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Renewable Finance and Investment Market Trends

Priming the Utility Scale Supercycle

In partnership with LIUM DATA SYNTHESIS, HUMAN TOUCH

PREDICTIVE RESEARCH
for energy & industrials

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Executive Summary

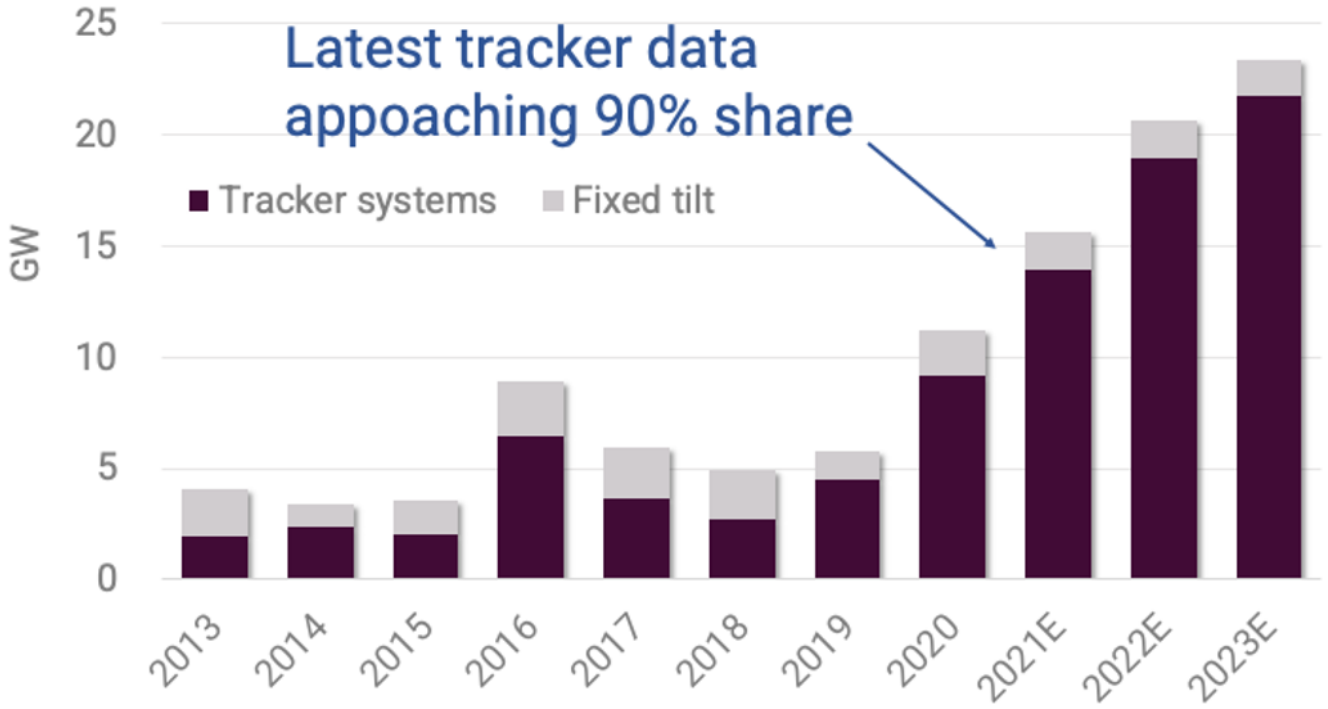
In this report, we have gathered data related to ~1,500 potential U.S. utility scale solar projects, with a particular focus on the 2022 / 2023 buildout and implications for the solar tracker market. While the recent surge in input costs adds risk to near term construction schedules, longer term expectations are likely still too complacent, particularly given the bulging queues in areas like Texas, Arizona, Nevada, and PJM. All said, we think the current fundamentals make U.S. utility scale solar and related tracker companies one of the best ways to add renewables exposure.

- **U.S. Will Need 20-25GW Of Trackers Annually (vs <10GW in 2020)...**
- **...As Utility Scale Solar Accelerates Through 2022/2023**
- **Beware Of Construction Slippage in 2021**
- **Unprecedented Number Of Mega-Project In Queue...**
- **...As Texas Becomes The Large Scale Solar King (will unseat Cali)**

Section 1: Tracker Market Overview

U.S. Will Need 20-25GW Of Trackers Per Year

With clear advantages, very few large scale solar projects in the U.S. are being deployed without trackers. In fact, we estimate that over 80% of the capacity installed in 2020 had a tracker, up from 50% in 2018.

