CURRENT NEWS

மின் செய்திகள்

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HOW MUCH POWER CAN YOUR ROOF GENERATE? ESTIMATING ROOFTOP SOLAR POTENTIAL USING NREL'S PVWATTS CALCULATOR

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On average, a 1 kW solar PV system produces approximately 4 to 5 units (kWh) and requires about 100 square feet of shade-free rooftop area. This estimate may vary slightly depending on specific location, weather patterns, and system efficiency.

Before installing a solar rooftop system, it is important for homeowners to understand the basics of estimating both the required system size and the expected energy generation. A well-sized system ensures better savings and efficient use of rooftop space, with minimum investment.

A publication from

CAG

Citizen consumer and civic Action Group

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For a more accurate and location specific estimate, consumers can use the PVWatts Calculator - https://pvwatts.nrel.gov/, a user-friendly free online tool developed by the National Renewable Energy Laboratory (NREL), USA. This tool allows you to :

- Assess rooftop area and the corresponding solar system capacity that can be installed.
- Estimate annual / monthly / hourly energy generation for a given system size.

The PVWatts Calculator uses nearby weather station data, satellite images / maps and realistic assumptions about solar system performance, providing a practical and reliable forecast for homeowners planning to invest in rooftop solar.

By understanding these basics, consumers can make informed decisions, calculate appropriate savings and work more effectively with vendors or consultants to design a system that matches their needs and site conditions.

Steps involved in the estimation of energy generated by the rooftop solar PV system using PV Watts calculator :

Step 1 : Visit the PVWatts Website : https://pvwatts.nrel.gov/

Step 2 : Type the address, city, or PIN code in the location box and click "Go".

Figure 1: Enter the Location | Source: CAG

Step 3 : Based on the location given the tool will automatically fetch the latitude and ongitude of the location, solar and weather data for your area, ensuring accurate estimates. Then click the "go to system info" icon.

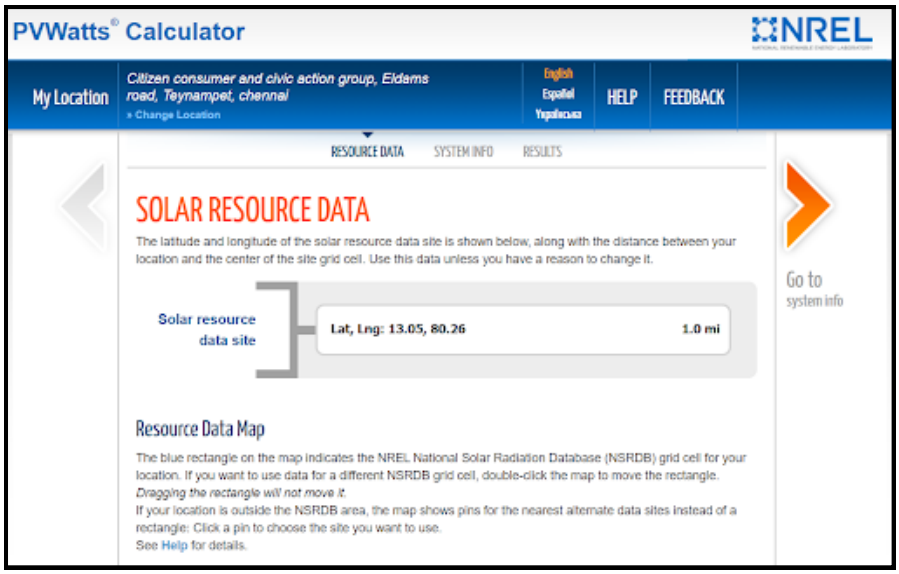


Figure 2: Fetching of Latitude, Longitude data of the location | Source: CAG

Figure 3 : Fetching weather resource data of the location | Source: CAG

Step 4 : Review system settings : In the System Info tab, default values for key system parameters such as DC system size, module type, system losses, tilt angle azimuth angle are prefilled. These pre-filled settings are suitable for general use, but you can customise them to match your specific system design for more accurate results.

For instance, if the consumer has knowledge of the planned system capacity or the orientation of their roof, one can input those details directly.

Additionally, under the Advanced Parameters section, one can account for shading-related losses or other factors that may impact system performance. This is especially useful if parts of their rooftop experience partial shading from trees, nearby buildings, or other obstructions.

