Residential: Efficiency of Lighting and Appliances

Level 1

Level 1 assumes that incandescent bulbs will reduce to 21% by 2050 and CFLs will continue to be used. Penetration of LED will increase to 9% by 2030 and thereafter increases gradually to reach 19% level in 2050. Remaining 26% 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 2050, all incandescent bulbs will reduce to 6% and LEDs and CFLs will increase to 38% and 405 respectively. In case of other appliances, 42% have low efficiency while 39% have medium efficiency in 2050.

As per tariff order of Assam, residential sector contributes to almost half of the electricity consumption in the state in FY16. 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 the World Bank report, *'India's State Level Energy Efficiency Implementation Readiness',* Assam has been ranked number twenty in terms of the state most prepared for implementation of energy efficiency programmes and schemes. 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 48% in 2050, while 40% would be medium efficiency and remaining 12% would be of low efficient appliances. The lighting demand decreases substantially due to 58% penetration of LED by 2050.

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 86% by 2050. Further, in case of lighting, almost all incandescent bulbs will be replaced and 78% penetration of LED would be achieved by 2050.