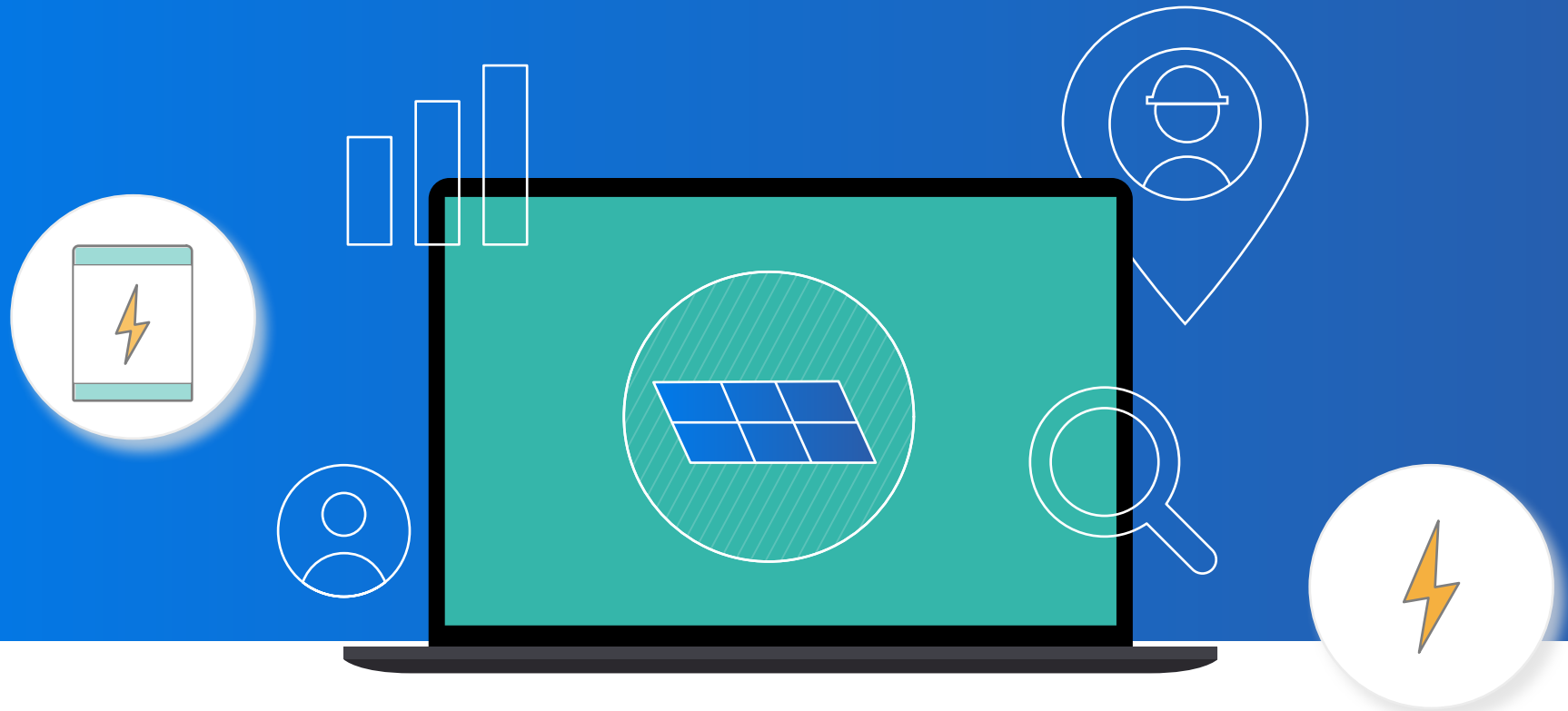
EnergySage Solar Marketplace

Intel Report

2020



energysage

12th edition | published May 2021

Thoughts from the CEO & Founder

We are excited to share with you our twelfth semiannual Solar Marketplace Intel Report™ covering the twelve month period from January 2020 through December 2020. Despite the ongoing COVID-19 pandemic, the solar and storage industries had a banner year driven by the strength of the back half of 2020. In this report, we review trends in pricing, equipment preference, and Marketplace share data for the residential solar and storage market on EnergySage.

Here are some of our top findings from our eleventh Intel Report™:

Vikram Aggarwal

CEO & Founder

EnergySage

LG Energy Solutions overtook Tesla as the most quoted storage brand in Q4 2020

In Q4 2020, nearly 40 percent of quotes on EnergySage included LG Energy Solutions, making it the most quoted storage brand on Energysage. Tesla remained the least expensive storage option quoted.

The loan market is beginning to consolidate, at least on EnergySage

While over 70 different solar loan providers were included in at least one quote on EnergySage in the second half of 2020, the top five most quoted loan providers accounted for 60 percent of all quotes for the first time since 2015.

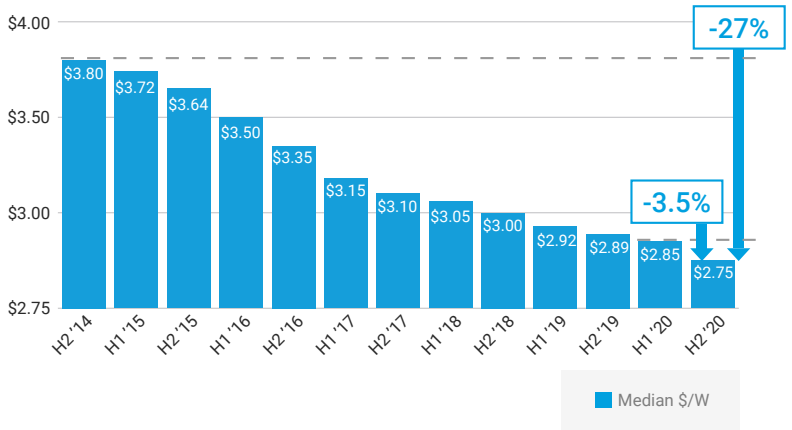
Installers are quick to quote the newest equipment

As evidenced by a jump in higher wattage solar panels quoted on EnergySage, solar companies are quick to learn about–and begin to sell–the newest technology available on the market: while two-thirds of quotes included sub-330 Watt panels in H2 2019, 330 W–and larger–panels accounted for 69 percent of all quotes in H2 2020.

H2 2020 saw the largest drop in solar prices since 2017

Quoted solar prices dropped by 3.5 percent on EnergySage between H1 2020 and H2 2020, the largest decrease since the first half of 2017.

Gross Cost Per Watt, by Half Year



There are many more insights contained within the data in this report. We invite you to start a conversation with us about your key takeaways and/or any ideas for future reports.

Sincerely,

Vikram Aggarwal

Vikram Aggarwal | CEO & Founder
EnergySage

National summary

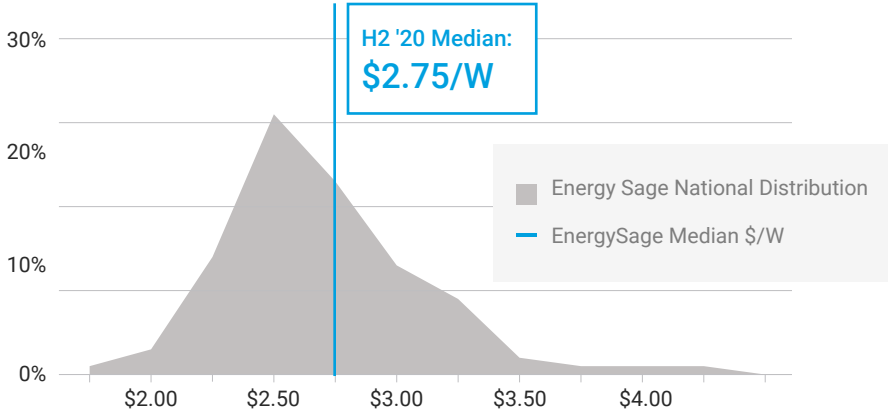
EnergySage is the leading online comparison-shopping marketplace for solar, facilitating and serving custom solar quotes to shoppers from local, vetted solar companies in 37 states and Washington DC. We analyzed quotes submitted by solar companies to shoppers in the Marketplace during the twelve month period covering all of 2020. The median quoted solar price dropped 3.5 percent between the first and second half of the year.

Solar prices decreased more in the second half of 2020 than in any other six month period over the last three years.