By customising these settings energy production estimation can be done more accurately, reflecting their actual site conditions.

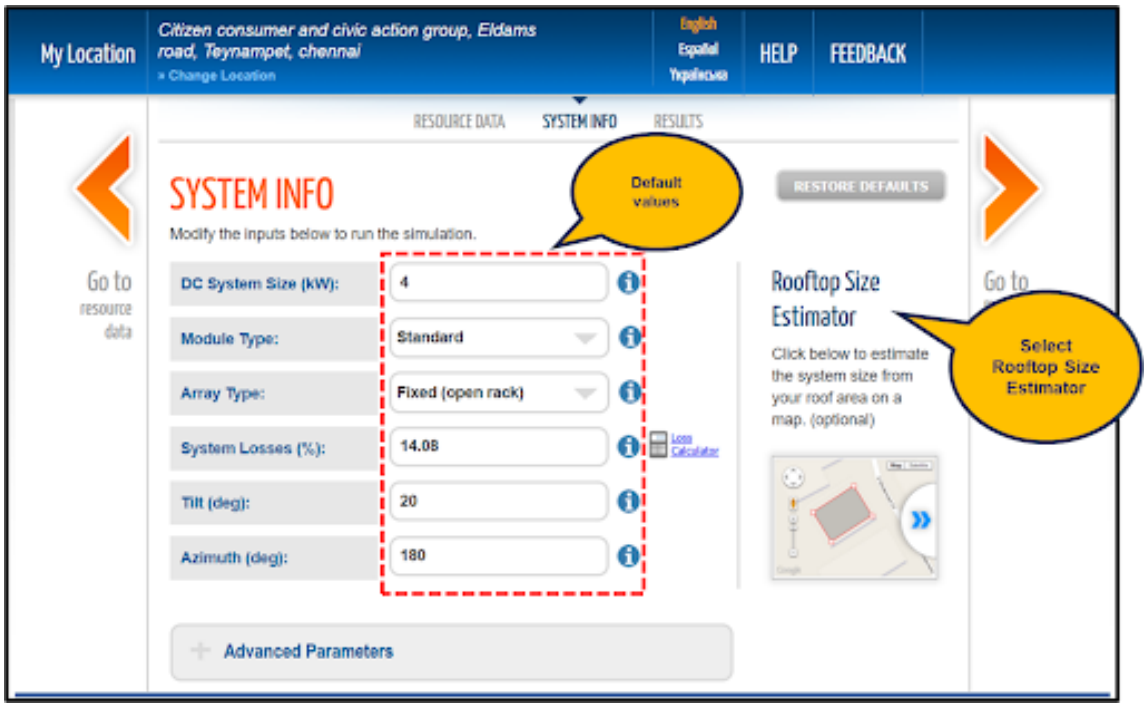


Figure 4 : System info with default values | Source: CAG

Step 5 : In the system info tab, look for the rooftop size estimator icon and click it. The estimator will display a satellite image of the home's rooftop. Click points on the map to draw a polygon outlining the usable, sunny area of your roof where you think solar panels could be installed. Avoid areas with significant shade.

