Solar Photovoltaic (SPV) Power

Tamil Nadu is rich in solar energy resource with substantial amounts of barren and uncultivable land. Solar irradiation are in the range of 5.5 to 6 kWh/m^2/day. As per NISE estimates, the State has a solar power potential of ~18 GW. The State has a very progressive solar policy, which substantially incentivizes solar energy development while minimizing the red tape associated with regulations and permissions. Although the growth of solar in the state has been modest in the recent past, growing to around 2.3 GW by 2017, the State has firm plans to add substantial amounts of solar capacity into its system. The state government provides various incentives like exemption from electricity duty and cross-subsidy surcharge & additional surcharge for power generated from large-scale solar projects. It also facilitates development of supporting infrastructure such as transmission network, water supply, and internal roads for solar parks. TNERC also came out with regulations for Forecasting, Scheduling and Deviation settlement framework for solar and wind generation in Tamil Nadu which would provide a mechanism for integrating the RE capacity addition. Tamil Nadu has target to add around 5.3 GW of ground mounted solar capacity by FY22 to meet its RPO and contribute to the national target of 100 GW.

Level 1

Level 1 assumes that solar PV capacity addition will be significantly slower as compared to targets set for the State. Large scale integration of solar power could continue to remain a challenge and environment related externalities of conventional power will be un-priced. Capacity will reach around 5 GW by 2025 and then will gradually increase to 9.7 GW by 2050.

Level 2

Level 2 assumes that the state will achieve its target to add around 5.3 GW of ground mounted solar capacity by FY22. Thereafter, the capacity addition would follow the same trajectory and capacity will increase and reach up to 10.3 GW by 2040 and 12 GW by 2050. Full potential of 18 GW will still not be realized, which could be owing to challenges related to large scale integration of solar power.

Level 3

Level 3 assumes that prices of solar modules could further decrease due to increased efforts of the government for integration of solar power. The state will capacity addition will achieve its 7.7 GW of ground mounted solar capacity by 2025. Thereafter, trend will continue and installed capacity will reach 12.6 GW in 2040 and 14.7 GW by 2050.

Level 4

Level 4 is a more aggressive scenario assuming a large increase in solar capacity, which could be likely if technology costs continue to fall, fossil fuel prices increase, or supportive government policies. This level assumes no barriers to capacity additions in solar power. Ancillary markets will be developed to support large scale grid integration of renewable energy. The State will achieve 15.1 GW by 2040 and will reach near to its potential of 17.7 GW by 2050.