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2024

Electrification Contractor Survey

Published April 2024

Executive perspective

Across the US, the solar landscape is evolving rapidly, as homeowners are increasingly thinking about solar not as a one-off purchase but rather as a piece of their path towards broader electrification.

From a homeowner's perspective, this transition is complex and expensive. So, the onus to provide that education and support has largely fallen to contractors in different industries, from solar installers to HVAC technicians to electricians.

At the same time, contractors face a difficult labor environment and a constantly shifting macroeconomic reality, further taxing the people and businesses who shoulder the risks of selling and installing new products that aren't yet familiar to consumers.

As the solar industry has evolved, so too have we at EnergySage. From our origins in residential rooftop solar, we've added the ability for consumers to shop for energy storage systems, community solar subscriptions, air source heat pumps, and, most recently, electric vehicle chargers, all in one place.

In building these additional business units at EnergySage, one thing has become abundantly clear to me: The energy transition rests on the shoulders of contractors.

And yet, the opportunities for contractors to lend their voice to the narrative are few and far between.

To that end, we are excited to share our eighth annual Contractor Survey—but our first that expands the breadth of our survey beyond just solar. At the end of 2023, we launched our first ever Electrification Contractor Survey, targeting all types of contractors offering solar, storage, heat pump, EV charger, main panel upgrades, and more.

From my perspective, the most important takeaway is this: Contractors are confident that their business will grow over the next three years across all product categories.

After reviewing the results, it's clear that the solar industry's success is tied directly to the overall success of electrification trends and vice versa. I look forward to hearing what you find valuable and how you apply it to your business.

Enjoy!

Charlie Hadlow
President & COO

Methodology and overview

As the country's leading online comparison-shopping marketplace for rooftop solar, energy storage, community solar, and heat pumps, EnergySage works closely with our network of hundreds of pre-screened solar installation companies throughout the country.

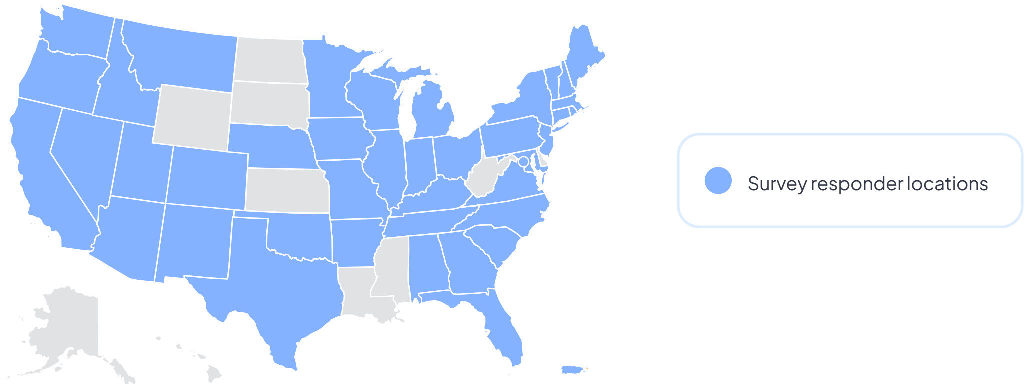
Our unique relationship with these solar installation professionals – as well as lenders, manufacturers, and distributors – affords us unparalleled insight into the trends shaping the U.S. solar industry.

Since 2015, we've fielded an annual survey of solar installers nationwide—both to EnergySage partners and contractors doing business outside our platform—to put our finger on the pulse of the installer mindset. How confident are installers about the solar industry? What are the barriers to growing their businesses? How do they see the industry evolving? And what are their plans for the coming years?

In 2023, we expanded our annual solar installer survey to be a broader electrification contractor survey, capturing responses from solar installers, electricians, HVAC contractors, and other service providers. We asked both common and segment-specific questions across contractors installing various electrification products, including solar, storage, heat pumps, electric vehicle chargers, main panel upgrades, and even operations and maintenance services.

In this report, we've first provided a breakdown of general business trends, followed by product-specific information for each electrification segment.

We conducted this survey during the fourth quarter of 2023 in collaboration with equipment manufacturers, financing companies, and industry non-profit groups. Overall, nearly 400 contractors from 40 states, including Washington, DC and Puerto Rico, responded to the survey. Two-thirds of responses to this year's Survey come from the CEO, Founder, or VP-level executive at their respective company.



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2024 ELECTRIFICATION CONTRACTOR SURVEY

General Business Trends

General business trends overview

Home electrification is not just one segment or industry but an amalgamation of multiple different types of businesses whose employees have varied skill sets.

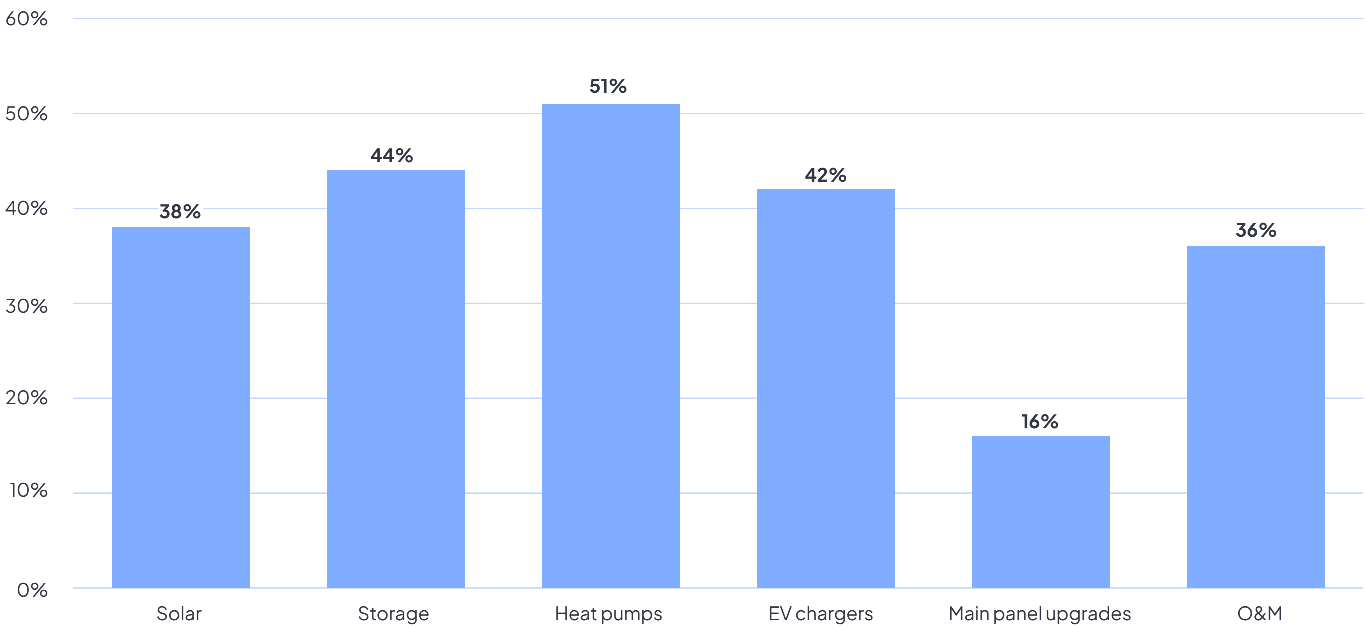
One thing is true across all of these segments: There are major players, but as with most trades, nobody dominates the market. As a result, electrification is driven by the long tail of contractors. For instance, in the solar industry, several thousand companies install at least one residential system every year, and the top 75 companies account for less than 50% of all installs, according to Wood Mackenzie. This dynamic is even more pronounced in the HVAC industry, where it's estimated that over 100,000 unique companies are operating in the US.

To better understand who these companies are and how they compare across segments, we asked them about their businesses. How long have they been in business? How many employees do they have? How many states do they operate in? What portion of their revenues come from their main line of business? What are their growth plans for the coming years? And how have they experienced the labor market in the past year?

The respondents to this year's survey are largely a part of that long tail: 75% of respondents operate in only one or two states, and 67% of companies employ 25 people or less. These companies have generally been in business for 6 to 15 years and typically see their primary line of business (i.e., solar or HVAC) account for 70% of their revenue.

These contractors also forecast growth over the coming years but are having difficulty finding qualified professionals to join the team due to a lack of industry-specific experience and knowledge, as well as increasing hourly labor rates.

FORECAST CHANGE IN ANNUAL INSTALLATIONS OVER THE NEXT THREE YEARS FOR YOUR BUSINESS



About your business

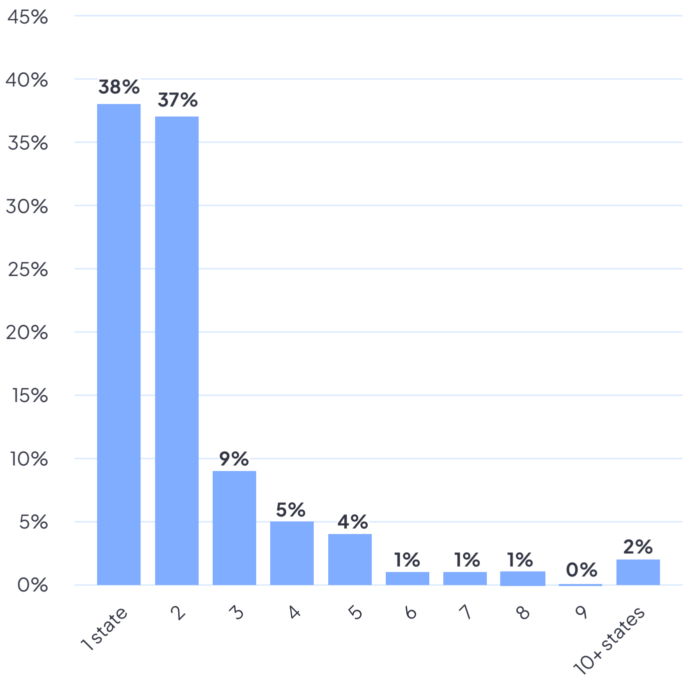
What do electrification contractors call their business?

Full service contractor or energy transition company.

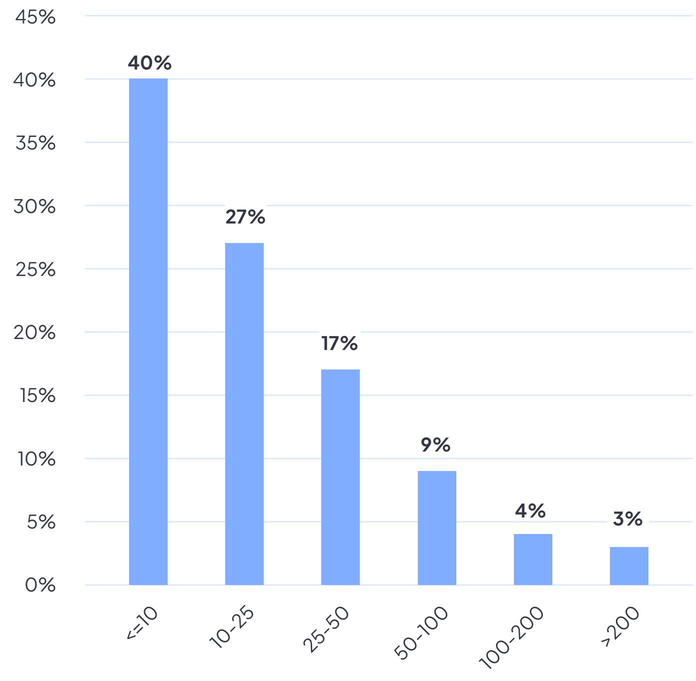
Installers operate primarily in one or two states (average number of states operating in is 1.7).

Two-thirds of companies have fewer than 25 employees.

HOW MANY STATES DO YOU OPERATE IN?



HOW MANY EMPLOYEES DO YOU HAVE?

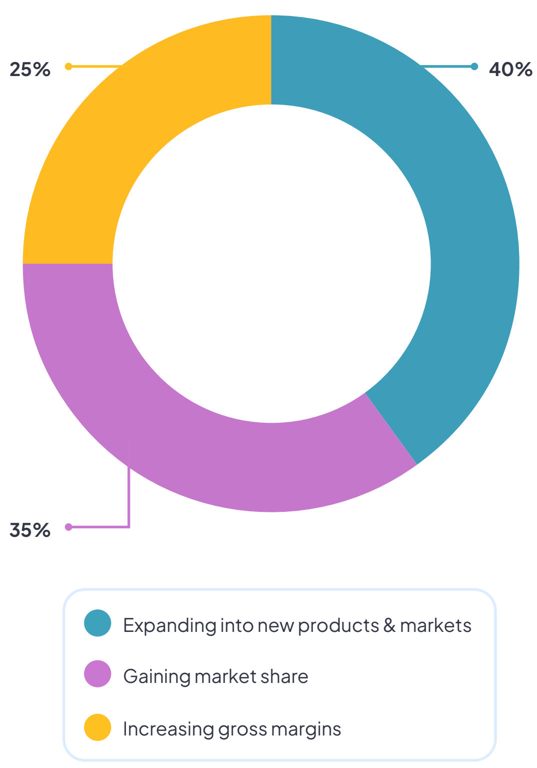


Business strategy

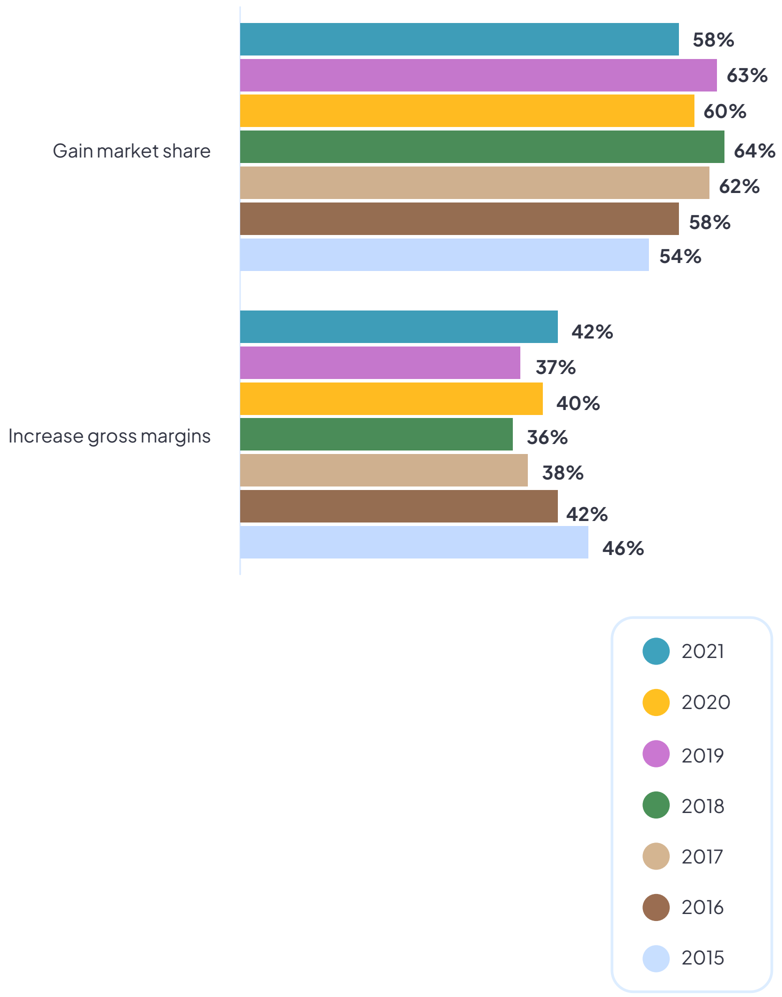
Contractors' business strategy is to expand into new products and markets.

- This is a new answer choice in this year's survey.
- Gaining market share remains more important than increasing margins.

WHICH STATEMENT BEST DESCRIBES YOUR BUSINESS STRATEGY OVER THE NEXT 3 YEARS?



MARKET SHARE VS. MARGINS: WHICH IS MORE IMPORTANT?