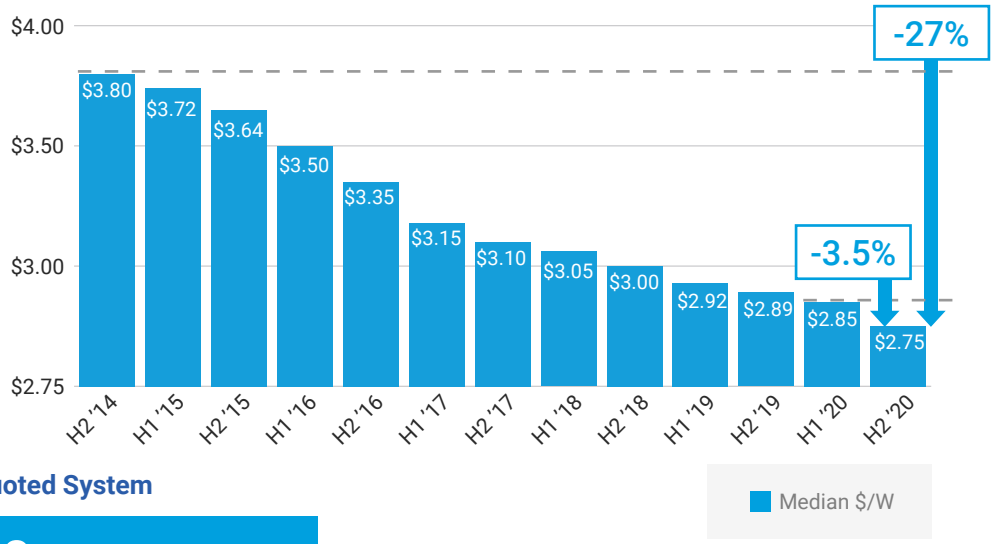
Solar prices declined at an accelerated rate in the second half of 2020

For the last seven years, the quoted price of solar has decreased across every six month period, a trend which continued throughout 2020 on EnergySage. In fact, the pace at which quoted solar prices declined on EnergySage accelerated between the first and second halves of 2020, as we saw the largest percent decrease in solar prices from H1 2020 to H2 2020 since a 5 percent drop in H1 2017. The percent of quotes below $2.50 nearly doubled from H1 2020 to H2 2020, from 10 percent to 18 percent. Meanwhile, quoted system sizes on EnergySage remained relatively steady at 10.2 kilowatts (kW) in H2 2020.

EnergySage Marketplace National Price Distribution, H2 2020



Gross Cost Per Watt, by Half Year



	Payback Period	Size of Quoted System
H1 '20	8.6 years	10.0 kW
H2 '20	8.5 years	10.2 kW

NOTE: Data have been revised to remove outliers in user-provided data.

Consumer preference regarding storage

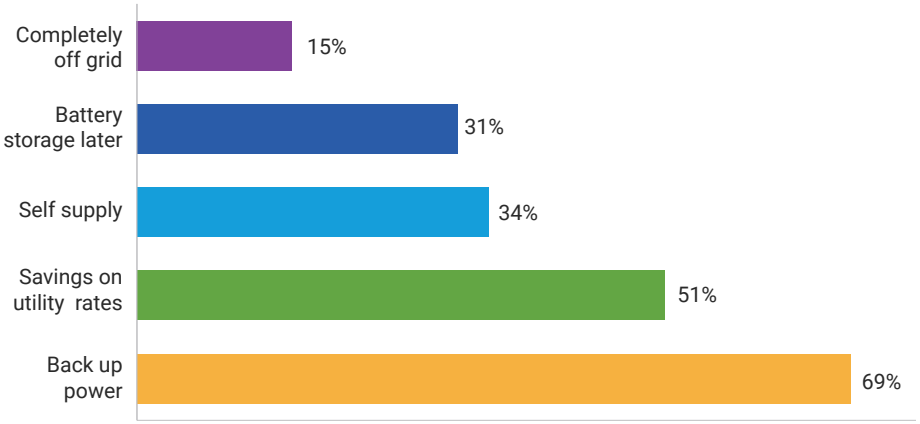
In addition to information on solar quotes, EnergySage also captures data about the energy storage solutions provided in quotes to homeowners through our Marketplace, including consumer preferences for storage (how many consumers are asking for storage quotes, where and why), battery equipment information (brand, model, power rating and usable capacity), and pricing information (gross cost and $/kilowatt-hour, kWh).

7 out of 10 consumers are interested in storage for emergency backup power.

Consumers confirm installer assumptions: resilience drives storage interest

In our recently released annual Installer Survey, 65 percent of installers said that resilience–having backup power in the event of a major storm event or power outage–is the primary driver of consumer interest in storage. Consumer preference on EnergySage confirms this trend: after asking to receive storage quotes on EnergySage, 69 percent of consumers say they're interested in storage for backup power.

Why are consumers interested in storage?



Completely off grid
a system for people who want to be completely disconnected from the grid

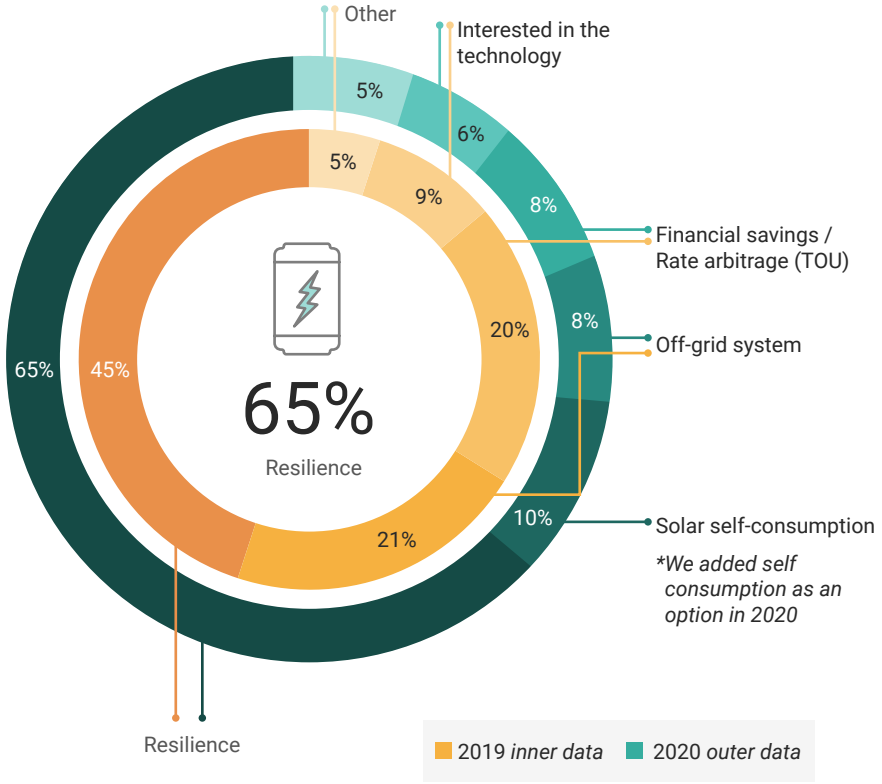
Self supply
maximize the amount of solar production that is consumed on-site instead of exported to the grid

Savings on utility rates
financially driven decision to save on time varying rates or demand charges

Battery storage later
a 'future proof' system that can easily integrate a battery down the line

Back up power
resiliency in the face of outages on the grid

Why are consumers interest in storage? The installer perspective



Storage pricing and marketplace share

The U.S. storage market is a rapidly evolving industry. According to Wood Mackenzie and the Energy Storage association, 2020 was a record breaking year for all types of storage, including the four best quarters ever for residential energy storage adoption. Even still, the market remains in flux, with many different manufacturers offering storage options with distinct chemistries and capabilities. Tracking EnergySage Marketplace share is a useful way to benchmark both consumer and installer preferences in this still nascent industry.

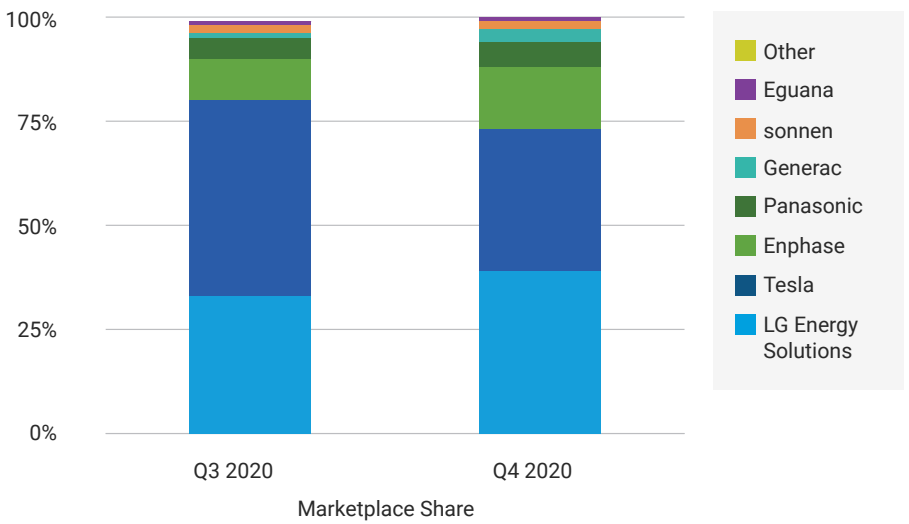
LG Energy Solutions overtook Tesla as the most quoted storage brand on EnergySage in Q4 2020.

