Solar Bazaar
Design. Finance. Install. Permits. Maintain

Empowering a Brighter Tomorrow

Turn Sunshine Into Savings!

solarbazaar.co.in

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“

The amount of solar energy received by Earth could power a civilization over **100 times larger than ours!**

Elon Musk,
CEO, Tesla Solar

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Why should you consider switching to Solar?

to save over 90% on your electricity bills every month!

1

Enjoy 20-22 years of Free electricity

Reduce or eliminate over 90% of your monthly electricity bills & payback of the solar system takes about 3-5 years.

2

Protect yourself against rising costs

The cost of electricity goes up by 3-10% every year, solar gives you a predictable source of energy & protects you against price fluctuations.

3

Enjoy energy independence

By generating your own electricity, you can become less reliant on the grid and enjoy greater energy independence.

4

Reduce your carbon footprint

Solar energy is a clean and renewable energy source that helps greenhouse gas emissions and combat climate change.

5

Avail Subsidy

The Indian Government offers financial help, in the form of subsidies to homeowners installing solar systems. This reduces the cost of installing solar. It would be best to take advantage of this while you still can; the subsidy will not be offered forever.

6 Low Maintenance

Solar systems require minimal upkeep once installed and can last for decades.

7 Increased Property Value

Homes with solar systems often see an increase in market value

If you're paying **₹15,000** a month for electricity in Gurgaon at ₹8 per unit, your yearly cost is approx **₹2,00,000**. Over the next 25 years, with a 4-10% yearly tariff increase, you'll spend around **₹50 lakhs** on electricity.

But with a 10kW solar system costing **₹6,00,000**(approx) and a government subsidy of **₹78,000**, your total comes to just **₹5,22,000**. Plus, with financing up to 80%, your initial investment could be as low as **₹50,000**.

Would you rather pay **₹50 lakhs** over 25 years, or invest **₹50,000** now and enjoy free electricity for decades?

Did you know?

Electricity bills are expected to double for an average Indian family in the next 5 years because of increasing electricity rates Global warming and heat waves across the country as reported by ET Money in march 2023

Does Solar work in all Indian states & seasons?

Solar energy is a viable source of power in all parts of India throughout the year.
So much so that we can predict the annual power generated by a rooftop solar system

There are, however, some day-to-day and seasonal variations.

.

1

Summer
(March to June)

Summer months provide the best conditions for solar power generation due to clear skies and long daylight hours.
Solar panels operate at peak efficiency during this period, contributing to the highest energy output.

2

Monsoon
(July to September)

The monsoon season brings heavy rainfall, clouds, and reduced sunlight. Solar power generation may decrease by up to 40-50% in regions with intense monsoons, though energy is still produced on cloudy days, albeit at lower efficiency.