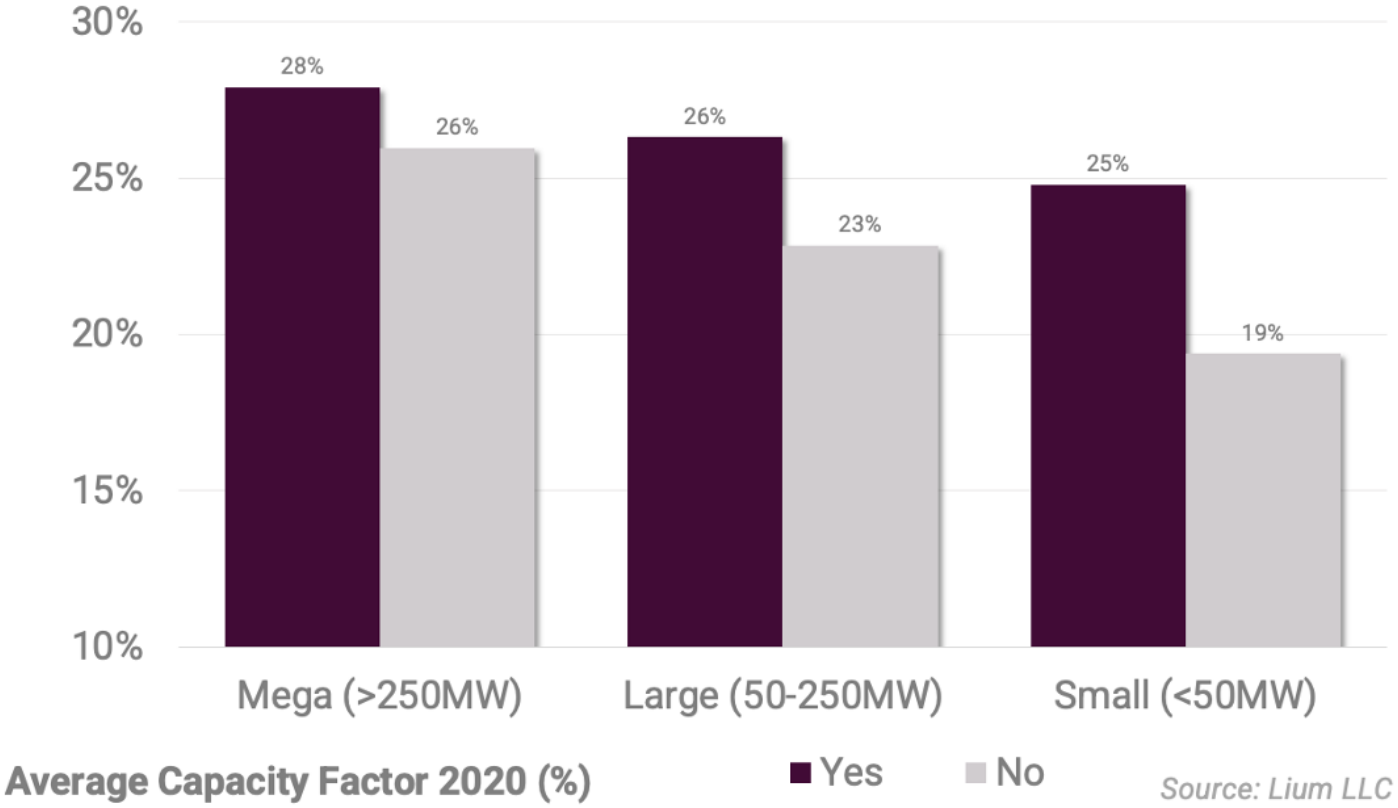


U.S. Tracker Deployments (GW)