A transition at the top of the leaderboard: LG Energy Solutions takes top spot

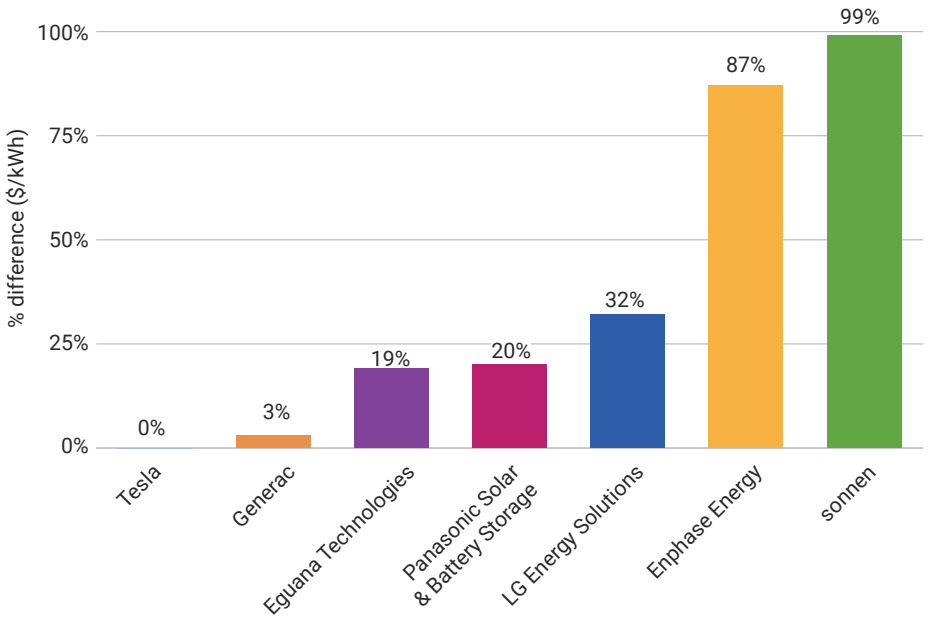
In our first two quarters of robust energy storage quote data, the two most popular storage brands are Tesla and LG Energy Solutions, which combined to account for three-quarters of all quotes on EnergySage. Between Q3 and Q4, though, LG Energy Solutions overtook Tesla as the most quoted storage brand, while Enphase also took marketplace share from Tesla.

Tesla remains the lowest cost storage option on a dollar per kilowatt-hour ($/kWh) basis. The two companies quoted at the highest cost per kWh–sonnen and Enphase–are two companies who exclusively offer lithium iron phosphate (LFP) battery chemistries.

Storage marketplace share by quarter, H2 2020



Percent difference from least expensive option



NOTE: Data have been revised to remove outliers in user-provided data.

Price distribution for residential solar in select states

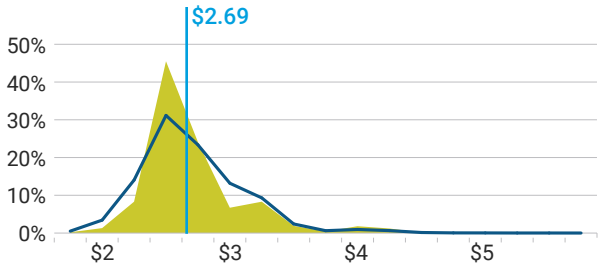
To provide a sense of market dynamics in different states and regions, EnergySage analyzed Marketplace quote data for the second half of 2020 for the top 10 states for residential solar, according to the Solar Energy Industries Association (SEIA).

The largest residential solar markets continue to exert **downward pressure** on national solar pricing trends.

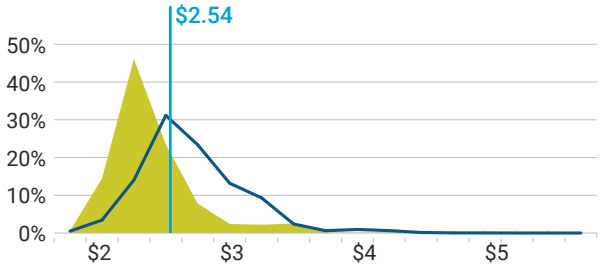
States 1-5: Driving solar price reductions at the national level

In each of the five largest residential solar markets, the median quoted price in H2 2020 was below the national median price. With the exception of Texas, these top residential solar markets all had relatively narrow distributions of quoted solar prices on EnergySage compared to national pricing distribution: at least two-thirds of solar quotes were within a $0.50 per Watt margin for these states in H2 2020. In Arizona, this margin was even narrower with 74 percent of solar quotes between $2.25 and $2.50 per Watt.

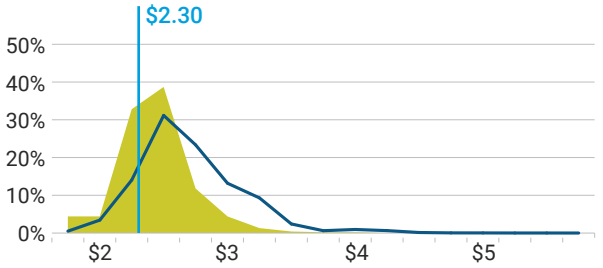
1. California



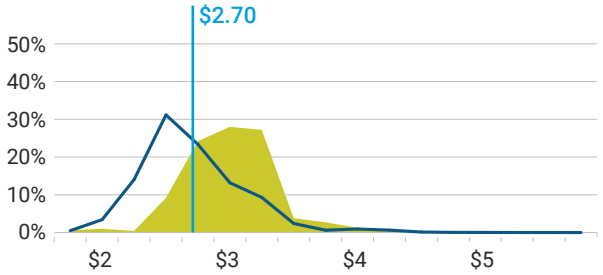
2. Florida



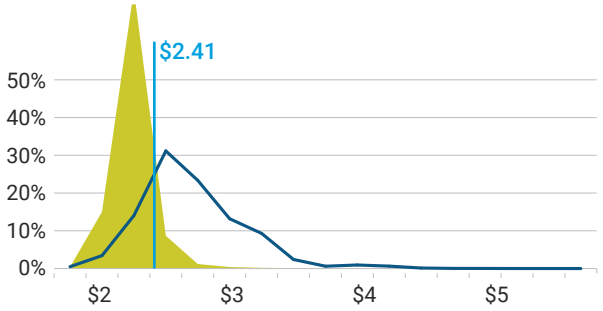
3. Arizona



4. Texas



5. New Jersey



EnergySage state pricing distribution

EnergySage national pricing distribution

EnergySage state average, $/W

NOTE: Data have been revised to remove outliers in user-provided data.

Price distribution for residential solar in select states

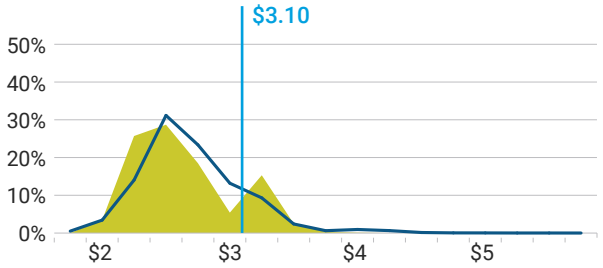
To provide a sense of market dynamics in different states and regions, EnergySage analyzed Marketplace quote data for the second half of 2020 for the top 10 states for residential solar, according to SEIA.

Median prices in four of the 6th-10th largest residential solar states are **higher than** the national median.

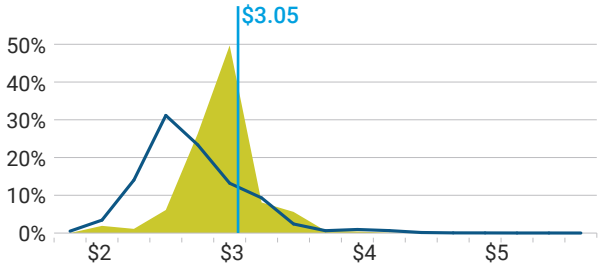
States 6-10: Higher prices than the national median

Similar to the top five states, the solar pricing distribution curves in the sixth through tenth largest residential solar markets are narrower than the national pricing distribution in all but one state: New York. In all but one of these states (Nevada), the median quoted price on EnergySage was higher than the national median price in H2 2020. Notably, Nevada tied Arizona for the lowest median quoted price on EnergySage at $2.30 per Watt.