3

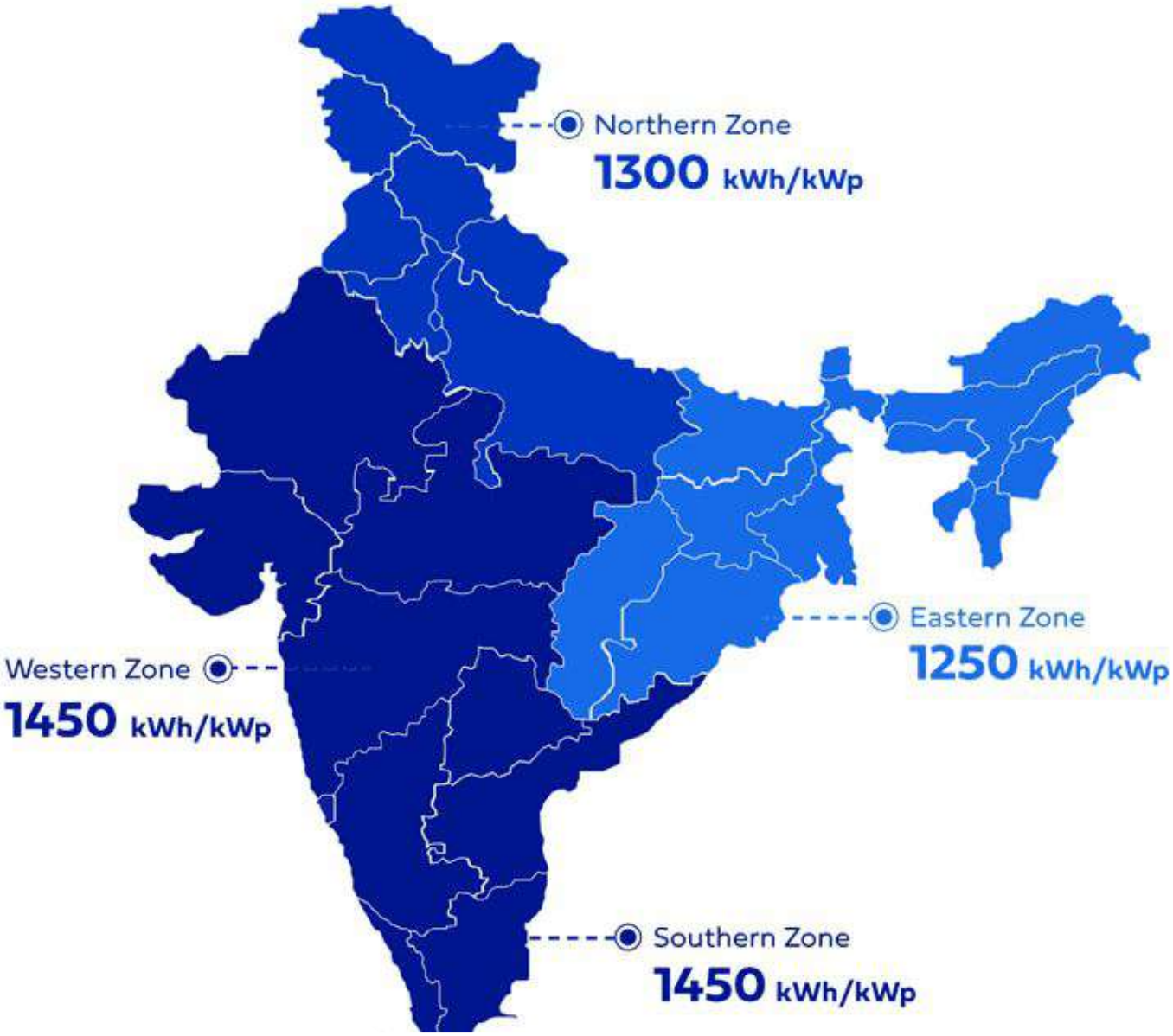
Autumn
(October to November)

Autumn sees a reduction in rainfall, and sunlight becomes more consistent. Solar generation improves compared to the monsoon, although the days are shorter than in summer.

