

4.1 General As we have seen, integrating more large-capacity RE into the grid brings variability and uncertainty. In addition to adding new flexibility, existing flexibility can be better exploited by operational enhancement within a balancing area, and can be shared in wider geographic footprints by cooperation between, or consolidation of, smaller balancing areas, supported by transmission expansion. The new solutions will include new technologies, methods and practices, applied in order to provide more flexibility and improve the efficiency of power systems, constantly balancing generation and load. This means mitigating the impacts of RE generation on the power system, enabling it to contribute to system reliability and stability by improving its design and control technologies. At the same time, there will continue to be unexpected disturbances stemming from load variation, grid faults and conventional generation outages. Worldwide studies and experience in recent years have shown that new technical solutions are needed to address this conjunction of difficulties. Flexibility from conventional generation is currently the major source of power system flexibility and is generally referred to as "generation flexibility". The required power system flexibility can be achieved on the generation side, from both RE generation and conventional generation.