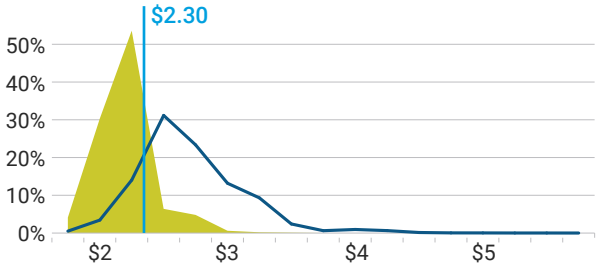
6. New York



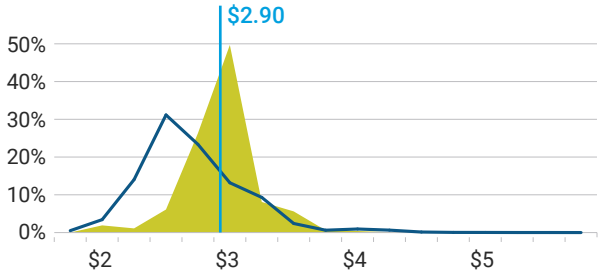
7. Illinois



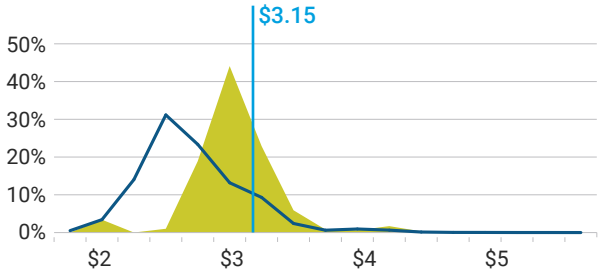
8. Nevada



9. Massachusetts



10. Colorado



EnergySage state pricing distribution

EnergySage national pricing distribution

EnergySage state average, $/W

NOTE: Data have been revised to remove outliers in user-provided data.

EnergySage Solutions for Utilities

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energysage.com/partners/utilities

We tailor our digital tools for utility customer experiences

- Educational Content
- Solar Cost Calculator
- Comparison-Shopping Marketplaces (Rooftop and Community Solar)

Utilities benefit from stronger customer engagement

- Deliver an integrated experience
- Deepen customer relationships
- Facilitate consumer protection

Featured utility partnership

2020 Best Practices Awards — SMART ENERGY CONSUMER COLLABORATIVE

nationalgrid

"In this partnership with EnergySage we were able to stand up a portal to bring the ecosystem together and that's where the utility became a true, trusted advisor."

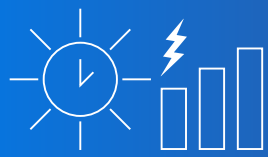
- Gregory Knight, Chief Customer Officer
National Grid

Trusted by

DSIRE® | ORACLE | OPOWER | Central Hudson (People. Power. Possibilities.) | CONNECTICUT GREEN BANK | CPA CLEAN POWER ALLIANCE | GO solar CALIFORNIA

Solar system characteristics in select states

Every quote a solar shopper receives on EnergySage is customized, meaning that solar panel system characteristics will vary from quote to quote. In general, higher average monthly electricity usage in a state is aligned with larger quoted solar panel system sizes on EnergySage, as solar companies design systems to cover 90+ percent of a customer's usage in 9 of the top 10 residential markets.



Quoted solar system sizes **increased** in all top 10 residential solar markets during the second half of 2020.

Quoted system sizes and average monthly consumption do not appear to be major influences in quoted solar prices

During the second half of 2020, quoted solar prices decreased in 6 out of the top 10 residential markets. Despite consistent, steady declines in the cost of solar at the national level, solar prices at the state level have traditionally fluctuated more broadly due to local market dynamics, whether incentive-, labor- or permitting-related. These fluctuations were apparent during the second half of 2020, and the changes in quoted solar prices do not appear to be correlated with the quoted system sizes or average monthly electricity usage.

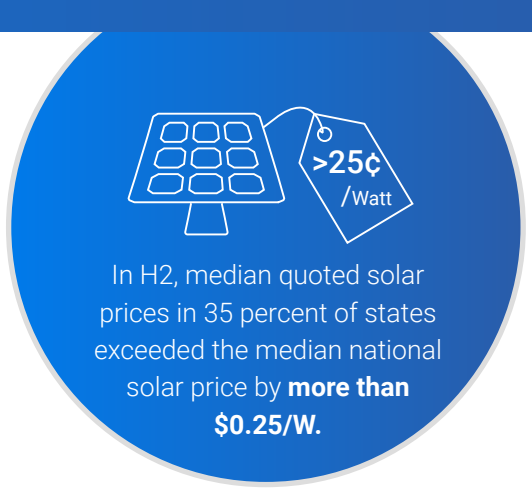
State System Characteristics: Quoted System Size (kW) and Usage Offset (%)

States	Residential Rank	System Size			Usage Offset (%)	Median $/W			Average Monthly Consumption (kWH)	Avg elec rate Jan 2021
		H1 2020	H2 2020	Delta	H2 2020	H1 2020	H2 2020	Delta		
California	SEIA #1	7.8	8.2	⬆	103%	$2.83	$2.69	⬇	550	21.43
Florida	SEIA #2	12.7	13.4	⬆	95%	$2.60	$2.54	⬇	1020	11.65
Arizona	SEIA #3	9.5	11.0	⬆	92%	$2.48	$2.30	⬇	890	11.7
Texas	SEIA #4	12.2	13.0	⬆	93%	$2.70	$2.70	–	1160	11.39
New Jersey	SEIA #5	11.1	12.1	⬆	94%	$2.84	$2.41	⬇	720	16.18
New York	SEIA #6	10.3	10.8	⬆	91%	$2.96	$3.10	⬆	650	18.27
Illinois	SEIA #7	9.9	9.9	⬆	88%	$3.05	$3.05	–	790	12.3
Nevada	SEIA #8	10.7	11.4	⬆	98%	$2.62	$2.30	⬇	770	11.53
Massachusetts	SEIA #9	9.1	9.3	⬆	93%	$2.99	$2.90	⬇	690	22.32
Colorado	SEIA #10	8.6	9.2	⬆	98%	$3.10	$3.15	⬆	750	12.14

Average state monthly consumption and price data from the Energy Information Administration (EIA)
NOTE: Data have been revised to remove outliers in user-provided data.

State cost differential from national average: residential solar

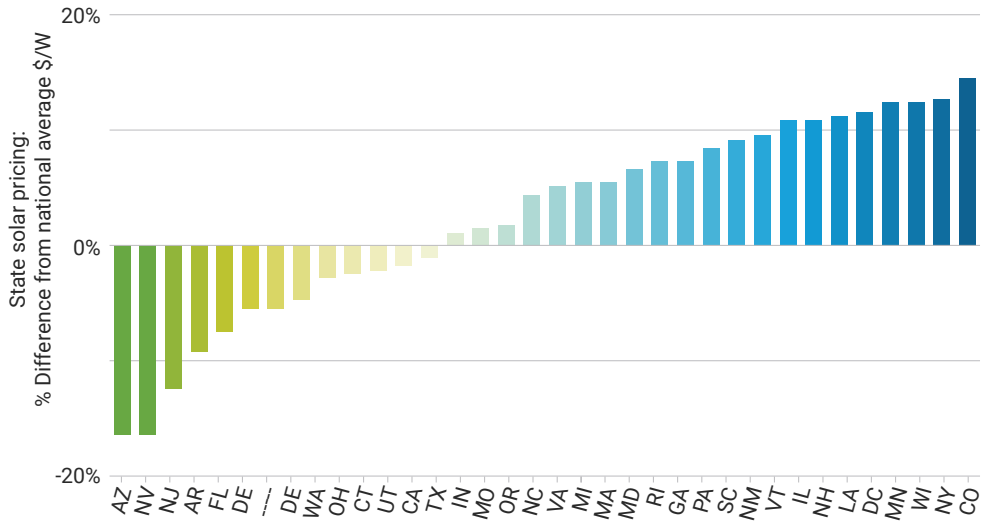
Solar costs can vary significantly from state-to-state. In H2 2020, median quoted solar costs ranged from $2.30 per Watt in Arizona and Nevada to $3.15 per Watt in Colorado. The 31 percent spread in median quoted prices represents a slight increase from a spread of 29 percent in the first half of 2020. Only three states saw median quoted solar prices 25 cents per Watt or more below the national median; however, solar prices in nine states were 25 cents per Watt or more above the national median. The range differs substantially from H1 2020 when only three states total were 25 cents per Watt outside of the national median.



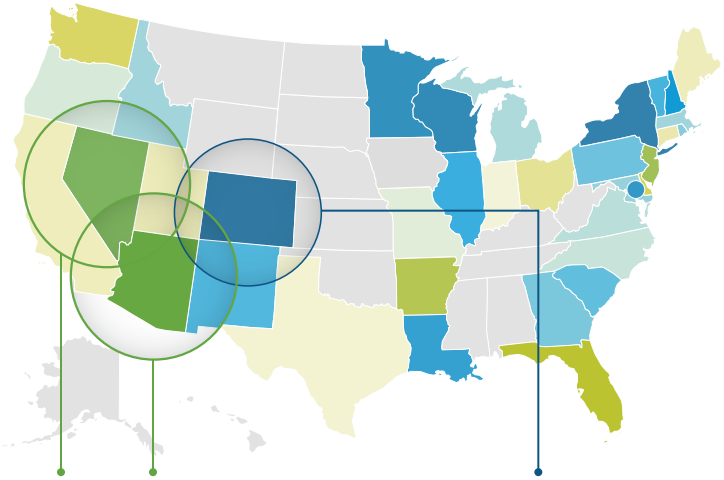
Solar prices are lower in the West and South; higher in the North

In general, solar prices during the second half of 2020 were higher in North Central and Northeastern states than in Western and Southern states. However, the state with the highest quoted price (Colorado) is only one state away from the states with the lowest quoted prices (Arizona and Nevada).