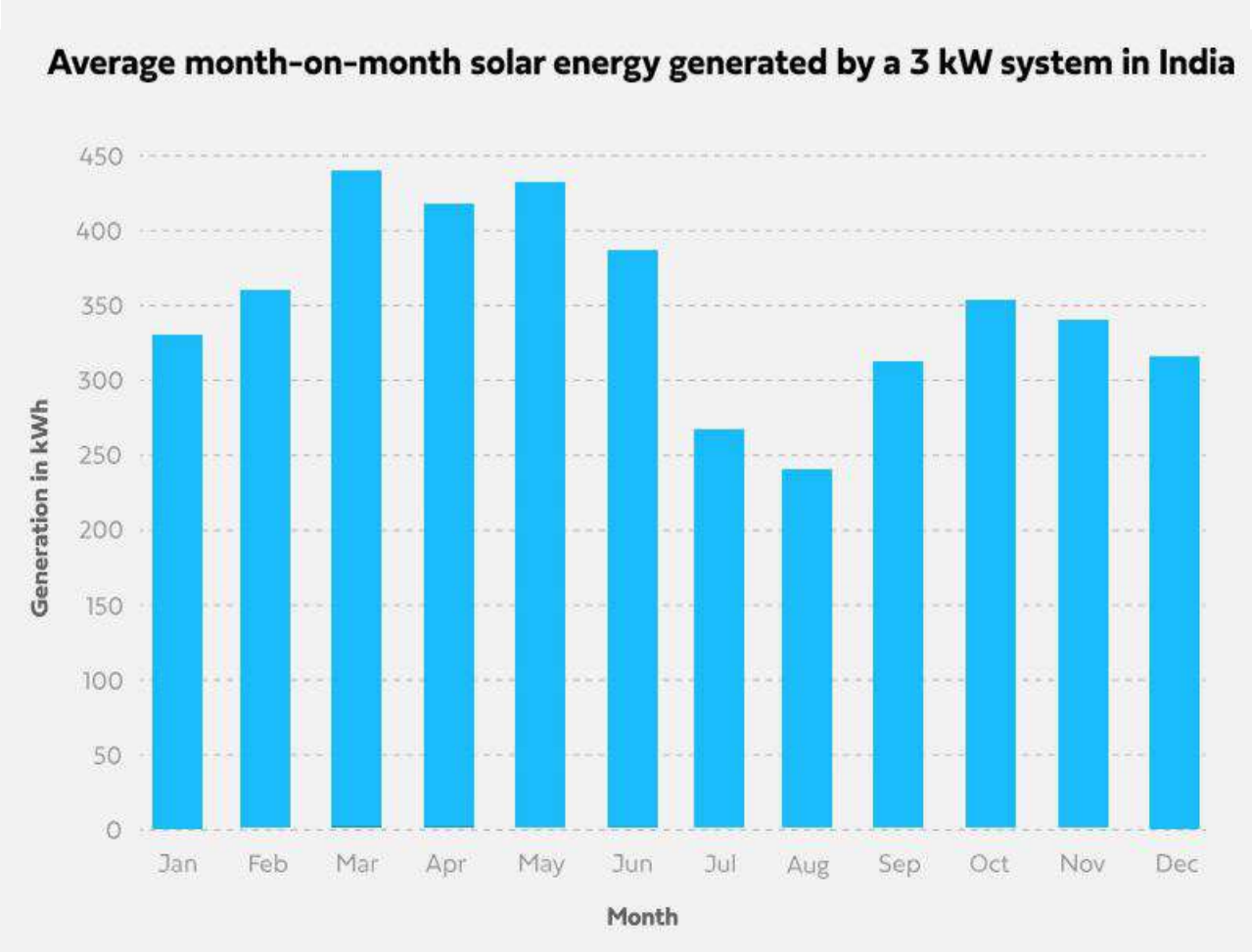
4 Winter

(December to February)

In winter, solar production may be lower due to shorter daylight hours and fog in some northern regions. However, in southern and western parts of India, where the climate remains sunny and mild, solar panels continue to produce significant energy.



Note: Pollution causes lesser electricity production around 1200-1250 kWh/ kWp


Average month-on-month solar energy generated by a 3 kW system in India
Generation in kWh
450
400
350
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

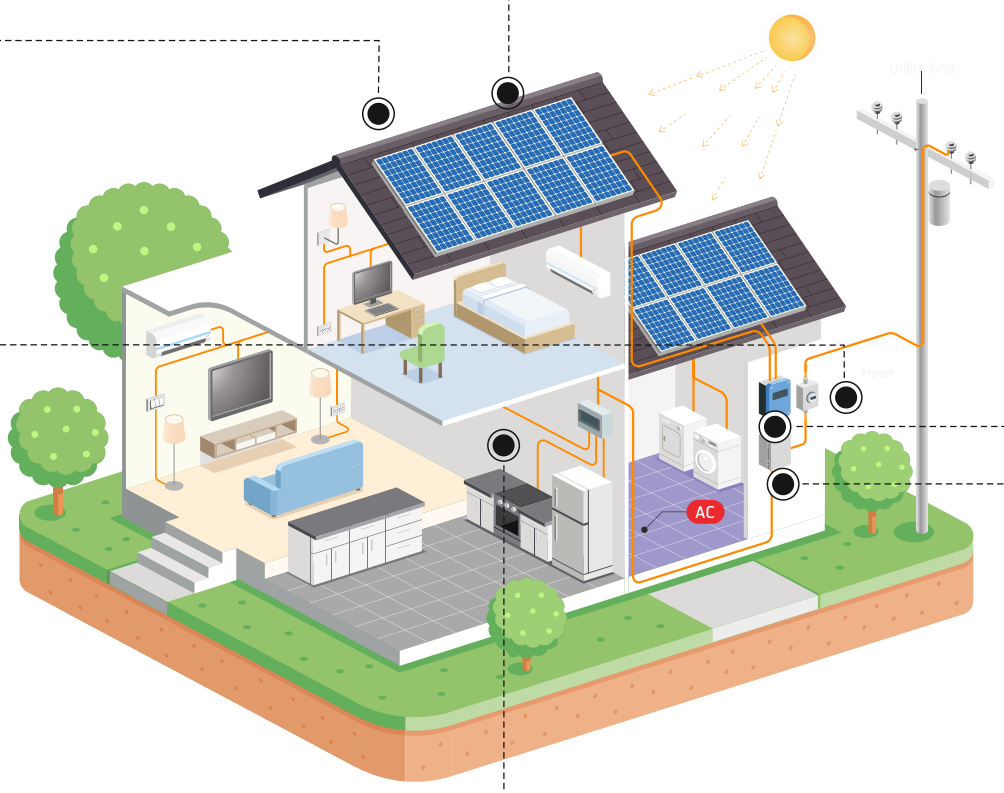
How does a rooftop Solar work?