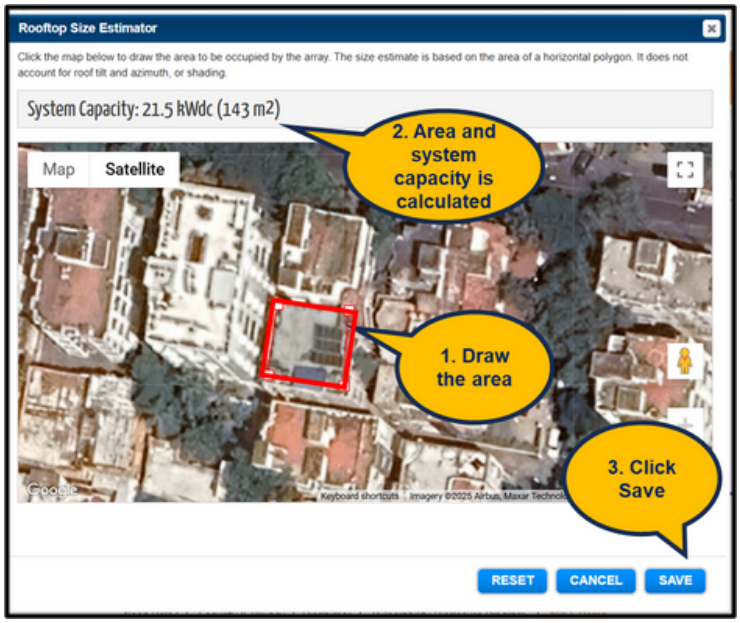


Figure 5 : Rooftop size estimator | Source: CAG

Step 6 : The tool will calculate the approximate roof area you selected (in square meters or feet). Based on this area, it will automatically estimate the maximum solar system size (in kilowatts, kWp) that could potentially fit in that space. Then click the 'save' option. Now this estimated size will appear updated in the system info page.

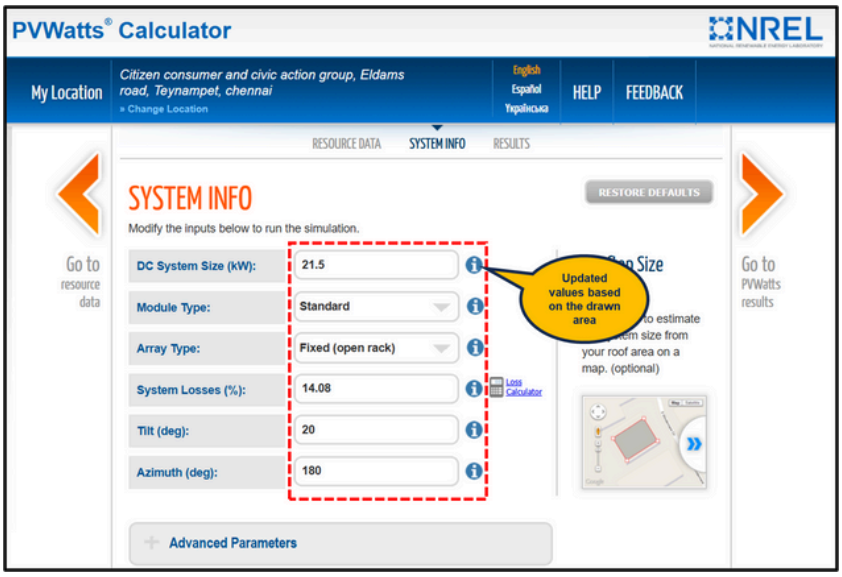


Figure 6 : Updated system info values | Source: CAG

Step 7 : To view results now click on the icon "Go to PV Watts results". The tool will then display the estimated energy production figures :

- Annual Energy Production: The total estimated electricity (kWh) the system could generate in one year.
- Monthly Breakdown: A table showing the estimated energy production for each month, illustrating seasonal variations.

Options are also available to download more detailed data, such as hourly production estimates, for more detailed analysis.