Source: Lium LLC

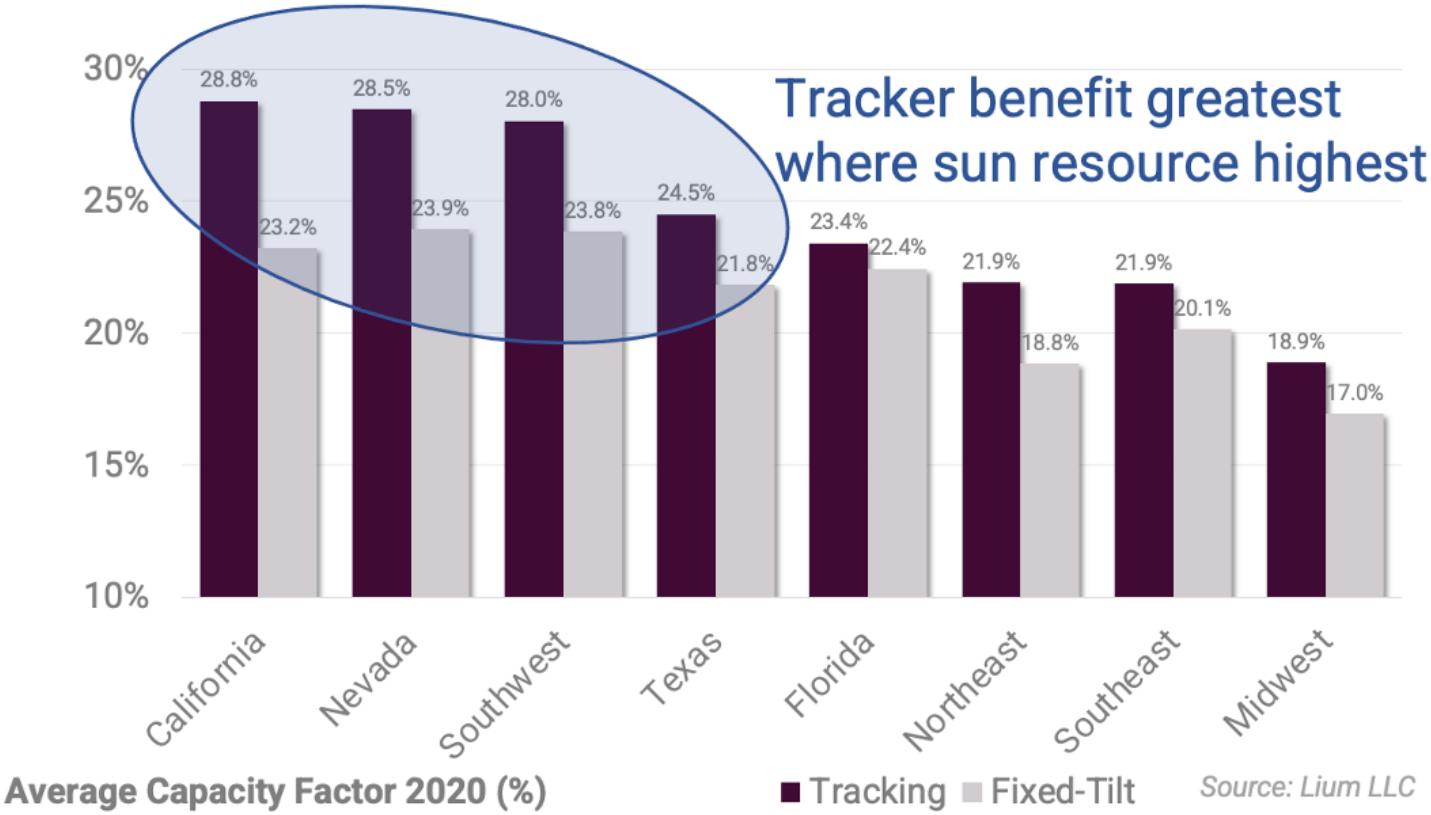
Tracker Utilization Boost

As trackers have become more common, the benefits have also become more clear. To put numbers to it, we connected utilization data for all U.S. utility scale solar facilities with their respective tracker configuration. As shown in the graph below, facilities with trackers produce ~2-6% better yields than fixed tilt projects with similar characteristics. Small facilities (< 50MW) with trackers perform particularly well relative to fixed tilt facilities.



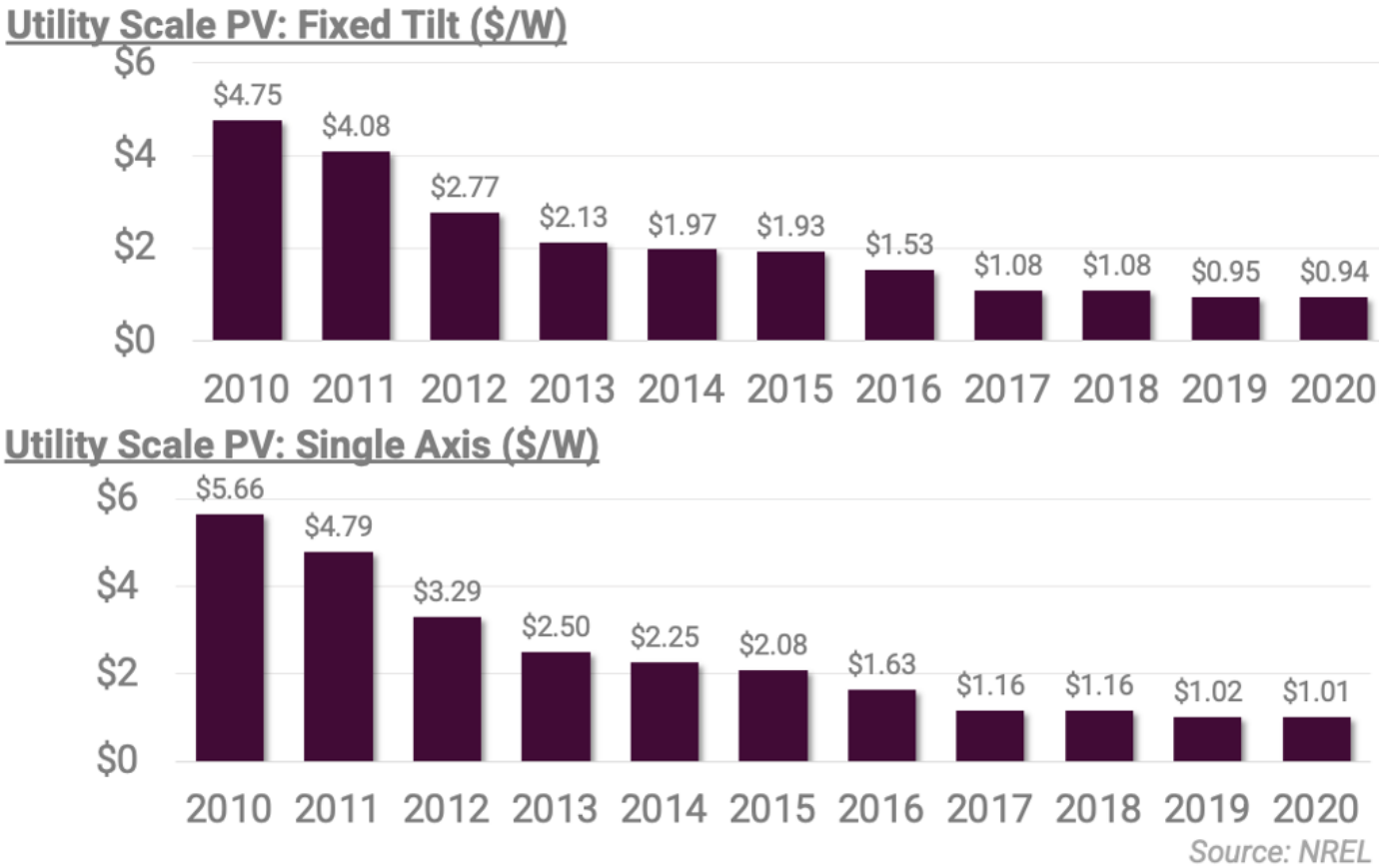
Tracker Benefit Less Pronounced in Low Irradiance

While tracker performance is evident across all project sizes, relative benefits are less pronounced in areas that have already have low solar resource. In the data below, we pulled tracker versus fixed tilt facilities in different regions, finding that areas in the Southeast and Midwest are seeing less relative benefit. Meanwhile, tracker installation appears absolutely critical in high irradiance areas.