1 Solar panels:

Solar panels, made of photovoltaic (PV) cells, convert sunlight into direct current (DC) electricity. They are installed on rooftops to maximize exposure to sunlight.

2 Mounting structures:

Roof-hugging aluminium or 6-9 ft steel structures that boost and secure panels to sun-soaking heights, leaving the roof free to move around. The best solar mounting structures are prefabricated in precision labs & are rust-proof.



4 Bi-directional Meter:

The meter measures the amount of electricity consumed and the excess solar energy generated. Under net metering, excess electricity is sent to the grid, and the consumer gets credit for it, reducing their electricity bill.

5 Battery (Optional):

In some setups, a battery is installed to store excess electricity for use during the night or power outages.

3 Inverter:

The inverter is a key component that converts the DC electricity generated by the solar panels into alternating current (AC) electricity, which can be used by household appliances or fed into the grid.

Types:

String Inverter: One inverter for the whole system.
Micro inverter: Each solar panel has its own inverter.

6 Accessories:

These include cables, MC4 connectors, combiner boxes, conduit trays, earthing strips, lightning arrester etc to help the system run smoothly.

Will I Need to Invest a Lot of Time and Effort in Buying Solar?

Switching to solar may seem complex, but with the right provider, the process can be smooth and hassle-free. A reputable solar company will handle everything, end-to-end, ensuring minimal effort from your side. Here's a step-by-step breakdown:

1

Evaluate Your Electricity Needs

Start by assessing how much electricity your household consumes. You can do this by reviewing your monthly electricity bills and calculating the total units used annually.

2

Roof Assessment

Next, your roof needs to be surveyed to ensure it's suitable for solar panels. It should be sturdy enough to support the system and have enough shadow-free space for optimal performance.

3

Choose a Reputable Solar Provider

Find a licensed and experienced solar provider in your area. Check their customer reviews, ensure they offer maintenance services, and feel confident they can answer all your questions.

5

Get a Solar Quote

Once you've selected a provider, request a detailed quote. This should include the cost of the solar components, installation, and any necessary permits.

6

Secure Necessary Permits

Before installation, you'll need permits from your local authorities. The key permit is for net metering, but you might also need permits for load changes, name changes, or a subsidy application. Your solar provider will guide you through this process.

7

Install the Solar Panels

After permits are secured, your provider will install the solar panels on your roof, ensuring everything is done professionally and efficiently.

Connect to the Grid

Once installed, the system will need to be connected to the electrical grid. This requires an inspection from your local electricity provider to ensure everything is up to standard.

8

Enjoy Solar Energy

After the system is connected, you can start generating your own electricity and enjoy the benefits of solar power!

How Much Can You Actually Save by Going Solar?

Your savings will vary depending on factors like your current electricity consumption, solar system size, location, and the cost of electricity in your area. Here's an estimated breakdown of yearly savings based on system size:

Estimated Savings by System Capacity:

System Capacity	Avg. Tariff (₹/unit)	Installation Cost (including Subsidy)	Annual Power Generated (kWh)	Avg. Annual Savings (₹)
2 kW	₹6.5	₹1,25,000	2,800 units	₹18,200
3 kW	₹8	₹1,32,000	4,200 units	₹33,600
4 kW	₹8	₹1,92,000	5,600 units	₹44,800
5 kW	₹9	₹2,47,000	7,000 units	₹63,000
10 kW	₹10	₹5,02,000	14,000 units	₹1,40,000

Note: A solar system typically generates around 3.7 units of electricity per kW per day.

