STATE ELECTRIC COMPANY LIMITED

NET-METERING GUIDELINE

RENEWABLE ENERGY DEPARTMENT

2025

VERSION 1.0

75 YEARSOFSERVICE

Guideline for Approval of Net-Metering Single Line Diagrams

This document details the required information of a single line diagram for solar net-metering applications under regulation number: 2020/R-46 "Net-metering Regulation".

1.0 General Requirements

1.1 Determination of Solar Capacity

1.1.1 The total installable solar capacity is determine based on the average electricity usage of the premises over a 12-month period.

1.1.2 If 12 months of usage data is not available, for example, in newly commissioned buildings the installable capacity must be determined through a load calculation.

1.2 Load Calculation Requirements

1.2.1 The customer is solely responsible for the accuracy of the load calculation, which must be carried out in accordance with Utility regulation authority (URA) guidelines and prepared by a licensed engineer engaged by the customer.

1.2.2 The load calculation document must include the engineer's name, license category, and signature.

1.2.3 The engineer must have a valid URA Power Engineering License with categories relevant to the work specified in this section

1.3 Documentation and Submission Process

1.3.1 If the main solar combiner box is directly connected to a:

- **Panel/Distribution Board (DB) rated 63A and above:** Where the main solar combiner box is connected to a panel, verification is required to confirm that the panel design has been approved by URA and that the panel has been tested by STELCO. In such cases, the customer must submit the approved single-line diagram (SLD) of the panel along with the SLD of the solar (PV) system. If the connection is to a metering distribution board, submission of the solar PV system's SLD alone is sufficient; however, verification must still be carried out to ensure that the distribution board has been tested by STELCO.

1.3.2 The net-metering application form can be downloaded from www.stelco.com.mv by navigating to Resources > Application Forms > Net Metering Application Form.

1.3.3 The application form outlines all required documents that must be submitted along with the form.

1.3.4 Accurate and complete data specification sheets for the proposed inverter and solar panels must be submitted together with the solar SLD.

1.4 SLD Requirements

1.4.1 All writings, symbols and labels in the SLD must be clearly legible.

1.4.2 Each page of the SLD must include the following:

- Page size it is intended for (e.g., A3, A4, etc.)
- Full address of the installation site
- Total capacity of the solar installation

1.4.3 Each page must also clearly display the following information of the URA Licensed Power Engineer:

- Full name
- License number
- Signature

1.4.4 The engineer must have a valid URA Power Engineering License with categories relevant to the work specified in this section.

1.4.5 All pages must be clearly numbered.

1.4.6 All feeders must be clearly labeled and numbered.

1.4.7 The current-carrying-capacity of the busbar must be given in standard notation.

1.4.8 All electrical components of the SLD must be specified, including:

- Breaker ratings
- Inverter size and model number
- PV panel power
- PV panel open circuit voltage (V_{oc})
- DC cable size
- AC cable size

1.4.9 A suitable omnipolar circuit breaker with manual operation and overload/short-circuit protection shall be provided, with the load not exceeding 80% of its rated capacity, in accordance with URA electrical standards.

1.4.10 If separate AC and DC combiner boxes are used, this must be clearly indicated on the SLD.

1.4.11 The solar photovoltaic strings must be clearly shown, specifying:

- Number of panels
- Individual panel rating and model number
- Total open-circuit voltage (Voc) of each string should be indicated individually

1.4.12 On the DC side combination box, it is recommended to install both SPD and DC breaker, However, the use of the inverter's integrated DC protection alone is also acceptable.

1.4.13 If the installed capacity of the system exceeds 10 kW, the inclusion of a Surge Protection Device (SPD) and a DC breaker is mandatory. However, a DC breaker is required even if the capacity is below 10 kW.