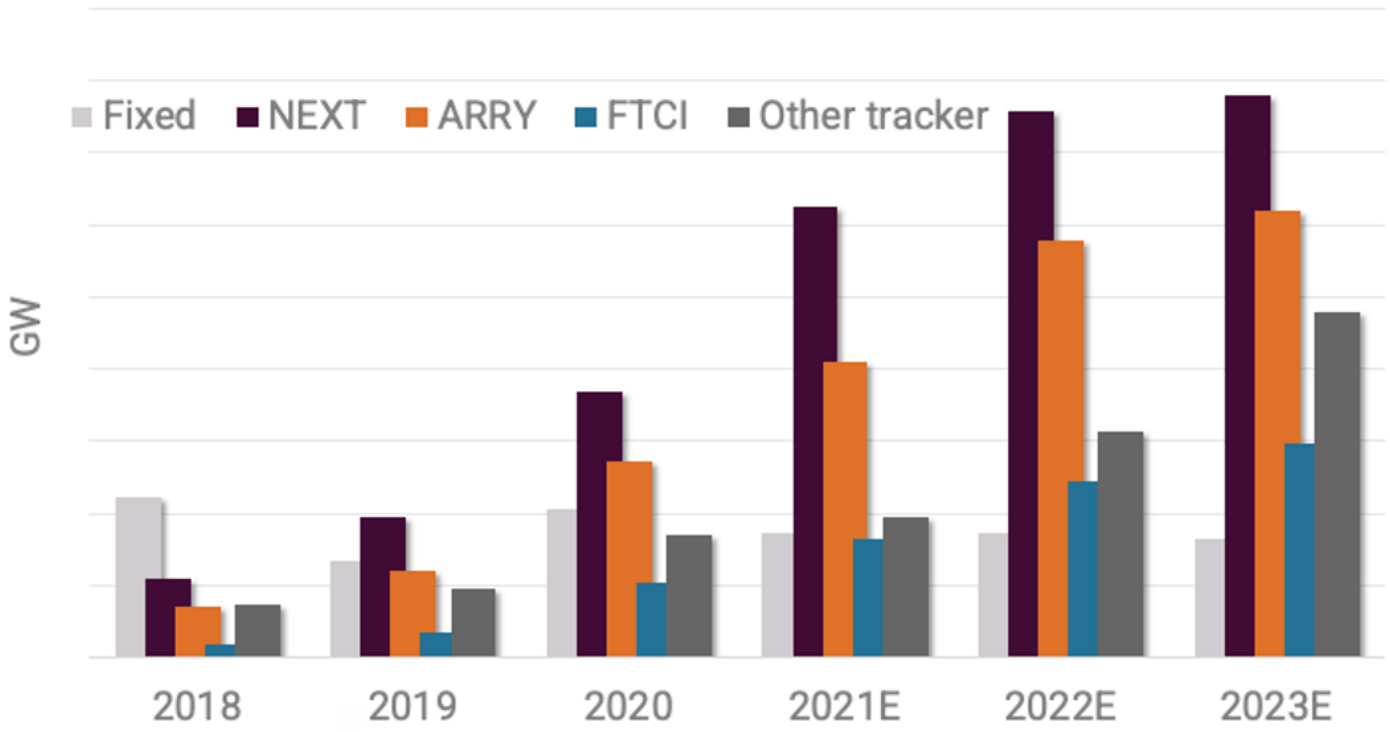
Tracker Costs Down 50% (on par w/fixed)

Another driver of high tracker acceptance has been the dramatic reduction in costs. Since 2015, solar farms with tracker systems are down more than 50%, only modestly more expensive than installing fixed tilt solutions.



Tracker Deployments By Company

As part of our utility scale solar model, we have also projected activity levels for the key U.S. tracker companies. As a broad statement, we think the main tracker companies can grow +20-30% per year for the next several years. Growth beyond that will depend on how well the big three can defend off new competitors.