How does Solar compare with Other Investment Options?

Rooftop solar offers a significantly higher return on investment compared to gold, mutual funds, and fixed deposits. Here's a comparison of the potential Internal Rate of Return (IRR) for these four options based on a ₹2.1 lakh investment.

Comparison of Potential IRR for different Investments

Investment Type	Initial Investment	Subsidy	Monthly Savings	IRR Calculation Basis	Estimated IRR
Solar (3 kW System)	₹2.1 lakh	₹78,000	₹3,000	4% annual escalation in electricity rates	Significantly higher IRR
Mutual Funds	₹2.1 lakh	N/A	N/A	Based on past 10-year performance of various mutual funds	Moderate to High IRR
Fixed Deposits	₹2.1 lakh	N/A	N/A	Based on the past 10-year average interest rates of FDs	Low IRR
Gold	₹2.1 lakh	N/A	N/A	Based on gold's performance over the last decade	Moderate IRR

Note:

The estimated cost of a 3 kW solar system is ₹2.1 lakh, with a subsidy of ₹78,000 from the National Portal for Rooftop Solar.

Solar provides ₹3,000 monthly savings and is calculated with a 4% increase in electricity rates annually, offering a much higher IRR compared to other investments like gold, mutual funds, or fixed deposits.

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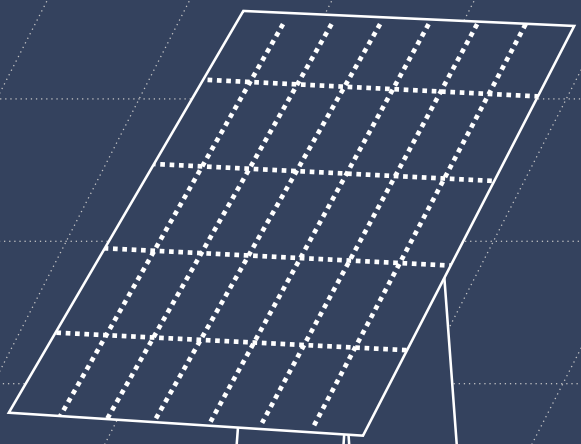
Design



How do you decide the right size Solar system for your needs?

You can power all your appliances with a solar system, as long as you choose the right system size. Here's how to determine the ideal capacity for your needs:

1 Power Consumption

Review your electricity bill over the past year to calculate your average energy use. Divide your yearly consumption by the annual units generated per kW to estimate your system size

Units required	Solar system size
1,400 ⚡	1 kW (1,400/1,400
2,800 ⚡⚡	2,800
4,200 ⚡⚡	4,200
5,600 ⚡⚡⚡	5,600
7,000 ⚡⚡⚡	7,000
14,000 ⚡⚡⚡⚡	14,000

2 Appliance Usage

Estimate the required solar system size based on the energy demands of your appliances.

Appliances type	3 kW	5 kW	10 kW
Air conditioner	No	2	3-4
Fridge	1	1	1
Geyser	1	2	2-3
Washing machine	1	1	1
TV	1	1	2
Pump	No	No	1
LED bulb	3-4	3-4	6-7
Tube light	1-2	1-2	3-4
Fan	4-5	4-5	6-7

3 Shadow-Free Rooftop Space

Ensure at least 100 square feet of shadow-free rooftop space is available per kilowatt of system capacity.

5

Rooftop Suitability

Your roof should be sturdy enough to support solar panels, ideally made of reinforced concrete, metallic sheets, or shingles. Asbestos roofs are not suitable for solar installations.

4

Sanctioned Load by Your Electricity Provider

Check the maximum electrical load you're allowed to draw from the grid to ensure compliance with your discom's rules.

What type of Solar system is best suited for your home?

Two most common types of Solar energy systems are On-grid and Off-Grid systems. What you choose depends on your energy consumption, the size of the roof, and the amount of sunlight that your area receives.

 On-grid solar system	VS.	 Off-grid solar system
Urban Areas	Viability	Rural Areas
Connected to the grid	Connection to the grid	Connected to the battery, not the grid
Yes	Power outages	No
Low	Cost	High
No	Battery Storage	Yes
Yes(upto 10 kW)	Subsidy	No
Yes	Net metering	No

Is a Battery Necessary for Your Solar System?