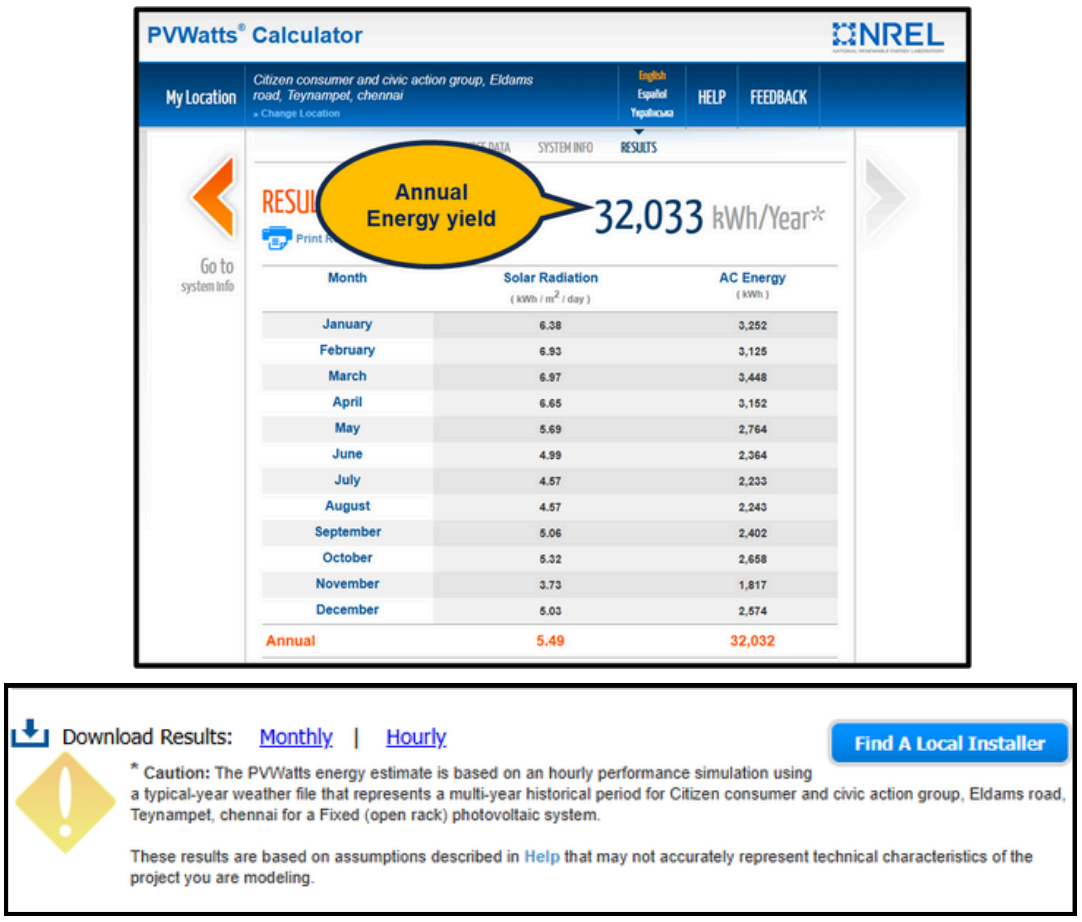


Figure 7 : Result showing annual energy yield | Source : CAG

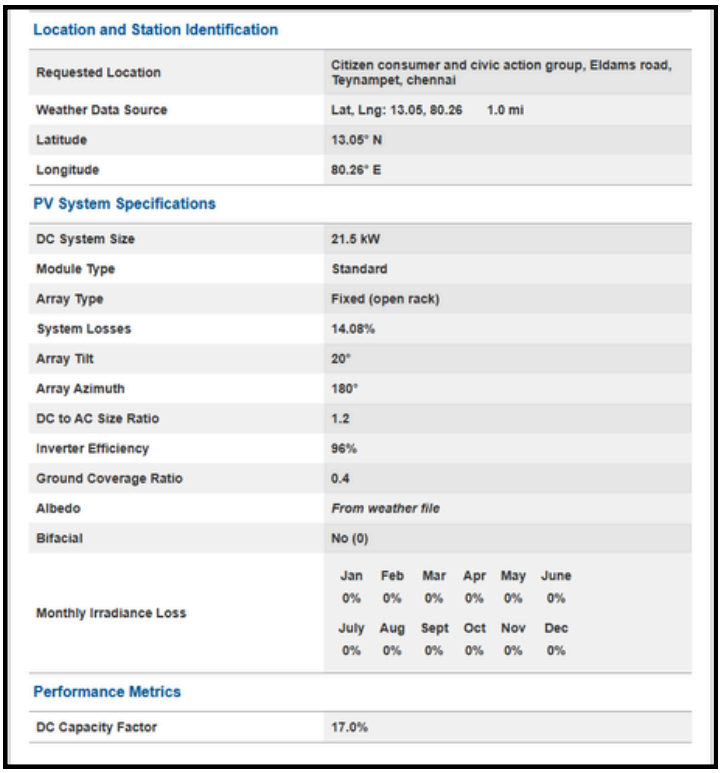


Figure 8 : PV system specifications and default assumptions for energy estimation | Source: CAG

Following the above steps one can estimate how much energy their rooftop solar PV system can generate, from which you can evaluate the cost savings, investment, and payback period. This tool can make investment decisions about installing a rooftop solar, a lot more informed and precise.

