Table 14.2.: Fire and Life Safety Requirements for Solar Power Generation Systems

ITEMS	REQUIREMENTS
11. FIRE STRATEGY	**1. GENERAL** i. Preplanned Fire strategy is of utmost important requirement in tackling solar power system fires, since it poses additional dangers and hazards to fire fighters than the normal fires. ii. The Utility service provider, stake holders, owners, system operators, manufacturers and installers shall jointly develop the fire strategy along with Civil Defence Operation Department. iii. A clear written fire strategy addressing the electrical shock hazard, isolation of panels and arrays, isolation of modules, type of fire fighting agent to be used and the method of fire fighting etc. based on the following. **2. KEY ELEMENTS TO BE CONSIDERED IN THE FIRE STRATEGY** i. Management shall assign responsible and knowledgeable person to coordinate with Emergency responders and Civil Defence, who knows hazards and disconnection switch locations and methods and who can assist Civil Defence during fire emergencies. ii. Photovoltaic panels exposed to sun are always "ON" and hence energized. iii. De-energizing solar panels is almost impossible. So first responders and fire fighters should always consider the solar system and its components as "energized". iv. Care should be taken never to cut or damage conduits and equipment and should be treated as energized always. v. Facility management and Utility provider should always be familiar with locations of disconnection switches scattered all along the vast areas of installations. vi. If all connections to inverter are not disconnected, the grid will still be live with voltages. vii. Battery storage arrangement poses additional threat. Batteries maintain electrical current during night time. Batteries on fire can be explosive and emit hazardous materials, corrosive gases and toxic fumes. viii. Appropriate PPE (Personal Protective Equipment) shall be available at all times along with respiratory protective equipment (Self-contained Breathing Apparatus), during and post fire clean up activities. ix. Minimum of 5 m distance should be maintained from these equipment while fighting fire. **3. KEY ELEMENTS TO BE CONSIDERED IN THE POST FIRE STRATEGY** i. During normal operation, solar power components are safe but when during fire and under fire solar cells, components are very dangerous in terms on hazardous and toxic materials emitted. ii. Care should be taken to avoid exposure to these exposures during fire and during clean up activities. iii. New solar technologies in domestic usage are integral part of the building components and materials and during fire, the hazardous nature of these materials may not be obvious to occupants, first responders and fire fighters.