State Pricing Difference from EnergySage National Median



$2.75 per Watt
ENERGYSAGE NATIONAL MEDIAN



$2.30 per Watt
LOWEST PRICE

$3.15 per Watt
HIGHEST PRICE

NOTE: Data have been revised to remove outliers in user-provided data.

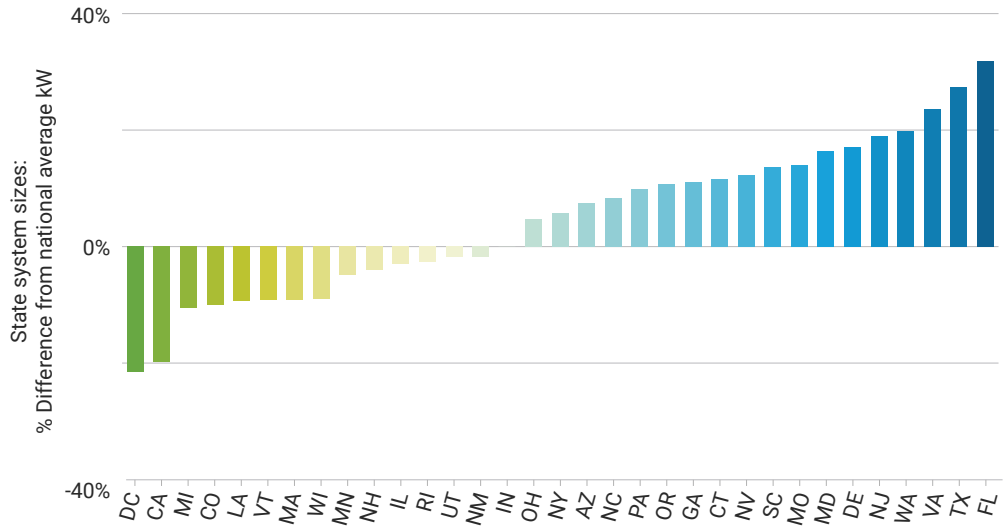
State system sizes: difference from energysage national average

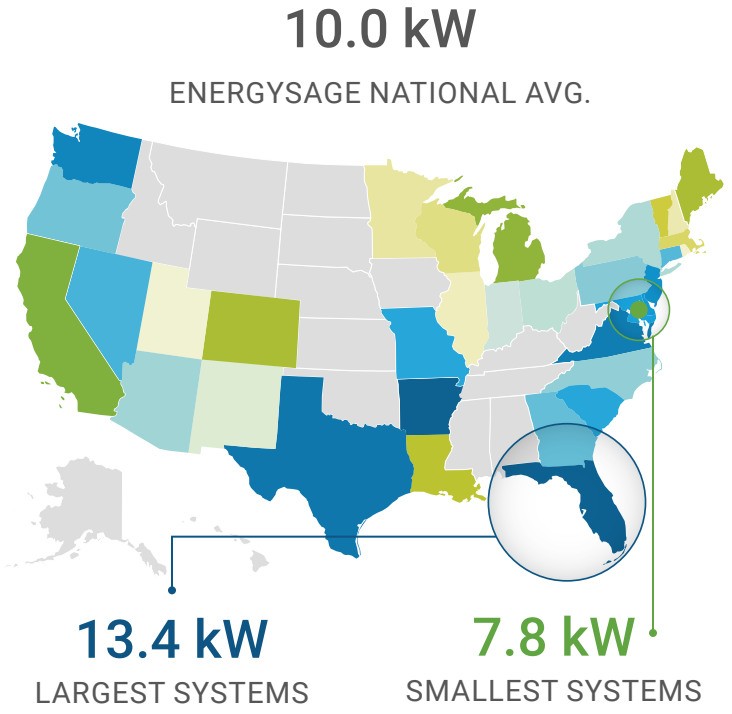
Across the country, average quoted system sizes ranged from a minimum of 8.0 kW in the District of Columbia to a maximum of 13.4 kW in Florida. In 16 of the 34 states analyzed, the quoted system size was within one kilowatt of the national average.

Larger system sizes track higher monthly electricity consumption

Aside from a few notable outliers, system sizes tend to increase as monthly electricity consumption increases: average monthly consumption exceeded 800 kilowatt-hours (kWh) in all but three of the states where quoted system sizes were larger than the national average, but for only three of the states where the average system sizes were below the national average.

State System Size Difference from EnergySage National Average





Average state monthly consumption data from EIA.

NOTE: Data have been revised to remove outliers in user-provided data.

Marketplace share: equipment

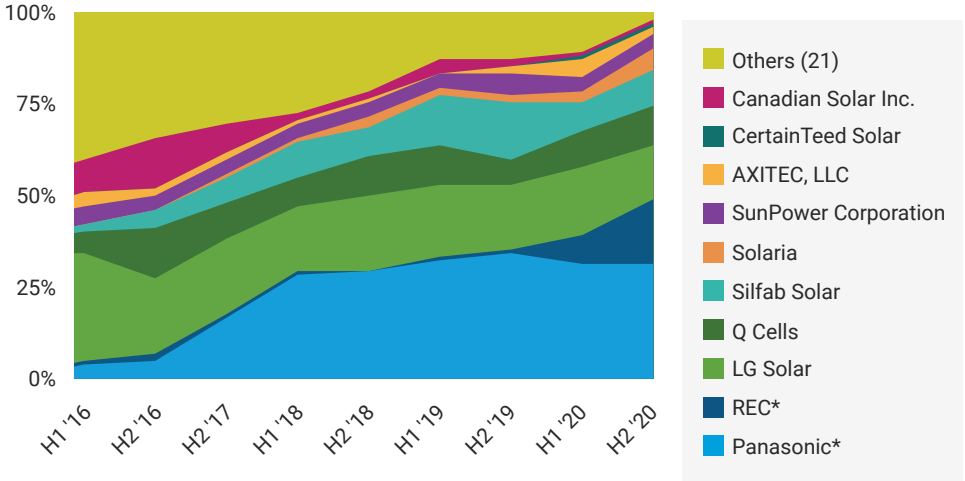
EnergySage Marketplace share is indicative of consumer preference and the resultant sales behavior of small-to-midsize solar installers. Marketplace share for solar panels continues to skew towards premium products on EnergySage and to highlight the effectiveness of consumer-facing promotions, while two companies continue to dominate the inverter Marketplace.

The success of Panasonic and REC on EnergySage highlight the effectiveness of consumer facing promotions in driving **consumer brand awareness** and demand.

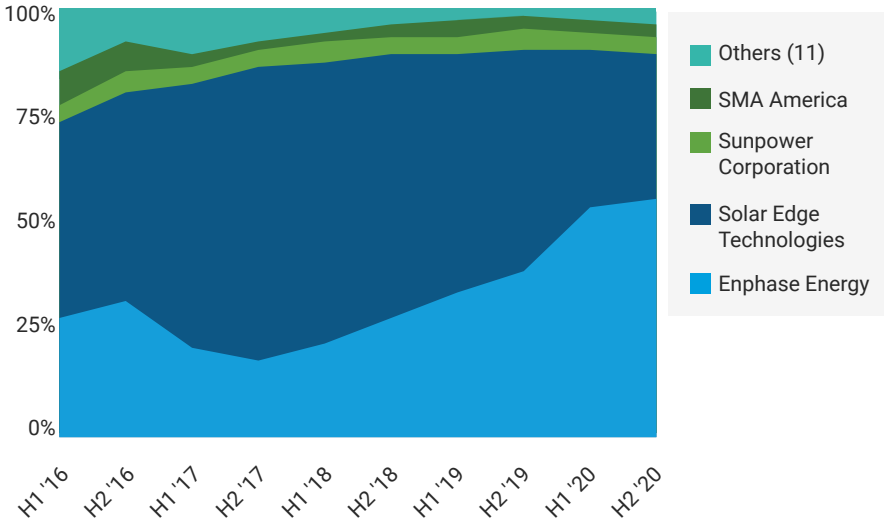
Quoted system sizes and average monthly consumption do not appear to be major influences in quoted solar prices.

