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Industry Research (/ibisworld) > Solar Panel Installation in the US **IBISWorld**

Last Updated: Aug 09, 2024

By: Shahool Al Bari

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Industry at a Glance

KEY STATISTICS

P

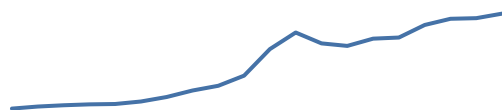
1,285 \$ million

PROFIT

CAGR:

2005 - 2024

25.01 %



P

5.90 %

PROFIT MARGIN

CAGR:

2005 - 2024

2.79 %



R 21,776 \$ million
REVENUE

CAGR:
2005 - 2024
21.63 %

PROJECTED:
2024 - 2030
4.07 %



E 11,091 Units
ENTERPRISES

CAGR:
2005 - 2024
14.84 %

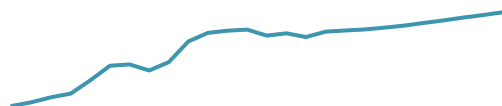
PROJECTED:
2024 - 2030
2.72 %



E 11,247 Units
ESTABLISHMENTS

CAGR:
2005 - 2024
14.86 %

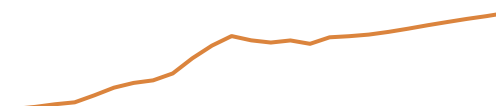
PROJECTED:
2024 - 2030
2.81 %



E 53,396 Units
EMPLOYMENT

CAGR:
2005 - 2024
18.48 %

PROJECTED:
2024 - 2030
3.61 %



W 4,940 \$ million
WAGES

CAGR:
2005 - 2024
21.09 %

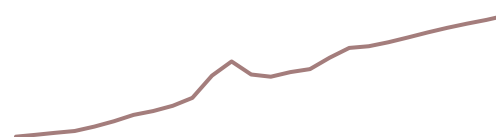
PROJECTED:
2024 - 2030
3.70 %



I 6,451 \$ million
IVA

CAGR:
2005 - 2024
21.70 %

PROJECTED:
2024 - 2030
4.16 %



EXECUTIVE SUMMARY

The surging popularity of solar power amid environmental concerns has led to an uptick in installations. As electricity prices skyrocket, consumers and businesses seek ways to reduce their utility bills. Solar energy not only helps reduce costs but also cuts down on carbon emissions while promoting sustainability. Revenue for installation services swelled at a CAGR of 7.9% to 21.8 billion over the past five years, including a 4.9% hike in 2024 alone.

The introduction of the investment tax credit (ITC), which offered a 30.0% tax credit, became a catalyst for installations. Initially, the tax credit was set to dip and expire in 2024. The recent Inflation Reduction Act reverted the credit to 30.0% and extended it until 2032. State and local governments also offer additional incentives for switching to solar. Increasing residential construction in 2020 and 2021 led to more installations as many new housing projects included solar panels to receive LEED certification and meet green initiatives targets. Low-cost imports from Asia and favorable regulations like the 24-month tariff pause led to the price of panels falling, causing installation services to charge less and attracting more customers. Profit remained afloat due to the influx of new installations.

The continuation of ITCs will aid installations moving forward. Rising environmental concerns and the urge to go green will lead to more commercial and government buildings switching to solar panels to meet ESG standards and green goals. With more consumers and businesses moving

toward solar power, contractors will hire more employees to fulfill the influx of new projects. Solar panel installation revenue will grow at a CAGR of 4.2% to \$26.7 billion through 2029.

CURRENT PERFORMANCE

GOVERNMENT INCENTIVES FUEL GROWTH

The Energy Policy Act of 2005 established the solar investment tax credit (ITC), which provided a 30.0% tax credit for eligible customers. The Inflation Reduction Act extended ITC solar panel installations to 30.0% between 2022 and 2032. Before this extension, the previous tax credit was set to fall to 26.0% in 2022.

Thirty-six states and Washington DC have enacted renewable portfolio standards, requiring electric providers to bolster renewable energy sources in their power supplies. This has caused an uptick in the spread of solar panels. Local and state governments offer additional incentives and tax breaks for consumers or businesses that install solar panels. These incentives bring states one step closer to reaching their renewable energy targets.

RESIDENTIAL MARKETS POWER THE INDUSTRY

Soaring electric prices and utility bills have made solar energy more attractive for residential consumers. Homeowners are looking to save money wherever possible and solar panels help them reduce costs in the long run but also help push towards a sustainable future.

The uptick in residential construction in 2020 and 2021 led to a surge in installations in that sector—many new residential construction projects contract solar panel installers to meet sustainability targets. Residential projects have short lead times, giving installers more flexibility. States with favorable weather conditions, like California and Texas, continue to see an uptick in solar projects so consumers can take advantage of the sun.

FAVORABLE TRADE DYNAMICS AID INSTALLATIONS

In June 2022, President Biden issued a 24-month pause on Southeast Asian tariffs to accelerate green initiatives. Low-cost imports from foreign countries reduce the cost of solar panels, allowing installation services to charge less. The median price of installations has dipped yearly since 2007, outside of a small uptick in 2020.

Solar power projects are also becoming less expensive, bolstering the number of power projects. According to the US Solar Energy Technologies Office, prices for components like modules and polysilicon has continued to dip toward the end of the period.

Domestic manufacturers are also finding ways to reduce costs to help installation companies source panels without waiting for imports. Some installation services are currently sourcing low-cost imports because of higher domestic pricing. Even so, most residential projects typically source domestic panels.

BUSINESSES ARE IMPROVING SUSTAINABILITY EFFORTS

Commercial solar panel installations have seen an uptick as environmental concerns continue to pose an issue. Companies recognize the importance of Environmental, Social and Governance (ESG) initiatives and do whatever they can to help incorporate these factors into their operations.

Installing solar panels signifies a company's commitment to sustainability and holds the potential for long-term energy cost reduction. Major corporations proactively outline their renewable energy objectives in financial reports, showcasing their trajectory to investors and the public.

While initial costs can be high, companies can use government tax incentives. Businesses can also apply for green loans to finance installation costs.

FUTURE OUTLOOK

GOVERNMENT INCENTIVES REMAIN THE INDUSTRY BACKBONE

Initially, investment tax credits were set to expire in 2024. Instead, a recent extension has enacted a 30.0% tax credit on solar panels up to 2032. Further incentives and extensions may come down the line as the country remains committed to fostering a greener and more sustainable future.

State and local rebates will remain intact, offering additional savings for those who install solar panels. This makes renewable energy solutions more appealing and financially advantageous for environmentally conscious homeowners.

Low-cost imports will allow contractors to continue lowering installation prices. Imports from Southeast Asian countries like Vietnam, Malaysia,

Thailand and Cambodia will remain crucial. While tariffs are set to resume in 2024, the hope is that domestic solar panel manufacturers will stabilize their supply chains to keep up with installation needs.