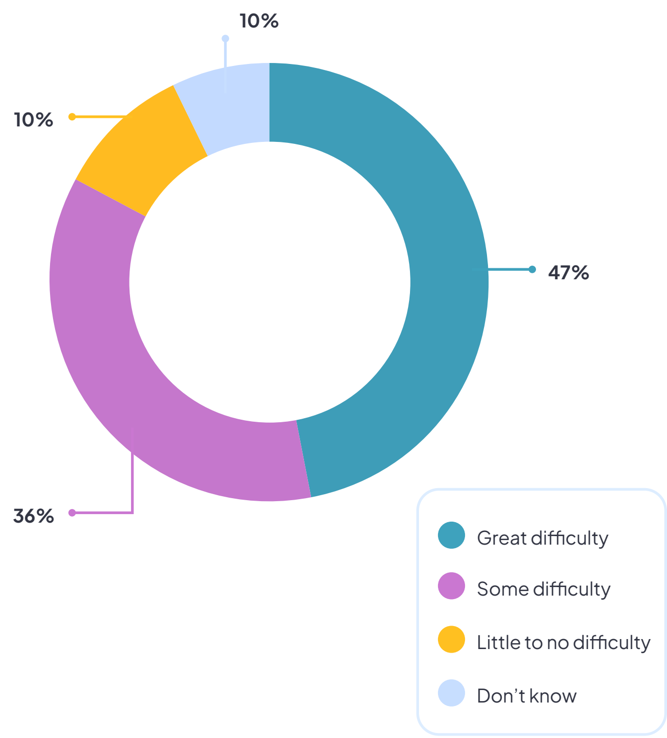


Labor

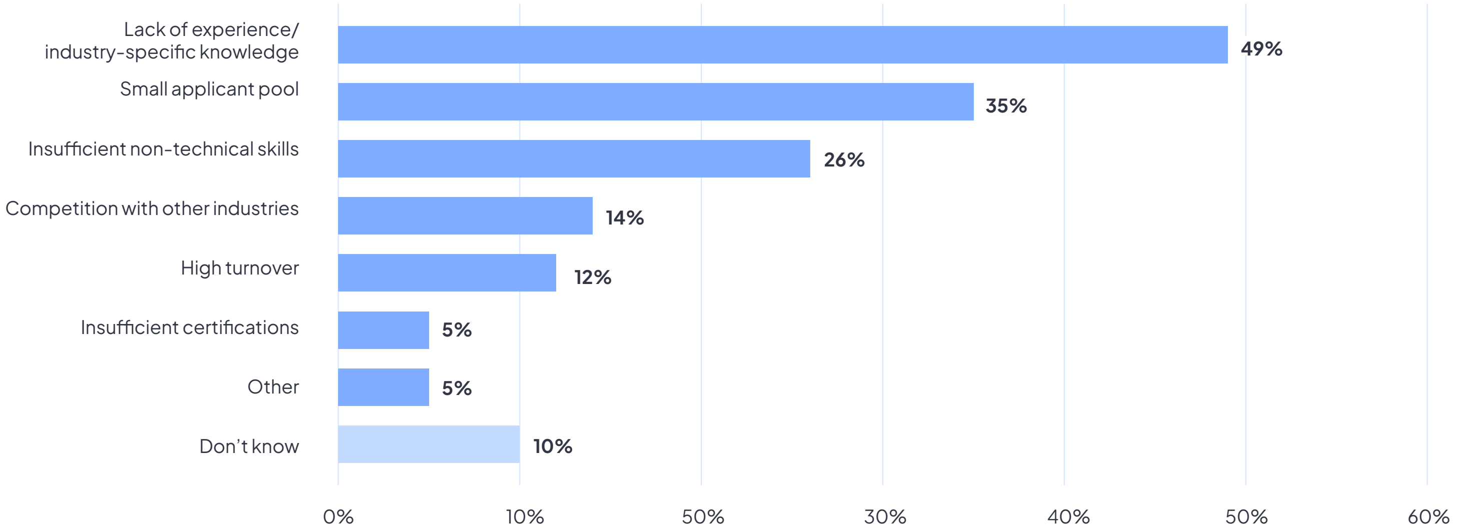
The labor market is difficult.

- Hourly labor rates increased by 15-20% in 2023.
- Contractors report difficulty filling open positions, primarily due to lack of industry-specific knowledge or skills.
- Contractors are struggling to fill a wide range of roles, especially electricians and field technicians.

HOW DIFFICULT IS IT FOR YOU TO FIND QUALIFIED PROFESSIONALS FOR OPEN POSITIONS?



PLEASE SELECT THE TOP TWO REASONS FOR YOUR REPORTED HIRING DIFFICULTY.



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2024 ELECTRIFICATION CONTRACTOR SURVEY

Solar

Solar overview

2023 was a year of contradictions in the US solar industry. On one hand, 2023 was the best year ever for residential solar installations, with nearly every quarter setting a new record for deployed capacity. On the other hand, following a year of shifting net metering policies and increasing interest rates, installer confidence in the solar industry is at its lowest point since 2016.

At the core of this year's responses is a fundamental tension in solar sales: The primary reason that consumers purchase solar is to save money, but the biggest driver of lost sales is cost or perceived cost.

In 2023, installers experienced a year of rising costs and less favorable consumer economics, hampering sales. For instance:

Three-fifths of installers say their equipment costs increased in 2023 by a median of 5%; California installers anticipate the transition to the net billing tariff will lead to a 22% reduction in sales volume in 2024 due to reduced solar savings.

Four-fifths solar installers say increasing interest rates decreased interest in solar.

Three-quarters of installers said their businesses had been adversely impacted as a result of those increasing interest rates.

To that end, when asked about the primary barrier to growing their business, the most common answer from solar installers was a lack of desirable financing options—even more than the challenges of customer acquisition, or a lack of trained labor.

But there are reasons for optimism. First, there are still myriad incentives for solar. While solar contractors are very familiar with both federal and local incentives, they report only half of their shoppers are familiar with these incentives. Continuing to educate consumers about the potential savings from incentives available to them will be a crucial strategy to help the industry rebound.

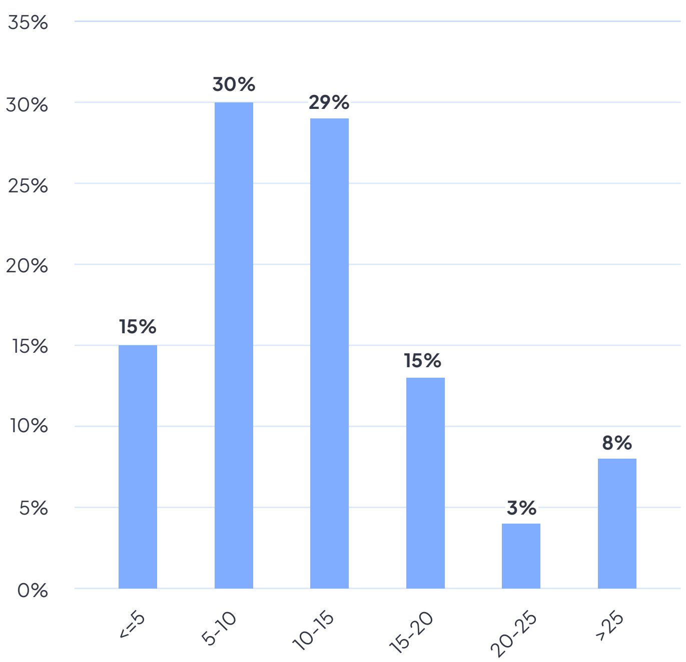
Second, solar is no longer a stand-alone sale and install: According to EnergySage Marketplace data, a quarter of solar installers' installations in 2023 included a battery.

Finally, although installer confidence in the industry may be low, solar companies have high hopes for the near future: Over 80% of respondents expect their annual installations to increase by more than 30% on average over the next three years.

About your business

Over half of respondents have been installing solar for more than 10 years.

HOW LONG HAVE YOU BEEN INSTALLING SOLAR?

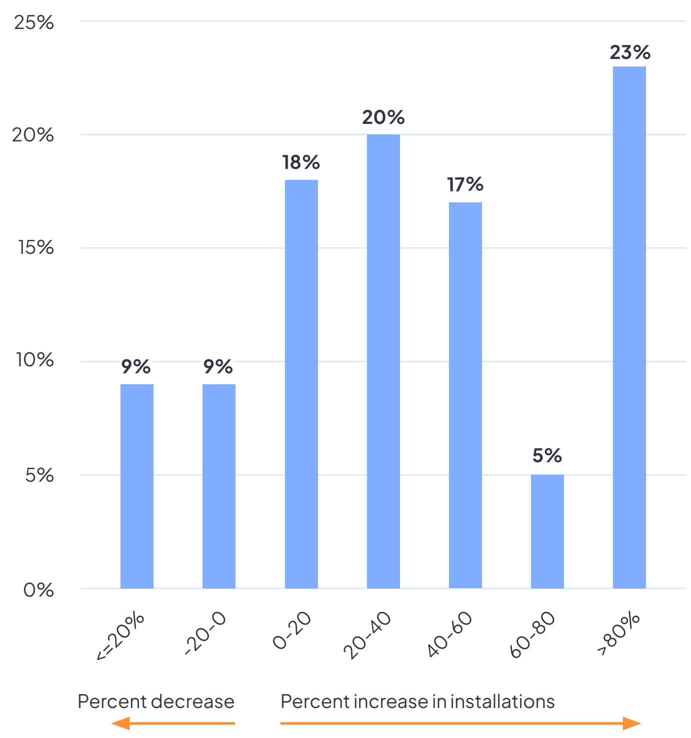


Future business growth

Over 80% of respondents expect their annual installations to increase over the next three years.

- Average is 38% growth, median is 30% growth.
- 56% of people who say sales will decrease are in California.
- Median for people who expect growth is 50% growth in installs.

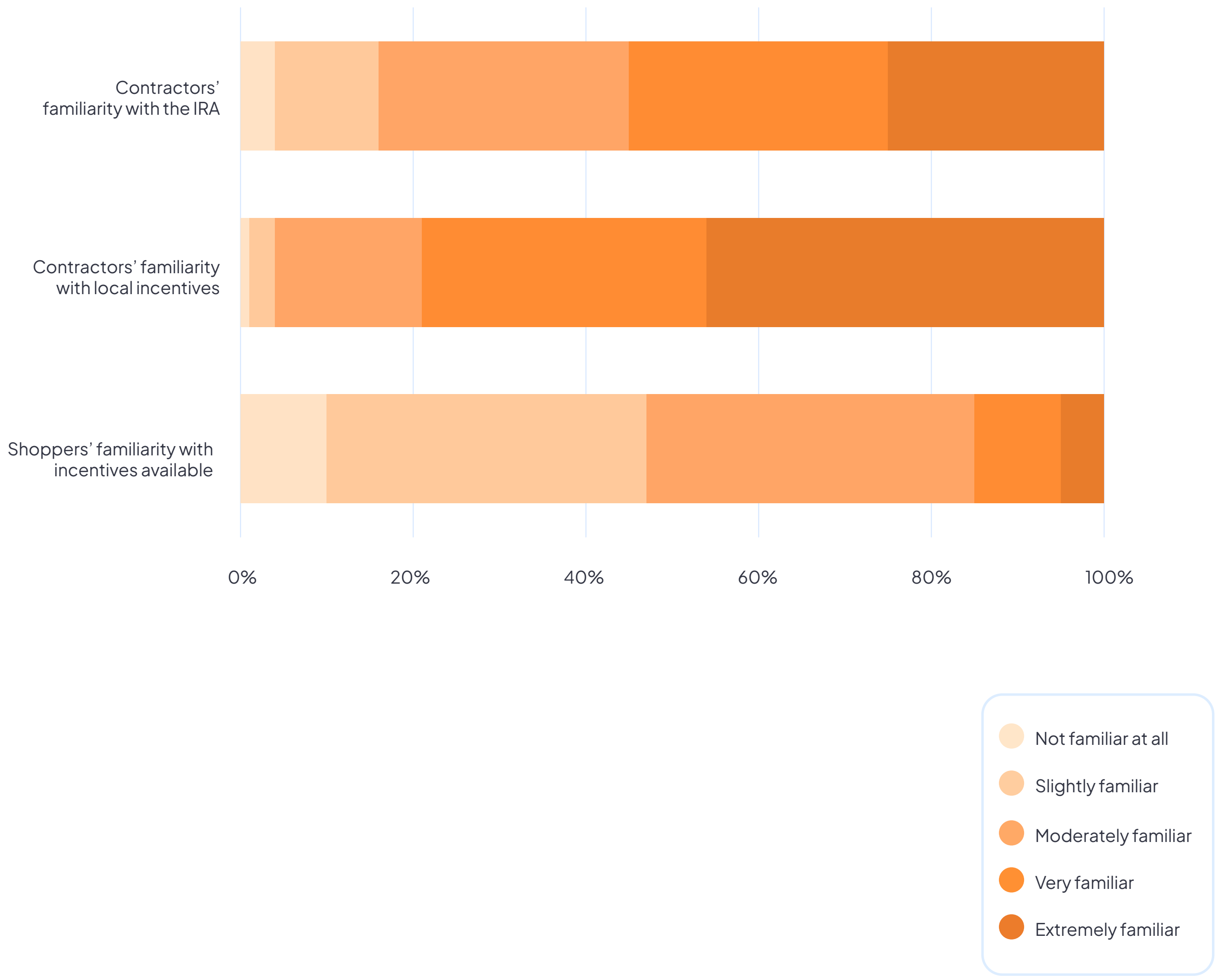
HOW DO YOU EXPECT ANNUAL INSTALLATIONS WILL CHANGE OVER THE NEXT THREE YEARS?



Policy familiarity

Installers generally say their shoppers are unfamiliar with the policies and incentives that are available to them.

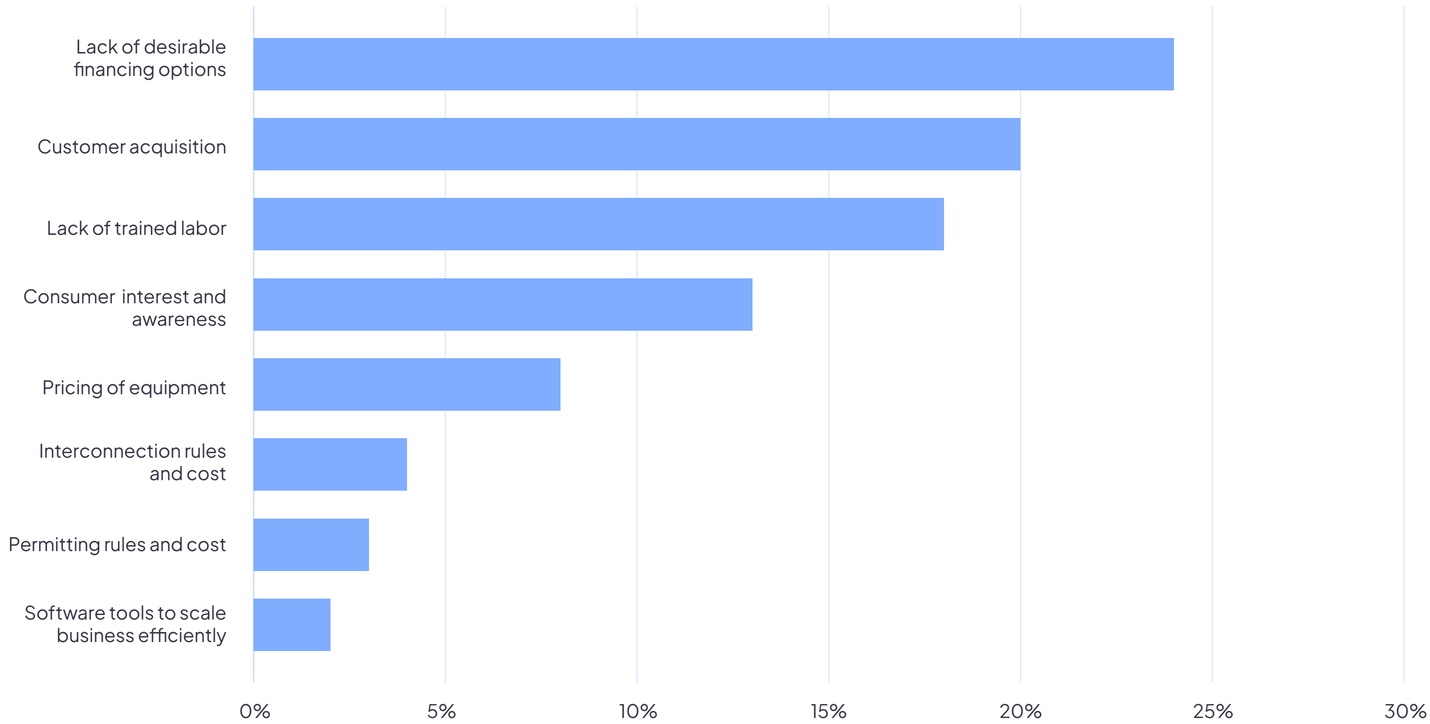
FAMILIARITY WITH INCENTIVES: CONTRACTORS & SHOPPERS



Barriers to growing your business

Desirable financing options overtook customer acquisition (2019-20) and trained labor (2021) as the biggest barrier to growing businesses.

WHAT IS THE PRIMARY BARRIER TO GROWING YOUR BUSINESS?



Costs of doing business

62% of installers saw equipment costs rise in 2023.

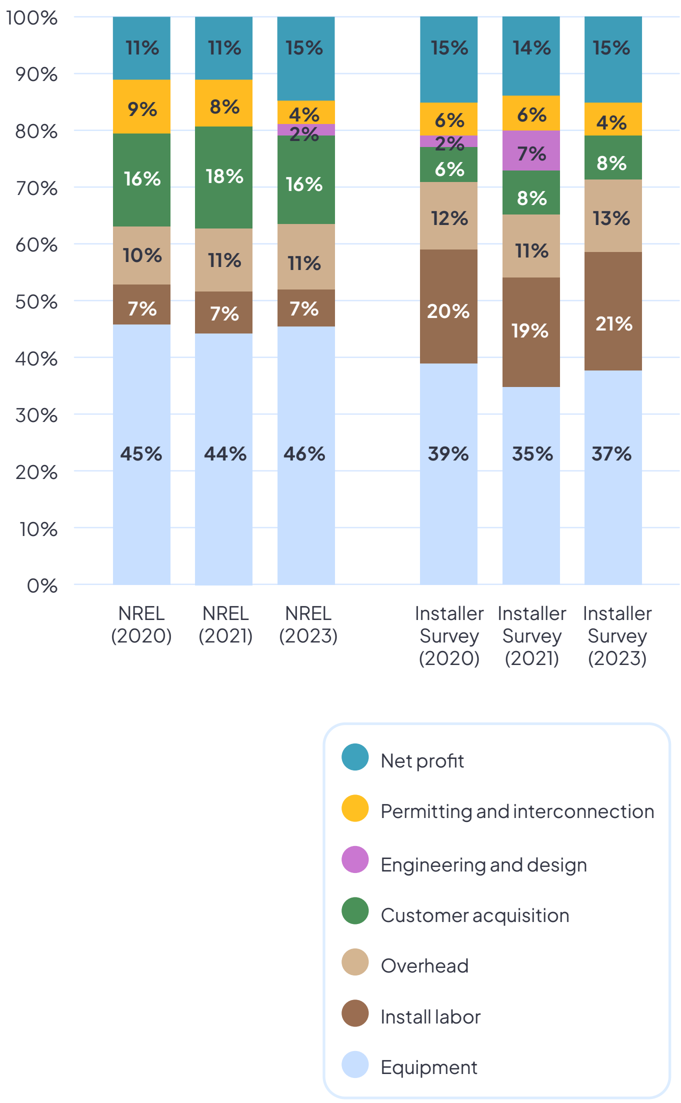
- Those that say costs rose say they increased by an average of 15%.
- Solar remains a high margin business.
- The average & median reported customer acquisition cost (CAC) is well below other solar industry benchmarks, such as those published by *Wood Mackenzie and NREL*.