CONSUMER FOCUS

The appellant is a domestic consumer living in an apartment building, in whose premises a distribution transformer (DT) has been erected. The horizontal distance between the erected DT and the building is less than 3 metres. The appellant contended that the DT was unsafe, often breaking down due to power fluctuations and burning with flames. Therefore, the appellant registered a complaint with the respondent i.e Tamil Nadu Power Distribution Corporation Limited (TNPDCL) to remove the DT structure. The respondent informed the appellant that the structure was functioning safely, and shifting it could only be done under the Deposit Contribution Works (DCW) scheme.

Unsatisfied with the respondent's reply, the appellant filed a complaint with the Consumer Grievance Redressal Forum (CGRF) for the shifting of the transformer at the cost of TNPDCL (respondent). During the CGRF hearing, the respondent submitted that the transformer was installed in line with CEA safety regulations and therefore cannot be shifted under the cost of the respondent. Therefore, the respondent stated that the only available remedy to the appellant was shifting on a DCW basis, i.e the cost to be borne by the appellant.

After hearing the contentions of both parties, the CGRF determined that the transformer was installed keeping all necessary regulations.The CGRF therefore concluded that the transformer could be shifted only under the DCW scheme. Dissatisfied with the CGRF order, the appellant filed an appeal petition with the Tamil Nadu Electricity Ombudsman.

During the hearing, the Ombudsman observed the following :

1. What necessitated the respondent to install the transformer inside the appellant's premises?
2. Was the transformer following the regulations that ensure its clearance with nearby buildings?
3. Is the appellant's claim for shifting the transformer feasible?
4. Is the appellant's prayer to ensure safety feasible?

Ombudsman's findings:

On the **first issue**, the Ombudsman noted that the transformer was erected 14 years ago as per Regulation 29 of the Tamil Nadu Electricity Distribution Code, 2004.

> *"29. Service Lines:*
> *(11) In storeyed building sufficient space at a suitable place shall be made available free of cost to the Licensee for installing transformers, switchgears etc., in addition to the space requirements stated below:*
> *(12) (For any building/premises requiring LT service connection(s) having either (a) total floor area of 900 square meters and above (excluding the stilt floor/basement floor) or (b) the total demand of all the LT services in the building exceeds 150 kw).*

From the above paragraph, it is evident that any building with a total floor area exceeding 900 square meters must allocate space for the installation of a transformer within the premises. Since the appellant's building has a total floor area greater than 900 square meters, it is subject to Regulation 29(12). This regulation requires the installation of a distribution transformer (DT) structure within the appellant's premises but also ensuring sufficient electrical safety clearances between the transformer and the building.

Regarding the **second issue**, as per Regulation 61 of the CEA (Measures Relating to Safety and Electrical Supply) Regulations 2010, a horizontal distance between the building and the installed transformer structure should be 1.2 meters for voltages above 650V and upto 11000V. During the inspection, the respondent found that the horizontal clearance between the transformer and the building is 2.6 meters. Hence, the appellant's claim of lack of safety has no merit because there is enough space.

On the **third issue**, the Ombudsman determined that the feasibility of shifting the structure was dependent on Regulation 6 of the TNE Supply Code.

> *"(6) Service/line, structure and equipments shifting charge:*
> *(1) The cost of shifting service / line, Structure and equipments shall be borne by the consumer. The consumer shall pay the estimated cost of shifting in advance in full. The copy of the estimate shall be given to the consumer. The shifting work will be taken up only after the payment is made."*

The respondent has complied with the CEA regulations regarding the installation of the DT structure and has determined that there is no option to relocate the DT structure under the license cost. If the appellant believes that the erected DT structure poses safety hazards, they may contact the respondent to request a relocation of the structure on a DCW basis, provided that a suitable location within the premises can be identified.

On the **fourth issue**, the Ombudsman addresses the appellant's concern of heavy fire and sound by referring to TNERC Distribution Code Regulation 16(1)(a):

> *"16. Safety Aspects:*
> *(1) Provisions with respect to safety and electricity supply is dealt in detail under section 53 of the Electricity Act, which reads as:*
> *(1) The Authority may in consultation with the State Government, specify suitable measures for –*
> *(a) Protecting the public (including the persons engaged in the generation, transmission or distribution or trading) from dangers arising from the generation, transmission or distribution or trading of electricity, or use of electricity supplied or installation, maintenance or use of any electric line or electric plant;"*

According to the regulation mentioned above, the licensee is responsible for the safe maintenance of the installation. The respondent has confirmed that periodic maintenance was being carried out at this structure to prevent any accidents, thus adhering to the regulations.