THE INITIATIVE TO GO GREEN IS MORE VITAL THAN EVER

Rising environmental concerns will sway public opinion in favor of solar panel installations. The importance of Environmental, Social and Governance (ESG) will expand. The US Securities and Exchange Commission (SEC) is currently examining ESG and green initiatives regulations, which may change how companies present their quarterly and annual reports.

Numerous states have implemented Renewable Portfolio Standards (RPS), which define specific targets for the proportion of energy derived from renewable sources, including solar power. To hit these benchmarks, states are set to introduce and bolster incentives and actively promote solar panel installations.

New construction projects will opt to install solar panels to meet sustainability targets. Solar panels help buildings earn points toward Leadership in Energy and Environmental Design (LEED) certification.

CONSUMERS TO REAP CLEAN ENERGY BENEFITS

Electricity prices are set to remain steady throughout the outlook period, leading to more consumers installing solar panels to reduce energy bills. Solar

panels also require less maintenance and have a lifespan of 25 years, providing homeowners with peace of mind.

Solar panels generate fewer greenhouse gases, create cleaner energy and are unaffected by blackouts. Residents in areas with sufficient sunlight can generate large amounts of energy. Solar panels are also attractive for consumers who live in remote areas without access to power grids.

Homeowners exhibit an increase in the value of their homes following solar panel installations. Solar panels help homeowners be more sustainable and are also a forward-thinking investment.

MORE JOBS AND INSTALLATION SERVICES AVAILABLE

The need for renewable energy will only expand as consumers and businesses rush to install solar panels before government incentives and benefits expire.

More installation companies are set to enter the mix and operate in less populated regions to ensure solar panels are available nationwide. With the price of solar panels set to come down, installers are set to see a bump in profitability as purchase costs contract.

The influx of new contractors will create job opportunities and bolster local economies as installers seek skilled labor. Installation services will continue subcontracting electrical work to electricians to ensure a smooth transition. If robotics and other machinery become a mainstay for installers, it could be a double-edged sword for workers. On one hand, companies may need to hire

supervisors who are experienced with these technologies; on the other hand, it could lead to a reduction in manual labor jobs.

INDUSTRY DEFINITION

Industry operators install solar panels as part of general residential and commercial contracting services. These companies are contracted by a homeowner, a solar panel manufacturer or by solar marketing firms that arrange a buyer for solar panels and contract an operator to carry out the work. Installations of commercial-grade solar power grids are excluded from this report (IBISWorld report OD4493), as are solar thermal systems that lack photovoltaic panels.

INDUSTRY IMPACT



POSITIVE IMPACT

Capital Intensity Level

low

Industry Assistance Level

high - steady

Concentration Level

low

Globalization Level

low - increasing

SWOT ANALYSIS



STRENGTHS

High & Steady Level of Assistance

Low Imports

High Profit vs. Sector Average

Low Product/Service Concentration

Low Capital Requirements



WEAKNESSES

Medium & Decreasing Barriers to Entry

**MIXED IMPACT**

Life Cycle Stage
mature

**NEGATIVE IMPACT**

Competition Level
high - increasing

High Competition

High Customer Class Concentration

**OPPORTUNITIES**

Very High Revenue Growth (2005-2024)

High Revenue Growth (2019-2024)

High Revenue Growth (2024-2029)

High Performance Drivers

Per capita disposable income

**THREATS**

Low Outlier Growth

Corporate profit

KEY TRENDS

Price competition and quality of work set contractors apart. Companies that do excellent work are hired more frequently because of word-of-mouth recommendations.

Traditional energy sources remain the most significant competitor. Despite the increased popularity of renewable energy, many

consumers are unwilling to switch since they are already familiar with gas or electric systems.

The Energy Policy Act and the Inflation Reduction Act have extended tax credits for solar installations. States and local governments are also supporting the spread of solar with additional incentives.

Escalating utility bills have prompted homeowners to turn to solar energy for long-term savings. Spikes in housing construction after the pandemic also contributed to an uptick in installations in the residential market.

In June 2024, Sunrun introduced a vehicle-to-home power plant using Ford F-150 Lightning trucks that offer energy resilience during outages. Customers can earn around \$800 by sharing stored energy during peak hours from June to September 2024.

In August 2023, SolarCity transitioned from installation services to product upgrades, implementing layoffs while hiring certified installers. The company aims to launch a new solar inverter designed to work with both panels and roofs.

Investment tax credits have been crucial in attracting customers. A recent extension under the Inflation Reduction Act now provides eligible customers with a 30.0% tax credit until 2032.

Tariffs on solar panels from Southeast Asian countries were paused for 24 months starting from June 2022. Low-cost imports lower the

price of installation, drawing in more customers.

Having skilled labor is essential to ensure solar panels are correctly installed. Subcontractors are often enlisted to handle various electrical tasks.

Roofing equipment and solar panels make up the majority of purchase expenses. While these costs have swelled, larger companies have saved money by buying bulk from distributors.

Operating in areas that provide additional local and state incentives helps attract customers. More significant discounts entice consumers. These incentives help states hit their renewable energy targets.

Regions with predominantly sunny weather are more efficient for solar panels. It allows for greater energy generation compared to areas where it rains or snows frequently. This is evident in states like California and Texas, which lead the country in solar panel installations.

The commercial market remains a steady source of revenue for installation services. With the surge in commercial construction, numerous new buildings are exploring using solar power to leverage cost-saving benefits and access green loans.

While more expensive, silicone cell panels are known for their higher energy conversion efficiency. Despite their higher cost, these panels

boast a smaller size, making them suitable for various spaces. In contrast, thin-film solar panels are generally larger in size.

Supply Chain

EXTERNAL DRIVERS

E

ELECTRIC POWER CONSUMPTION

Electric power consumption represents the total amount of electricity consumed in the United States. Electric consumption has trended upward along with the number of households, manufacturing capacity and industrial production. With more consumption, prices also push up, driving customers to alternative providers and presenting a potential opportunity for solar panel installation services.

CAGR:

1980 - 2024

1.52 %

PROJECTED:

2024 - 2030

0.88 %



C

CORPORATE PROFIT

Businesses are more willing to invest in new or upgraded facilities, including solar panel systems, when they are doing well, among other things. Corporate profit measures the amount of profit earned across all industries. When companies endure financial struggles, they may delay investments in solar technology, weakening the need for installation services and posing a potential threat to revenue.

CAGR:

1980 - 2024

3.75 %

PROJECTED:

2024 - 2030

4.83 %



T

TAX CREDITS FOR ENERGY EFFICIENCY

Tax credits at both state and federal levels influence consumer investment in solar systems. The Energy Improvement and Extension Act of 2008, which extends the federal tax credit for solar systems through 2032, incentivizes consumers to adopt renewable energy. Demographic factors like income levels, education, macroeconomic conditions like energy prices and government policies are critical in shaping the solar panel installation landscape.

CAGR:

2001 - 2024

-

PROJECTED:

2024 - 2026

-

P

PER CAPITA DISPOSABLE INCOME

Per capita disposable income influences an individual's capacity to invest in solar panel installations. As disposable income pushes up, consumers tend to show greater willingness to pay for these systems. Government incentives and tax credits have effectively lowered the financial barrier, enabling a broader segment of the population, including those with lower disposable incomes, to access solar energy options.