Consolidation of marketplace share continues with the top five most frequently quoted solar panel brands on EnergySage: 85 percent of quotes included one of five solar panel brands in H2 2020, up from 76 percent of quotes in H1 2020. REC more than doubled marketplace share from H1 to H2 2020 after launching a consumer facing rebate through EnergySage. On the inverter front, Enphase continued to eat into SolarEdge's share of quotes on EnergySage, but at a much slower pace than over the previous six month periods.

Top Panel Brands



Top Inverter Brands



NOTE: Data have been revised to remove outliers in user-provided data.

*Rebate offered. All solar panel manufacturers are eligible to offer a rebate to consumers via the EnergySage Marketplace.

Solar equipment characteristics

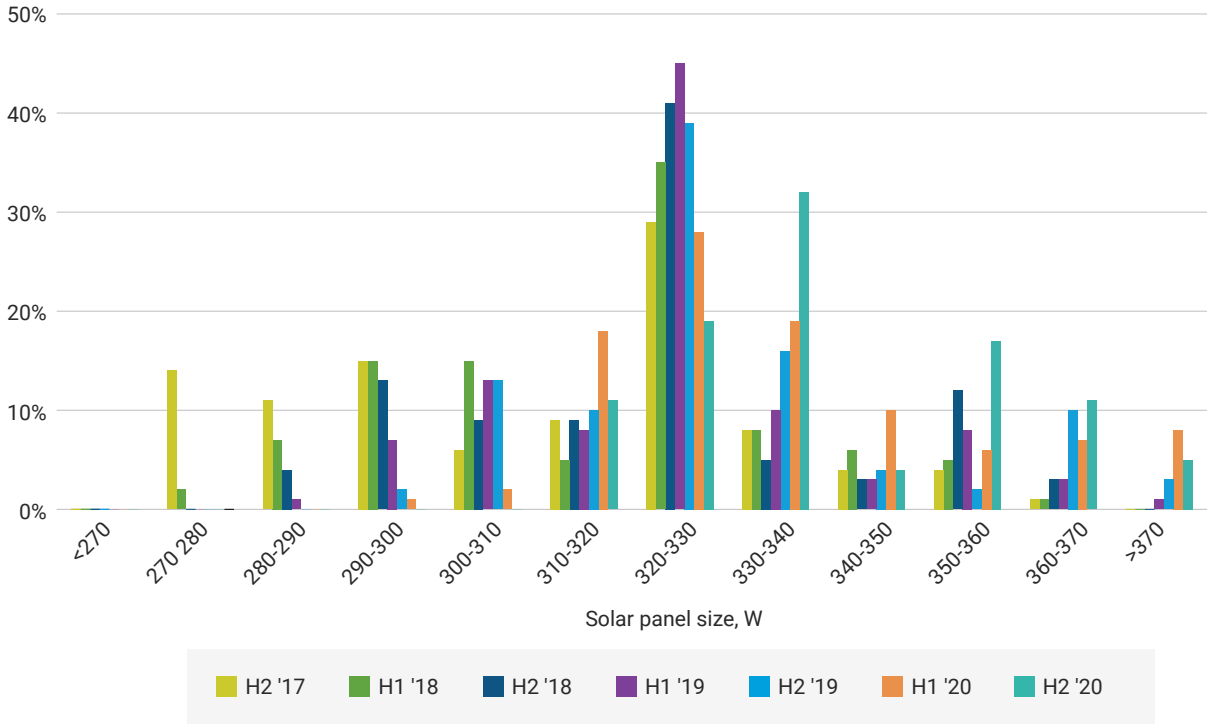
EnergySage analyzed the quoted cost per Watt by system size and module efficiency, as well as the wattage of panels quoted over the last three years. During the second half of 2020, 99 percent of all quotes included solar panels with an efficiency rating above 18.5 percent, and with a power rating greater than 310 Watts.

77 different solar modules were quoted at least once per day to consumers on EnergySage in H2 2020.

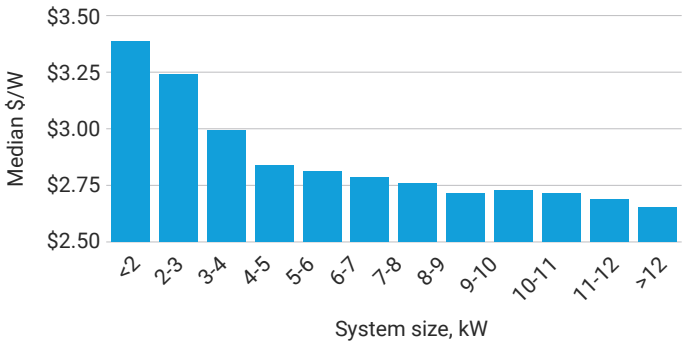
340 Watt panels are the most popular on EnergySage

In H2 2020, the top three most quoted solar panels were 340 Watt solar panels, led by Panasonic's VBHN340SA17, which alone accounted for one fifth of all quotes. However, there is still significant diversity in the products quoted to consumers on EnergySage: 16 specific solar panels were quoted an average of 10 times per day, while 77 different solar panels were quoted at least once per day during the second half of 2020.

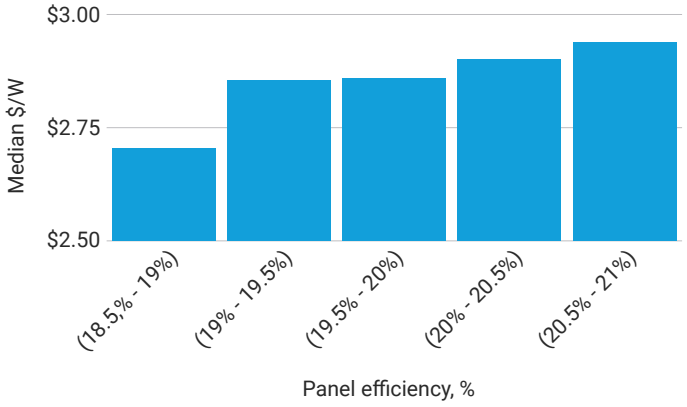
Percent of Quotes by Panel Size



Solar Cost vs. System Size, $/W by kW



Solar Cost vs. Efficiency, $/W by %



NOTE: Data have been revised to remove outliers in user-provided data.

Installer equipment offerings

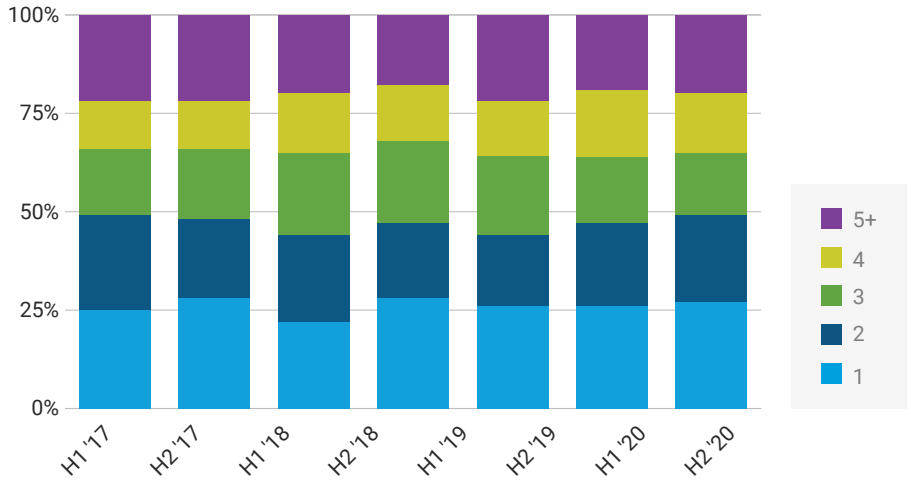
Tracking installer equipment offerings over time provides a useful metric for analyzing both customer choice and installer brand loyalty. Half of installers continue to only offer one or two different brands of solar panels, while four out of five offer only one or two brands of inverters.

Across the last five years, there has been **little change** in the number of different panel and inverter brands offered by installers.

