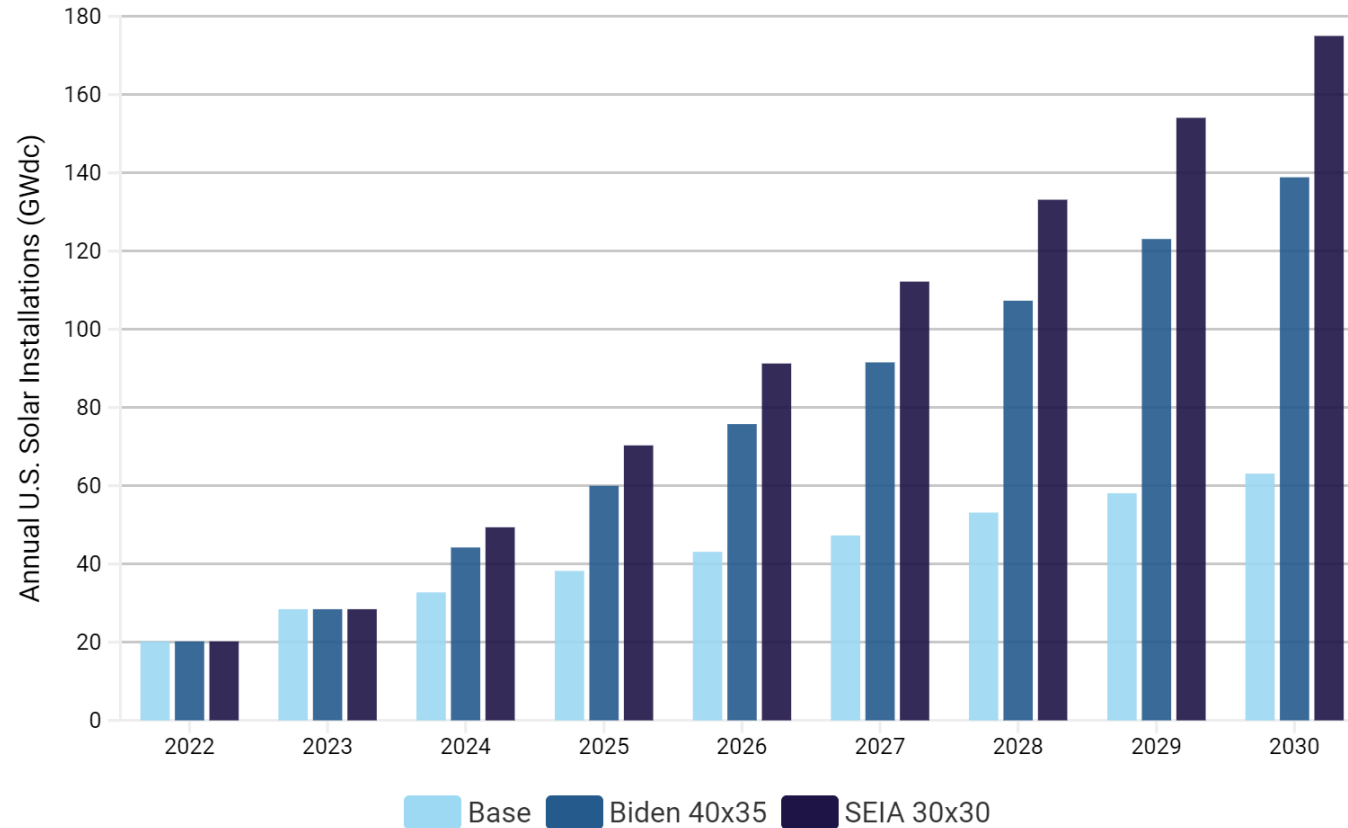
**Consumer
Protection**

Trade

**Washington
Power
Dynamics**

More Aggressive Growth Needed to Reach Climate Goals

U.S. Solar Market Forecasts Under Various Policy Scenarios & Goals



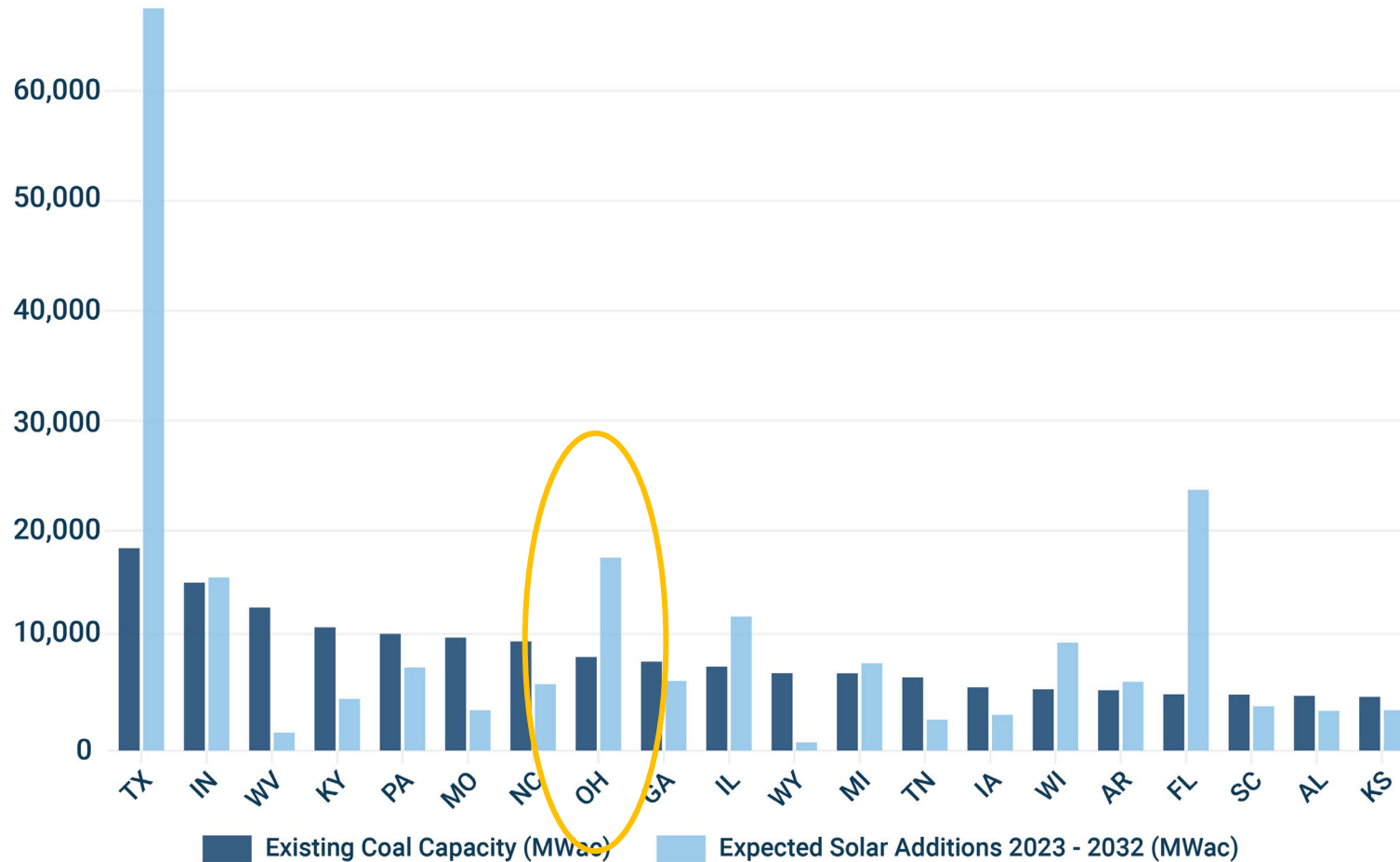
While projected growth over the next 10 years spurred by the IRA puts the solar market in reach of ambitious clean energy goals set by the industry and the Biden administration, more work is needed to achieve the pace required for a 100% clean energy electricity system. **Annual installs will need to grow from less than 25 GW in 2021 to more than 90 GW by 2030, with cumulative totals over 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.

Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Report 2022 Year in Review, SEIA 30x30 Analysis



Solar Can Replace Coal, But Speed is Key

Existing Coal Capacity vs. Expected Solar Capacity





Solar+ Decade Workforce Opportunities



U.S. Solar Workforce Statistics 2022

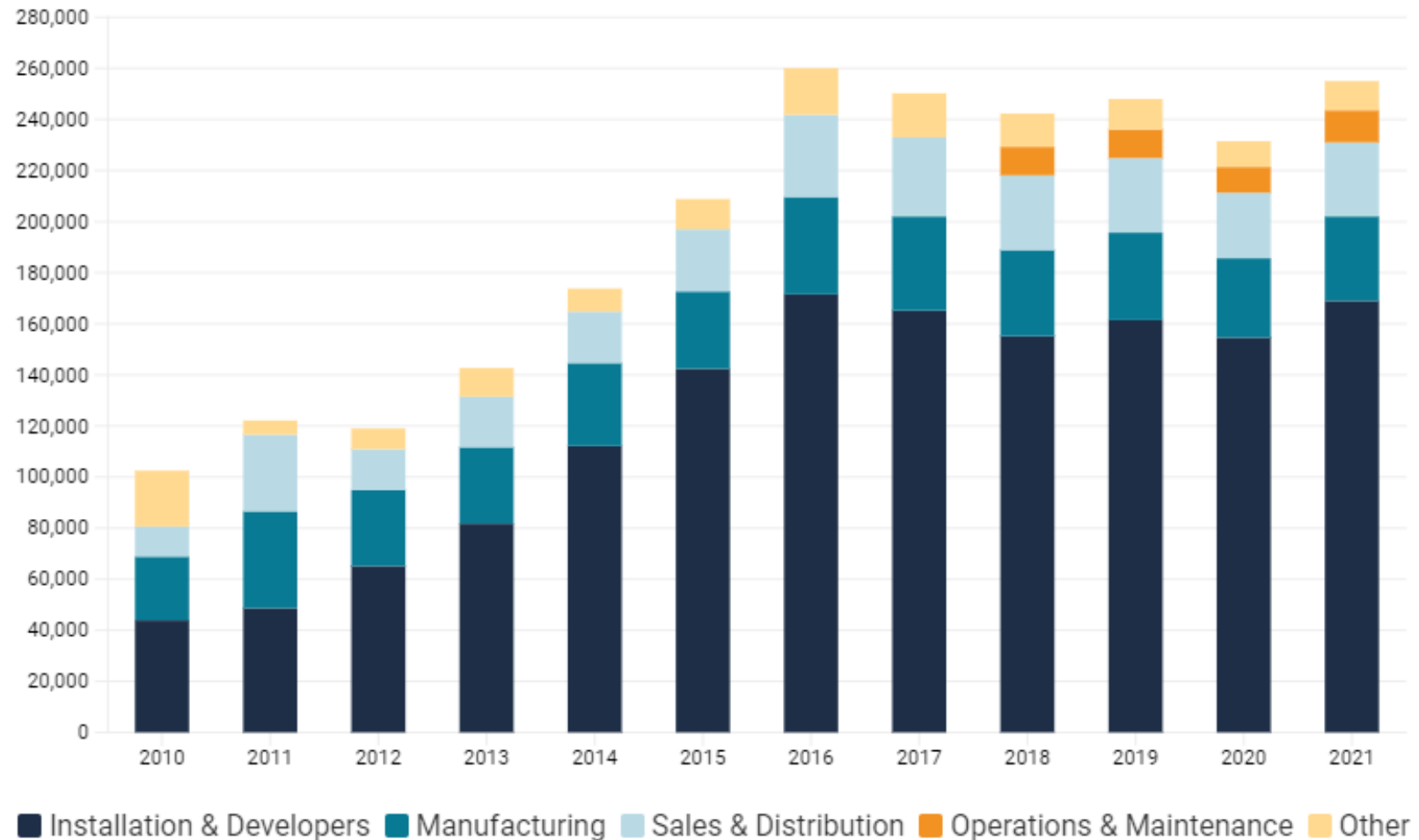
- **263,883** solar workers in 2022 (3.5% increase from 2021)
- **Less than half** of all new solar jobs required a bachelor's degree



Solar as an Economic Engine

As of 2021, more than 255,000 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.

U.S. Solar Workers by Job Category



Source: National Solar Jobs Census 2021

Who Makes Up the Solar Workforce?