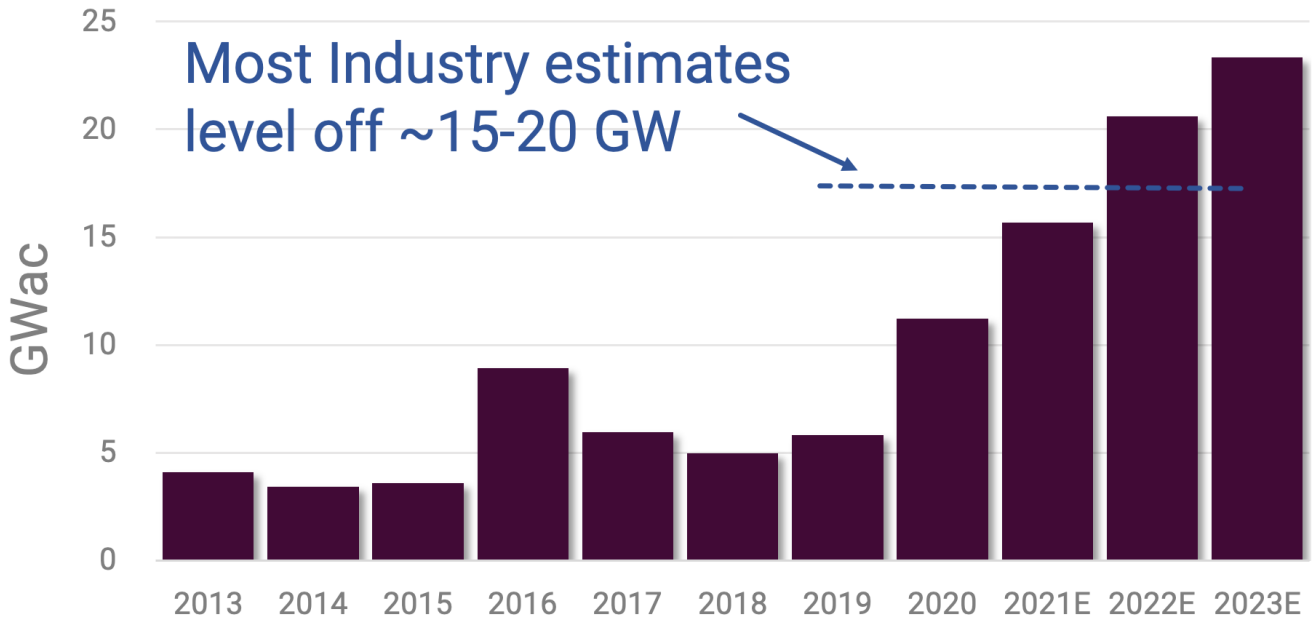
U.S. Tracker Deployments

Source: Lium LLC

Section 2: Utility Scale Solar Overview

Utility Scale Solar Under Appreciated

In this slide, we show historical & estimated installations of utility scale solar projects. While most estimates assume capacity growth moderates in 2022, we think U.S. build out is still in the early stages. In total, we are projecting over 20 GW of new capacity in 2022 and almost 25 GW in 2023.

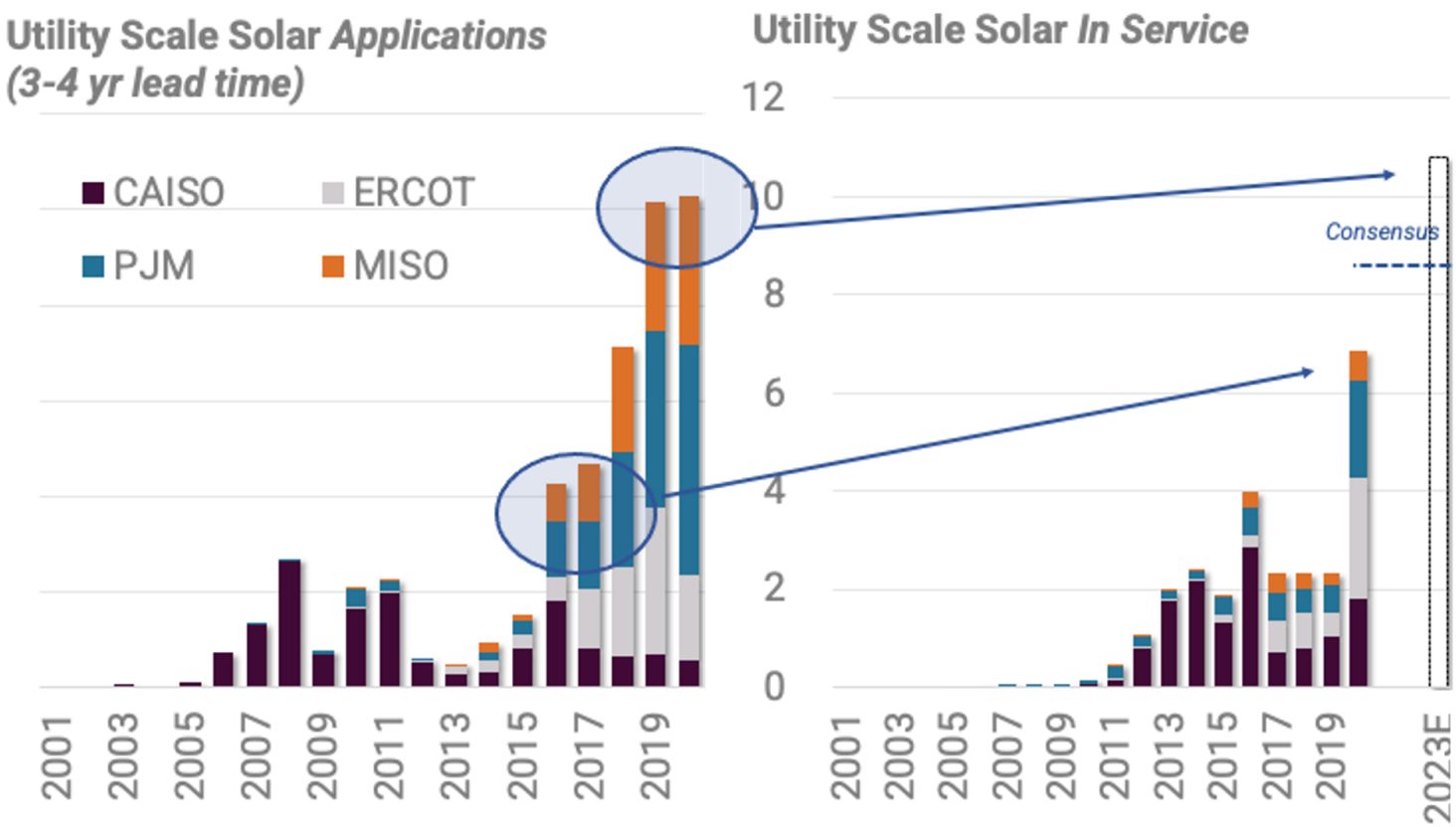


U.S. Solar Capacity Adds (utility scale)