	Equip cost change (%)	Solar margins (%)	CAC ($)
Average	5	27	$1,505
Median	5	24	$700

Breakdown of costs

Contractors remain consistent when listing expenses, but differ from NREL benchmarks on equipment vs. install vs. CAC costs.

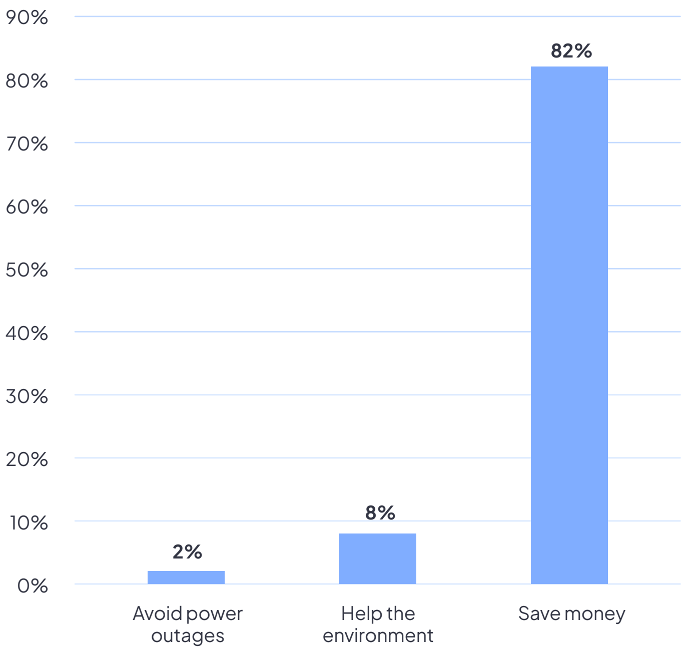
SOLAR INSTALLER SHARE OF WALLET



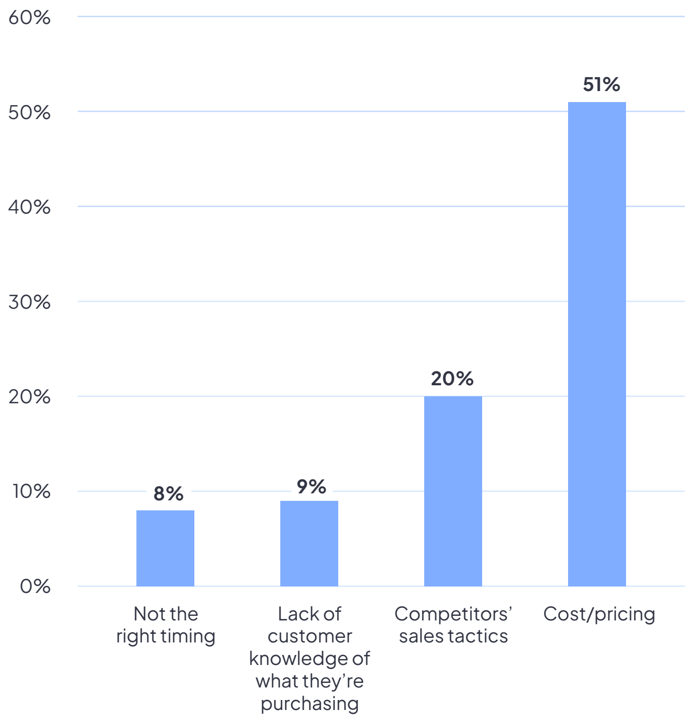
Primary drivers of sales & lost sales

The main driver of sales is saving money while the main driver of lost sales is pricing or perceived cost.

WHAT IS THE PRIMARY REASON YOUR SOLAR CUSTOMERS PURCHASE SOLAR?



WHAT IS THE BIGGEST DRIVER OF LOST SOLAR SALES?

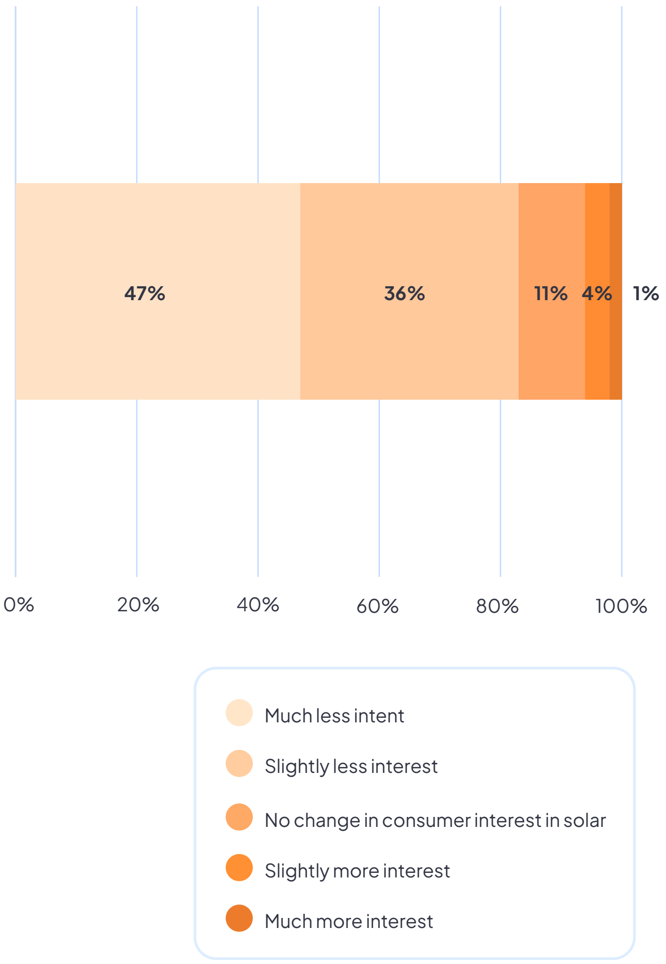


Impact of increasing rates on demand

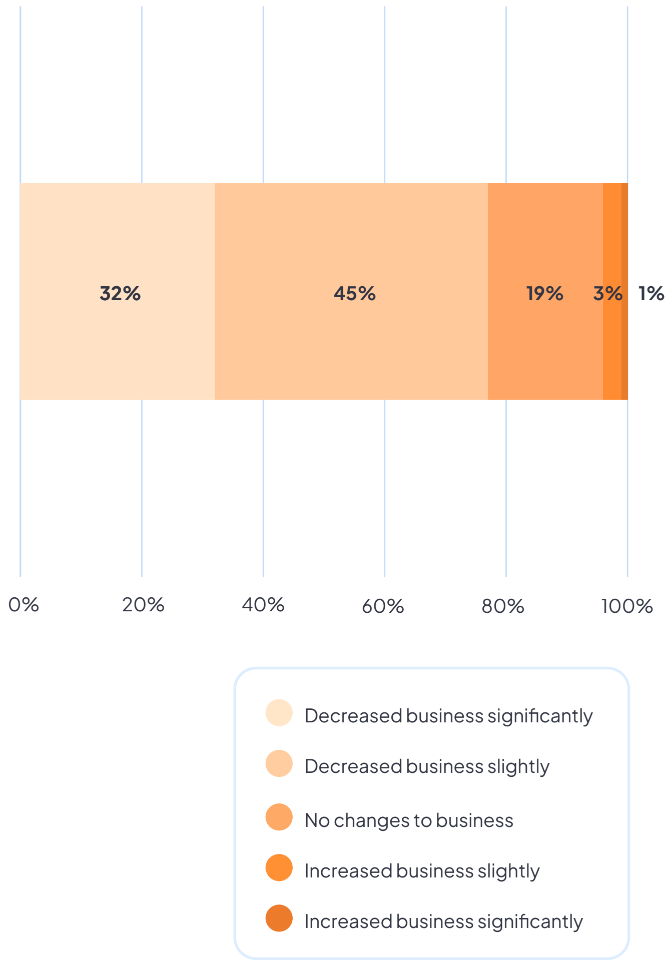
Increasing interest rates impacts businesses and consumer demand.

- 82% say increasing interest rates has decreased interest for solar.
- 75% say increasing interest rates have adversely impacted their businesses.

WHAT IMPACT HAVE INCREASING INTEREST RATES HAD ON CONSUMER INTEREST IN SOLAR?



HOW HAVE CHANGING INTEREST RATES IMPACTED YOUR BUSINESS?

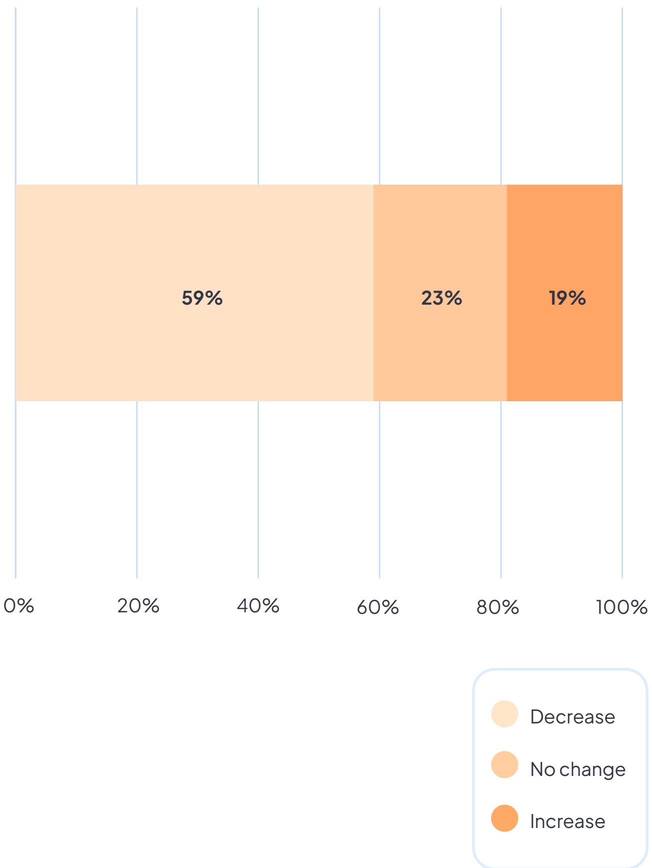


Selling with financing

40% of deals are financed.

- 85% of installers offer loan products.
- 59% of installers say loan product sales have decreased recently.
- 75% of installers say rate increases have reduced financed deal flow.
- 33% of installers say they need new financing partners and struggled to find one.

HAVE YOU NOTICED ANY DIFFERENCE IN LOAN PRODUCT SALES IN THE PAST THREE MONTHS?



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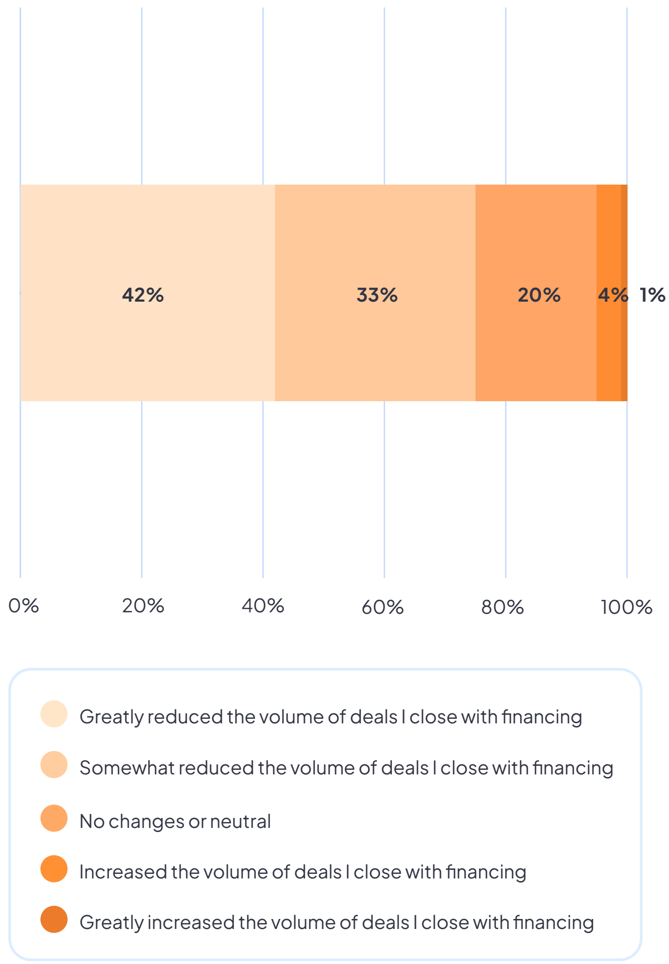
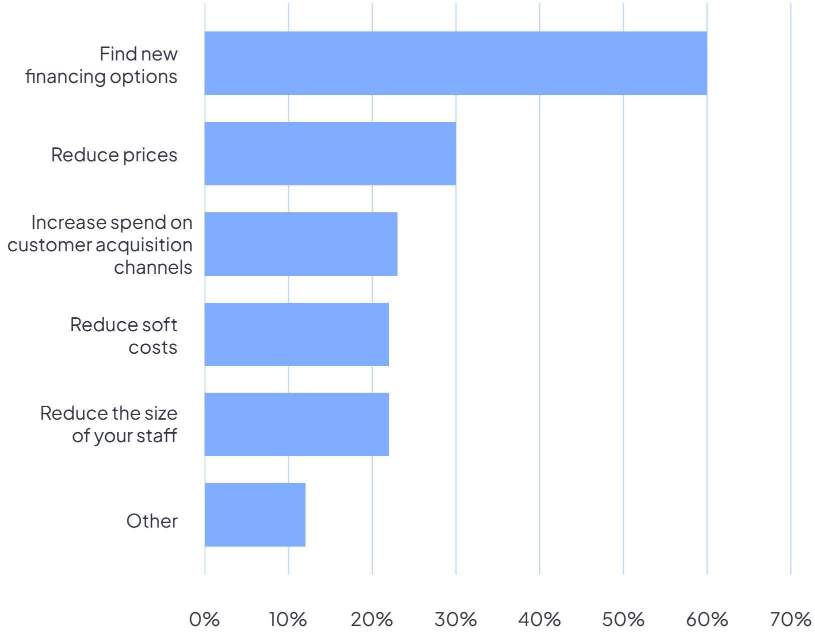


Strategies to mitigate rate impact

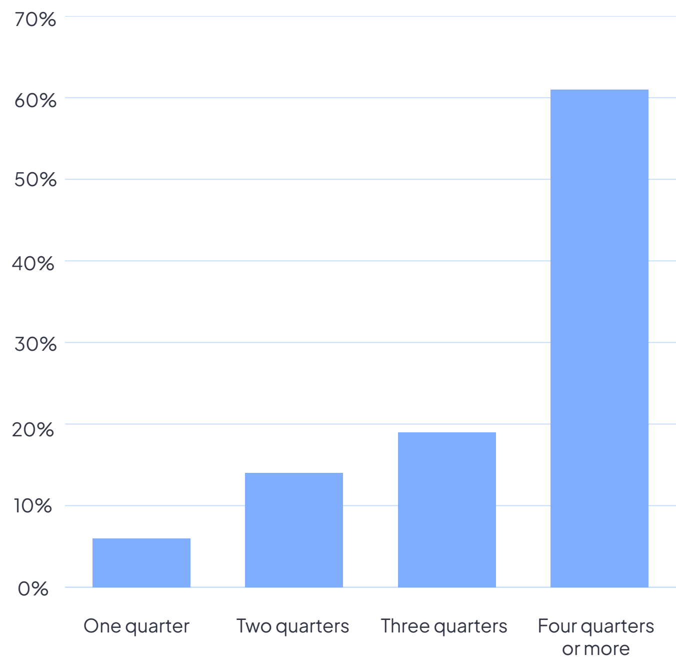
Installers anticipate that interest rate impacts will continue for a year or longer.

3 of 5 installers are planning to combat high interest rates by finding new financing options.

IF YOUR BUSINESS HAS BEEN IMPACTED, WHAT ARE YOUR STRATEGIES TO REDUCE THE IMPACT OF HIGHER INTEREST RATES ON YOUR BUSINESS?



HOW LONG DO YOU EXPECT THESE INTEREST RATE IMPACTS TO CONTINUE?

