Rigidity Remains

The clouds over India's bright rooftop solar potential

Shantanu Roy, Project Manager, Energy and Power Sector, Center for Study of Science, Technology and Policy

The Government of India, in 2015, had set an ambitious target of installing 100 GW of solar capacity by 2022. The target included 40 GW of rooftop solar (RTS) systems and 60 GW of ground-mounted utility-scale solar (GMS) systems.

The growth in RTS was expected to be huge, considering its estimated market potential of 124 GW (as per a 2014 study by The Energy and Resources Institute). Another factor expected to favour the growth of RTS was the large number of readily available roofs in households, office buildings (both government and private), commercial and industrial (C&I) establishments, educational institutes, etc., all over the country.

However, as of March 31, 2022, the total installed RTS and GMS capacity stood at 6.65 GW and 45.79 GW, respectively. While 76.32 per cent of the GMS target was achieved, only 16.61 per cent of the RTS target could be reached. Further, only five states/UTs, namely Uttarakhand, Gujarat, Chandigarh, Rajasthan, and Daman & Diu could achieve more than 30 per cent of their RTS targets. A total of 27 states/UTs could not achieve even 20 per cent of their RTS targets. In fact, only three states (Gujarat, Rajasthan, and Maharashtra) have been able to install more than 500 MW of RTS capacity.

There are a number of factors that have kept RTS from growing on the expected lines. These include high upfront system costs and the lack of financing options, lack of consumer awareness, tedious subsidy approval process, and inconsistent net-metering regulations.

Upfront system cost and the lack of financing options

A majority of potential RTS customers (residential and C&I) require loans for setting up their RTS systems, but the poor availability of loans for RTS systems acts as a deterrent. Residential customers are impacted the most. In the absence of financing options, a residential customer generally needs to pay an upfront equity cost of around Rs 100,000 or higher, depending on the system size. This is a

significant investment for most households in the country. So, even though residential customers can avail government subsidies for RTS systems up to a size of 10 kW, they would still be required to bear a reasonably large upfront investment. Similarly, small C&I customers are required to make a significant upfront investment due to the unavailability of financing options.

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Lack of consumer awareness

The lack of awareness and understanding of RTS benefits among the potential customers is another major challenge. This problem is bigger for residential customers who are generally unaware of RTS technology and its benefits in the household context. There is also a lack of easy-to-understand and readily available sources of information about RTS. Consequently, most of the customers have to depend on the Engineering, Procurement and Construction (EPC) vendors for such information. These vendors, particularly in the residential RTS space, are generally small firms or start-ups that may not always have the requisite skilled workforce available to adequately train the customers about RTS systems.

Over the last few years, there has been a gradual increase in consumer awareness, mainly through word of mouth. However, a much bigger increase is required for a desired rise in RTS uptake. RTS awareness campaigns (online and offline) organised by state nodal agencies, distribution companies (discoms), EPC vendors, think tanks, etc., covering a vast number of consumers could be the way forward. With the right know-how about the RTS system and its benefits over time, customers would be more willing to take the next step in their solar journey.

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Subsidy approval process

Residential RTS customers (earlier educational institutes also) get the benefit of central and state government subsidies. Generally, EPC vendors deduct the subsidy value from the project cost. So, the customers are required to pay an upfront cost which is the project value minus the subsidy amount.

The EPC vendors are required to complete the installations, commission the system, and then submit the customer files to the respective state nodal agency/discom office. The subsidy amount is released to the EPC vendors as and when a file is approved by the nodal agency/discom, provided there are sufficient funds available with these offices for subsidy disbursements. The process can take months, which means that the funds of EPC vendors get blocked for an extended period of time. This scenario is not ideal for the EPC vendors, who are already working at highly competitive rates. As a result, most of the leading EPC vendors have not shown much interest in residential RTS, negatively impacting overall RTS growth.

In February 2022, the Ministry of New and Renewable Energy announced a simplified procedure for RTS installation, and subsidy approvals and disbursement. For this purpose, a national portal for registering applications would be launched. Customers would be required to apply for residential RTS systems on this portal, and the subsidy would be directly credited in their bank account after system commissioning and the necessary approvals. This would be favourable for EPC vendors and would motivate them to take on more projects in the residential RTS space.

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Net-metering regulations

The regulatory framework significantly impacts RTS growth in the country. The state-level policy support for the RTS space has not been consistent, especially for the C&I segment, resulting in slow growth.

The net-metering regulations in the RTS space pose substantial challenges. There have been several changes in the net-metering cap over the years—it has been varying from 1 MW to 500 kW, to even just at a proposed 10 kW (as per the Union Power Ministry's first draft of Electricity Rights of Consumers Rules, 2020). A low net-metering cap would make solar energy generation unprofitable for the C&I, and the micro, small, and medium enterprises (MSME) segments in particular.

As most states allow net-metering for RTS systems up to 1 MW, the C&I customers generally go in for RTS systems up to 1 MW only for availing the net-metering benefits, even when they have a much larger roof area available and higher sanctioned loads.

Also, such frequent fluctuations in net-metering regulations leave the potential customers in a state of confusion over the RTS capacity they should get installed to avail the maximum benefits. Many leading EPC vendors have also stayed away from the RTS space due to such policy fluctuations.

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The pandemic effect

The global economic fallout of the Covid-19 pandemic — manifested most clearly in higher prices — has also affected the growth of RTS in India. The increase in the prices of major items, solar panels in particular, has increased the overall price of RTS systems. For residential RTS, since the benchmark prices have to be followed, many EPC vendors do not find the residential RTS space profitable and stay away from it. For other RTS systems, the increased price for end customers has caused many of them to postpone their plans for RTS system installation.

Further, as people have become more cautious in making big investments, many households and other customer segments have postponed or even cancelled their plans to get an RTS system.

Consistent policies and regulatory processes across the country, along with higher net-metering caps, and simplification of the subsidy approval process can help accelerate the growth of RTS.

Measures to boost RTS

Given the current state of RTS in India, it is imperative that the necessary steps to ensure its progress is taken with utmost urgency. Making financing options for RTS systems readily available across all customer segments could lead to huge growth in RTS uptake. In January 2022, the State Bank of India, in partnership with Tata Power, launched Surya Shakti Cell, an end-to-end digital platform for a hassle-free journey for loan applicants (households as well as business entities) for financing solar projects up to 1 MW. This is a welcome move from India's leading lender. However, many more such ventures would be required to reach the maximum number of customers. The central government could mandate the public financial institutions and other key lenders to create custom products for lending to consumers in the RTS space. This would also help make the space more attractive to EPC vendors and developers.

Further, consistent policies and regulatory processes across the country, along with higher net-metering caps, and simplification of the subsidy approval process can help accelerate the growth of RTS. Such steps would not only help India move closer to the 100 GW solar target, but also set the tone for achieving its 300 GW solar target by 2030.