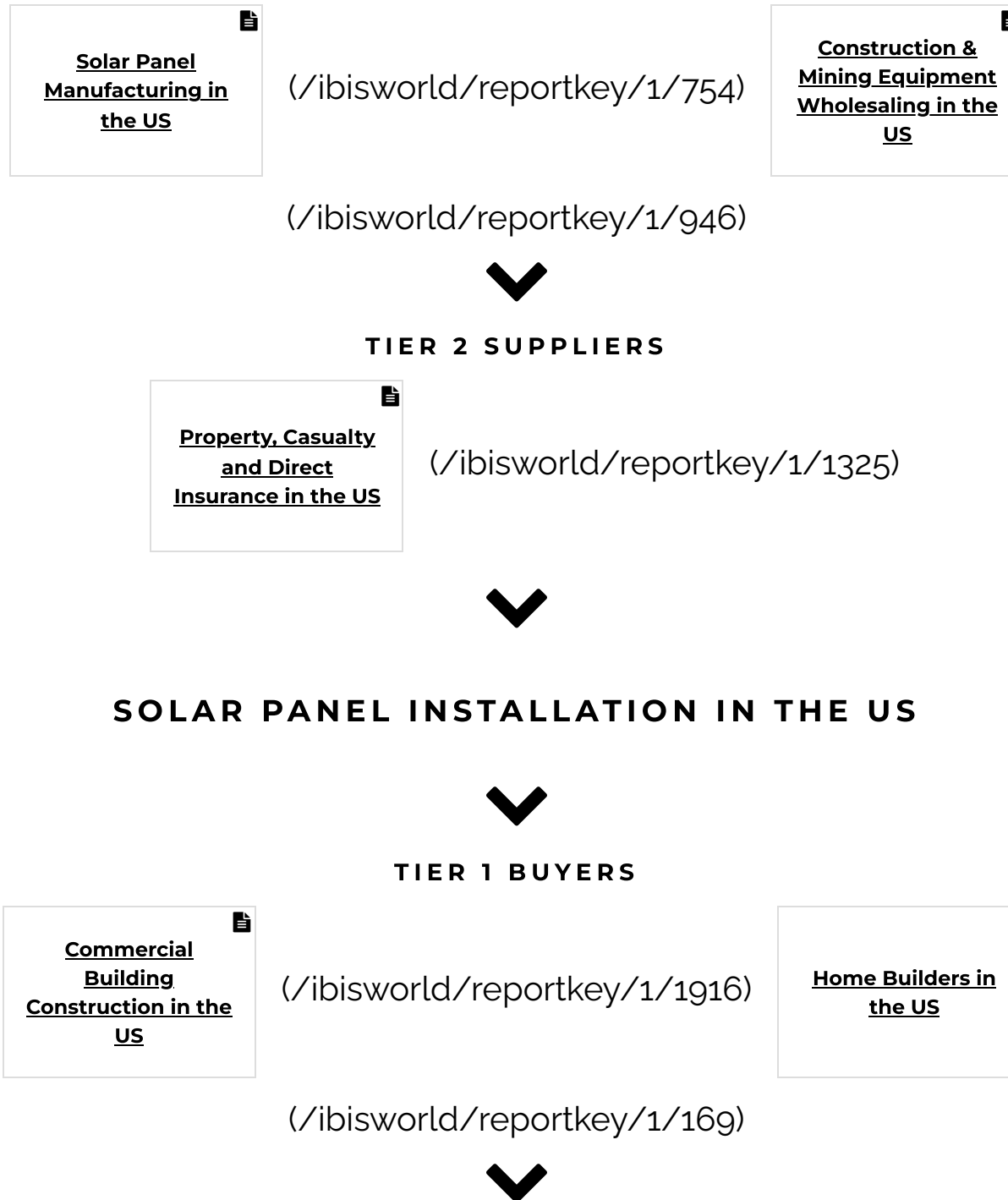
CAGR:
1980 - 2024
1.83 %

PROJECTED:
2024 - 2030
4.03 %



SUPPLY CHAIN

TIER 1 SUPPLIERS



TIER 2 BUYERS
**Roofing Contractors
in the US**

(/ibisworld/reportkey/1/198)


**Electric Power
Transmission in the
US**

(/ibisworld/reportkey/1/155)

SIMILAR INDUSTRIES
**Roofing Contractors
in the US**

(/ibisworld/reportkey/1/198)


**Heating & Air-
Conditioning
Contractors in the
US**

(/ibisworld/reportkey/1/1945)


Plumbers in the US

(/ibisworld/reportkey/1/1946)


**Solar Power in the
US**

(/ibisworld/reportkey/1/1914)

RELATED INTERNATIONAL INDUSTRIES


**Air Conditioning
and Heating
Services in Australia**

(/ibisworld/reportkey/61/326)


**Building
Completion &
Interior Design in
China**

(/ibisworld/reportkey/86/740)


**Plumbing, Heating
& Air Conditioning
Installation in the
UK**

(/ibisworld/reportkey/44/2505)


**Heating & Air-
Conditioning
Contractors in
Canada**

(/ibisworld/reportkey/124/1945)

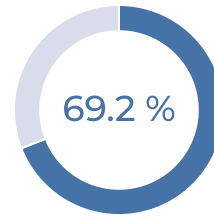

**Air Conditioning
and Heating
Services in New
Zealand**

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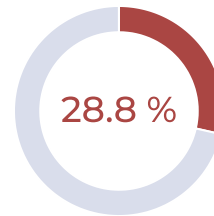

**Plumbing, Heating
& Air Conditioning
Installation in
Ireland**

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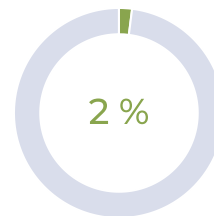
PRODUCTS & SERVICES



SILICONE CELL PANEL INSTALLATION



THIN-FILM PANEL INSTALLATION



OTHER

SILICONE CELL PANEL INSTALLATIONS CONTINUE TO DOMINATE

Silicone cell-based solar panels are prevalent because of their high energy conversion efficiency. They are also very durable and are made to last at least 25 years.

Roof-mounted and ground-mounted solar panels most commonly use monocrystalline and polycrystalline cells. Monocrystalline cells are small and efficient but very expensive. Polycrystalline cells have high energy outputs but take up more space.

THIN-FILM PANELS ARE LESS EXPENSIVE

Thin-film panels are made by laying different types of semiconducting material on top of one another in a series of thin layers. Thin-film panels are inexpensive but less efficient than silicone cell panels.

Thin-film solar panels take up a lot of space, so they are mainly used for large utility or commercial buildings.

MISCELLANEOUS SERVICES AVAILABLE

Installers offer additional value-added and after-installation services. These services help companies generate additional revenue at low costs.

One essential service offered by installation companies is monitoring.

Monitoring services track the performance and efficiency of installed panels.