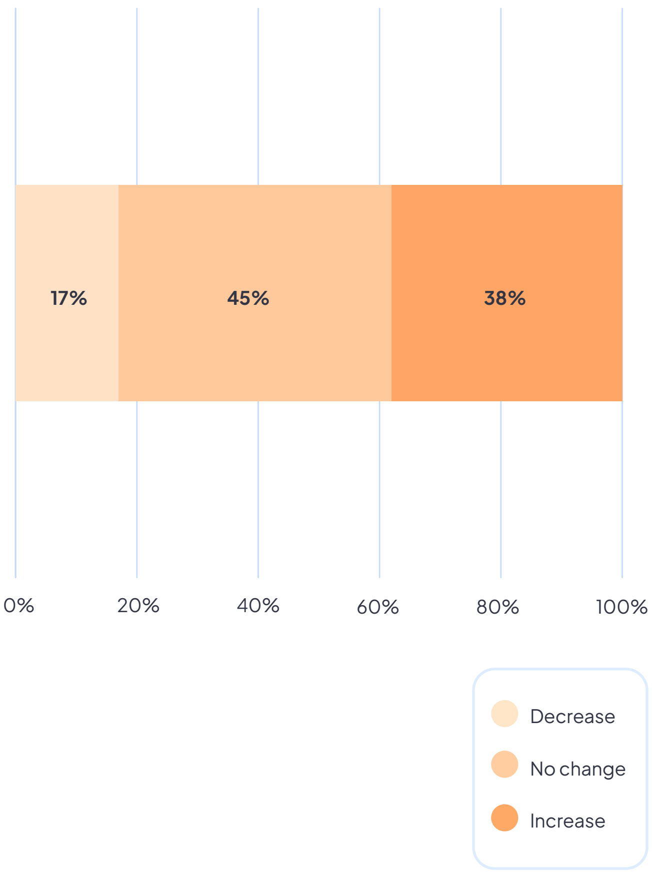


Third party owned (TPO) financing offerings

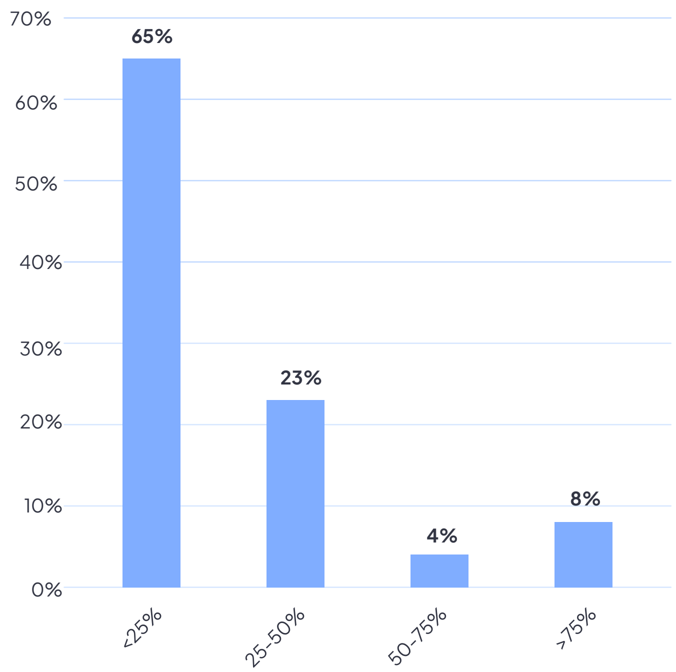
Only a quarter of respondents offer TPO products (e.g., leases and PPAs). Of those that do:

- Just under half say TPO sales have not changed since the IRA passed.
- Two-thirds say under 25% of their sales will qualify for ITC adders.

HAVE YOU NOTICED ANY DIFFERENCE IN TPO PRODUCT SALES SINCE THE IRA WAS PASSED?



HOW MUCH OF YOUR SALES DO YOU EXPECT TO QUALIFY FOR ANY ITC BONUS ADDERS?



Impact of net metering changes in California

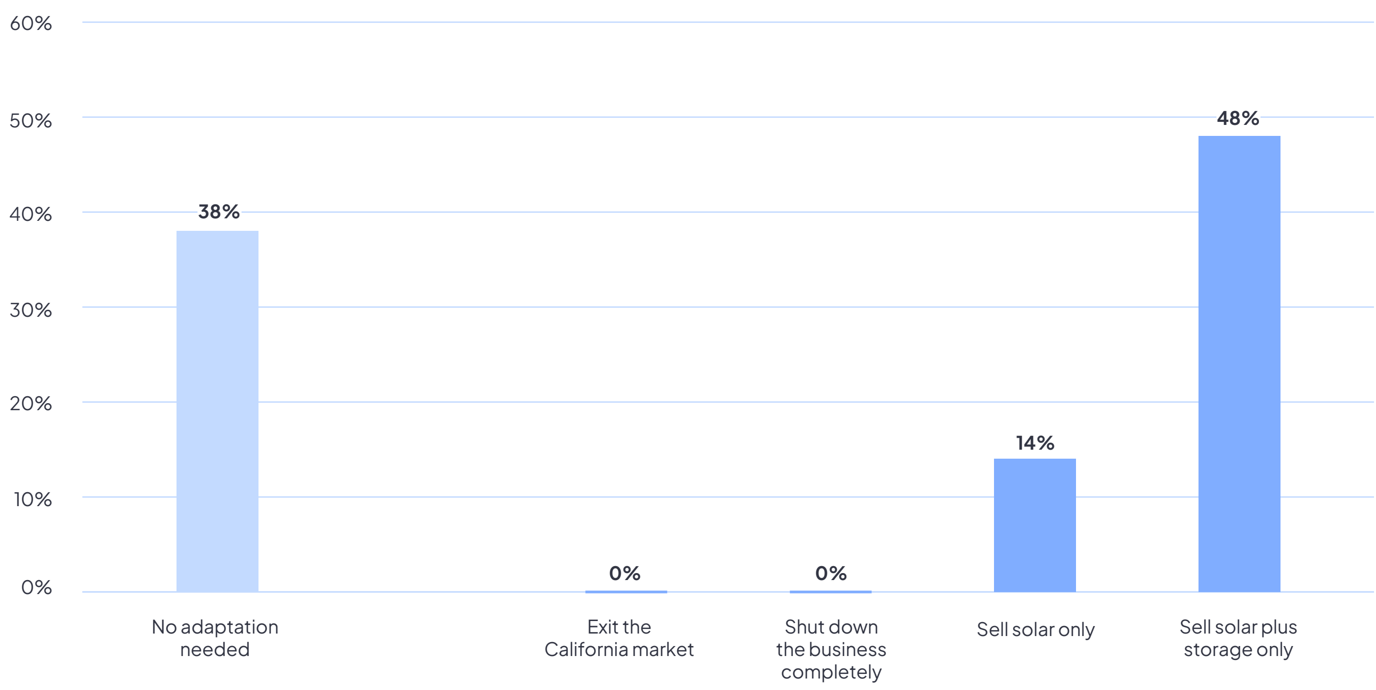
29 California installers responded to NEM 3 questions.

- Forecast 2023 will be down 15% y/y.
- Expect 2024 will be down 22% y/y.
- None say they'll shut down the business or exit the California market.

WHAT ARE YOUR EXPECTATIONS OF NEM 3'S IMPACT ON YOUR SALES VOLUME (%Y/Y)?

	2023/2022	2024/2023
Average	-15	-22
Median	-2	-13

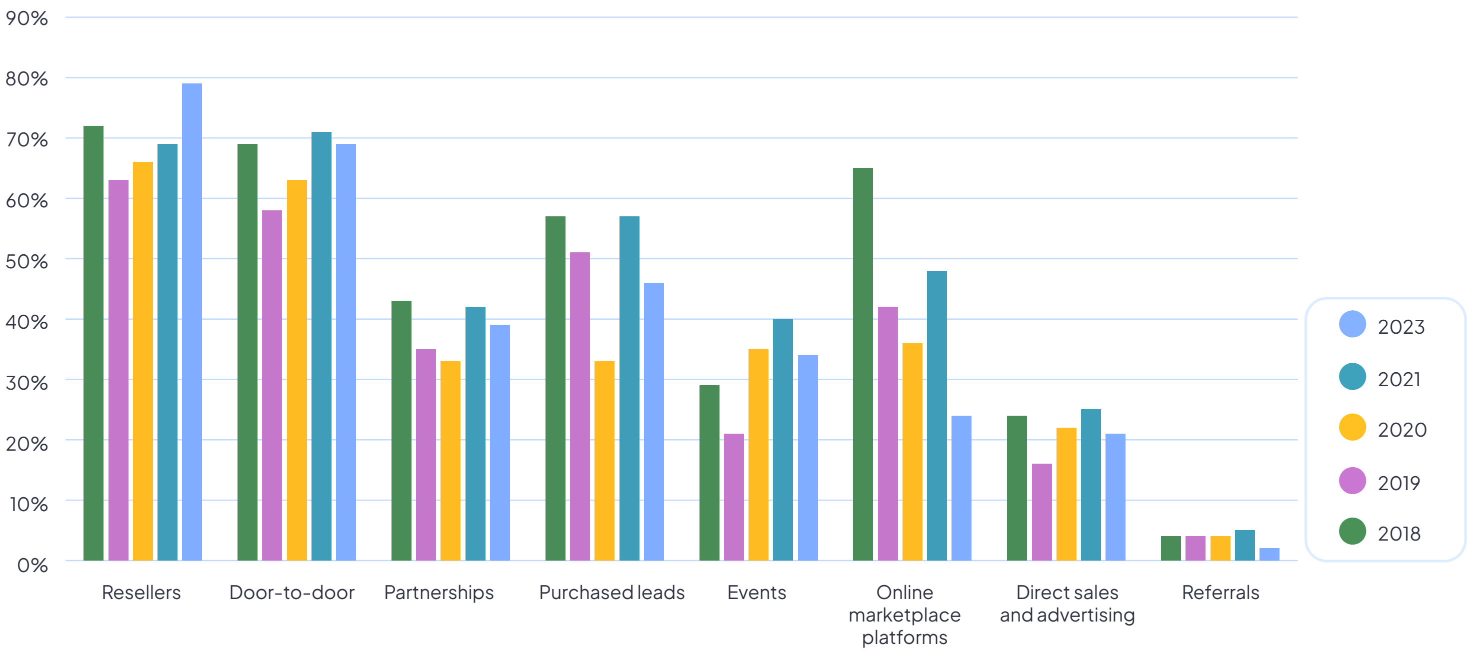
HOW DO YOU PLAN TO ADAPT YOUR BUSINESS AS A RESULT OF THE NEW BET BILLING TARIFF?



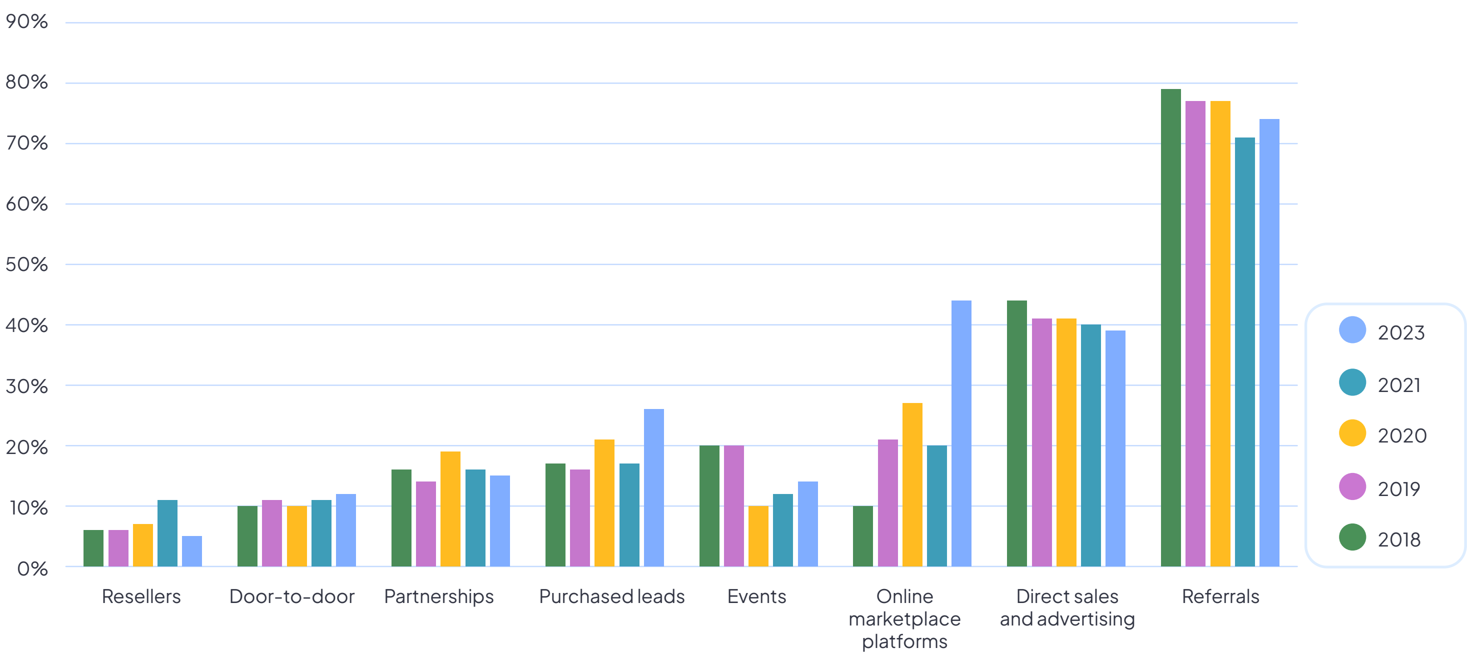
Customer acquisition channels used

Most installers say they don't rely on door-to-door selling or resellers but 40% use direct sales/advertising.

ACQUISITION CHANNELS: DO NOT USE



ACQUISITION CHANNELS: USE FREQUENTLY



Installer confidence in the solar industry

Installer confidence is down across the country.

- Installers cite rising interest rates, NEM changes in California, and poor sales tactics from other companies.
- Confident installers cite increasing electricity rates.

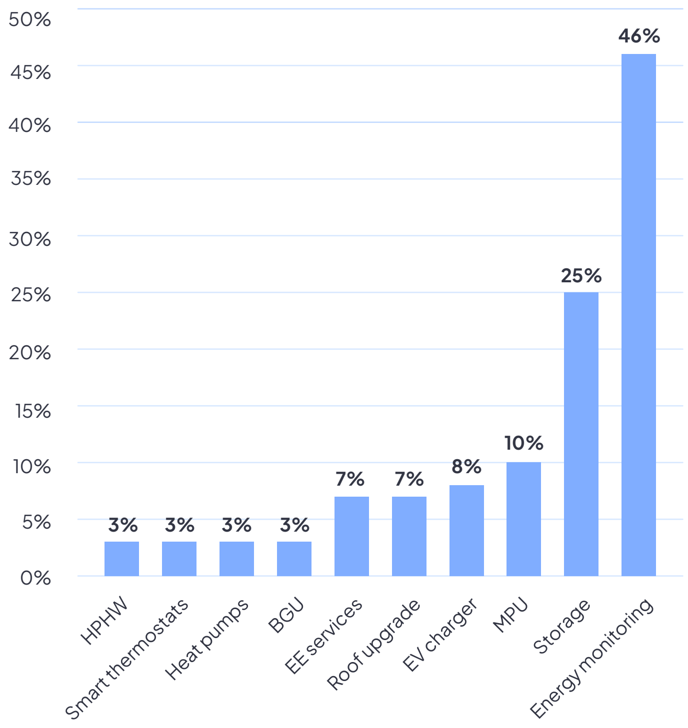
COMPARED TO ONE YEAR AGO, HOW HAS YOUR CONFIDENCE IN THE SOLAR INDUSTRY CHANGED?

Adjacent products

Solar is already installed with other products.

- Nearly half of installs include a type of monitoring.
- Installers say storage is attached a quarter of the time (median = 15%).
- MPUs, roof upgrades, and EV chargers are all lower than in years past.

WHAT PERCENTAGE OF YOUR SOLAR INSTALLATIONS ALSO INCLUDE THE FOLLOWING PRODUCTS?



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2024 ELECTRIFICATION CONTRACTOR SURVEY

Storage

Storage overview

Energy storage systems installations are accelerating rapidly. On EnergySage, storage attachment rates reached 24% in the fourth quarter of 2023, up from just 8% three years ago. But storage installations remain a nascent piece of contractors' electrification puzzle.

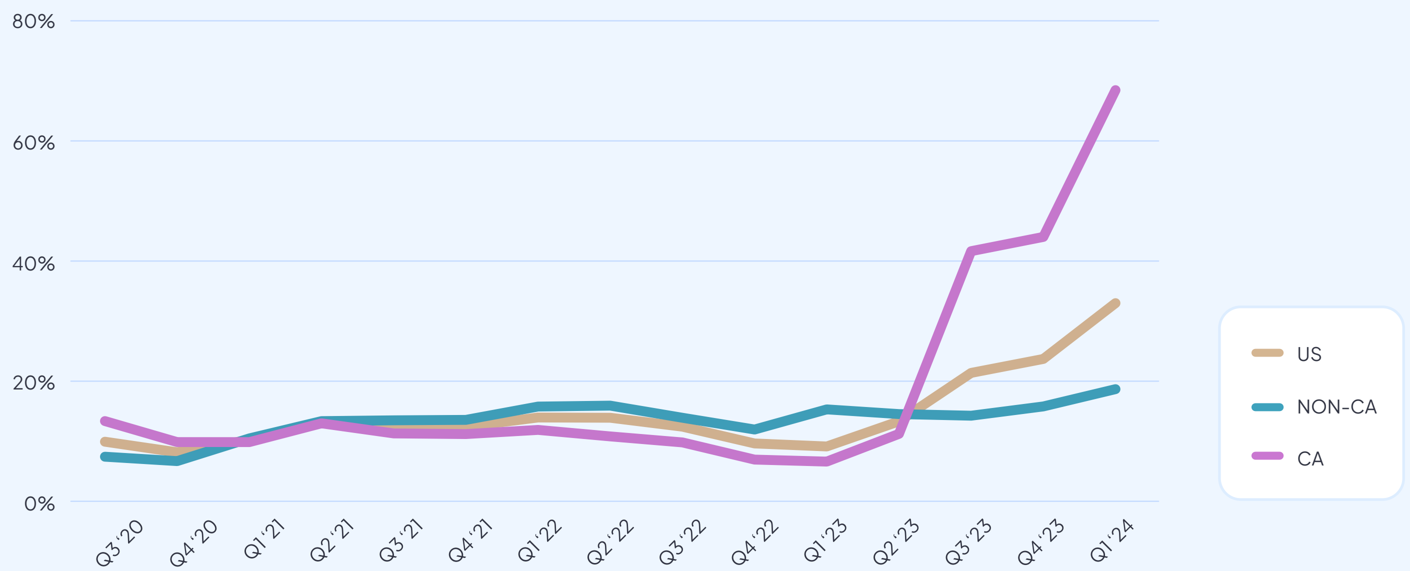
From the installer perspective, contractors are relatively new to installing batteries: Nearly half have installed storage for five years or less, while three-quarters have installed storage for 10 years or less.

From the consumer perspective, nearly 60% of storage adopters actively asked their installers for a battery. A big driver of this dynamic is that consumers primarily adopt energy storage for resiliency purposes (e.g., emergency backup power in the event of an outage), as opposed to for economic reasons, as is the case with solar. These data points indicate that the energy storage market is driven primarily by consumer pull over contractor push.