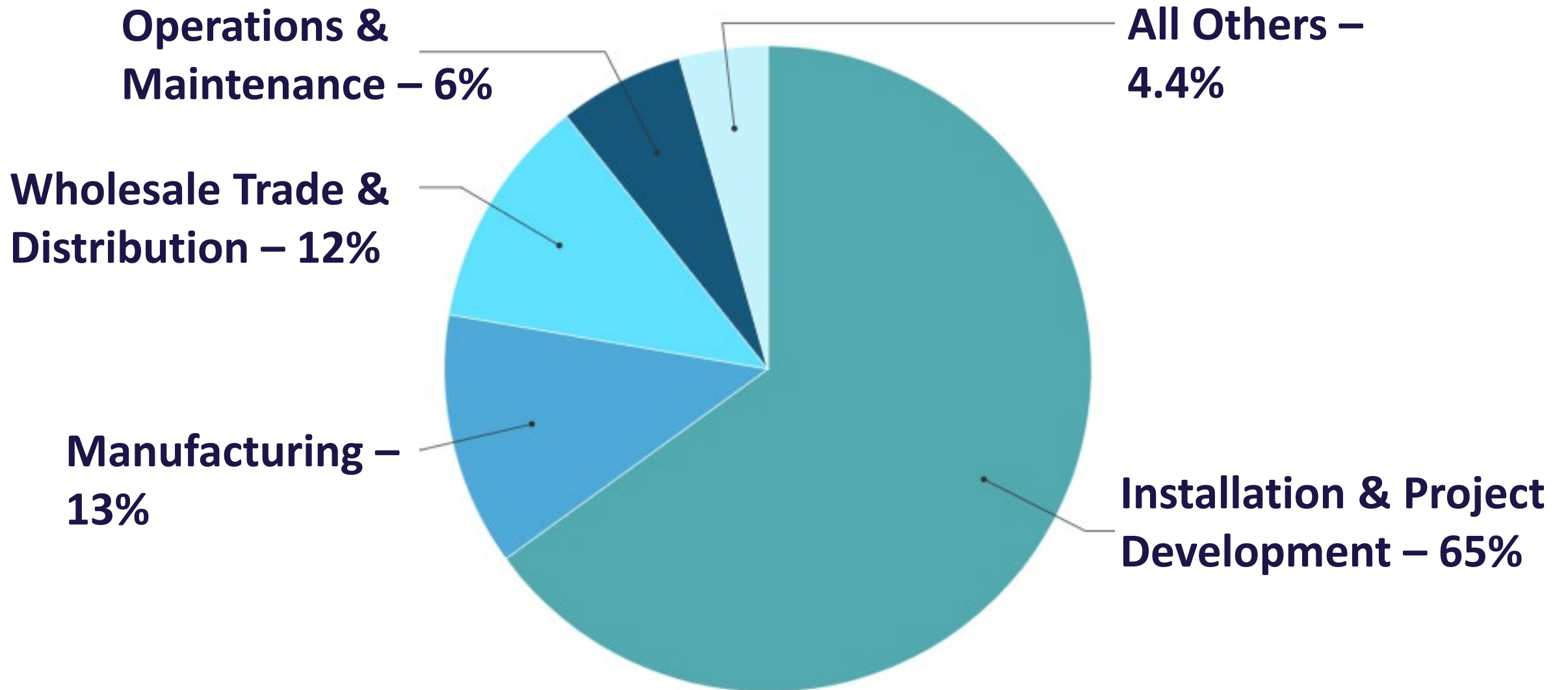
Above Photo: SOLV Energy



Photo: Riley Neugebauer, Solar for Women www.solarforwomen.com



U.S. Solar Jobs by Sector, 2022



Source: IREC's *National Solar Jobs Census 2022* available at <http://www.SolarJobsCensus.org>

Preparing for Job Growth – IRA Era

Due in large part to the Inflation Reduction Act, over the next decade:

- Solar industry employment will **nearly double**, from about 263,000 today to close to **500,000 by 2033**.
- U.S. solar manufacturing workforce is set to **triple in size** to over **100,000 jobs**.



Clean energy growth is ushering in a new reality for American energy.

To be successful, we must manage growth responsibly, tackle remaining barriers to deployment, and deliver on the promises of equity and economic prosperity for all.



Thank you!

Questions?

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Powering the Solar+ Decade