Source: Lium LLC

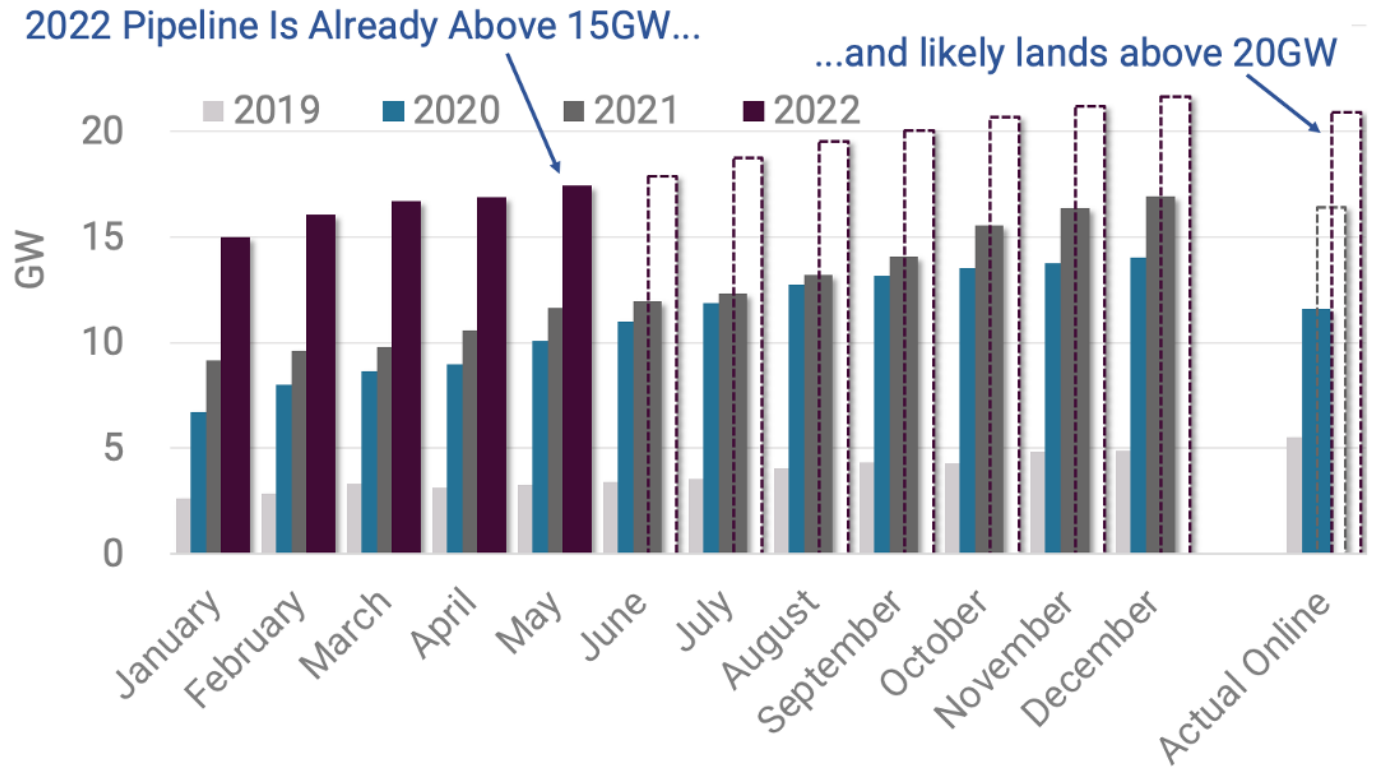
Interconnection Queues Telling A Bullish Story

Swelling applications for utility scale solar projects is contributing to our positive outlook. As shown in these graphs, the number of applications submitted to the main U.S. ISOs has doubled over the last two years. With 3-4 year lead times, the latest surge is a strong indication of 2022/2023 installations.



2022 Visible Backlog +50% VS 2021

While most estimates have 2022 installations of less than 20 GW, we show in this slide why we think that is too conservative. As of June, we have counted up over 16 GW of solar installations that is already in late stage planning or under construction. On top of this, we think another 5-10 GW for 2022 will still come in as short cycle projects get closer to approval.