As the consumer market for batteries matures, we anticipate a few key trends based on the responses to this survey. First, we expect that storage will become more of an economic purchase for consumers, as evidenced by the fact that contractors in California plan to adapt to the Net Billing Tariff by selling only solar plus storage, responding to price signals from the new tariff.

Second, while storage installations have historically been co-installed with solar, according to Lawrence Berkeley National Laboratory's Tracking the Sun report, nearly 80% of survey respondents offer retrofit storage installations on existing solar. Given there are five million solar adopters nationwide and a sub-10% battery attachment rate historically, this indicates a huge opportunity to expand into the retrofit market in the coming years. As a result, 90% of respondents say their installations will increase over the next three years, belying the role that energy storage will play in the energy transition.

STORAGE ATTACHMENT RATE BY QUARTER ON ENERGYSAGE



About your business

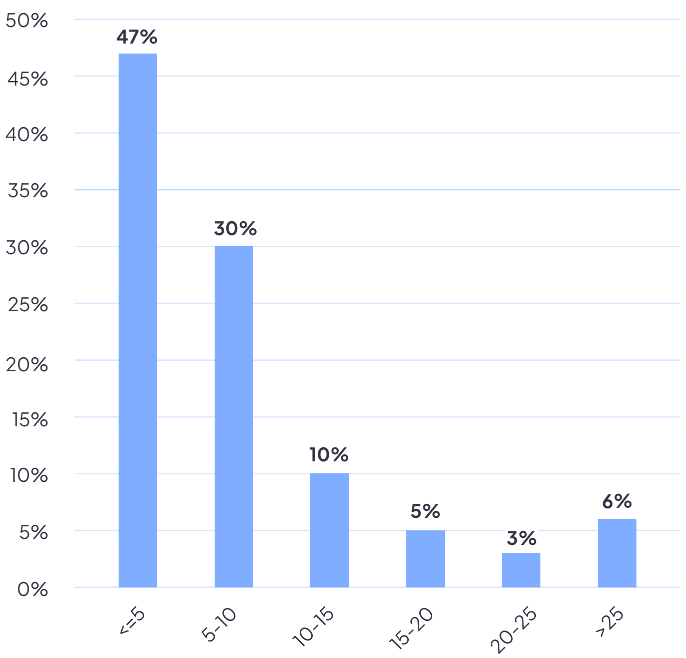
Installers are new to storage – half have only installed it for less than five years, while ¾ have less than 10 years experience.

Future business growth

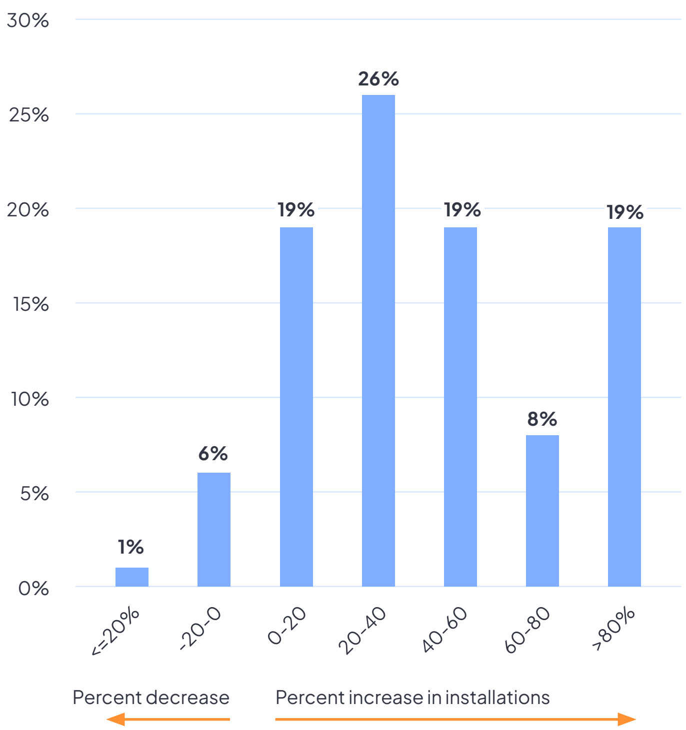
Over 90% of respondents expect their annual installations to increase over the next three years.

- Average is 44% growth, median is 30% growth.
- Median for people who expect growth is 42% growth in installs.

HOW MANY YEARS YOU BEEN INSTALLING STORAGE?



HOW DO YOU EXPECT ANNUAL ENERGY STORAGE INSTALLATIONS WILL CHANGE OVER THE NEXT THREE YEARS?



Costs of doing business

56% of installers saw equipment costs rise in 2023.

- Those that say costs rose say they increased by an average of **11%**.
- Those that say costs declined say they decreased by an average of **11%**.

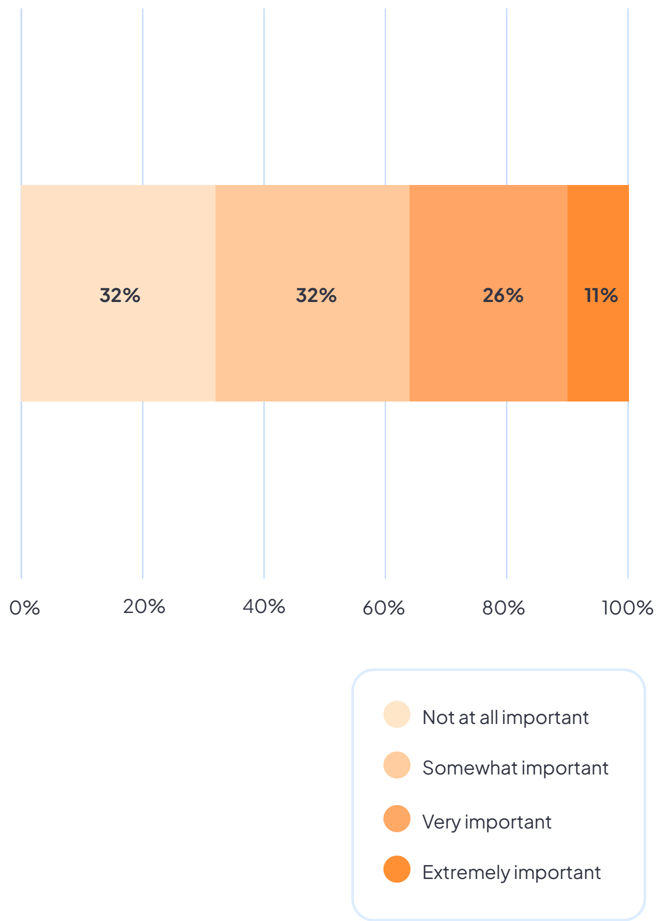
Storage is also high margin, but has lower margins than solar.

	Equip cost change (%)	Storage margins (%)
Average	-1	21
Median	0	20

Importance of integrated systems

2 out of 3 installers say it's not important to match the inverter and battery manufacturer.

HOW IMPORTANT IS IT TO HAVE THE SAME MANUFACTURER FOR YOUR BATTERY AND INVERTER?



Primary drivers of sales & lost sales

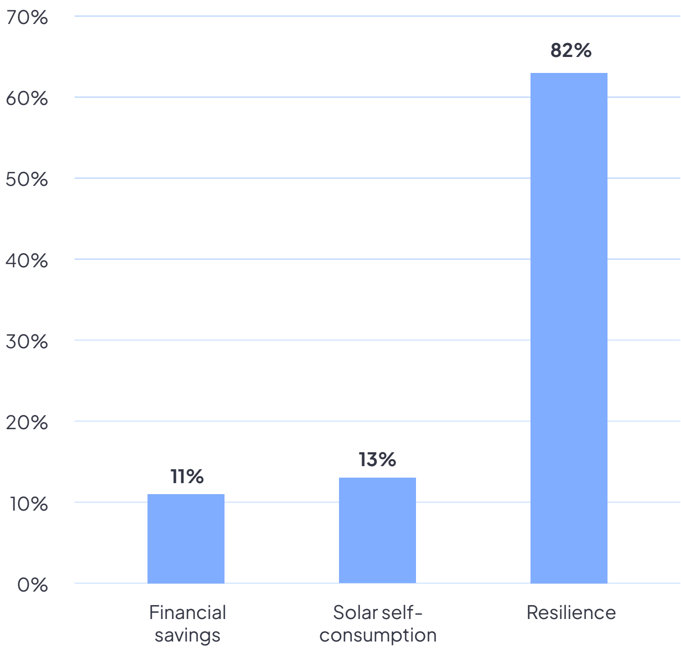
Storage is still not a financial purchase.

- Costs are too high, so most people are buying it for resilience.

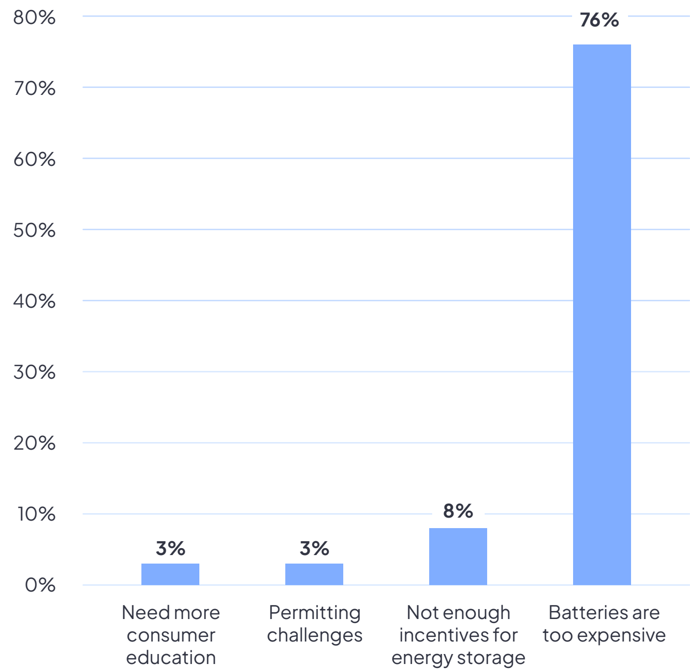
Storage adopters are proactively asking their installer for it.

- Installers say 58% of storage shoppers proactively ask for it (median 51%).

WHAT IS THE PRIMARY REASON YOUR ESS CUSTOMERS PURCHASE STORAGE?



WHAT IS THE BIGGEST DRIVER OF LOST STORAGE SALES?



Types of storage installs offered

Most installers are willing to offer retrofit storage to existing solar.

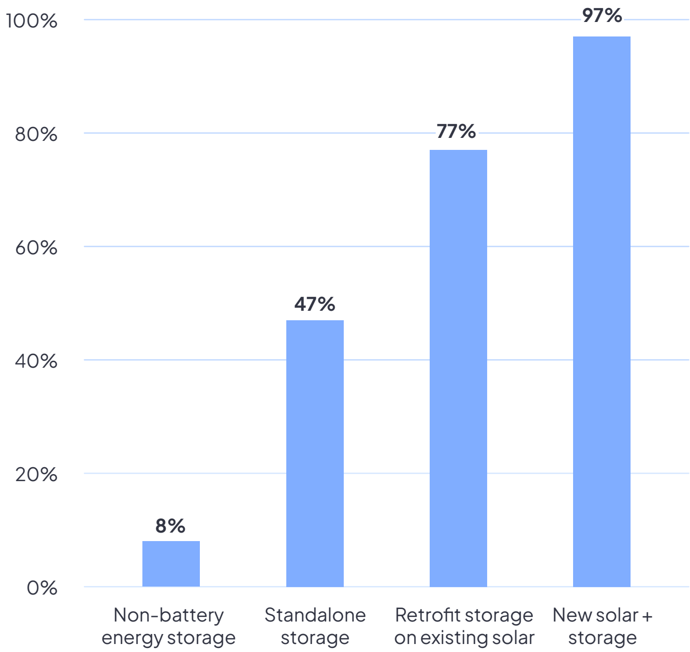
- Could be an artifact of the types of installers we reached with this survey.
- Installers still see the balance of installs being AC-coupled more than DC-coupled, which indicates either paired with micros or retrofit.

Adjacent products

Storage is nearly always installed at the same time as solar.

- LBNL says 23% of storage installs were retrofits in 2022.
- MPUs are required 14% of the time.

WHICH TYPES OF ENERGY STORAGE INSTALLATIONS DO YOU OFFER?



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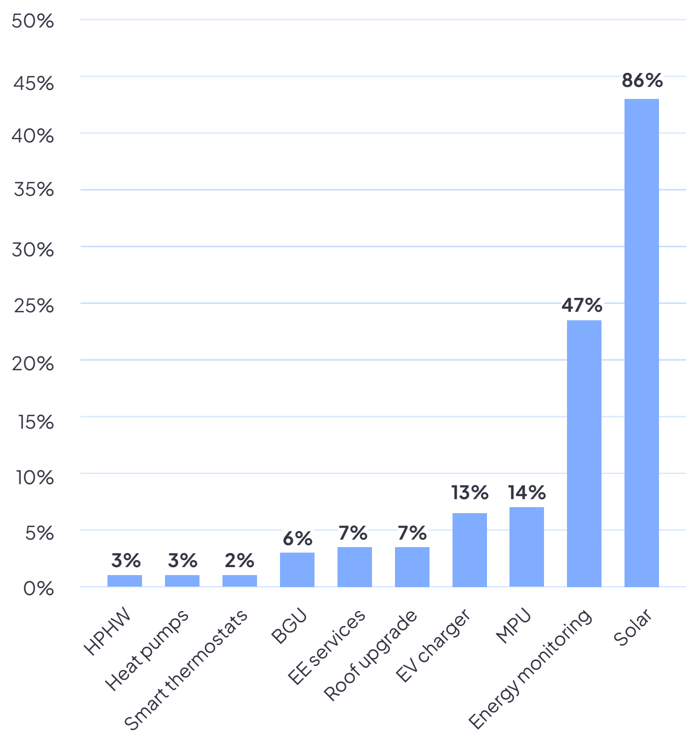

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2024 ELECTRIFICATION CONTRACTOR SURVEY

Heat Pumps

Heat pumps trends overview

To our knowledge, this is one of the first surveys of its kind targeting heat pump contractors. With that in mind, the survey centered on two main research goals. The first aim was to benchmark what heat pump installations look like today: what type of installations contractors are performing, what equipment they are using, what types of HVAC systems they are replacing, and how consumers are paying for these products. The second major research goal was to compare and contrast the experience and mindset of heat pump contractors compared to solar installers.

At a high level, today's heat pump installations are split relatively evenly between ducted and mini-split systems. Around half of installs are complete replacements of fossil heating systems, and respondents indicate that about half of installs still require a backup heating element.

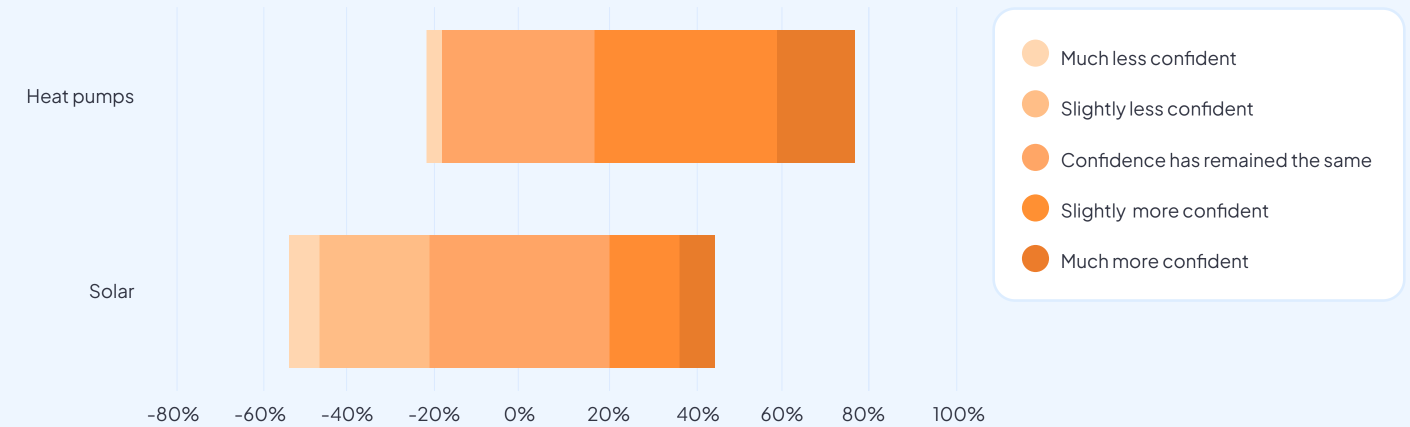
For the most part, homeowners are paying for their heat pumps with cash purchases or through state-sponsored loan programs.

At present, consumers drive most of the demand for heat pumps. Contractors report that 75% of heat pump installs are for consumers who proactively reach out to the contractor, and 50% are for homeowners who specifically ask for heat pumps.

Overall, the heat pump market has several notable contrasts to the solar market: Heat pump installers are much more confident that their industry will grow than solar installers are about their industry. 15% of respondents anticipate installs will more than double in the next three years. From a demand generation perspective, 85% of heat pump installers don't purchase leads, unlike in solar, where that practice is common. And, importantly, contractors report that heat pump installations are a higher-margin business than solar is.

But in some ways, the solar and heat pump markets are experiencing the same barriers to growth. For instance, survey respondents report that the most significant barrier to selling more heat pumps is cost: They're too expensive, and there aren't enough incentives available. Another commonality is how quickly the industry is growing, as indicated by how many new contractors are entering the space.
There's a mix of very new and very established companies in the heat pump space, with a nearly identical percentage of respondents having been in business for over 20 years as have been for 5 years or less. As such, there are ample opportunities for contractors in the two industries to learn from each other's experiences.

COMPARED TO ONE YEAR AGO, HOW HAS YOUR CONFIDENCE IN THE HEAT PUMP INDUSTRY CHANGED?



