

Gas Power Stations

Development of gas based power generation in Andhra Pradesh started way back in 1990s when the first unit of Vijjeswaram Gas Power Station (33 MW) was commissioned. Subsequently 4 more units were commissioned by 1998 which led to increase in total installed capacity at Vijjeswaram Gas Power Station up to 272 MW. By year 2000, total installed capacity of gas based power plants in existing Andhra Pradesh (excluding Telangana) was 694 MW which included Vijjeswaram, Godawari and Jegurupadu power stations. In last fifteen years (from 2000 to 2015), installed capacity of gas based power plants have increased to 3.2 GW. However most of these power plants are lying idle or 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 the existing plants under construction will be commissioned by 2020. There will be no gas-based capacity addition thereafter due to issues related to fuel availability, gas infrastructure, lack of policy support etc. The total installed capacity will reach up to 5 GW by 2020 and will remain same. However the plant load factor of gas based power plants will improve from existing 13% to 40% by 2050 which will result in increase in generation from 3.6 TWh to 16 TWh by 2050. Share of gas based plant in all level 1 scenario would be 6% of installed capacity by 2050.

Level 2

Gas availability will be slightly improved and due to government interventions, utilization of existing stranded assets will increase. Historical trend will continue and more capacities will be added in the system, however, at slower rate. Total installed capacity will reach up to 12 GW by 2050 and plant load factor will also improve to 45% in 2050. This will result in increase in electricity generation from 3.6 TWh in 2015 to 45 TWh in 2050. Share of gas based plant in all level 2 scenario would be 8% of installed capacity by 2050.

Level 3

Level 3 assumes a slightly higher growth in installation of gas based power plants due to increase in fuel availability, improved gas infrastructure and need for balancing power to manage renewable generation. Total installed capacity will reach 15 GW by 2050 and plant load factor will also improve and reach up to 55% in 2050. Further, due to technological advancements conversion efficiency will improve to about 64% by 2050, resulting in electricity generation of 72 TWh by 2050. Share of gas based plant in all level 3 scenario would be 10% of installed capacity by 2050.

Level 4

Level 4 is a more aggressive scenario wherein installation of gas based power plants will increase at much faster rate as compared to historic trend. This development would be fueled by improved gas availability from both domestic and imported sources and improvement in gas infrastructure. Total installed capacity will reach up to 18 GW by 2050 and plant load factor will also improve significantly reaching to 60% in 2050. This will result in increase in generation from gas based power plant to 96 TWh in 2050. Share of gas based plant in all level 4 scenario would be 11% of installed capacity by 2050.