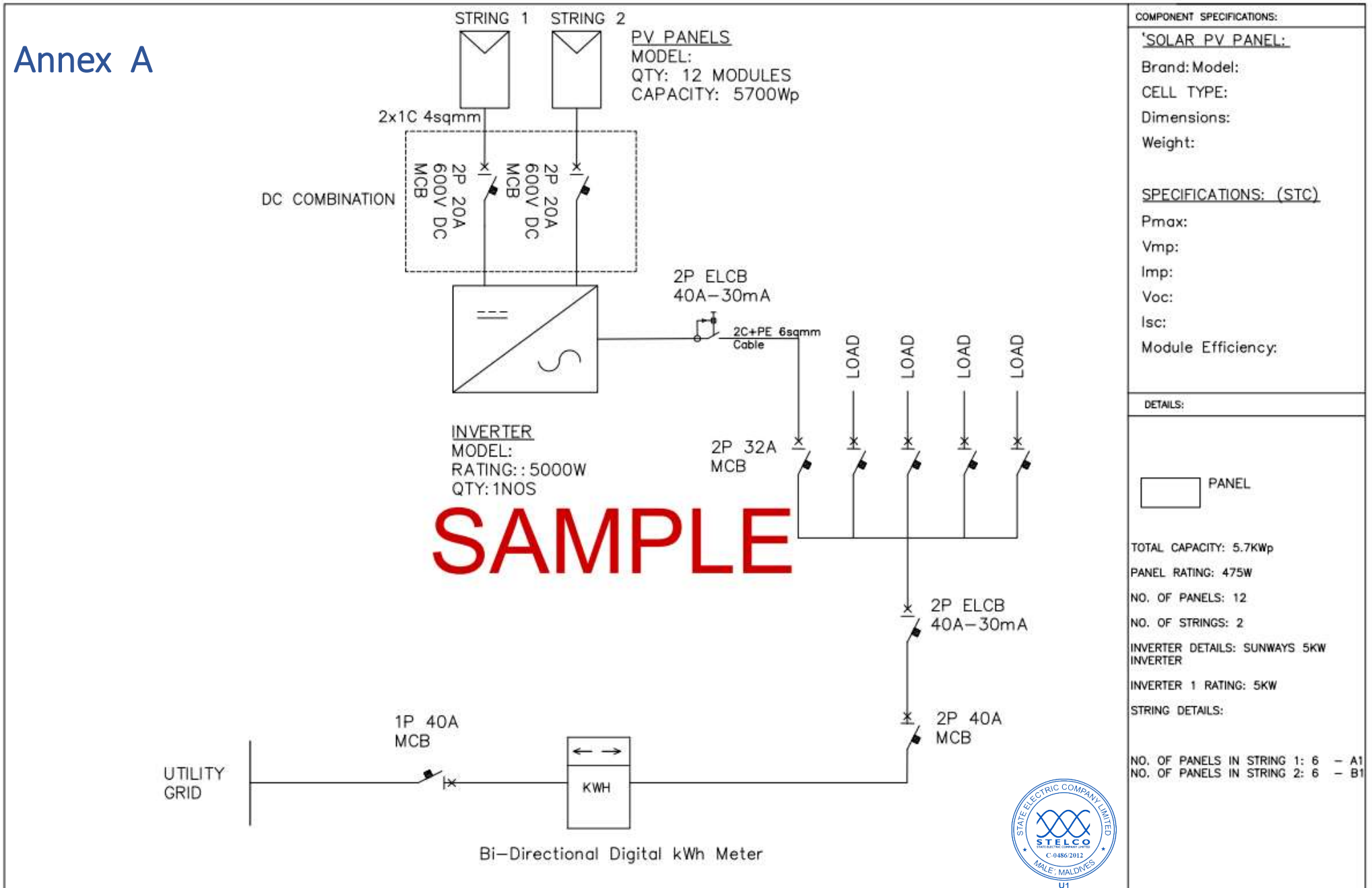
1.4.14 If the solar AC combination box exceeds 63A:

- An earth leakage relay (ELR) and over current relay (OCR) must be installed
- The panel to which it is connected must have its SLD approved by the URA and must be tested by STELCO.
- If a 30mA Earth Leakage Circuit Breaker (ELCB) is not sufficient, a separate 100mA ELCB can be used for solar inverters.
- If the solar inverter is connecting to an existing consumer distribution box, the existing ELCB must not be altered or replaced. (The ELCB leakage current must be 30mA)

Refer to Annex A for Sample single line diagram.

STATE ELECTRIC COMPANY LIMITED STELCO C-0486/2012 MALE', MALDIVES U1

Annex A



COMPONENT SPECIFICATIONS:

'SOLAR PV PANEL:

Brand: Model:

CELL TYPE:

Dimensions:

Weight:

SPECIFICATIONS: (STC)

Pmax:

Vmp:

Imp:

Voc:

Isc:

Module Efficiency:

DETAILS:

PANEL

TOTAL CAPACITY: 5.7KWp

PANEL RATING: 475W

NO. OF PANELS: 12

NO. OF STRINGS: 2

INVERTER DETAILS: SUNWAYS 5KW INVERTER

INVERTER 1 RATING: 5KW

STRING DETAILS:

NO. OF PANELS IN STRING 1: 6 – A1
NO. OF PANELS IN STRING 2: 6 – B1

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