About your business

There's an interesting mix of new market entrants and incumbent HVAC companies in the space.

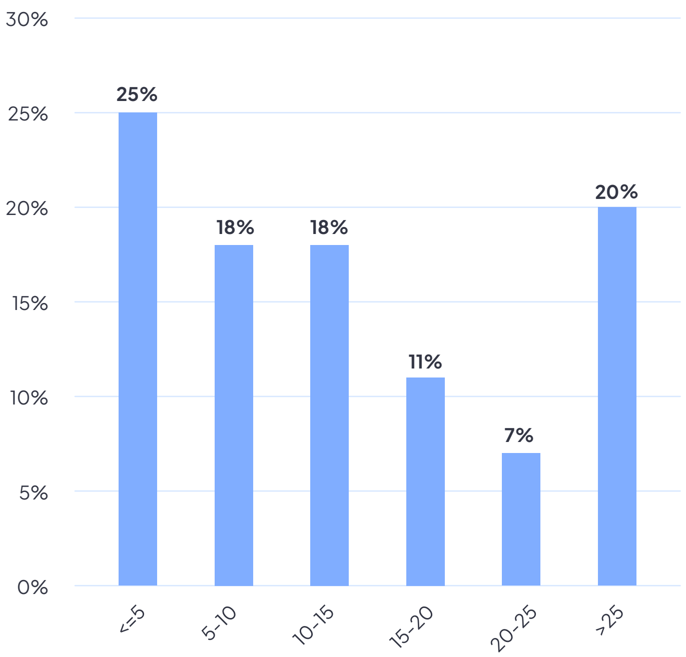
- The percentage of installers with less than 10 years and great than 15 years experience is nearly equal.

Future business growth

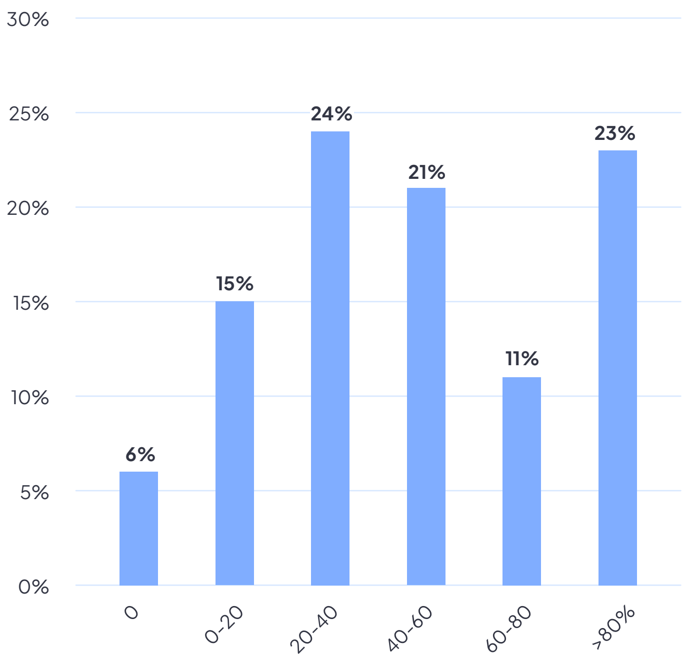
Not a single heat pump contractor expects sales to decline.

- Average is 51% growth.
- 15% expect annual installations to grow 100% or more.

HOW MANY YEARS HAVE YOU BEEN INSTALLING HEAT PUMPS?



HOW DO YOU EXPECT ANNUAL HEAT PUMP INSTALLATIONS WILL CHANGE OVER THE NEXT THREE YEARS?

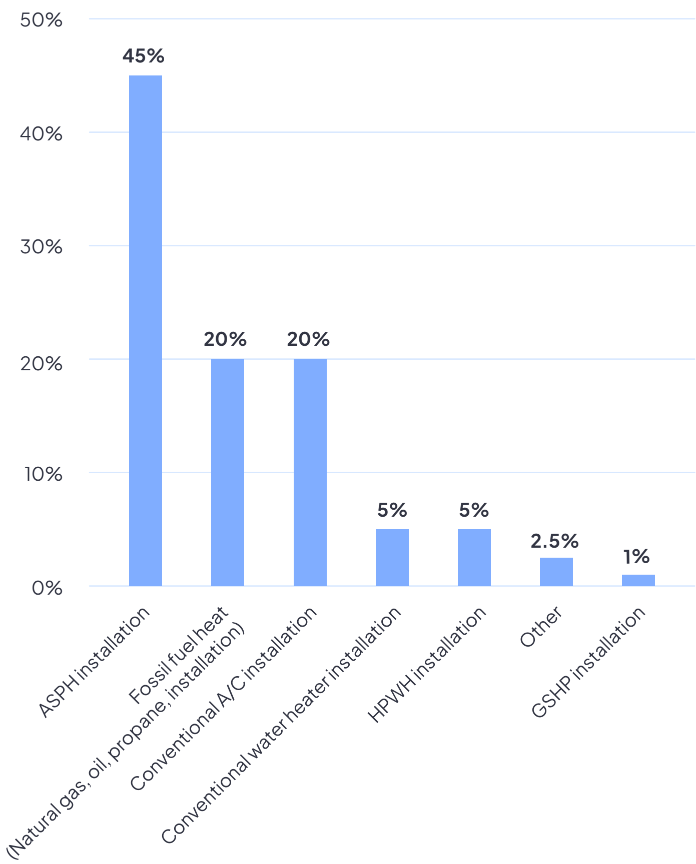


Types of installs

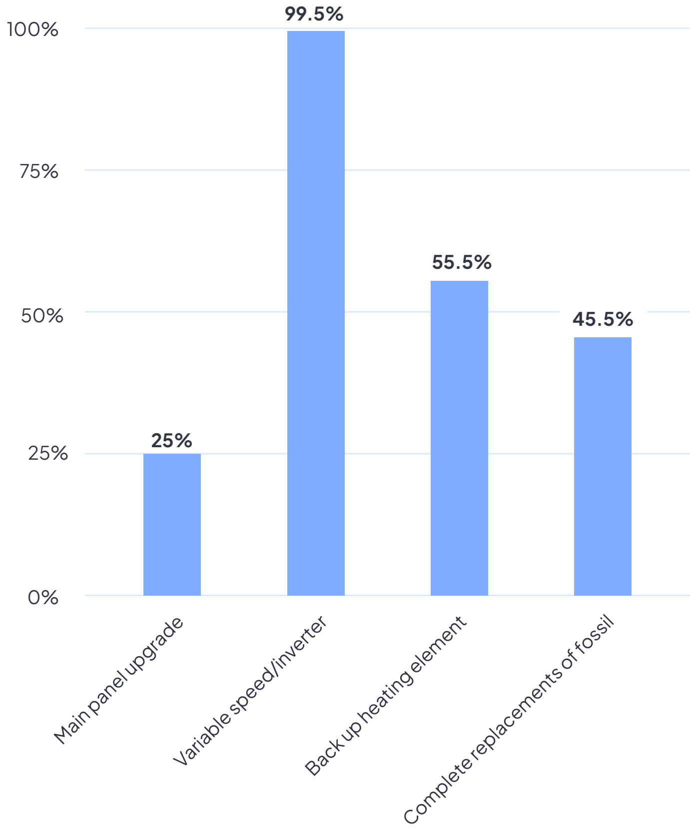
For heat pump installers, heat pumps are the primary source of business.

- Half of installs still require a backup heating element.
- Almost half of installs are complete fossil replacements or more.
- Nearly even split between mini-splits (55% median) and centrally ducted (50% median).

WHAT % OF YOUR JOBS COME FROM



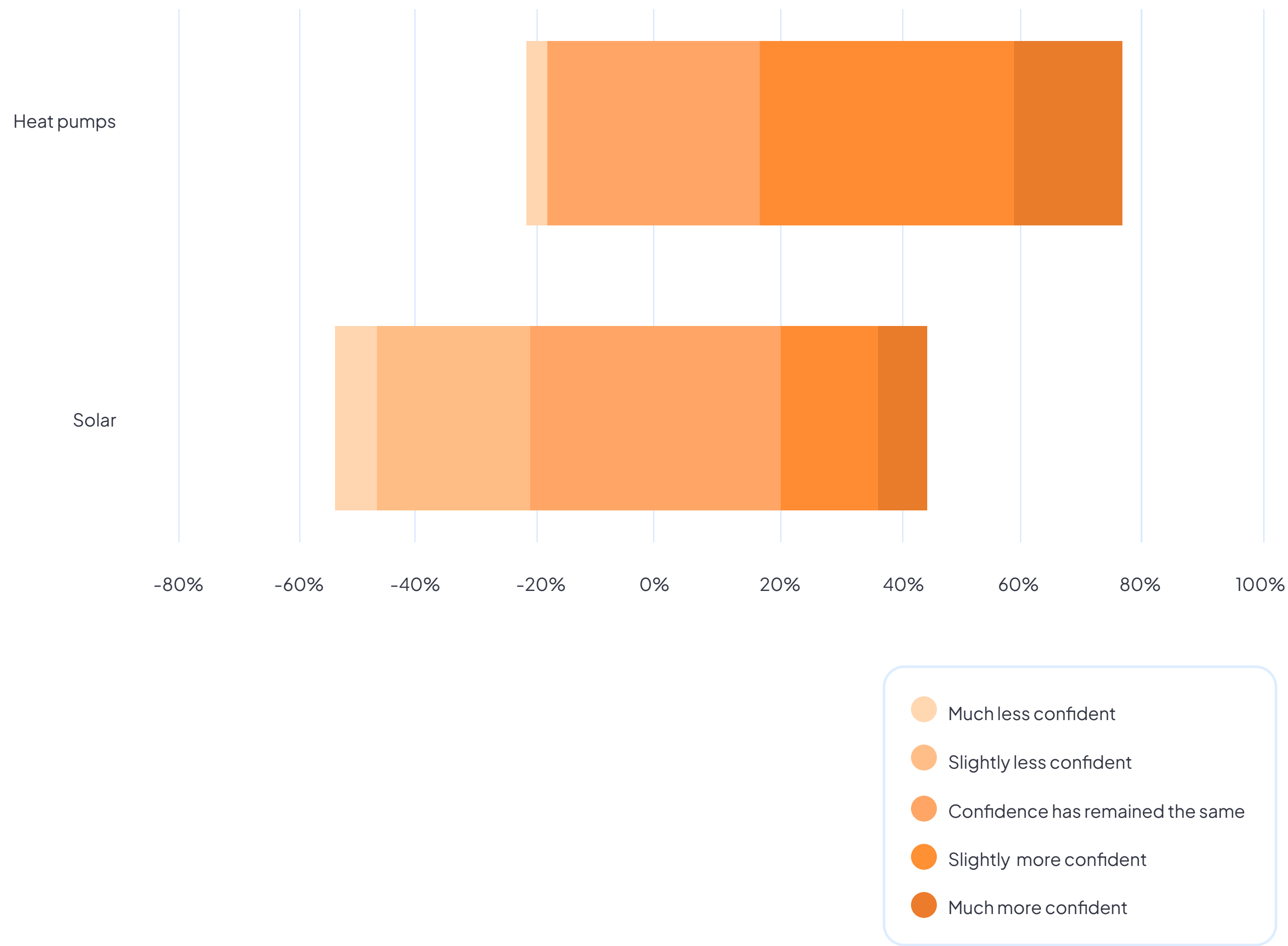
WHAT % OF YOUR INSTALLS INCLUDE THE FOLLOWING



Confidence

Heat pump contractors are generally more confident about the industry than solar installers are.

COMPARED TO ONE YEAR AGO, HOW HAS YOUR CONFIDENCE IN THE HEAT PUMP INDUSTRY CHANGED?

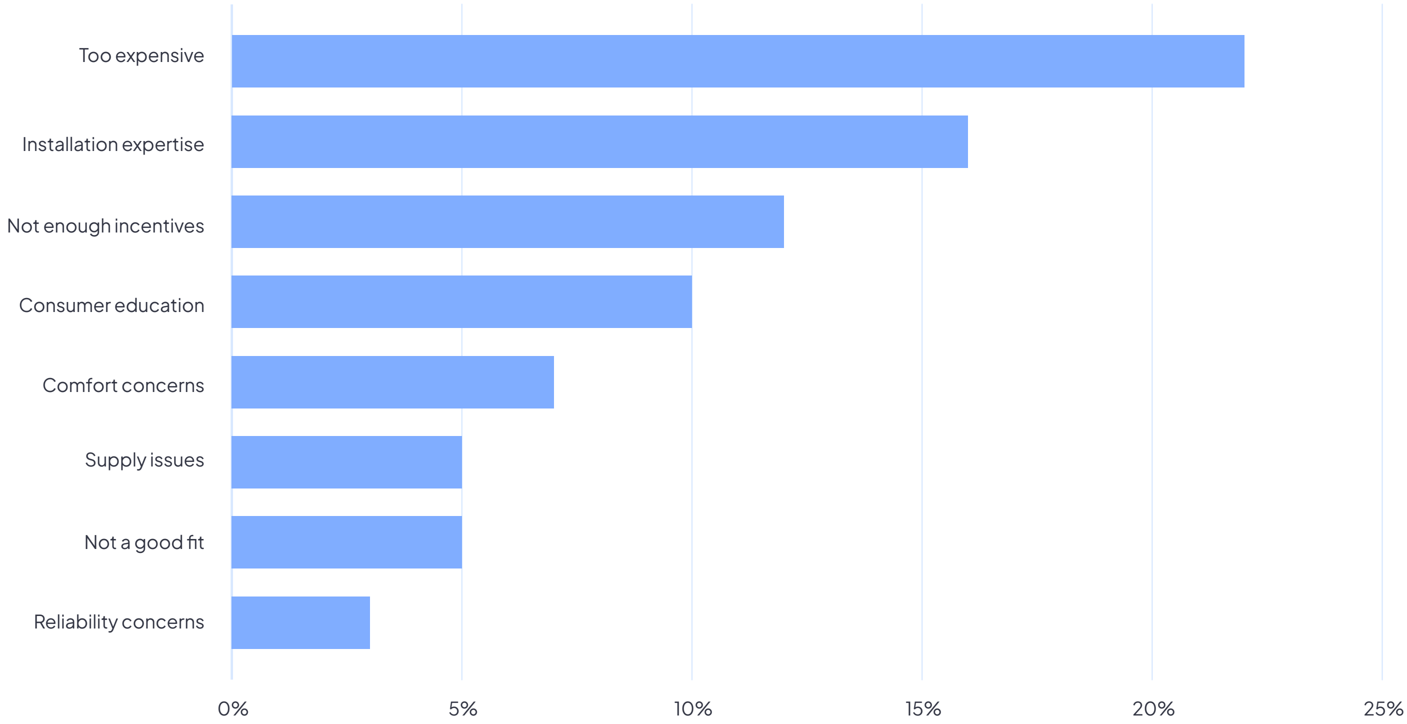


Barriers to growing your business

Similar to other electrification products, the main barrier to selling more heat pumps is that they are too expensive.

- Half of installs still require a backup heating element.

WHAT IS THE PRIMARY BARRIER TO YOUR COMPANY SELLING MORE HEAT PUMPS SYSTEMS?



Recommended installs

Installers say they recommend heat pumps half of the time.

- Recommend them due to the lower environmental impact and co-benefit of getting both AC & heating.
- In other words, installers aren't recommending based on cost savings yet.