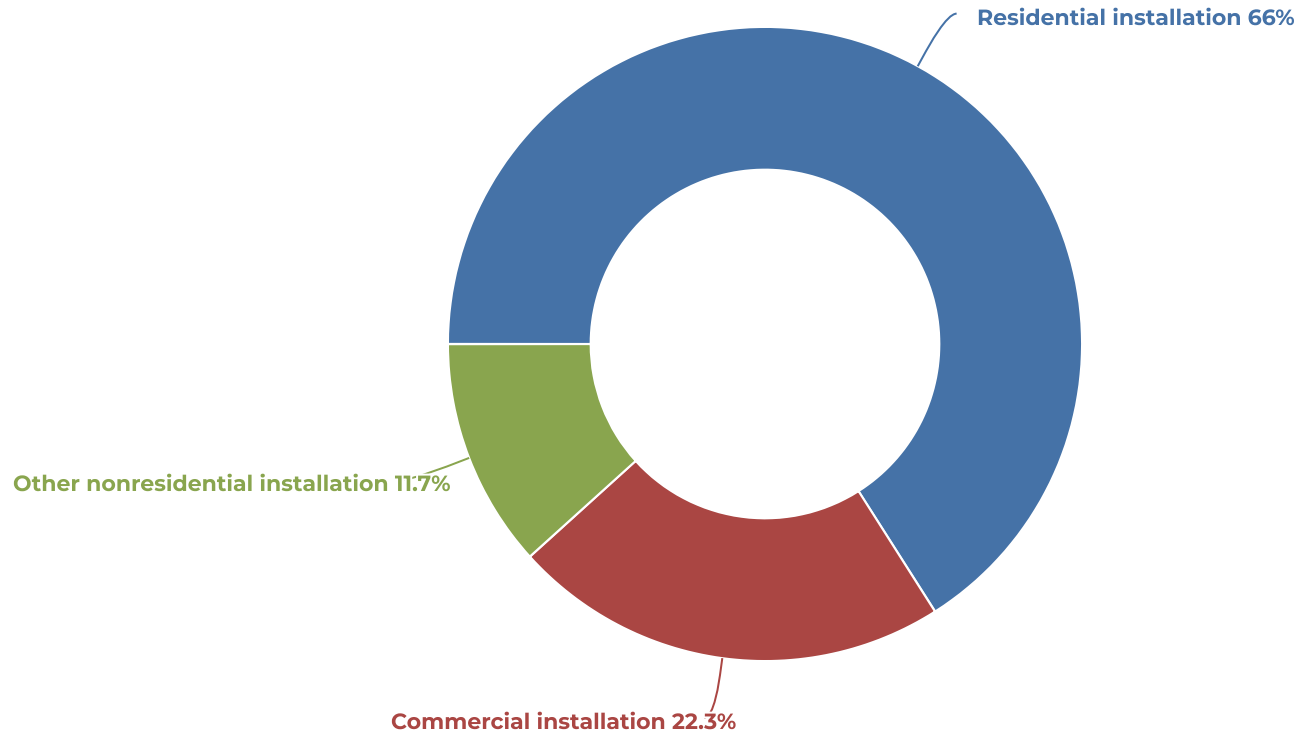
They can also detect any issues or malfunctions in the system and promptly

alert the company. This proactive approach allows the company to address and fix the problem before it escalates.

DEMAND DETERMINANTS

Electric power consumption represents the total amount of electricity consumed in the United States. Electric consumption has trended upward along with the number of households, manufacturing capacity and industrial production. With more consumption, prices also push up, driving customers to alternative providers and presenting a potential opportunity for solar panel installation services.

MARKET SEGMENTATION



RESIDENTIAL CUSTOMERS CONTINUE TO MAKE THE SWITCH

Residential consumers account for two-thirds of solar panel installations. Consumers have been seeing an uptick in their electricity bills and have shifted toward solar panels.

Extended tax credits and falling installation prices have made solar panels more attractive. The recently passed Inflation Reduction Act offers a 30.0% federal tax credit for panels installed anytime between 2022 and 2032.

BUSINESSES LOOKING TO GO GREEN

Environmental concerns have pushed corporations to become more green. Commercial businesses are transitioning to renewable energy sources to reach sustainability goals.

Installing solar panels also helps businesses reduce their energy bills. Many states and local areas offer additional benefits for switching to solar, sometimes covering most installation costs.

PUBLIC ESTABLISHMENTS SLOWLY SHIFT

Schools, government buildings and non-profits make up a minor portion of installations. These establishments cannot take advantage of tax breaks and rely on external funding and grants to install panels.

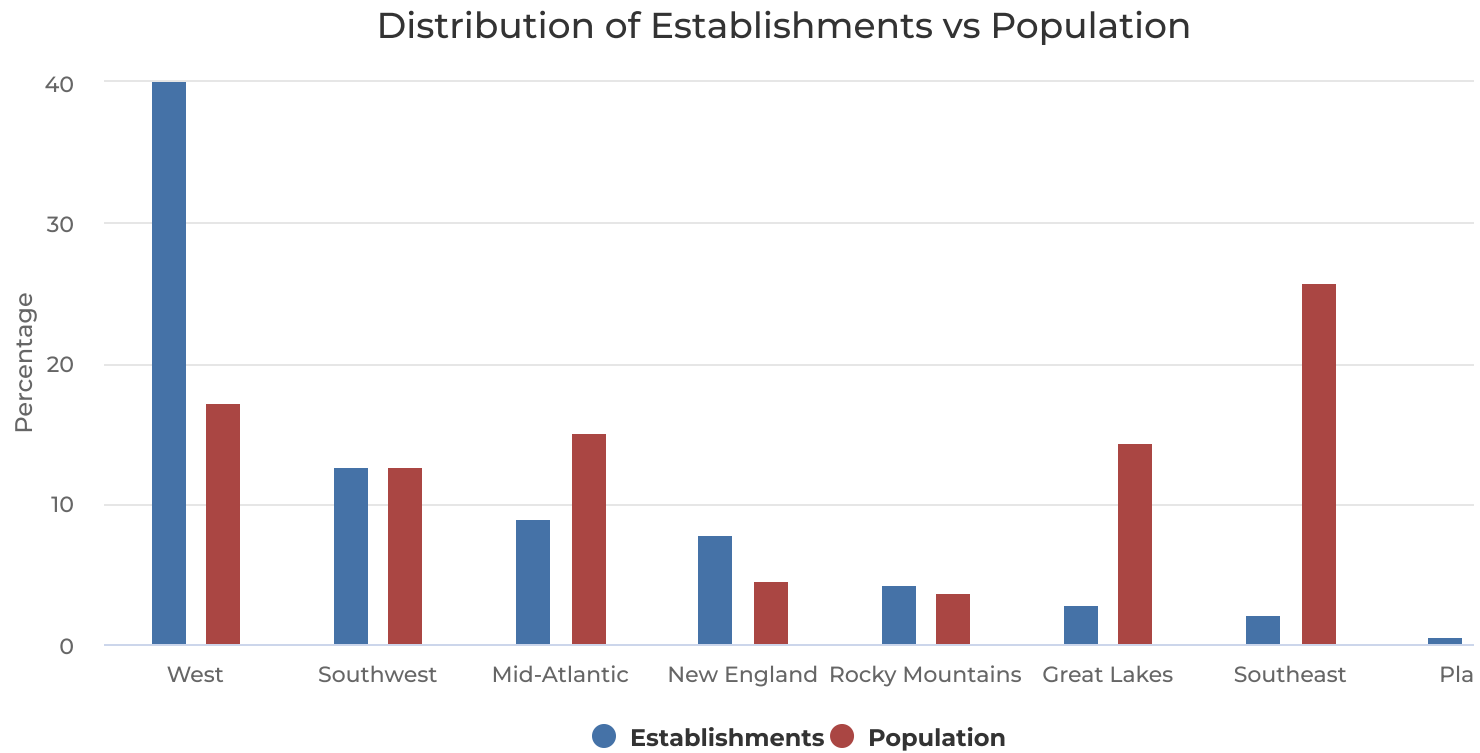
While installation prices have declined through the years, many places still do not have adequate funding to transition.