Based on his findings, the Ombudsman upheld the CGRF order, stating that the appellant's plea for the shift of the transformer was only feasible under the DCW approach.

SOURCE: OMBUDSMAN CASE

NEWS FROM TAMIL NADU

Tamil Nadu: Mobile teams to resolve power cut issues in rural areas

angedco has initiated steps to establish mobile teams to monitor and rectify the power cuts in the rural areas, ensuring uninterrupted power supply even during the summer, said the additional chief secretary and chairman and managing director of Tangedco J Radhakrishnan in Thanjavur on Saturday. Speaking to reporters on the sidelines of the Conservation of Biodiversity conference organised by the Society for the Prevention of Cruelty to Animals (SPCA) in Thanjavur, Radhakrishnan noted that the power demand and consumption will increase after 1st week of May, which is likely to be hotter than usual. The wind power generation is expected to increase during May, he said, assuring there won't be power cuts in the current year.

Stating that a cyclonic warning given to the State would result in frequent power cuts, Radhakrishnan said, citing damage to trees, the maintenance teams were instructed to replace the transformers and electric power poles. "Tangedco has been initiating steps to establish mobile teams to monitor and rectify the power cuts in the rural areas across the State on time", he said. He further said that the consumers are more important to Tangedco and the corporation must rectify the issues related to power supply at one's convenience. "We have also instructed the officials to solve any issue related to power cuts even during the late hours," said Radhakrishnan. Earlier, Radhakrishnan distributed awards to 30 individuals who had rescued stray animals and adopted them. Speaking during the occasion, Radhakrishnan said that the people who rear cattle should ensure proper cattle handling, and safety of the public.

SOURCE: DT NEXT, 4 MAY 2025

NEWS FROM ACROSS THE COUNTRY

Energy and efficiency: On India and greater energy efficiency mandates

Despite robust growth in electricity generation over the past two decades, with rapid additions of renewable energy in the past five years, India has been unable to meet its peak power demand, with the deficit widening from 0.69% in FY20 to about 5% in FY24. This reveals constraints in the supply of power — new power production is time consuming, especially if fossil-fuel based, even as India attempts to integrate renewable power into the power grid. Therefore, India must focus on enhancing energy efficiency holistically to reduce power demand, also the quickest and least expensive way to address rising power demand and climate change. This year marks a decade of India's groundbreaking energy efficiency scheme, UJALA, which has helped bring down the price of energy efficient light emitting diode (LED) bulbs from about ₹500 a decade ago to ₹70, enabling its widespread home use. The scheme succeeded as another public energy efficiency measure was baked into the initiative — the Street Lighting National Programme, which led to the installation of over 1.34 crore LED lamps across urban local bodies and gram panchayats, and reducing peak demand by over 1,500 MW. As of January 2025, the government has distributed about 37 crore LED bulbs and enabled the sale of about 407 crore more. But with India's rapid urbanisation in the past two decades and rising per capita energy consumption to meet cooling needs as summers get hotter, peak power demand reached 250 GW last year. India is today the third largest power consumer globally, after China and the United States. Moreover, 70% of its energy output continues to be from coal and India has plans to add another 90 GW of coal-based capacity by 2032. What is needed now is greater energy efficiency mandates across sectors such as buildings, home appliances and the country's sprawling MSMEs.

SOURCE: THE HINDU, 28 MAY 2025

WORLD NEWS

Global Solar Council marks 10 years of PV progress

Industry body the Global Solar Council (GSC) is marking its 10th anniversary by urging governments and investors to step up efforts to turbocharge the next decade of PV growth. GSC said that with over 2TW of solar PV installed, 4.9 million jobs created, and more than 2.4 billion tonnes of carbon dioxide emissions avoided, solar energy is reshaping the global energy system. The trade body said the next decade is a chance to continue driving forward the growth of solar. As the world looks to triple global renewable energy capacity by 2030, GSC is calling for urgent action to fast-track permitting, scale investment in grids and storage, lower the cost of finance, and build inclusive solar markets that reach every region and community. To celebrate its milestone anniversary and encourage the acceleration of future solar developments, GSC will be hosting a series of events, roundtables, and campaign activations at all major industry and political events throughout the rest of the year.