Battery storage becomes essential when the main power grid is unreliable, and your area experiences frequent or prolonged power outages.

Solar systems typically use two types of batteries: lead-acid batteries and lithium-ion batteries.

There is also a hybrid solar system. Hybrid systems are connected to the grid as well as batteries. Excess electricity left after the battery is charged is fed back into the grid. Of the 3 types, hybrid systems are the most expensive. Price depends on the size of the system as well as the battery's capacity.

Did you know?

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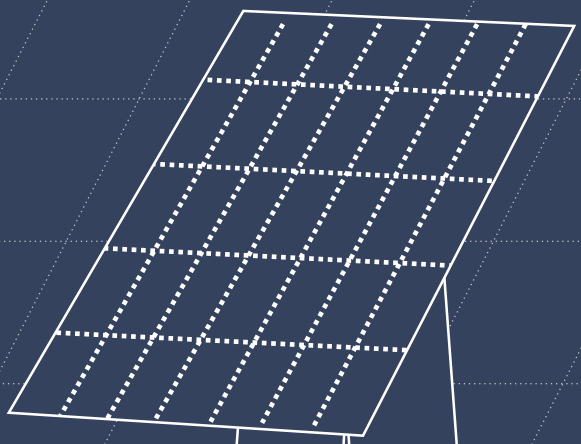
Finance



Rooftop Solar Subsidy and Cost Breakdown

The Ministry of New and Renewable Energy (MNRE) now transfers the solar subsidy directly to the customer's bank account within 30 days of local discom inspection. To avail the subsidy, customers must meet the following eligibility criteria:

Eligibility for Solar Subsidy:

1. Solar panels must be made in India.
2. Panels must comply with ALMM (Approved List of Models and Manufacturers) specifications.
3. The system must be a rooftop on-grid solar system.

Estimated Rooftop Solar Installation Costs (as of March 2023):

System Capacity	Avg. Installation Cost (Excluding Subsidy)	Subsidy Offered	Avg. Installation Cost (including Subsidy)
2 kW	₹1,85,000	₹60,000	₹1,25,000
3 kW	₹2,10,000	₹78,000	₹1,32,000
5 kW	₹2,70,000	₹78,000	₹1,92,000
5 kW	₹3,25,000	₹78,000	₹2,42,000
10 kW	₹5,80,000	₹78,000	₹5,02,000

Important Notes:

1. Costs Vary:

Installation costs fluctuate based on product variants, net-metering charges, panel and inverter types, module mounting structures, and after-sales service options.

2. Cost Assumptions:

- Panels: Made-in-India bifacial monocrystalline panels.
- Mounting: Installed on metallic sheds.
- Inverter: String inverters (standard installation charges).
- No Maintenance Contract: Costs do not include a maintenance package.

Did you know?

You can recover your solar installation costs within 4-5 years!Scan the QR code for a rough calculation of your expected Solar Internal Rate of Return (IRR), which shows the returns your solar system is expected to generate.

What are the Solar Financing Options Available?

You have three main options for financing your solar installation:

1 Personal Loan

- Some banks offer solar loans to homeowners for
- financing solar systems.
- Cons: High interest rates (16-18%) and challenging to secure.
- Collateral: Collateral-free; no personal assets required.

2 Bundle with a Home Loan

- If you're building a new house, you can bundle your solar loan
- with your home loan.
- Note: Only State Bank of India (SBI) offers this option.
- Interest Rate: Lower rate of 10%.
  Collateral: Your home serves as collateral.

3 EMIs via Solar Bazaar

- We offer EMI plans to make switching to solar easier.
- Benefits: Flexible repayment terms, with 1, 3, or 5-year tenures.
- Interest Rate: 11-15% (depending on your credit score, above 700).
- Collateral: The solar system itself serves as collateral.

Interest Rates & Collateral Comparison:

Type	Collateral	Interest Rate
Personal Loan	No collateral required	16-18%
Solar Bundled Home Loan	Your home serves as collateral	10%
EMI via Solar Bazaar	The solar system itself serves as collateral	11-15% (with good credit)

Evaluate your financing options based on interest rates, collateral, and flexibility before making a decision.