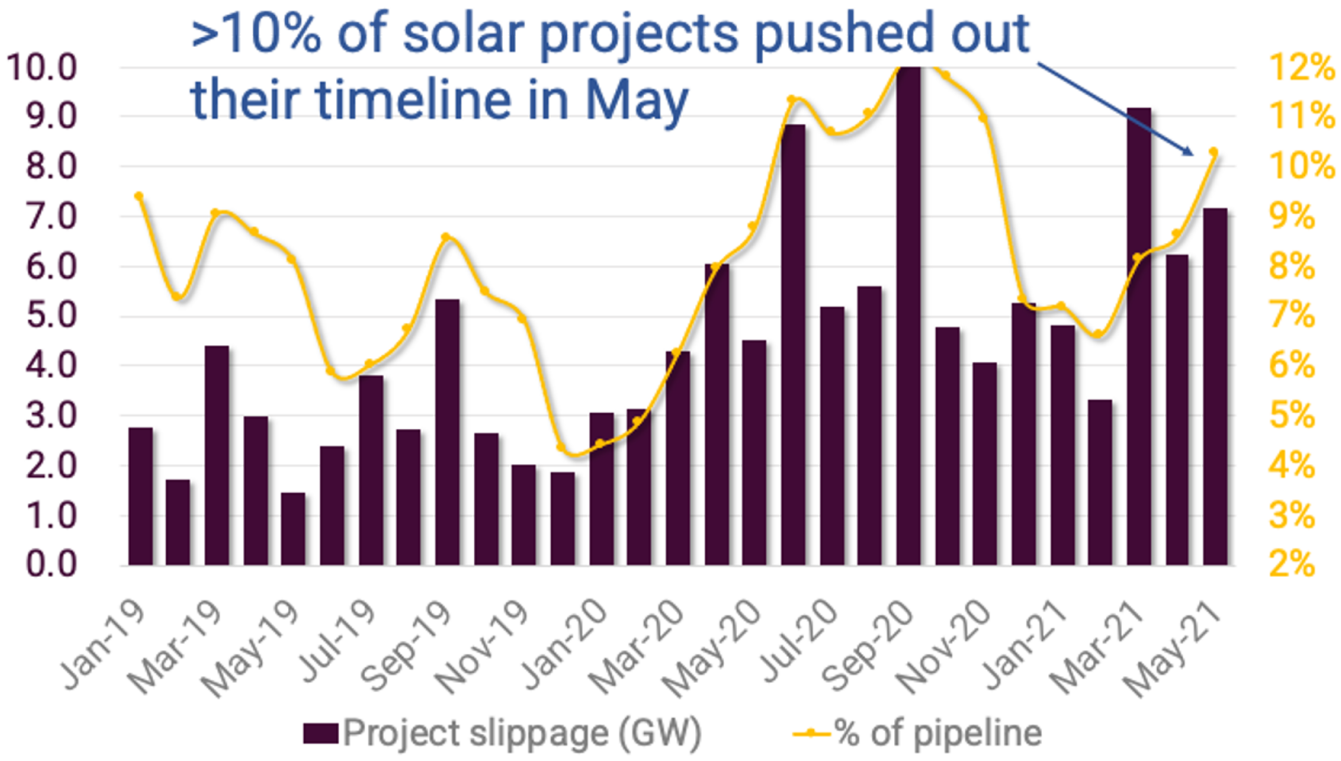


Utility Scale Solar Pipeline (year prior to coming online)

Source: Lium LLC

Be Leary Of Projects Being Pushed Out

While investors are likely underestimating the long term solar buildout, the recent surge in costs is adding significant risks to the near term. Although some costs have eased in recent weeks, many developers have already started to reassess the timing of their projects. To put numbers around it, our data shows more than 10% of projects were pushed to the right in May, up from the normal range of 5-7%.

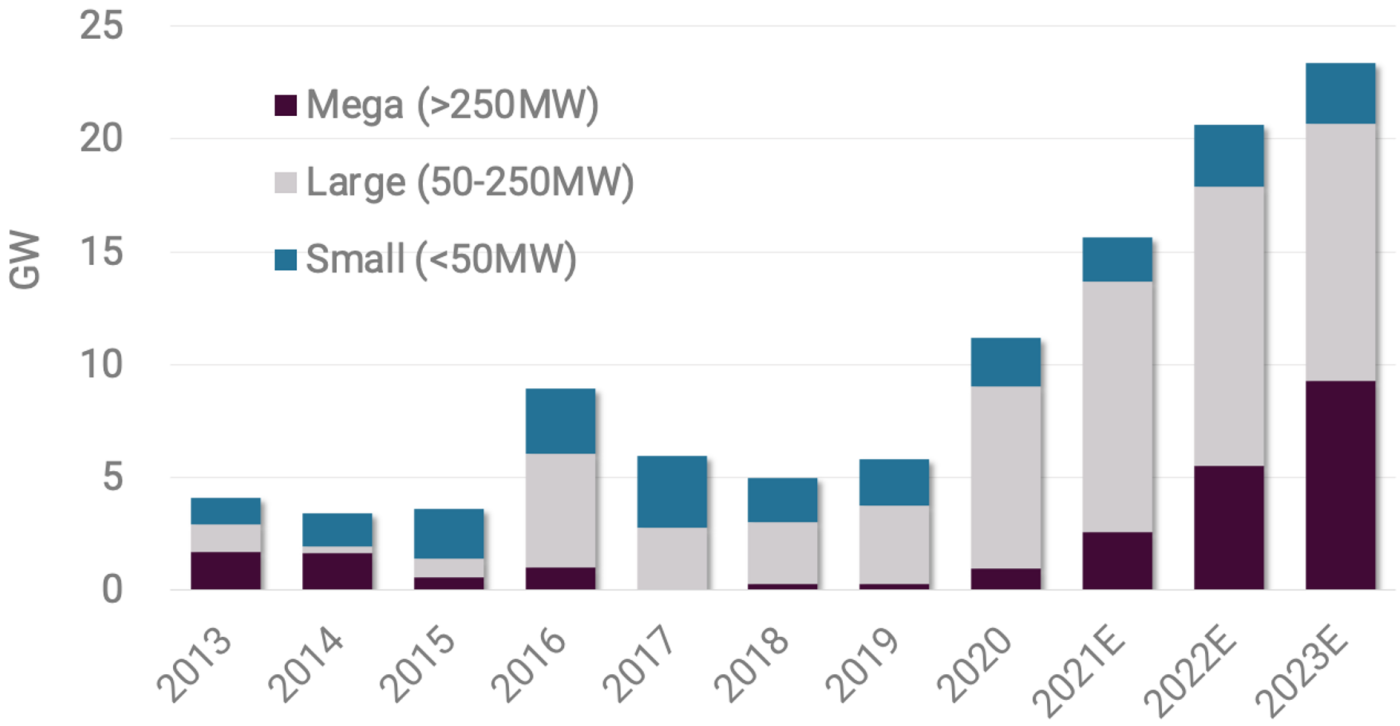


Utility Scale Solar Project Slippage (ERCOT)

Source: ERCOT

Next Phase Dominated By Megaprojects

An interesting characteristic of the U.S. buildout this cycle is the extraordinarily large project sizes. In fact, over the next three years, we have already counted 43 solar projects that are being planned for over 250 MW. This compares to only 21 facilities that were built of that size over the last 10 years.