What are the main factors that cause you to recommend [ASHP or GSHP]?
Lower impact on the environment than other options
Getting air conditioning with ability to use heat pumps for heating in winter
Lower operating cost than other options
Getting heat with ability to use heat pumps for booling in summer
Better anticipated comfort than other options
Aesthetic advantage over other options

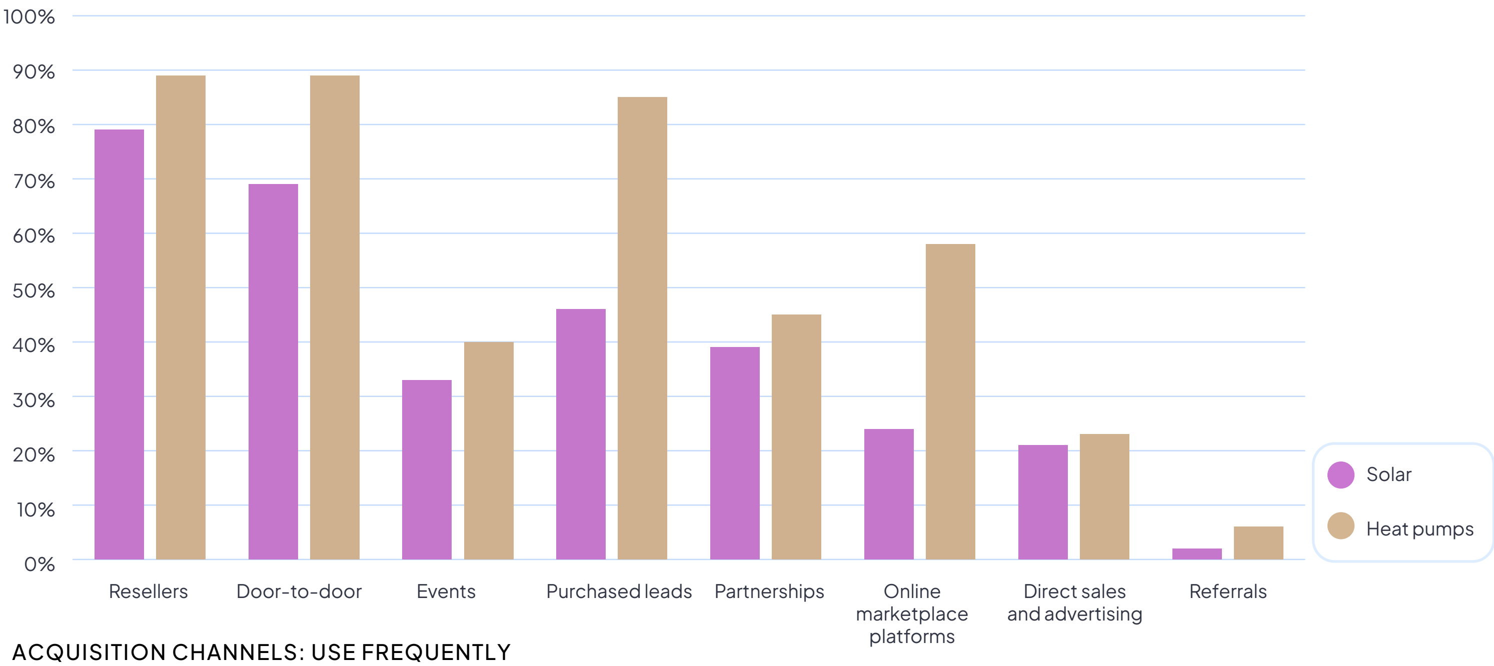
When do you not recommend heat pumps for a customer's heating and/or cooling needs?
When home is insufficiently insulated/air sealed
When anticipated operating cost for heat pumps appears to be higher than for comparable fossil fuel system and/or conventional air conditioning
When outdoor space is not available for external components
When heat pumps would be the sole source of heat for the home
When initial cost of heat pumps is higher than for comparable fossil fuel system
When home has multiple small rooms
I never recommend heat pumps to my customers

Customer acquisition channels

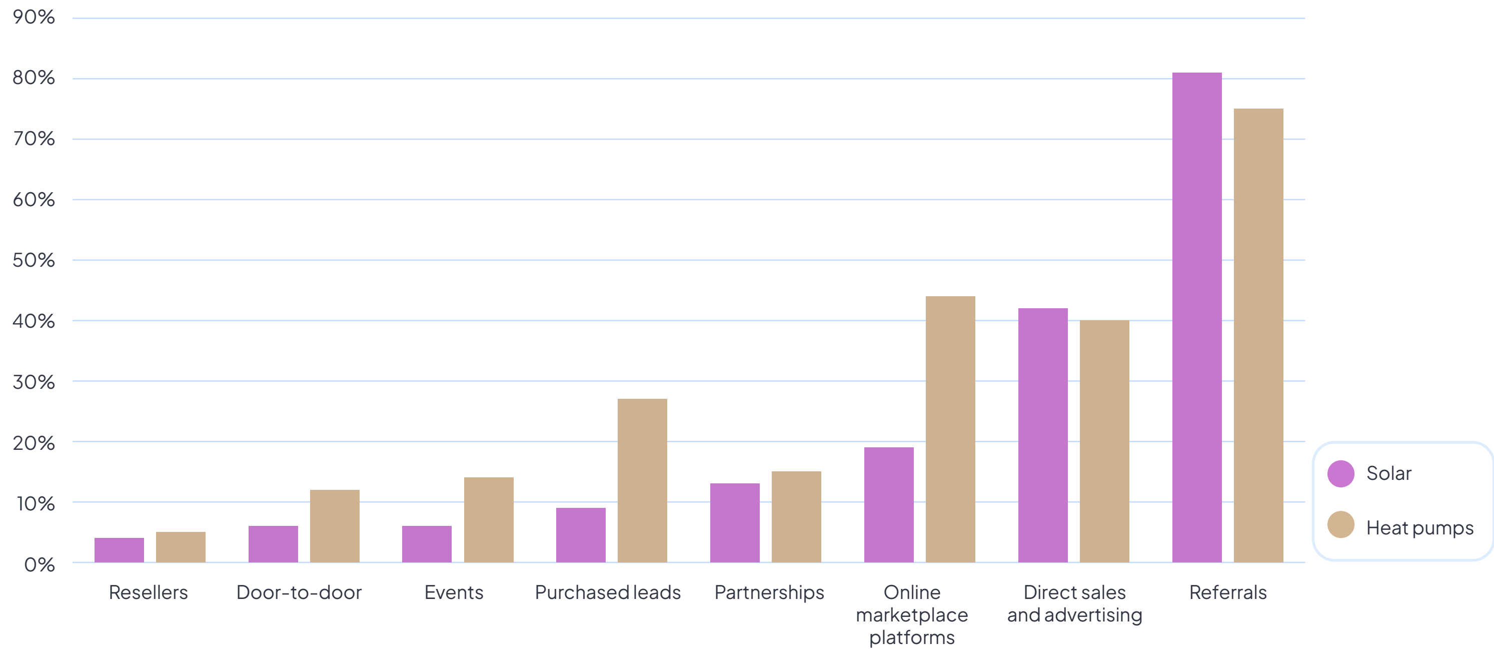
Most heat pump installers (85%) do not purchase leads, in stark contrast to solar installers.

- 75% of heat pump installs are customers who proactively reach out, and 50% specifically ask for heat pumps.

ACQUISITION CHANNELS: DO NOT USE



ACQUISITION CHANNELS: USE FREQUENTLY



Costs of doing business

- HVAC contractors say heat pump costs have increased more than solar or storage.
- HPs are higher margin than solar.
- The cost of customer acquisition less than half the CAC for solar.

	Equip cost change (%)	Heat pump margins (%)	CAC ($)
Average	15	35	$605
Median	15	33	$250

How are they paid for?

HVAC contractors say heat pumps are paid for with cash at a higher rate than solar is.

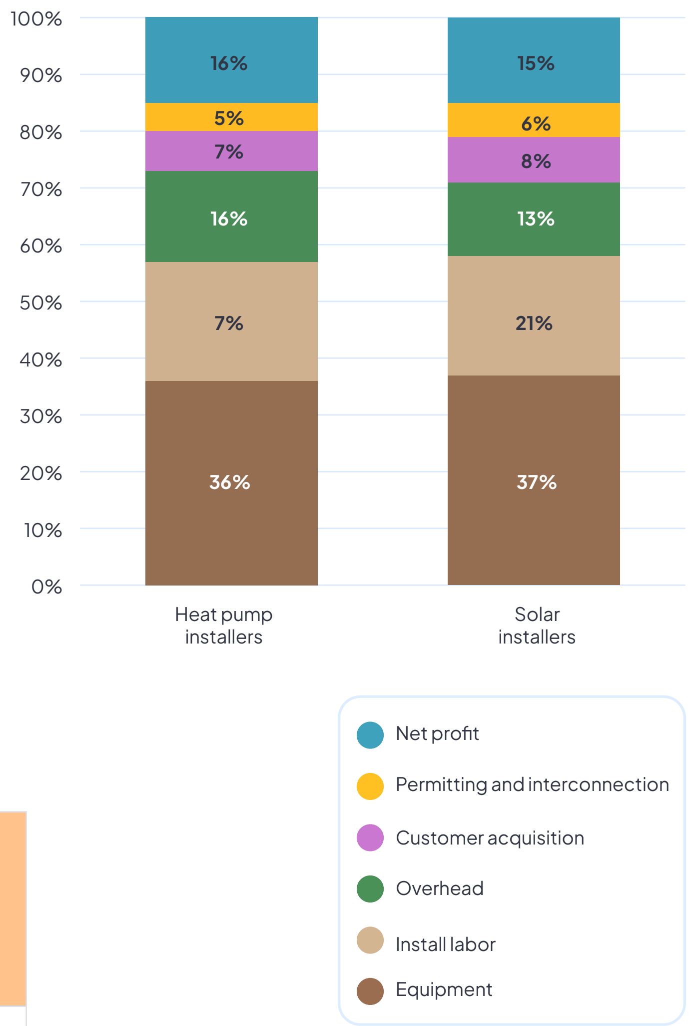
- Recently, ~70% of residential solar installs have been financed with a loan.

	Cash	HELOC/ home equity loan	Loan through installer	Personal home improvement loan	Utility or state sponsored loan program	Other
Average	57	8	14	18	38	25
Median	60	5	5	5	20	13

Share of wallet

The share of wallet for heat pump installers compared to solar installers is remarkably similar.

HEAT PUMP INSTALLER SHARE OF WALLET

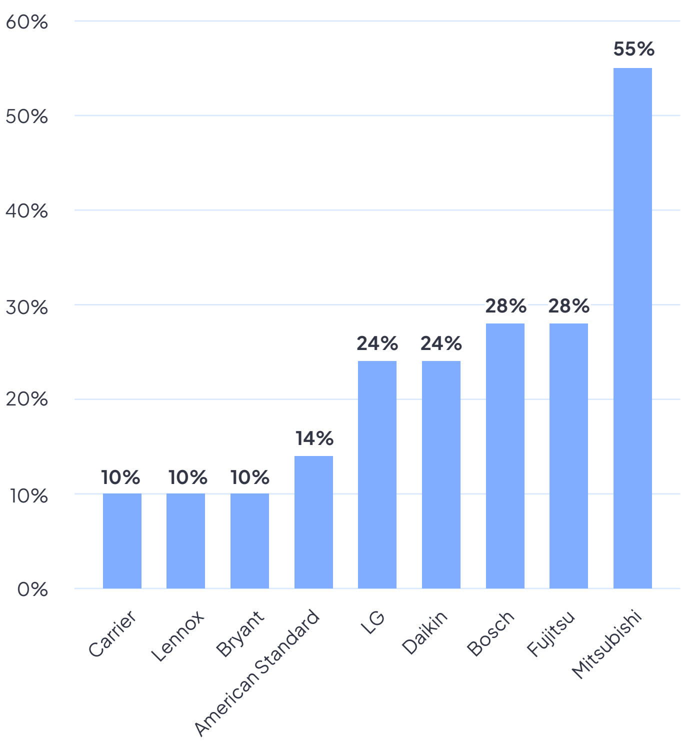


Equipment brands

Mitsubishi is the most frequently offered/installed heat pump brand at the moment.

- Otherwise, still a pretty open market.

PLEASE SELECT THE THREE MOST COMMON HEAT PUMP BRANDS YOU USE

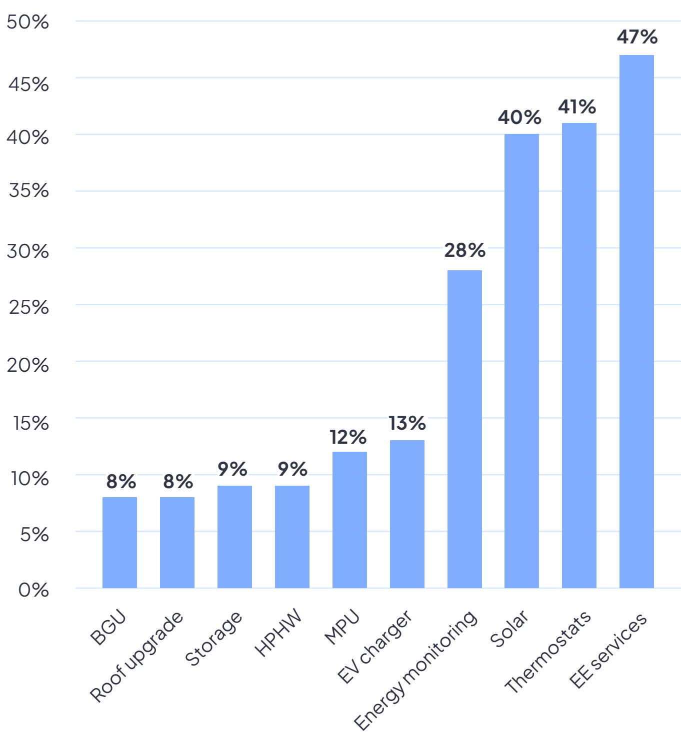


Adjacent products

Energy efficiency & heat pump installs go hand in hand.

- Note: the % of times heat pumps are installed with solar is probably an artifact of having so many solar installers respond to the survey.

WHAT PERCENTAGE OF YOUR HEAT PUMP INSTALLATIONS ALSO INCLUDE THE FOLLOWING PRODUCTS?



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2024 ELECTRIFICATION CONTRACTOR SURVEY

Electrical Upgrades

Electrical upgrades overview

In addition to the big-ticket purchases, like solar, heat pumps, and an electric vehicle (EV), a handful of smaller-ticket electrical upgrades act as enabling technologies for homeowners. In our survey, we asked contractors about two of these technologies and upgrades: EV chargers and main panel upgrades (MPUs).

The results present a study in contrast.

Main panels are old technology that electricians have been installing for over a century, while EV chargers are novel technology whose adoption rates are skyrocketing in conjunction with accelerating EV adoption overall. As a result, contractors have much more experience installing MPUs than EV chargers.

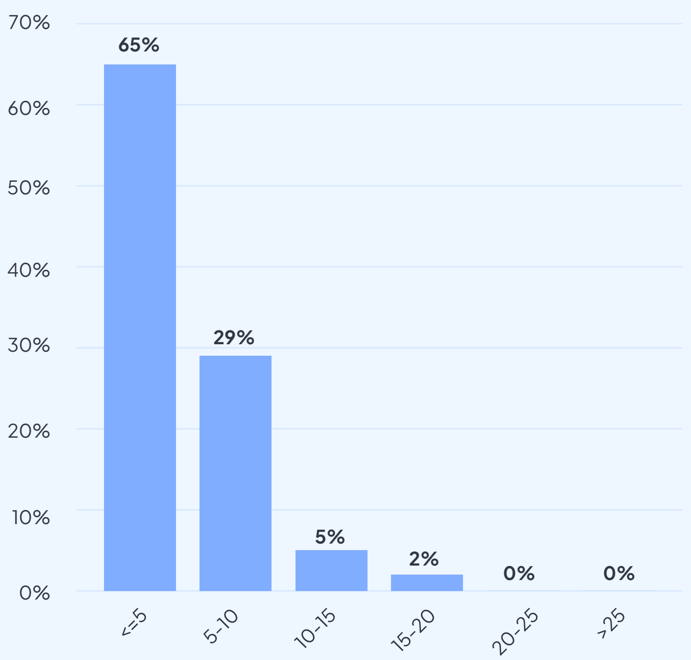
Similarly, where EVs offer a highly visible, highly public piece of the electrification transition, upgrading a main panel is often an enabling technology of last resort if a homeowner cannot accommodate the products they want to install with their current main panel.

Given that dynamic, contractors are more bullish on their future EV charger sales than MPU sales: nine out of 10 installers anticipate they'll increase EV charger installations over the next three years, while only three in five installers feel the same about their MPU sales and installations.

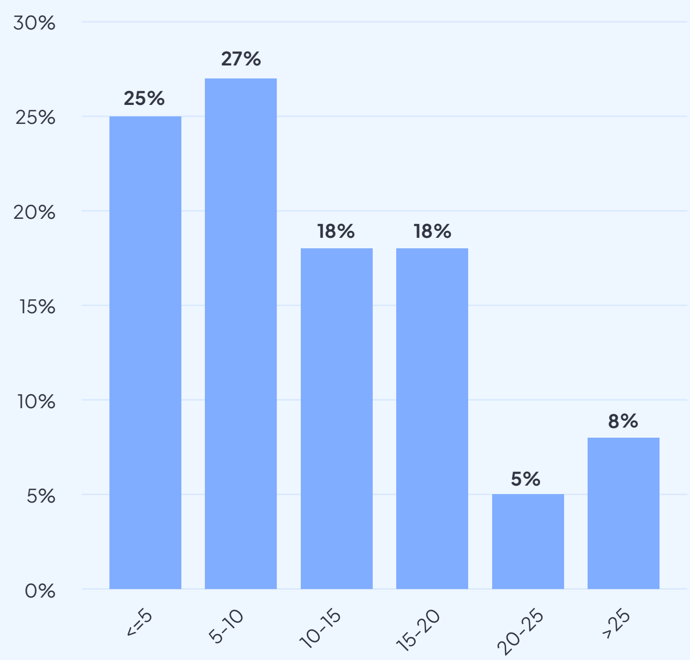
Importantly, the survey results also help benchmark what EV charger and MPU installations look like today. Generally, EV chargers are primarily installed indoors, with an even split of hardwired and NEMA plug installations. Typically, the charger is installed 20-30 feet away from the homeowner's main panel. The decision of the EV charger brand is slightly weighted towards the consumer.

Interestingly, despite all the buzz around smart panels and controllable home energy management systems, contractors report that only 10% of the MPUs installed are controllable, on average.

HOW MANY YEARS HAVE YOU BEEN INSTALLING ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSES)?



HOW LONG HAVE YOU BEEN INSTALLING MAIN PANEL UPGRADES (MPUS)?



About your business

Contractors are much newer to installing EV chargers.

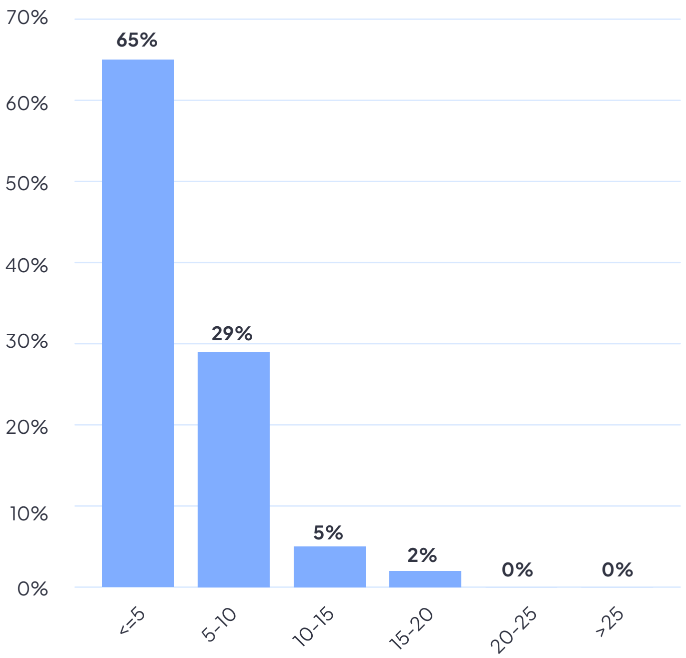
- Nearly two thirds have fewer than 5 years of experience installing EV chargers.