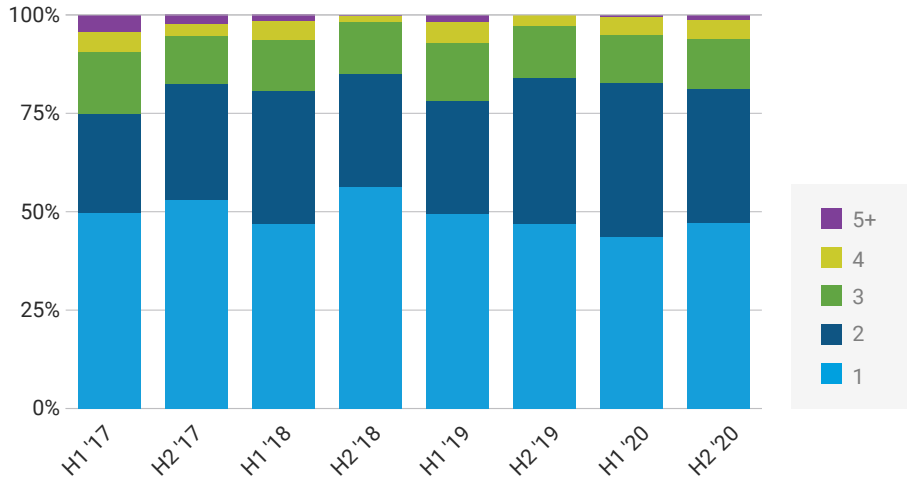
Very little change in number of installer equipment offerings over time

Looking back at five years' worth of data tracking the number of different solar panel brands and solar inverter brands individual installers offer in any six month period, the biggest takeaway is perhaps just how consistent the results are from half-year to half-year. The percentage of installers offering two or fewer solar panel brands has only exceeded 50 percent in one 6-month period, and has never dropped below 44 percent of EnergySage installers. Meanwhile, the percentage of installers offering a single inverter has traced a similar trend, only increasing above 50 percent twice and dropping below 44 percent once in the last five years.

Number of Panel Brands Offered



Number of Inverter Brands Offered



NOTE: Data have been revised to remove outliers in user-provided data.

Installer equipment pairings & price

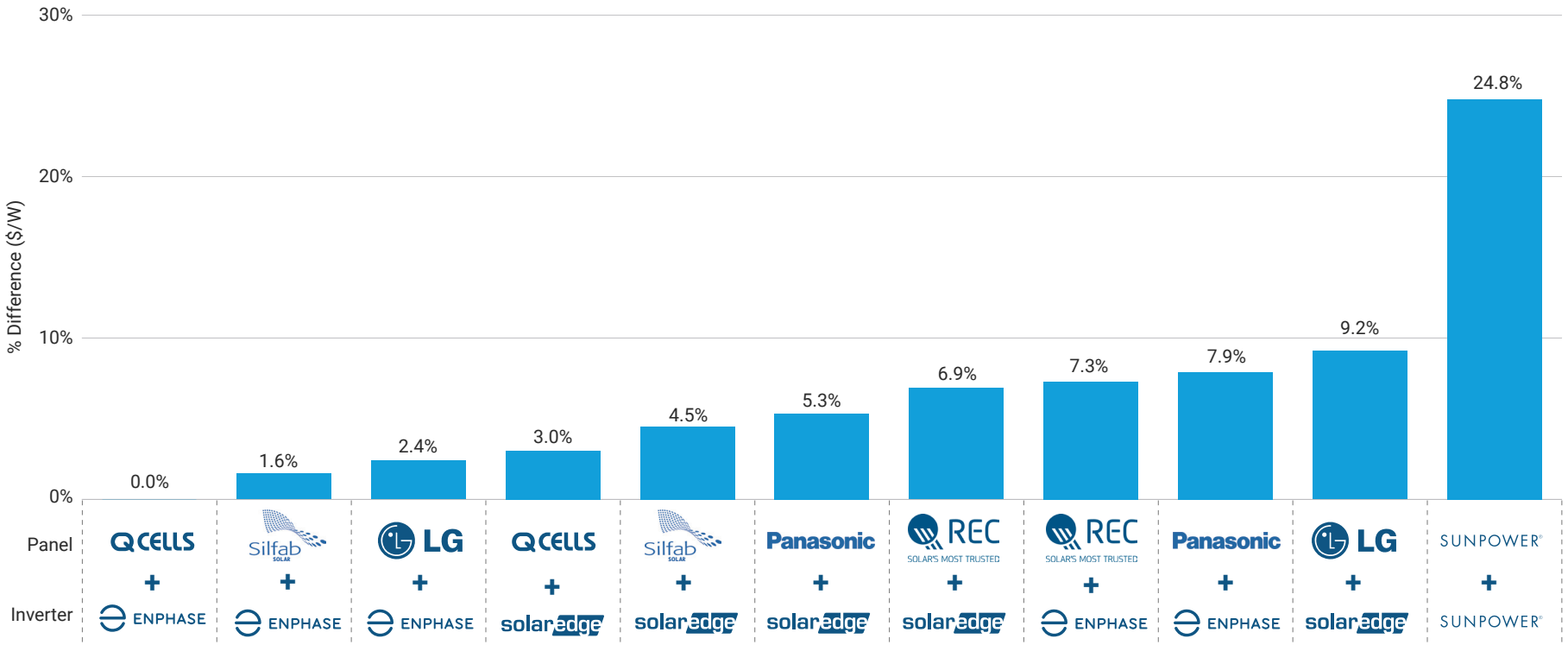
EnergySage analyzed the comparative cost differences across the eleven panel and inverter pairings quoted most frequently to Marketplace shoppers over the entirety of 2020. For the second straight twelve month period, the average quoted price for all but one of the top pairings was below $3 per Watt over this time period.

7 of the 11 top equipment pairings were quoted within a $0.25/W range of each other on average

Wide variation in most quoted equipment brands by state

During 2020, four different solar panel brands–Panasonic, LG, Silfab and REC–were the most frequently quoted brand in five or more states. On the inverter front, Enphase was the most frequently quoted inverter brand in two-thirds of states, with SolarEdge the most often quoted in the remaining third of states. This geographic variation in equipment quoting preferences influences the price dispersion between equipment pairings at a national level; nevertheless, 7 of the 11 top equipment pairings were quoted within a $0.25 per Watt range of each other on average.

Percent Difference from Least Expensive Equipment Pairing



NOTE: Data have been revised to remove outliers in user-provided data.

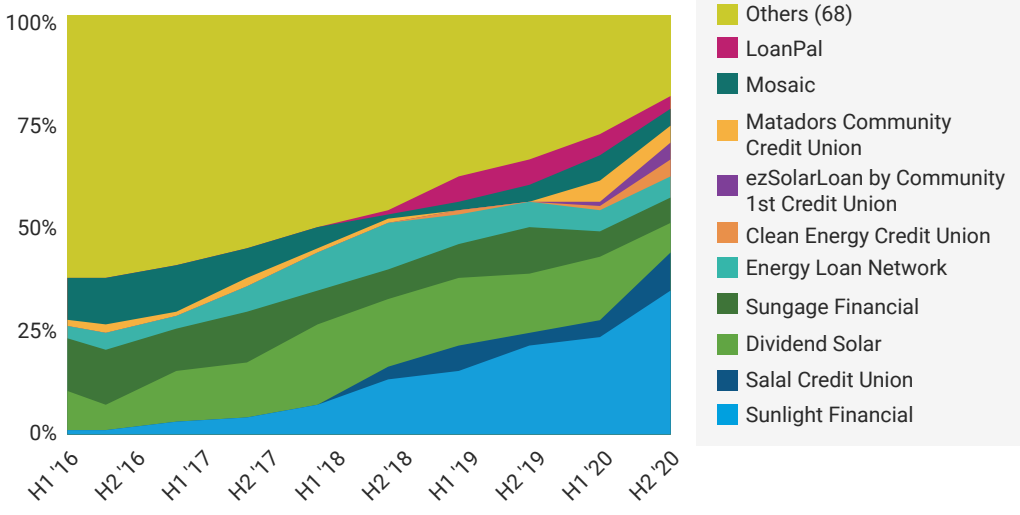
Financing products

Solar loans continue to increase in popularity both on EnergySage and within the broader solar market. While the loan market remains fractured on EnergySage, it is far less so than five years ago: the top four providers accounted for half of quotes that included loans in the Marketplace for the third Intel Report™ in a row. One solar provider, Sunlight Financial, accounted for over a third of all quotes that included loans on EnergySage during H2 2020.

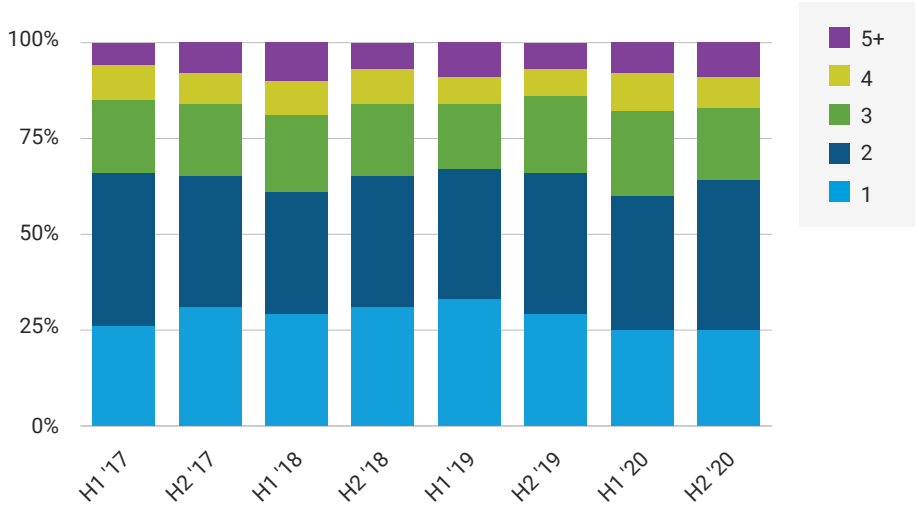
Most installers continue to work with either one or two financiers

Despite the number of different loan providers available for solar installers to work with on EnergySage, 64 percent of installers who offer loans on EnergySage worked with only one or two different lenders. Over the past four years, the percentage of installers working with only one or two lenders has consistently been above 60 percent. The percentage of installers working with four or more lenders has also remained steady over the past four years at under 20 percent.