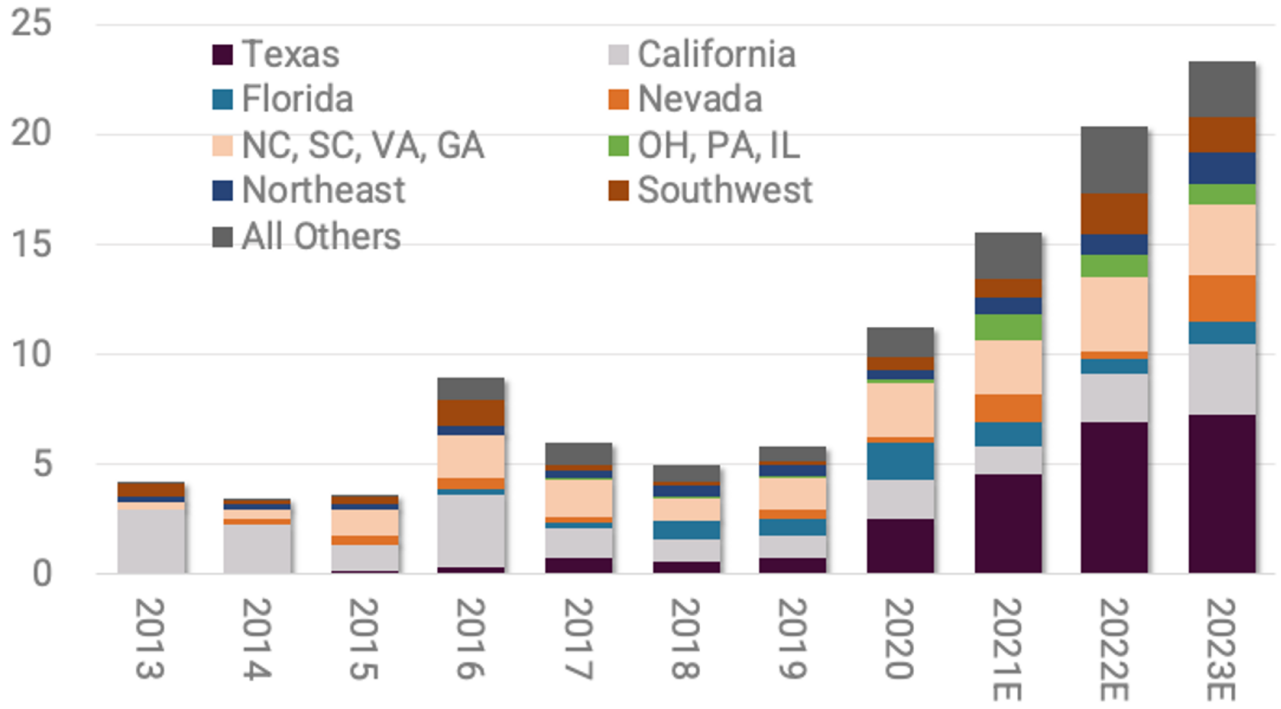


U.S. Solar Capacity Adds (by size of project)

Source: Lium LLC

Utility Scale Solar Diversifies Away From Cali

While California has historically been the overwhelming solar builder, the next several years look much different. In fact, California will likely be less than 10% of utility scale solar installations as 41 other states have now started building at least one facility (12 of these states had nothing five years ago). Meanwhile, Texas is quickly becoming the large scale solar king, accounting for 40% of U.S. installations in 2022.

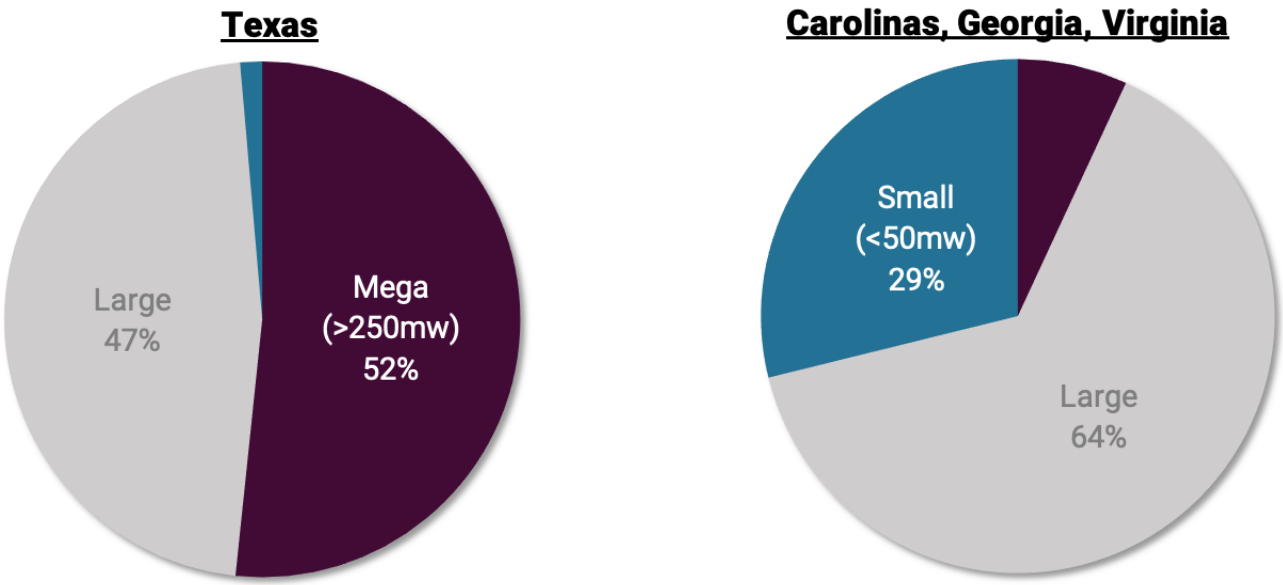


U.S. Solar Capacity Adds (by state)

Source: Lium LLC

Texas Becoming The New Solar King

While the utility scale market moves away from California, Texas will likely lead the way over the next several years. In fact, we expect Texas to account for 40% of U.S. installations next year. Furthermore, the Texas buildout is characteristic of the overall trend toward larger projects, where over 50% of new capacity will be from projects > 250 MW. This contrasts with areas like the Southeast that have very little mega-scale activity.



Utility Scale Installations (2022E)

Source: Lium LLC

Related Predictive Data by Lium Research

Utility Solar Model >

Solar Utilization Data >

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