

## Gas Power Stations

Development of gas-based power generation in Tamil Nadu started way back in 1990s. By year 2000, total installed capacity of gas-based power plants in Tamil Nadu was 120 MW which included Basin Bridge gas-based station. In the last fifteen years (from 2000 to 2015), installed capacity of gas-based power plants have increased to 1 GW. However, most of these power stations are operating at a very low plant load factor due to non-availability of gas. The present analysis deals with grid connected gas-based plants and how they will grow under different scenarios. It is expected that gas-based power will be vital, not only to meet peaking demand but also to balance intermittent generation from renewable energy sources. Further in all the four levels, it is assumed that existing plants which are under construction will be commissioned as per plan.

### Level 1

Level 1 assumes that only there will be no gas-based capacity addition thereafter, which could be because of issues related to fuel availability, gas infrastructure, lack of policy support, etc. The total installed capacity will remain at 1 GW. Further, it is assumed that existing plants will continue to operate at 30% capacity factor which will result in generation of 2.7 TWh by 2050.

### Level 2

Government interventions can improve gas availability slightly. There will be an increase in the total installed capacity which will reach up to 1.4 GW by 2050 and plant load factor will also improve to 50% in 2050. This will result in increase in electricity generation to 6.2 TWh in 2050.

### Level 3

Level 3 assumes a slightly higher growth in installation of gas-based power plants. This could be because of increase in fuel availability, improved gas infrastructure, and need for balancing power to manage renewable generation. Total installed capacity will reach 1.8 GW by 2050 and plant load factor will also improve and reach up to 60% in 2050. Further, due to technological advancements conversion efficiency will improve to about 64% by 2050, resulting in electricity generation of 9.4 TWh by 2050.

### Level 4

Level 4 is a more aggressive scenario wherein installation of gas-based power plants will increase at a much faster rate as compared to historic trend. This development could be due to improved gas availability from both domestic and imported sources and improvement in gas infrastructure. Total installed capacity will reach up to 2.3 GW by 2050 and plant load factor will also improve significantly reaching to 70% in 2050. This will result in increase in generation from gas-based power plant to 13.9 TWh in 2050.

Gas Based Installed Capacity