INTERNATIONAL TRADE

■ **IMPORTS**
low and steady

■ **EXPORTS**
low and steady

BUSINESS LOCATIONS



CALIFORNIA CONTINUES TO DOMINATE THE PACK

More than half of industry establishments are in California. California has over 1.5 million solar panel systems, with more residents converting yearly because

of high electric bills. According to the Interstate Renewable Energy Council's Solar Job Census, California added the most solar jobs in 2022. California offers many local and state incentives in addition to federal tax credits, making the switch to solar more affordable. Many of these incentives stem from the state's efforts to reach its renewable portfolio standard target.

MID-ATLANTIC BENEFITS FROM PROGRAMS

New Jersey maintains the largest roof-mounted, grid-connected solar system in the United States at the Atlantic City Convention Center. According to the Solar Energy Industries Association, the state accounted for the 8th-highest cumulative installed solar PV capacity in 2022.

New Jersey and New York offer customers state and local incentives and exemptions when switching to solar. In New Jersey, clients can get a certificate through the Successor Solar Incentive (SuSI) Program for every MWh of electricity their solar system generates. Customers can earn a \$90 reward for each certificate over 15 years.

SOUTHWEST AREAS AIDED BY WEATHER

Southwest states, most notably Texas, benefit from installing panels amid sunny weather. Texas is right behind California in solar jobs added in 2022. Installations surged after the 2021 winter storm in Texas, as solar panels are more efficient in cold weather since they can remove snow and continue to operate without a hitch.

Competitive Landscape

BASIS OF COMPETITION

 **HIGH** competition

 **INCREASING** competition

Price competition and quality of work set contractors apart. Companies that do excellent work are hired more frequently because of word-of-mouth recommendations.

Traditional energy sources remain the most significant competitor. Despite the increased popularity of renewable energy, many consumers are unwilling to switch since they are already familiar with gas or electric systems.

BARRIERS TO ENTRY

 **MODERATE** barriers

 **DECREASING** barriers

FACTORS FOR INCREASED BARRIERS**Life Cycle Stage**

mature

Competition Level

high - increasing

FACTORS FOR DECREASED BARRIERS**Capital Intensity Level**

low

Industry Assistance Level

high - steady

Concentration Level

low

Globalization Level

low - increasing

LEGAL

Required licensing for roof contracting and electricians vary by state. For example, Georgia requires no state licensing, while Colorado requires certification through the North American Board of Certified Energy Practitioners (NABCEP). According to the National Solar Jobs Census, over a third of solar installers were unlicensed.

START-UP COSTS

Initial costs are kept to a minimum, consisting primarily of power tools, other installation equipment, scaffolding, harnessing equipment and a motor vehicle for transportation.

DIFFERENTIATION

Solar contractors differentiate primarily through quality and timeliness, as installation is uniform across the industry. High standards in these areas can set one contractor apart from their competitors.

LABOR EXPENSES

Labor expenses are significant in solar installation. Skilled labor ensures panels are installed correctly and function efficiently, making competent labor essential for new entrants.

MARKET SHARE CONCENTRATION

 **LOW** concentration

INSTALLATION IS FRAGMENTED BY NATURE BECAUSE OF LOCAL OPERATIONS

Solar panel installation is inherently fragmented, with various markets that requires different expertise, regulations, and approaches, making it challenging for one entity to dominate the entire market.

Most companies employing less than ten full-time workers. Companies will often hire subcontractors for projects to reduce expenses. Many companies only serve in a local geographic area, preventing major dominance.

SOME CONSOLIDATION ACTIVITY IS LOOMING

Solar panel installations are witnessing a trend toward consolidation as larger companies acquire smaller ones to expand their market footprint and streamline operations. This allows them to capitalize on economies of scale, offering competitive pricing and enhanced services.

Only large companies with a significant amount of resources can benefit from consolidation. Even so, contractors usually won't venture outside their region because of high expenses.

INDUSTRY GLOBALIZATION



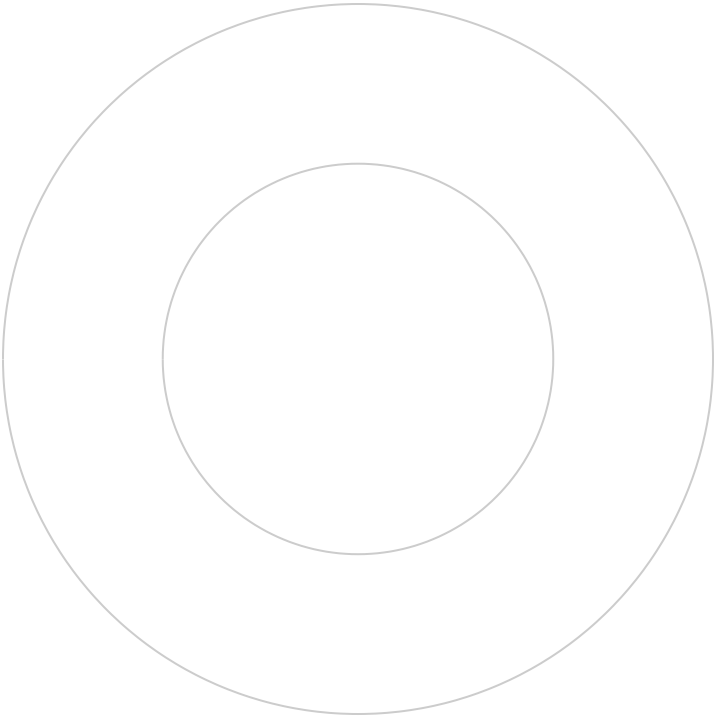
LOW globalization



INCREASING globalization

MAJOR PLAYERS

Market Share for 2024



0

OTHER COMPANIES

MARKET SHARE: 100 %

YEAR	REVENUE	GROWTH % CHANGE	OPERATING INCOME	GROWTH % CHANGE
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* Estimates

