Masterclass

Rooftop Solar Market in India: Creating Value for Discoms

18 July 2019 | 1130 – 1500 hrs

Hyatt Regency, New Delhi

Decentralised energy sources such as grid-connected rooftop solar are shifting the electricity distribution paradigm across the world. The grids are no longer unidirectional and centralised, but multidirectional and decentralised. With a target to add 40 GW of rooftop solar capacity by 2022, rooftop solar installations in India are growing, slowly but steadily. The proliferation of rooftop solar systems across the distribution network fundamentally changes the way distribution companies (discoms) conduct business. With an effective strategy and new business design discoms can maximise the benefits from this transition and minimise losses.

To help discoms prepare and adapt to the energy transition, developing strategies to advance the deployment of rooftop solar while optimising for the technical and commercial impacts will be critical. The Council on Energy, Environment and Water (CEEW) has worked with distribution companies in Delhi to develop a toolkit to plan large-scale grid integration of rooftop solar. It consists of two tools – a) a tool for discoms to estimate the economic value of integrating rooftop solar into the grid and b) a decision-support tool for rooftop solar business models led by discoms.

To introduce the toolkit to officials from discoms around the country, regulators, policy makers, state nodal agency representatives, and other relevant stakeholders, CEEW is hosting a masterclass on 18 July from 11:30 am to 3:00pm in New Delhi as part of *Energy Horizons 2019*, the annual flagship event of CEEW. With this masterclass we aim to:

- Introduce a **framework that accurately assess the benefits and costs** of integrating rooftop solar into the distribution grid
- Introduce multiple **innovative discom-led rooftop solar business models**. And demonstrate a decision-support tool that compares different business models for respective distribution geographies.
- **Train participants in using the tools** for their respective license area and integrate it into their decision-making process
- Receive **feedback from the participants to improve the tools** to make them more valuable to discoms and other relevant actors

Part I – Grid integration of rooftop solar: An economic loss/gain to discoms?

Assessing the value of grid-connected rooftop solar (VGRS)

Under the current regulatory regime, installing a rooftop solar system results in bill savings for the consumer who owns the system. However, the compensation mechanism for solar generation does not account for its impact on discoms, which is a function of the time of generation, location, and the consumer category (high or low paying etc). There is a need to assess the actual value of the installed rooftop solar capacity within the discom distribution network to understand its real impact on their finances. Responding to this need, CEEW has developed a methodology to assess the commercial impact of grid-connected rooftop solar on Indian discoms. The VGRS (Value of Grid Connected Renewable System) tool, developed in partnership with BSES Rajadhani, assesses the

value of rooftop solar at the distribution transformer level by factoring in benefits such as the avoided power purchase cost, avoided capacity procurement, avoided transmission charges, grid decongestion and costs such as revenue loss, administrative costs, etc.

This tool will provide insights on the cost of integrating rooftop solar into the grid, and thus help discoms in developing strategies to optimise the rooftop deployment in their distribution area. It will also enable them to identify strategic areas and consumer segments to target, as well as develop better demand side and peak load management plans.

Part II – Grid integration of rooftop solar: Choosing the appropriate business models

Rooftop solar business model decision-making tool

To optimise the benefits of rooftop solar deployment in respective discom distribution areas, one of the best strategies for the discoms is to have a targeted rooftop solar programme by implementing innovative business models. Given the slow uptake of rooftop solar in the residential sector there is a need for new market interventions that can address the concerns of different consumer segments and increase uptake. Discoms will also benefit from reduced cross-subsidy burden if there is an increased uptake in the residential sector. By leading such interventions, a discom can target strategic geographies and consumer segments, optimise the deployment, and create new revenue streams for themselves.

The suitability of a discom-led business model depends on the priorities and characteristics of the discom – such as geography, demography and built-up area. Parameters like average consumption per consumer, predominant building types, and consumer mix can determine whether a business model will be feasible or not. Choosing an effective model is crucial for the success of a rooftop solar programme. The decision-making tool helps discoms compare different business models and identify suitable models based on their objectives, target consumer segments, and other additional parameters. Discoms can choose from multiple priorities such as adding new revenue streams, attracting consumers from low-paying categories, or level of difficulty in implementation. The tool list suitable business models, their characteristic features, and a preliminary cost-benefit analysis for the target consumer. By choosing business models that meet their priorities, discoms will be able to maximise their value addition while promoting the adoption of rooftop solar systems in their service area.