Residential: Efficiency of Lighting and Appliances

Level 1

Level 1 assumes that although incandescent lamps will be phased out by 2020, CFLs will continue to be used. Penetration of LED will increase to 71% by 2030 and thereafter increases gradually to reach 90% level in 2050. Remaining 10% will energy efficient tube lights. In 2050, 98% of appliances are assumed to be of low efficiency, 1% are of medium efficiency, and 1% are of high efficiency.

Level 2

Level 2 assumes, by 2020, all incandescent bulbs will be replaced by LEDs and by 2030 all CFLs will be replaced by LEDs. In case of other appliances, 45% have low efficiency while 38% have medium efficiency in 2050.

As per the load research study report, residential sector contributes to 23% of system peak demand. Major end use component includes residential lighting, fans, refrigerators, air conditioners and other appliances like washing machine, geysers, computers, televisions, etc. The state government has implemented Domestic Efficient Lighting Programme (DELP) for increasing penetration of LED based among residential and commercial consumers. In addition to this state is also implementing energy efficient fan and air-conditioner programme also. This lever captures the impact of increasing penetration of energy efficient appliances in total electricity demand of residential sector.

Level 3

Level 3 assumes that increase in awareness among consumers about benefits of energy efficient appliances, will a result in increasing penetration of high efficiency appliances to 45% in 2050, while 42% would be medium efficiency and remaining 13% would be of low efficient appliances. The lighting demand decreases substantially due to 100% penetration of LED by 2030.

Level 4

Level 4 is the optimistic scenario which assumes that energy efficiency ratio of air conditioners improves due to usage of variable speed compressors, advanced technology like BLDC will improve energy efficiency of fans and penetration of these high efficient appliances also increase to 80% by 2050. Further, in case of lighting 100% penetration of LED would be achieved by 2025.