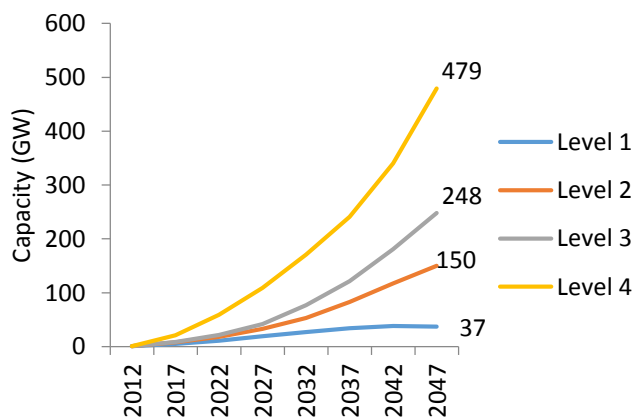


## SOLAR PHOTOVOLTAIC POWER (SPV)

With 941 MW installed in the country as of 31st March 2012, Solar PV was possibly the smallest in terms of supply from any one resource. The present capacity is 2517 MW (May 2014) most of which is located in the states of western high solar resource states of Gujarat and Rajasthan. The target for grid connected solar power (PV and CSP) under the JNNSM is set at 20 GW by 2022. However given the present price advantage of PV over CSP it looks likely that a significant share of the 20 GW would be done by PV. Going beyond the JNNSM, the National Tariff Policy was amended in 2011 to have a separate solar RPO for all obligated entities in the country. This is expected to begin with 0.25% in 2012 and increase to 3% in 2022. According to MNRE, this translates to a need of roughly 34,000 MW in 2022. Most of the solar PV plants are based on either c-Si or thin film technology.

### Solar PV Capacity (GW)



### LEVEL 1

Level 1 assumes that solar PV capacity addition would be significantly slower than that prescribed under the JNNSM or as required under the NTP. Costs of solar power would continue to be high while carbon/externalities of power generation would continue to remain un-priced. Similarly reliably integrating variable generation remains a challenge. Capacity would increase to roughly 11 GW by 2022, peak at 37 GW in 2047.

### LEVEL 2

Level 2 assumes that the capacity addition would follow the JNNSM trajectory. By 2017, capacity would reach close to 8 GW in line with the 12th Plan projections, while by 2022 it would reach 17.9 GW. Capacity addition increases strongly thereafter culminating in a cumulative capacity of 150 GW by 2047. This implies a 35 year CAGR of 16% (2012-2047).

### LEVEL 4

In this scenario, there is absolutely no barrier (economic, social or technical) to the growth of solar PV. There is a sharp drop in solar and wind prices coupled with significant increases in fossil fuel prices, especially coal. Fossil fuel externalities are priced. Smart grids, Demand response and storage are in place. Similarly, forecasting/dispatch and reliable grid integration is taken care of. Energy security is consciously factored in energy planning and land is not a constraint. In this level, capacity increases to 60 GW by 2022 in line with the new target adopted by the Government. By 2042 it reaches 340 GW and by 2047 a high of 479 GW.

### LEVEL 3

Level 3 assumes steady drop in solar PV prices and the marginal increase in fossil fuels prices thus making Solar PV economically competitive. Capacity addition in this scenario would be slightly higher than the JNNSM resulting in 21.5 GW in 2022. It would cross the 100 GW mark by 2035 and finally reach 248 GW by 2047.