

F.No.: 41/06/2015-16/PVSE
Ministry of New & Renewable Energy
(SPV Division)

Block No.14, CGO Complex
Lodi Road, New Delhi

Dated: 21.08.2017

OFFICE MEMORANDUM

Subject: Guidelines for Solar DC systems for off-grid and grid connected applications.

There has been a felt need to issue guidelines for solar DC system for off-grid and grid connected applications. Accordingly, an Expert Committee was constituted by this Ministry to work on DC system configurations for Off-grid and Grid-connected Solar PV applications. The Committee, after detailed deliberations, made a set of recommendations which have been accepted by this Ministry.

2. Based on such recommendations of the Expert Committee, following guidelines are hereby issued with respect to DC systems for Off-grid and Grid-connected applications:

- (i) For both, grid-connected and off-grid systems, system voltage may be left to the discretion of project developer. The system voltage may be selected based on technology options for solar panels and batteries available in the market. In view of safety, voltage for DC systems should be limited to 60 V.
- (ii) BIS Standards and/or International standards must be specified for equipment along with their technical parameters. For example, solar panels should comply with the IEC 61215 standard. At the same time, ETD50 LVDC specifications and SEG4, SysLVDC standard should be followed.
- (iii) Cable should be selected such that the voltage drop is less than 3% and the power loss is less than 2%. This condition should be adhered to, because higher loss leads to an increase in the size of the PV module and thus the system cost. Hence, the system voltage should be so selected that cables of standard thicknesses widely used in homes/offices should be used, and thickness above 10 sq. mm is to be avoided.
- (iv) For development of mini/micro grids:
 - The selection of AC or DC systems may be left to the developer based on the size of the village and feasibility of transmission.

- For DC micro grid, voltage should be limited up to 60 V at home level distribution in view of the safety norms of DC voltage.
3. It will be mandatory to follow the aforementioned guidelines for DC systems installed under programmes of this Ministry. Even for the systems installed outside the programmes of the Ministry, it is advised to follow the aforementioned guidelines.
 4. All concerned may revise/update the specifications in line with the above guidelines, wherever required.



(Shobhit Srivastava)
Scientist 'C'

To,

All Concerned Stakeholders