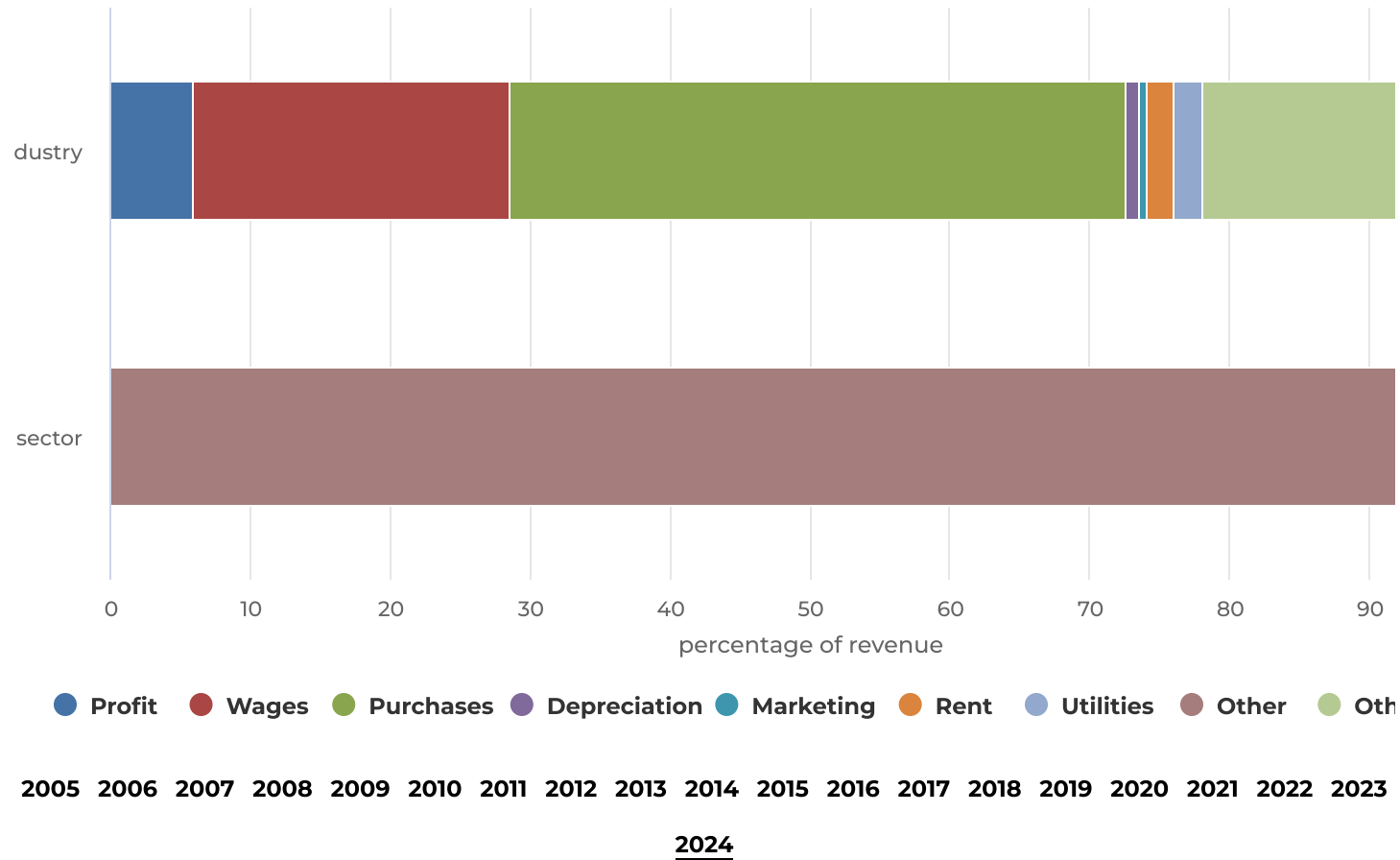
REVENUE

REVENUE OPERATING INCOME

Costs & Operations

COST STRUCTURE

Benchmarks for 2024



EQUIPMENT AND PANELS LEAD TO HIGHER EXPENSES

Purchases include roofing materials, mounting hardware, wiring, electrical equipment and other parts needed for mounting solar panels. Prices of input materials have remained elevated, which has led purchasing expenses to creep upward throughout the period.

Low-cost imports have softened purchase costs regarding solar panels themselves. Most installers buy in bulk from distributors, saving money.

COMPETITION AND EXPENSES PRESSURE PROFITABILITY

Profit has slightly trickled down. Interlocking and prewired panels allow crews to install panels more efficiently, cutting labor hours. Solar power purchasing agreements (SPPAs) remove the up-front capital costs of purchasing and installing a solar panel system, reducing marketing expenses.

Profit was sluggish amid the pandemic as contractors temporarily halted installations. While the economy recovered, rising purchase costs have continued to push down profitability.

The influx of new entrants has pressured solar panel installation companies as price competition has become prominent. Companies must either lower their costs or face the risk of losing business.

SKILLED LABOR IS REQUIRED TO ENSURE PROPER INSTALLATION

Wages remain the second-largest expense for installation services, accounting for almost a quarter of revenue. Appropriately installing solar panels requires skilled labor. Roof installations are dangerous; workers must undergo training and follow safety protocols.

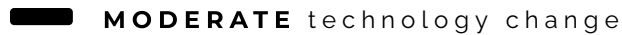
Installation services often subcontract electric work to electricians. Even so, this has done little to shrink wage costs.

CAPITAL INTENSITY



LABOR EXPENSES

Labor expenses are significant in solar installation. Skilled labor ensures panels are installed correctly and function efficiently, making competent labor essential for new entrants.



VALUE-ADDED SERVICES SET COMPANIES APART

The majority of product innovation in solar panels comes at the manufacturing level. Installation services innovate themselves through additional services offered. Offering services for different markets help services carve out a niche. The addition of monitoring services lets consumers keep track of their panels through an already familiar service. It also reduces risk by detecting and addressing issues before they become a bigger problem.

TECHNOLOGICAL INNOVATIONS MAKES INSTALLATIONS A BREEZE

Many companies seek to improve efficiency while reducing costs and creating a safer work environment. In August 2024, The AES Corporation showed off its

new robot, which uses artificial intelligence to make installation easier. AES's robot, Maximo, helps lift heavy panels and place them in the appropriate area, assisting workers in reducing tedious and repetitive tasks. AES states that the robot has installed about 10,000 MW of solar panels and continues working on various projects with Amazon.

REVENUE VOLATILITY

 **MODERATE** revenue volatility

NEW POLICIES PUSH DEMAND UPWARD

The Solar Investment Tax Credit (ITC) was originally set to dip in 2022 and 2023.

The Inflation Reduction Act extended these credits, providing a 30.0% tax credit for individuals who install solar systems on residential property between 2022 and 2032.

RISING ELECTRIC PRICES LEAD TO MORE INSTALLATIONS

Spikes in the price of electric power throughout the period have led to higher electric bills across the country. More consumers switched to solar panels because of rising bills and inflationary concerns.