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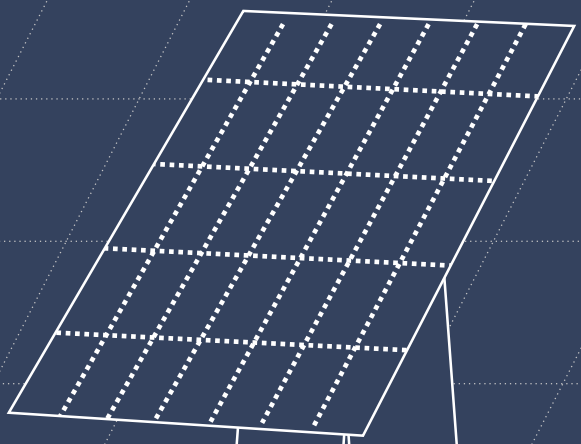
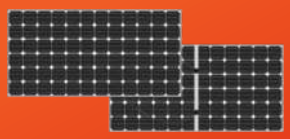
Install



Which type of Solar panels should you choose?

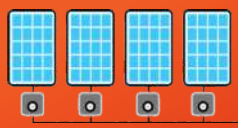
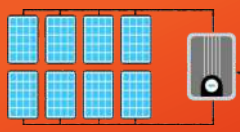
Choosing the right type of solar panel depends on several factors, including the technology that best suits your needs, the brand, and the available roof space. In India, the two main options to consider are monocrystalline panels and bifacial panels.

 Monocrystalline panels	VS.	 Bifacial panels
Single silicon crystal	Composition	Two silicon cells facing opposite directions
One side	Sunlight collection	Both sides
500-watt	Nominal maximum power	540-watt
0.55%	Degradation rate/year	0.45-0.50%
20%	Module efficiency	21.6%

What are the different kinds of Solar inverters?

The most popular solar inverters in India are string inverters and micro-inverters. A string inverter converts DC output from solar panels attached in a series into AC power. Even if one panel stops working, the output of the string of panels dramaticallydrops by as much as 50%

A micro-inverter, which is no more than the size of an iPad, is the best option for cluttered roofs with shadow problems.

 Micro-inverters	VS.	 String inverters
High efficiency(even with oartial shadow)	Efficiency	Lower efficiency (under partial shadow)
Each panel has its own micro-inverter, allowing for customised system design	System design	Limited configuration: changes require system redesign
Individual monitoring of each panel helps in issue identification and troubleshooting	Monitoring	Centralised monitoring may make issue identification difficult
Higher upfront cost	Cost	Less expensive but may require additonal maintenance costs in the long run
If a panel is damged, only generation from the affected panel is lost: remaining panels continue to generate energy	Damage control	If a panel is damged, the entire string of panels does not generateelectricity

Sturdy and Durable Mounting Structures for Solar Panels

Choosing the right mounting structure is crucial for the durability and performance of your solar panels, especially in extreme weather conditions and areas prone to shading. Here are two main categories of mounting structures based on roof types:

1 Reinforced Concrete Rooftops

For concrete rooftops, steel mounting structures coated with hot-dipped galvanized zinc are ideal. The zinc coating makes the structure rust-proof and weather-resistant, ensuring long-term durability. Homeowners often opt for taller mounting structures (6 to 9 feet) to minimize the risk of shadows from surrounding structures or objects, ensuring maximum solar power generation.

2 Metallic Sheet Rooftops

For metallic sheet rooftops, aluminum rail mounting structures are the best choice. Aluminum is lightweight, corrosion-resistant, and strong enough to withstand harsh weather conditions like thunderstorms with wind speeds over 100 km/h.

3 Extreme Weather and Shadow Management

In situations like thunderstorms with winds over 100 km/h, properly installed mounting structures, whether steel or aluminum, ensure that your solar panels stay securely in place.

Moreover, to avoid the impact of shadows on energy production, it's important to install taller mounting structures, especially on concrete rooftops, to maximize sunlight exposure and boost efficiency.

By selecting the right mounting structure, you ensure that your solar panels can withstand the challenges of weather and shading while delivering optimal performance for years to come.

Pro Tip

Ensure your solar installer uses chemical anchoring to secure mounting structures. This technique uses waterproofing chemicals to ensure the structure remains free of water seepage for a decade, while also filling in any minor cracks that may occur.