Launched at COP21 in 2015, on the sidelines of the historic signing of the Paris Agreement, GSC was established to serve as the unified voice of the global solar PV industry. Over the past decade, it says it has expanded its reach, strengthened international partnerships, and grown into a platform for real-world collaboration – co-ordinating global action to address persistent barriers and accelerate progress. GSC chief executive Sonia Dunlop said: "The last decade was about proving what solar can do. The next will be about ensuring it becomes the world's leading electricity source.

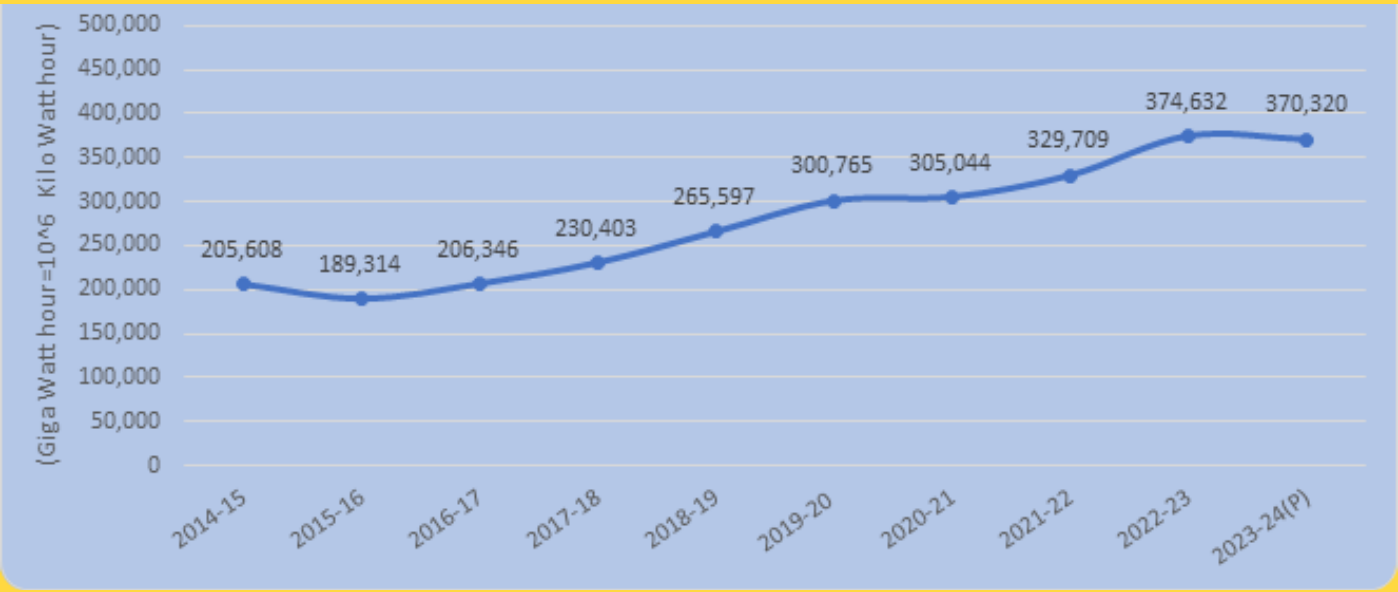
"From 2TW today to over 8TW by 2030, we know what's needed: cheaper and more accessible finance, smarter grids, investment in storage, resilient supply chains, and a skilled global workforce. That's what will unlock the full potential of solar." Today, solar PV is installed in more than 190 countries, and costs have fallen by more than 80% in many markets.

SOURCE:RENEW.BIZ 05 MAY 2025

PUBLICATIONS

- **Rooftop Solar Installation - A Simple Practical Guide, CAG**
- **PM Surya Ghar Yojna - A Consumer Manual, CAG**
- **Rooftop Solar PV Systems- FAQs, CAG**
- **Residential Rooftop Solar PV Systems - A Technical Guide, CAG**
- **Tamil Nadu's Solar Energy Policy and Regulations: A Consumer's Guide, CAG**

GROSS GENERATION OF ELECTRCITY FROM RENEWABLE SOURCES OF ENERGY (2014-2024)



SOURCE: PIB, MARCH 2025

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