This has been more apparent in areas with copious amounts of sunlight, where solar panels can harness and convert abundant solar energy into electricity with greater efficiency.

LOW-COST IMPORTS LOWER INSTALLATION COSTS

Tariffs on imported solar panels from low-cost labor countries declined and were eventually waived, causing an uptick in domestic solar panels. Even so, these tariffs are set to be reinstated in June 2024.

More solar panels have led to lower installation costs which stem from the high supply.

REGULATION & POLICY



HIGH regulation



STEADY regulation

RENEWABLE PORTFOLIO STANDARDS

Thirty-six states and Washington, DC, have renewable electricity standards (also called renewable portfolio standards or RPS) that require electric providers to gradually increase the number of renewable energy sources in their power supplies. For example, California's RPS requires 60.0% of electricity retail sales from renewable sources by 2030 and 100.0% by 2045, fueling substantial solar infrastructure investments.

SOLID WASTE REGULATIONS

Solar panels become solid waste at the end of their lifespan or are discarded, requiring them to be federally regulated under the Resource Conservation and Recovery Act (RCRA). Solar panels are tested for toxicity to see if they

would fall under hazardous waste. Certain states also have policies regarding solar panel waste.

INDUSTRY ASSISTANCE



HIGH assistance



STEADY assistance

LOCAL INCENTIVES

Some areas administer tax exemptions or rebate programs for eligible products and installations locally. Some states may also have sales and property tax exemptions. Other states or regions offer solar certificates that pay a lumpsum amount annually. Low-income consumers can also receive loans at lower interest rates to help make the switch.

Questions for Owners

Does your company primarily work with residential or nonresidential construction markets? Can you easily switch between these markets?

Sales & Marketing

Operators in the industry can switch between these markets, depending on the size of their operations. Most contractors work mainly with homes, while

bigger operators focus on larger contracts associated with commercial buildings.

Are you solely focused on new work, or do you participate in remodeling activities?

Sales & Marketing

Operators in this industry are solely focused on new work, as they are installing solar panels that are costly.

Some companies offer maintenance and repair services as value-added bonuses.

What is the size of your staff? How does that compare to your competitors?

Strategy & Operations

Most operators have only a few employees that work mainly with home alterations, while bigger operators focus on larger contracts with commercial buildings.

How does your company compete for contracts with larger businesses? Do you ever find you lack the capacity to deliver on more-lucrative projects?

Strategy & Operations

Most large operators in the industry compete on the basis of quality, especially for lucrative contracts with large projects. These operators typically

do not lack the capacity to deliver on more lucrative projects.

Have productivity issues ever kept you from winning lucrative contracts over larger competitors?

Technology

Lucrative contracts are typically awarded to larger contractors with the resources to complete a quality job at a specific time for the right price.

Companies also compete on delivery time.

Investment in new technology is usually fairly low among builders and contractors. How much does your company invest in new equipment annually?

Technology

Depreciation is very low in this industry since most innovation comes from manufacturing.

Companies can invest in field service operation software to help keep track of installations and deployments.

Do you work with local or national trade associations to advance your company's interests?

Compliance

The Solar Energy Industries Association provides resources and education for its members.

How does your company ensure all health and safety requirements are met?

Compliance

Solar panel installers train employees on safe working practices, proper use of equipment, emergency procedures and awareness of potential hazards.

Companies must follow local, state and federal health standards and regulations or risk business closure.

How many of your clients are return customers?

Finance

Return customers typically involve updating the technology of the solar panels put in place, or replacing older machinery. As a result, returning customers are varied in this industry.

How do your company's profit margins compare with your competitors'?

Finance

Profit margins vary depending on the price of inputs and demand.

Smaller contractors have lower profit margins, while larger contractors with multi-million dollar contracts have higher profit margins.

Do you have a strong reputation among customers? Are you known for your reliability and performance?

Having a good reputation

Much of the work in this market comes from referrals from satisfied clients, particularly building contractors. A business must establish a sound reputation for quality and timeliness to obtain long-term success.

**How do you keep track of the company's expenditures?
What costs can you cut back on?**

Ability to expand and curtail operations rapidly in line with market demand

Successful installation operators learn to read trends in downstream demand and judge the appropriate time to expand or curtail operations (e.g. marketing effort and labor requirement).

Do you have contacts with key distributors and end-users? Are you located close to your target markets and suppliers?

Having contacts within key markets

Maintaining positive relationships with clients (e.g. prime builders, developers and building owners) is important to the success of industry operators.

How do tax credits affect demand? If tax credits are not available, what other ways do you bring in revenue?

Tax credits for energy efficiency

State and federal tax credits for the purchase of solar systems increase the impetus for consumers to invest in such systems.

Do you expect major changes in demand as a result of rising disposable income levels? How do you plan to take advantage of this opportunity?

Per capita disposable income

Solar panel systems are often relatively expensive to install, but new financing models designed to reduce the cost of the system over time have created renewed interest in consumer-level purchases.

What percentage of your revenue comes from corporate demand? Do you gain more revenue from companies or homes?

Corporate profit

Corporate profit gauges the ability and willingness of companies to invest in new or upgraded facilities, among other things, including solar panel systems.

Datatables & Glossary

INDUSTRY DATA

YEAR	REVENUE \$ MILLION	ENTERPRISES UNITS	ESTABLISHMENTS UNITS	EMPLOYMENT UNITS	WAGES \$ MILLION	IVA \$ MILLION	IMPORTS \$ MILLION	EXPORTS \$ MILLION
2005	527	154	809	800	2,128	130		
2006	920	278	1,301	1,288	3,423	223		

YEAR	REVENUE \$ MILLION	ENTERPRISES UNITS	ESTABLISHMENTS UNITS	EMPLOYMENT UNITS	WAGES \$ MILLION	IVA \$ MILLION	IMPORTS \$ MILLION	EXPORTS \$ MILLION
2007	1,403	412	1,962	1,943	5,162	334		
2008	1,878	533	2,452	2,425	6,450	440		
2009	3,075	826	4,226	4,175	11,118	708		
2010	4,526	1,183	6,165	6,086	16,216	1,025		
2011	6,190	1,607	6,344	6,261	19,378	1,378		
2012	7,021	1,863	5,536	5,463	21,104	1,536		
2013	8,279	2,214	6,643	6,555	25,710	1,821		
2014	9,953	2,742	9,408	9,284	35,814	2,200		
2015	14,764	4,224	10,553	10,414	44,266	3,279		
2016	17,810	5,169	10,841	10,698	50,616	3,975		
2017	14,559	4,300	10,984	10,837	47,770	3,266		
2018	14,008	4,152	10,182	10,046	46,298	3,158		
2019	14,863	4,460	10,490	10,353	47,702	3,367		
2020	15,584	4,660	9,994	9,867	45,446	3,548		
2021	17,994	5,419	10,710	10,580	49,792	4,117		
2022	20,269	6,071	10,870	10,746	50,534	4,660		
2023	20,753	6,185	11,009	10,875	51,605	4,761		
2024	21,776	6,451	11,247	11,091	53,396	4,940		
2025	22,931	6,771	11,515	11,334	55,531	5,151		
2026	24,078	7,104	11,872	11,670	57,843	5,374		