How to Choose the Right Solar Installation Company?

Selecting a solar installation company is a critical decision, as solar is a long-term investment. Here are the key factors to consider when choosing the right provider:

1

Experience and Reputation

Look for a solar provider with a solid track record and positive customer reviews. Check online reviews, ratings, and testimonials to assess their credibility.

2

Customized System Design and Installation

Ensure the provider can design and install a system tailored to your specific energy needs and preferences. Verify their expertise in system design and installation.

3

Product Quality

Choose a company that uses high-quality solar panels, inverters, and other components. Ensure the products come with reliable warranties from reputable manufacturers.

4 Customer Service

Opt for a provider that offers responsive and knowledgeable customer support. They should be quick to answer queries and address concerns throughout the process.

5 Cost and Financing Options

Compare costs and financing options across companies. Consider the total cost, including installation, maintenance, and operational expenses. Look for providers offering EMI plans to ease the financial burden.

6 Experience with Discoms and Subsidy Assistance

Choose a company that uses high-quality solar panels, inverters, and other components. Ensure the products come with reliable warranties from reputable manufacturers.

Did you know?

Till March 2023, more than 5 lakh families in India had switched to rooftop solar for their electricity needs!

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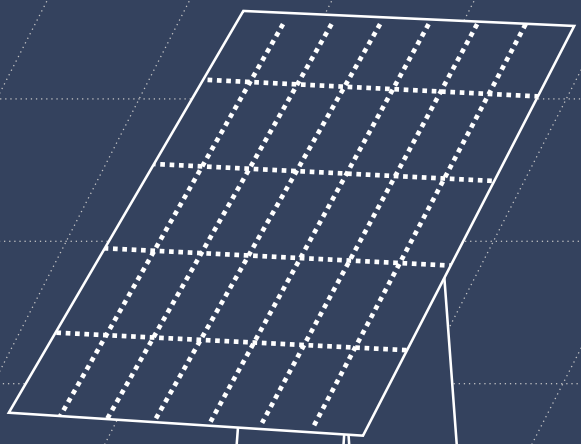
Permits



How Much Does Rooftop Solar Cost? What About Government Subsidy?

Switching to solar may seem complex, but with the right provider, the process can be smooth and hassle-free. A reputable solar company will handle everything, end-to-end, ensuring minimal effort from your side. Here's a step-by-step breakdown:

Key Details:

National Rooftop Solar Portal: Launched on July 30, 2022, by PM Modi, this initiative offers a unified solar subsidy scheme across India.

Subsidy Structure for Homeowners:

System capacity	Applicable subsidy*
1 kW to 2 kW	30,000/kW
2 kW to 3 kW	₹30,000 per kW for the first 2 kW, and ₹18,000 per kW for additional capacity
Above 3 kW	₹78,000 fixed subsidy

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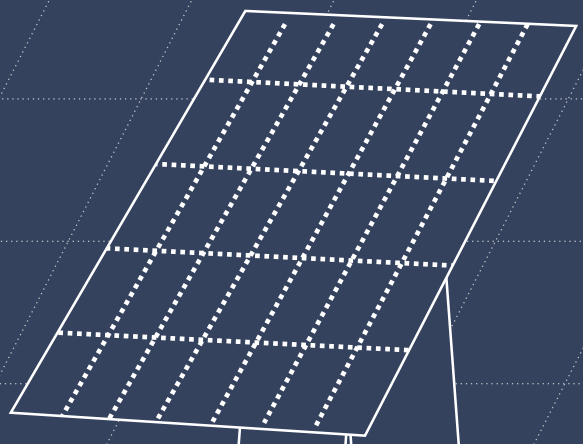

Solar systems difficult to maintain? How frequentely to clean?

Maintenance for solar panels is not just required, but essential for their optimum performance and longevity. Neglecting maintenance can lead to a whopping 40% reduction in power generation, in just a few months.

A solar system should be cleaned and maintained by professionals using the right tools and techniques. Here's what maintenance should include:

Pro Tip

Choose a solar installation company that provides live monitoring of your system via a mobile app. You should be able to keep track of the performance of your solar system to ensure it is generating power at its best capacity.Homeowners Guide To Buying Rooftop Solar