Financing Provider Marketplace Share



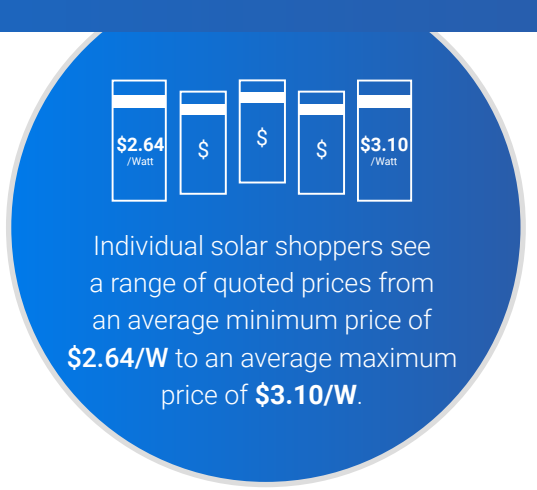
Number of Loan Brands Offered



NOTE: Data have been revised to remove outliers in user-provided data.

Price dispersion for EnergySage customers

Solar shoppers assess quotes on more than just price: from the quality of solar equipment to the ratings and reviews of the installer, there are a variety of factors to consider when making a solar decision. To track how the range of quoted prices have changed over time, EnergySage analyzed the prices of the average maximum and minimum quotes that each individual shopper received.

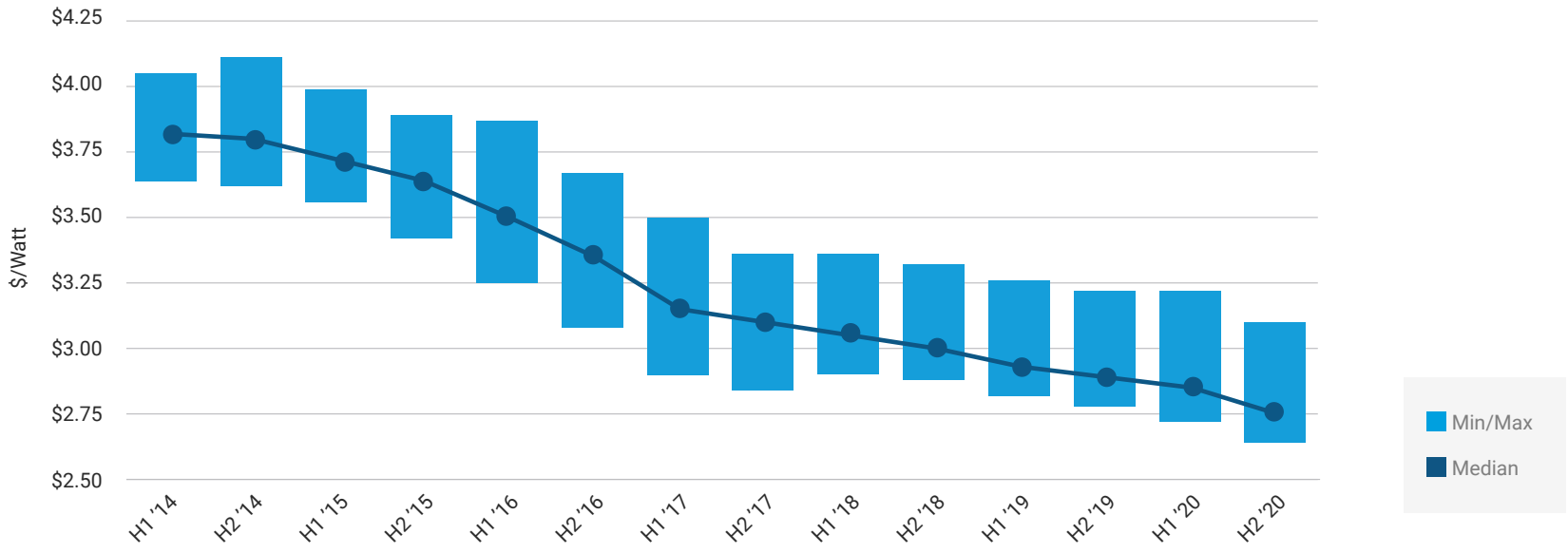


Individual solar shoppers see a range of quoted prices from an average minimum price of **$2.64/W** to an average maximum price of **$3.10/W**.

Shoppers see a $5,300 difference between lowest to highest quotes, on average

The average solar-interested customer on EnergySage could expect a range of quoted solar costs of 18 percent on a $/W basis during the second half of 2020, only a slightly narrower range than the 19 percent spread in H1 2020. For the average 10.2 kW system on EnergySage, this means an average difference of $4,600 between the upfront price of the minimum and maximum quotes received by each customer. Interestingly, despite the steady decline in quoted solar prices on EnergySage, it is not price alone that influences a consumer's purchasing decision. In fact, in 2020, three fifths of solar adopters did not select the lowest price quote they receive on EnergySage, indicating the role that other criteria–including equipment quality and installer ratings and reviews–play in driving solar adoption.

Customer Price Dispersion Over Time



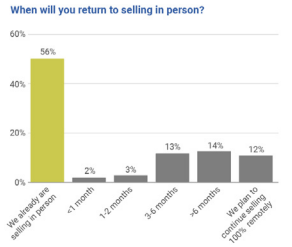
NOTE: Data have been revised to remove outliers in user-provided data.

In case you missed it:

Three recent reports from EnergySage

energysage.com/data

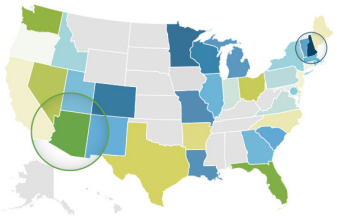
Solar Installer Survey:
2020 Results



Special Report:
Assessing the impact of COVID-19 on residential solar

Solar Marketplace Intel Report™

Data from H2 2019 - H1 2020



What can EnergySage data do for you?

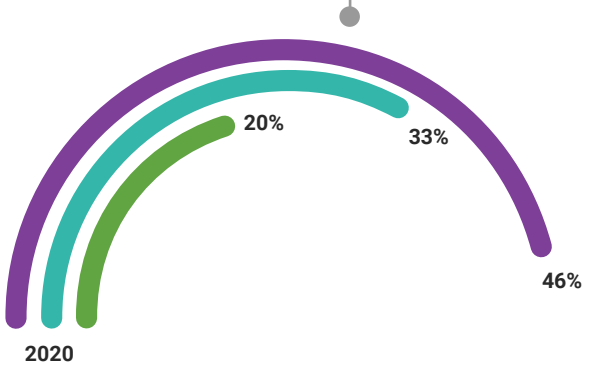
EnergySage is the most visited website in the solar industry and the leading online marketplace for solar and storage comparison shopping in the country. As a result, EnergySage data provides a unique look at the solar industry from both the consumer and installer perspectives.

The EnergySage Marketplace data included in this report reviews nearly twenty million transaction level data points from custom solar quotes provided to active solar shoppers on EnergySage from January 2020 through December 2020. For additional market insights, EnergySage recently published our 2020 Solar Installer Survey, which analyzes responses from 650 solar companies.

Although this report presents this data aggregated at a very high level, EnergySage selectively partners with different organizations in the solar industry to provide custom data reports, including equipment manufacturers, national research laboratories and investment firms. If you're interested in custom solar data reports, explore our options at energysage.com/data or email us at data@energysage.com to set up a consultation today.

Nearly half of all customers are interested in receiving quotes with energy storage, and installers indicate that one-fifth of all installations include a battery.
Download the free report here.

Energy Storage Demand
National Average



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About EnergySage, Inc.

EnergySage is the leading online comparison-shopping marketplace for rooftop solar, energy storage, project financing, and community solar. Supported by the U.S. Department of Energy, EnergySage is trusted by over 10 million consumers across the country to help them make smarter energy decisions through simplicity, transparency, and choice. Unlike traditional lead-generation websites, EnergySage empowers consumers to request and compare competing quotes online from a network of more than 500 pre-screened installation companies – a formula that is proven to result in a higher rate of adoption, 20 percent lower prices on average for consumers, and significantly lower costs for renewable energy providers. For these reasons, leading organizations like Connecticut Green Bank, DSIRE, Environment America, Kaiser Permanente, and National Grid refer their audiences to EnergySage.

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