Future business growth

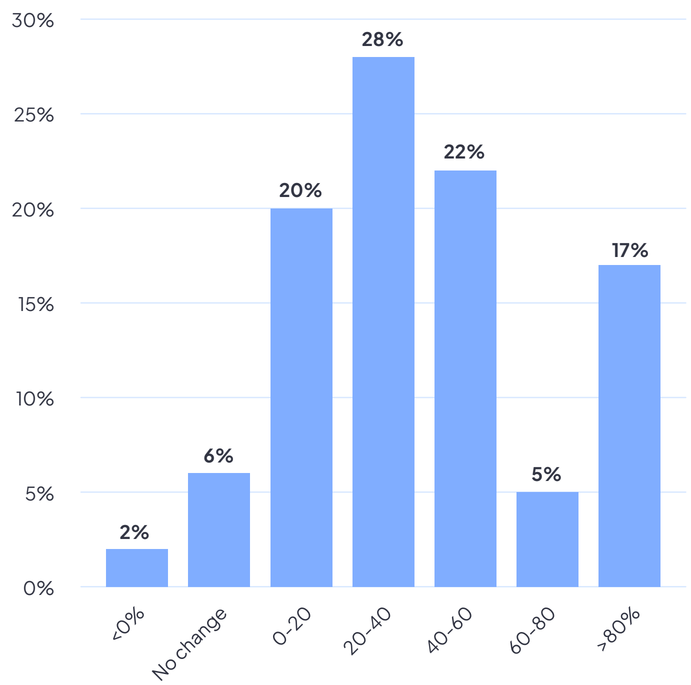
9 out of 10 installers anticipate EV charger installs will increase over the next three years.

- Median expected growth is 40%.
- 15% expect annual installations to grow 100% or more.

HOW MANY YEARS HAVE YOU BEEN INSTALLING EVSES?



HOW DO YOU EXPECT ANNUAL EVSE INSTALLATIONS WILL CHANGE OVER THE NEXT THREE YEARS?



Costs of doing business

Contractors say EV charger pricing has remained steady.

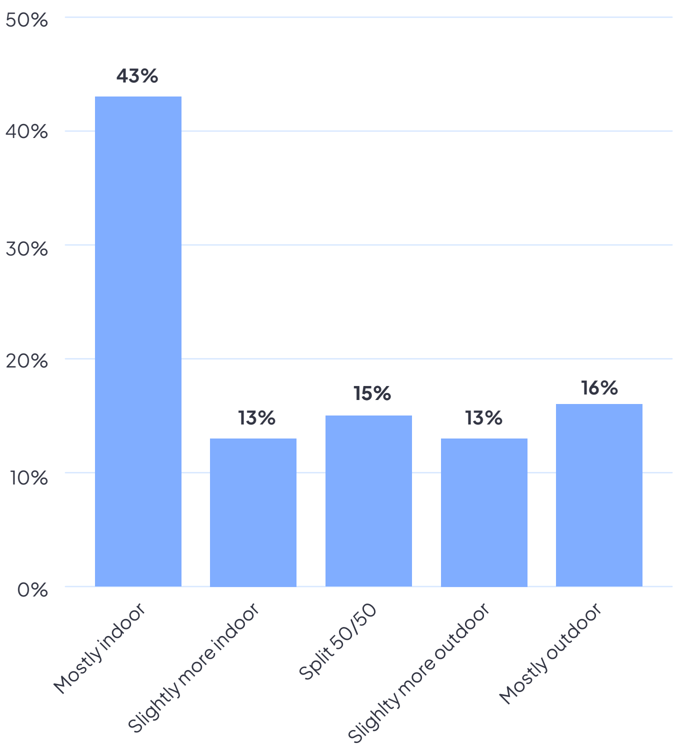
- 42% of installers say prices didn't change in 2023.

	Equip cost change (%)	EVSE margins (%)
Average	2	25
Median	0	20

Types of installations

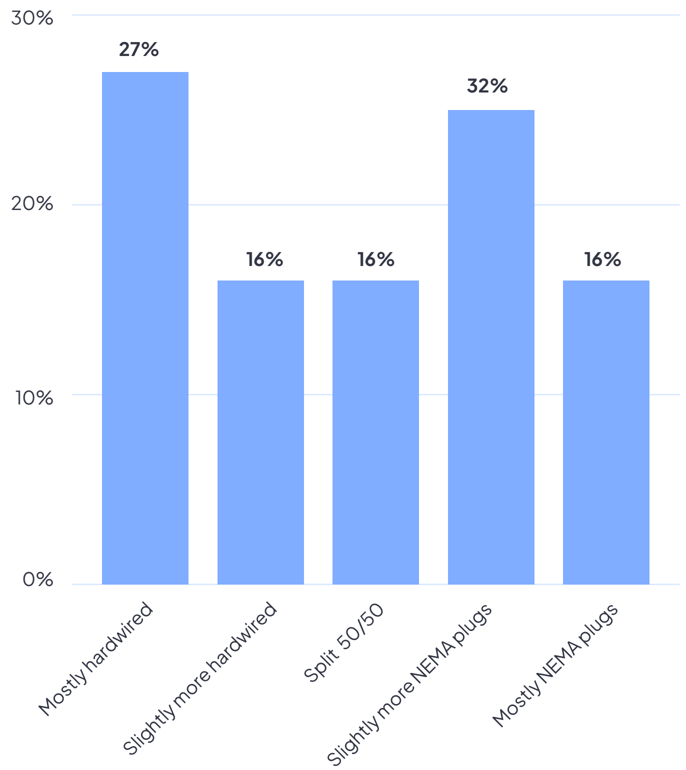
For the most part, installers are primarily installing EVs indoors.

ARE YOUR EVSE INSTALLATIONS PRIMARILY INDOOR OR OUTDOOR



EV charger installs are nearly evenly split between hardwired and NEMA plug options.

ARE YOUR EVSE INSTALLATIONS PRIMARILY HARDWIRED OR A NEMA PLUG?

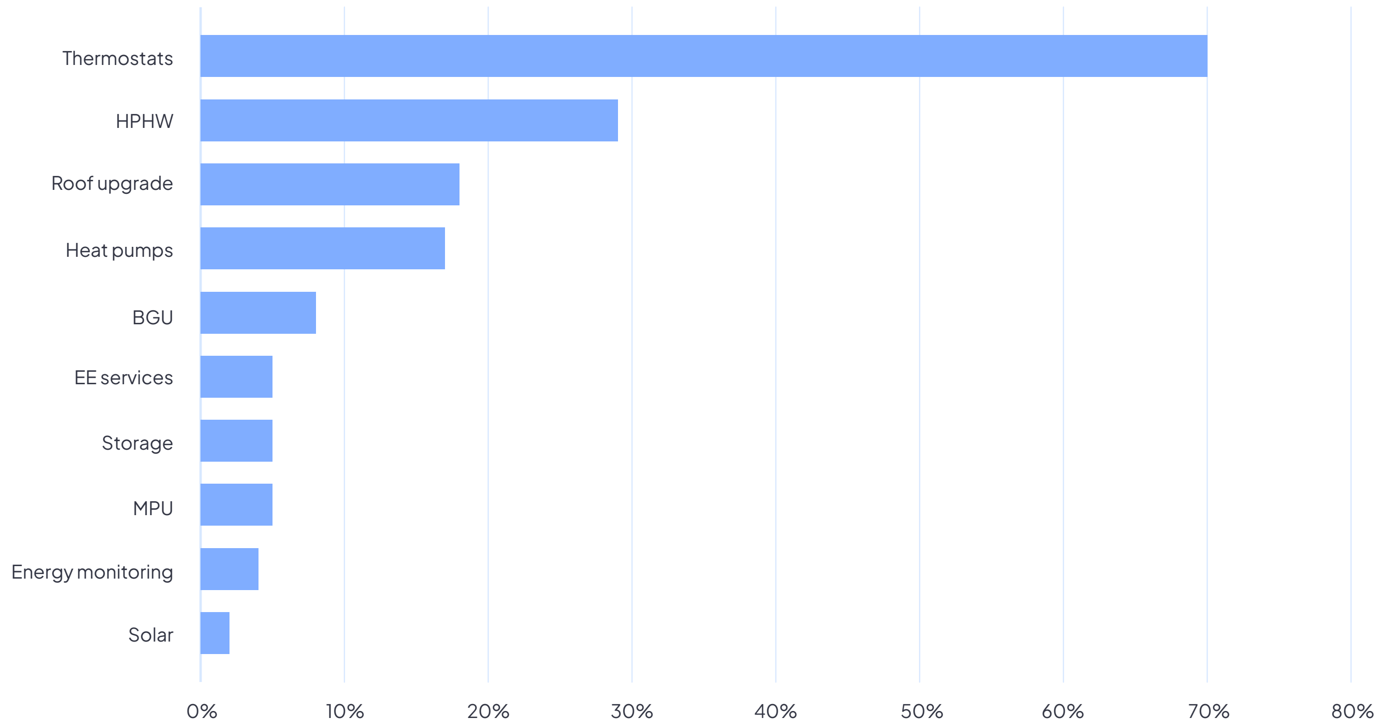


Adjacent products

More than other products, EVSE may be a one off or installed with solar.

- The % of times EVSE installed with solar is probably an artifact of having so many solar installers respond to the survey.

WHAT PERCENTAGE OF YOUR EVSE INSTALLATIONS ALSO INCLUDE THE FOLLOWING PRODUCTS



WHAT'S THE TYPICAL DISTANCE BETWEEN THE MAIN PANEL AND WHERE THE EV CHARGER IS INSTALLED (IN FEET)?

29 feet, median 20 feet

WHAT ARE THE MOST TYPICAL AMPERAGES OF MAIN PANELS YOU SEE?

9 out of 10 say 200 amps

Note: *It seems some respondents interpreted this as what amperage of charger do you install, so lots of 32, 40, and 50 amp answers too that are excluded from that 9/10.*

DO YOU SELECT THE BRAND OF LEVEL 2 EV CHARGER OR DOES THE CONSUMER?

Split nearly 50/50, slightly more consumer choices

DO YOU USE ANY COLLARS OR OTHER TECHNOLOGICAL WORKAROUNDS TO REDUCE THE NEED FOR MAIN PANEL UPGRADES/REDUCE ELECTRICAL WORK?

55%/45% no

About your business

Even if the brands and specific tech is new, contractors have been installing main panels for many years.

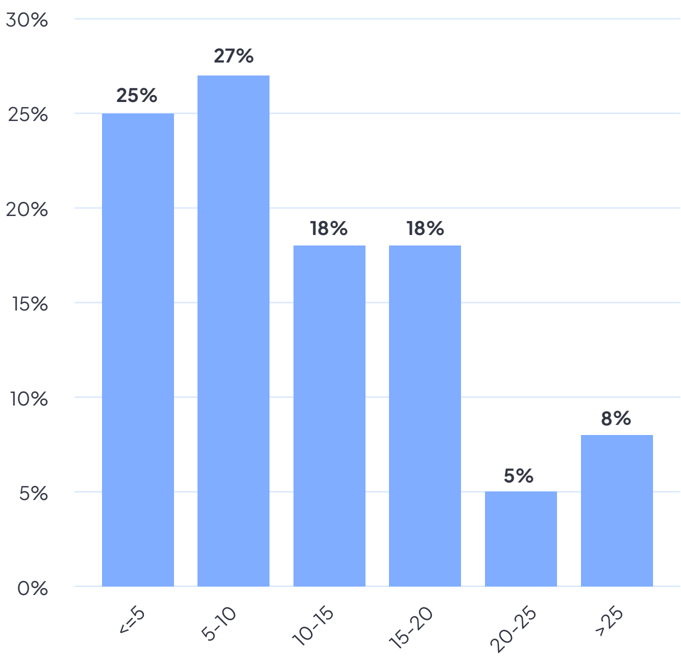
- The percentage of installers with less than 10 years and great than 15 years experience is nearly equal.

Future business growth

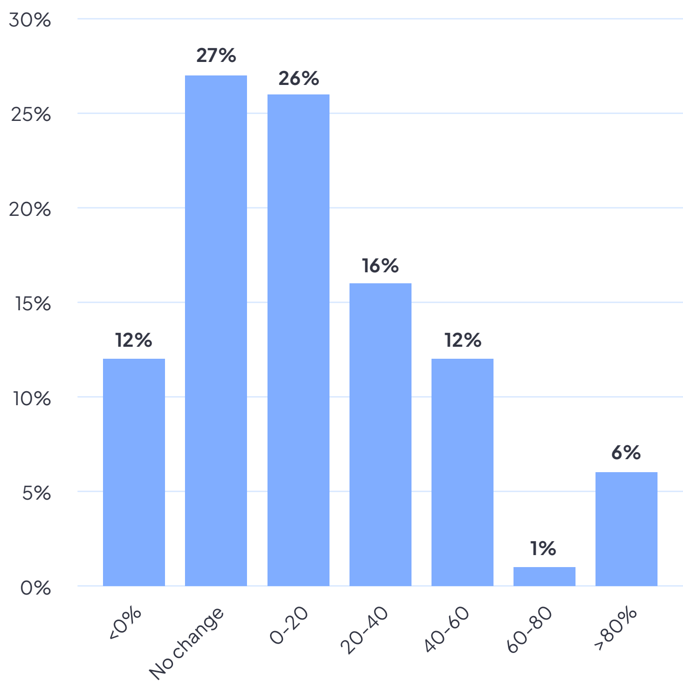
Three-fifths of installers anticipate MPU installs will increase over the next three years.

- Median expected increase of 25% for those expecting increases.

HOW LONG HAVE YOU BEEN INSTALLING MPUS?



HOW DO YOU EXPECT ANNUAL MPU INSTALLATIONS WILL CHANGE OVER THE NEXT THREE YEARS?



Costs of doing business

- 7 out of 10 installers say equipment costs increased this year.
- The electrical work – EVSE, MPUs, and even storage – all has similar margins.

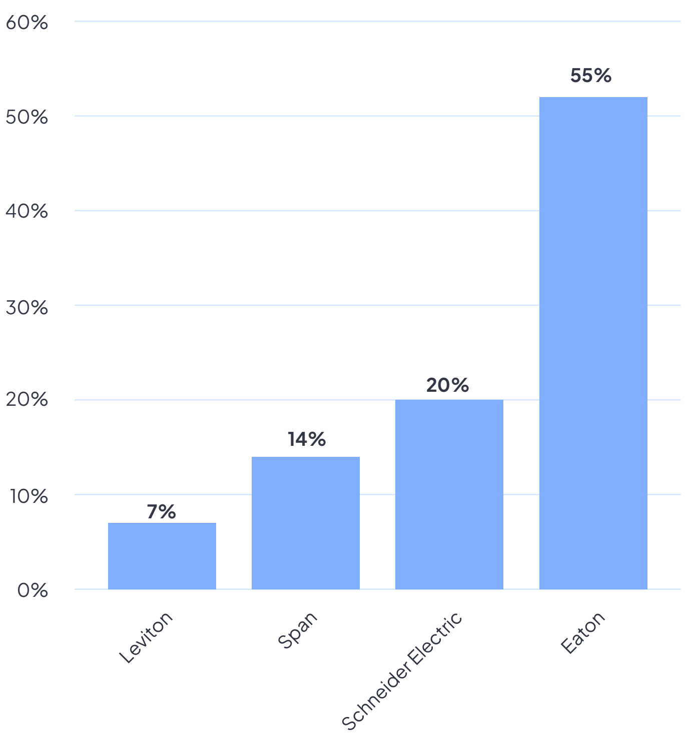
	Equip cost change (%)	Storage margins (%)
Average	11	21
Median	10	20

Types of installations

At present, Eaton is the most popular brand of main panel installed.

- Only 10% of main panels installed are controllable (1% median).

WHAT BRAND OF MPU DO YOU PRIMARILY USE?

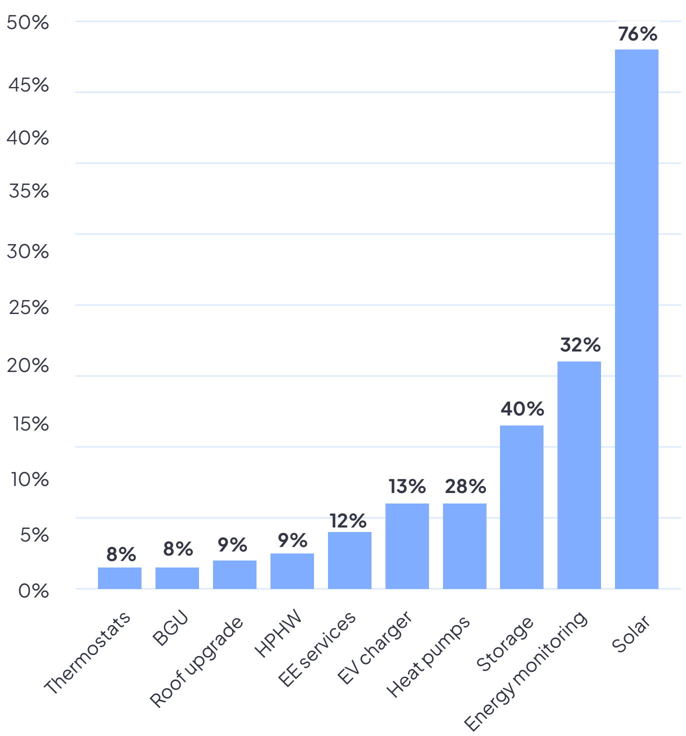


Adjacent products

A large portion of MPU are in conjunction with solar.

- Note: the % of times heat pumps are installed with solar is probably an artifact of having so many solar installers respond to the survey.

WHAT PERCENTAGE OF YOUR HEAT PUMP INSTALLATIONS ALSO INCLUDE THE FOLLOWING PRODUCTS?



In case you missed it

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Data from H1 2023 to H2 2023

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- No need to wait for permit records to be pulled: Quote data are ready to share the day after quotes are submitted

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