YEAR	REVENUE \$ MILLION	ENTERPRISES UNITS	ESTABLISHMENTS UNITS	EMPLOYMENT UNITS	WAGES \$ MILLION	IVA \$ MILLION	IMPORTS \$ MILLION	EXPORTS \$ MILLION
2027	25,105	7,412	12,205	11,986	59,980	5,578		
2028	25,956	7,688	12,584	12,354	62,060	5,771		
2029	26,744	7,940	12,913	12,673	63,912	5,944		
2030	27,670	8,237	13,285	13,032	66,045	6,144		

*Future values are projections made by IBISWORLD.
Figures have been adjusted for inflation and are presented in 2024 currency.*

ANNUAL CHANGE

YEAR	REVENUE %	ENTERPRISES %	ESTABLISHMENTS %	EMPLOYMENT %	WAGES %	IVA %
2005	N/A	N/A	N/A	N/A	N/A	N/A
2006	74.503945128067	80.156316800755	60.815822002472	61	60.855263157895	71.51856202437
2007	52.512872677502	48.026438773658	50.807071483474	50.854037267081	50.803388840199	49.71227063954
2008	33.862392840308	29.3295636834	24.974515800204	24.806999485332	24.951569159241	31.591071493171
2009	63.719166987632	55.097543633704	72.349102773246	72.164948453608	72.372093023256	60.9857039685
2010	47.194751874476	43.154016531995	45.882631329863	45.77245508982	45.853570786113	44.72972304532
2011	36.763970508928	35.812553275539	2.9034874290349	2.8754518567203	19.499259990133	34.46744822383
2012	13.416669647411	15.935755280755	-12.736443883985	-12.745567800671	8.9070079471566	11.50699405104
2013	17.925433169291	18.853667093381	19.996387283237	19.989017023613	21.825246398787	18.511948744017
2014	20.221927657988	23.856040906779	41.622760800843	41.632341723875	39.299883313886	20.81650126943
2015	48.339440705782	54.045258775142	12.170493197279	12.171477811288	23.599709610767	49.06796410086

YEAR	REVENUE %	ENTERPRISES %	ESTABLISHMENTS %	EMPLOYMENT %	WAGES %	IVA %
2016	20.631176106503	22.359481538023	2.7290817776935	2.7270981371231	14.345095558668	21.22803682620
2017	-18.253492558763	-16.8148151827	1.3190665067798	1.2993082819218	-5.622727991149	-17.84704917430
2018	-3.7896382606613	-3.4300086774615	-7.3015294974508	-7.2990680077512	-3.0814318610006	-3.315096131182
2019	6.1043482812034	7.4174431956848	3.0249459831074	3.0559426637468	3.0325284029548	6.629037854048
2020	4.8543649401785	4.4822360600033	-4.7283126787417	-4.6942915097073	-4.72936145235	5.374892929660
2021	15.461872439158	16.294463405904	7.1642985791475	7.2261072261072	9.5629978435946	16.03348163002
2022	12.643709462749	12.027778505576	1.4939309056956	1.5689981096408	1.4901992287918	13.19923850867
2023	2.3861872994591	1.8699257139897	1.278748850046	1.2004466778336	2.1193651798789	2.167406685242
2024	4.9303150081657	4.3097057351605	2.1618675629031	1.9862068965517	3.4705939346963	3.761580126928
2025	5.3026754470559	4.9556671626984	2.3828576509291	2.1909656478226	3.9984268484531	4.258936885140
2026	5.0029436776346	4.9225361473364	3.1003039513678	2.9645314981472	4.1634402405863	4.331534190191
2027	4.2670188597748	4.3298330565018	2.8049191374663	2.7077977720651	3.6944833428418	3.809293410490
2028	3.3877578659316	3.7251409913921	3.1052847193773	3.070248623394	3.4678226075359	3.450810268177
2029	3.0363389788716	3.2817804602037	2.6144310235219	2.5821596244131	2.9842088301644	2.996066471434
2030	3.4636194692582	3.7354222815546	2.8808177805312	2.8327941292512	3.3374014269621	3.361485918090

Future values are projections made by IBISWORLD.

KEY RATIOS

YEAR	REVENUE PER EMPLOYEE \$	REVENUE PER ENTERPRISE \$ MILLION	EMPLOYEES PER ESTABLISHMENT UNITS	EMPLOYEES PER ENTERPRISE UNITS	AVERAGE WAGE \$	WAGES/ REVENUE %	ESTABLISHMENTS PER ENTERPRISE UNITS	IVA/ REVENUE %
2005	29	247,734	25	3	61,160	1	3	1
2006	30	268,754	24	3	65,214	1	3	1
2007	29	271,801	24	3	64,743	1	3	1
2008	28	291,184	23	3	68,183	1	3	1
2009	27	276,567	23	3	63,679	1	3	1
2010	26	279,110	23	3	63,188	1	3	1
2011	26	319,435	22	3	71,103	1	3	1
2012	27	332,662	22	4	72,800	1	4	1
2013	27	322,013	22	4	70,820	1	4	1
2014	28	277,911	22	4	61,423	1	4	1
2015	29	333,538	22	4	74,080	1	4	1
2016	29	351,874	22	5	78,539	2	5	1
2017	30	304,782	22	4	68,366	1	4	1
2018	30	302,555	23	5	68,201	1	5	1
2019	30	311,575	23	5	70,582	1	5	1
2020	30	342,918	23	5	78,068	2	5	1
2021	30	361,381	23	5	82,678	2	5	1
2022	30	401,096	23	5	92,217	2	5	1
2023	30	402,144	23	5	92,261	2	5	1

YEAR	REVENUE PER EMPLOYEE \$	REVENUE PER ENTERPRISE \$ MILLION	EMPLOYEES PER ESTABLISHMENT UNITS	EMPLOYEES PER ENTERPRISE UNITS	AVERAGE WAGE \$	WAGES/ REVENUE %	ESTABLISHMENTS PER ENTERPRISE UNITS	IVA/ REVENUE %
2024	30	407,817	23	5	92,520	2	5	1
2025	30	412,932	22	5	92,752	2	5	1
2026	30	416,260	22	5	92,901	2	5	1
2027	30	418,558	22	5	93,004	2	5	1
2028	30	418,234	22	5	92,989	2	5	1
2029	30	418,446	22	5	93,000	2	5	1
2030	30	418,957	22	5	93,021	2	5	1

Future values are projections made by IBISWORLD.

GLOSSARY

PHOTOVOLTAIC (PV)

The ability to generate electrical energy from light energy, usually from the sun.

GRID PARITY

An equilibrium between the cost and power provided by traditional and alternative energy sources.

SOLAR POWER PURCHASING AGREEMENTS (SPPA)

This contractual obligation sets forth the terms by which a solar power provider will reimburse a third-party financier for paying the up-front costs of

system installation.

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