

**Government of  
Democratic Socialist Republic of Sri Lanka**

**Ministry of Power & Energy**

**CEYLON ELECTRICITY BOARD**

**Request for Proposals**

**Development of 100 MW<sub>AC</sub> Solar Park Facility at  
Siyambalanduwa on Build, Own and Operate (BOO) Basis and  
Construction of 132 kV Transmission Facility on Turnkey Basis**

**VOLUME VII**

**SCHEDULES OF POWER PURCHASE AGREEMENT AND  
CONTRACT FOR CONSTRUCTION OF TRANSMISSION  
FACILITY**

Issued on: 22<sup>nd</sup> August 2022  
Bid no.: TR/RED&PM/ICB/2022/002/C  
Employer: Ceylon Electricity Board  
Country: Sri Lanka

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## Attachments

1. Plans and Drawings (Schedule 2)
2. General Technical Specifications of Transmission Line (Schedule 5)
3. General Technical Specifications of Grid Sub-stations (Schedule 5)
4. Report of Environmental Impact Assessment (Schedule 19)
5. Solar Resource Data (Schedule 19)

## Schedule 1 – Definitions

This Schedule accommodates definitions for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

<b>"Affiliate"</b>	means in relation to a party, any one of: (a) a holding company of that party; (b) a Subsidiary of that party; (c) any other company which is a Subsidiary of that party's holding company;
<b>"Agreement" or "Power Purchase Agreement"</b>	means this power purchase agreement;
<b>"Applicable Codes and Standards"</b>	means the codes and standards referred to in Schedule 5 ( <i>Minimum Functional Specification</i> );
<b>"Arbitral Tribunal" or "Tribunal"</b>	has the meaning given to that term in paragraph 15.7 of Schedule 15 Part II;
<b>"Arbitration"</b>	means the dispute resolution mechanism set forth in Schedule 15 Part II;
<b>"Articles of Association"</b>	means the articles of association of the Project Company;
<b>"Available Amount"</b>	means as defined in the format for Drawing Certificate given in Schedule 12 (format of Letters of Credit);
<b>"BOI"</b>	means the Board of Investment of Sri Lanka, as authorised under the BOI Act;
<b>"BOI Act"</b>	means the Board of Investment of Sri Lanka, Act No. 4 of 1978, as amended;
<b>"BOI Law"</b>	means the BOI Act and all regulation, rules made thereunder and orders and directions issues pursuant thereto;
<b>"BOI Agreement"</b>	means the agreement between the BOI and the Project Company;
<b>"BOO"</b>	means build, own and operate method of project delivery;

<b>“Board” or “Board of Directors”</b>	means the board of directors of CEB or the Project Company, as the case may be;
<b>“Board Members”</b>	means the members of the Board;
<b>“Business Day”</b>	means any day other than a Saturday, Sunday, public holiday or bank holiday in Sri Lanka;
<b>“Buy-Out”</b>	in relation to the Agreement, means the purchase of the Solar Park Facility by the CEB upon the occurrence of a Buy-Out Event;
<b>“Buy-Out Event”</b>	in relation to the Agreement, means a CEB Buy-Out Event or a Company Buy-Out Event;
<b>“Buy-Out Notice”</b>	in relation to the Agreement, means a CEB Buy-Out Notice or a Company Buy-Out Notice;
<b>“Buy-Out Price”</b>	in relation to the Agreement, means the price paid by the CEB to the Company upon transfer of ownership of the Solar Park Facility to the CEB following a Buy-Out Event, as calculated in accordance with Schedule 11 ( <i>Buy-Out</i> );
<b>“Capital Cost of the Project”</b>	in relation to the Agreement, means at any time, the total cost of the financing, design, development, construction, manufacture, testing and Commissioning of the Solar Park Facility;
<b>“Capital Cost of the Transmission Facility”</b>	in relation to the Transmission Agreement, means at any time, the total cost of the financing, design, development, construction, manufacture, testing and Commissioning of the Transmission Facility;
<b>“CEB”</b>	means the Ceylon Electricity Board, a body corporate established by Act No 17 of 1969 and any successor and permitted assign;
<b>“CEB Approvals”</b>	means all approvals to be obtained by the Project Company from CEB pursuant to the Agreement or the Transmission

	Agreement, as the case may be, or pursuant to the Laws of Sri Lanka;
<b>“CEB Buy-Out Event”</b>	in relation to the Agreement, has the meaning given to that term in paragraph 13.1 of Schedule 13 ( <i>Buy-Out</i> );
<b>“CEB Buy-Out Notice”</b>	in relation to the Agreement, has the meaning given to that term in paragraph 13.3 of Schedule 13 ( <i>Buy-Out</i> );
<b>“CEB Delay Charge”</b>	has the meaning given to that term in Clause 10.1.2;
<b>“CEB Early Handover Event”</b>	in relation to the Transmission Agreement, means [insert];
<b>“CEB Group”</b>	in relation to the Agreement means, CEB, CEB’s Affiliates, each Person (other than CEB) executing the Downstream Off-taker, CEB’s subcontractors, and the Representatives of each of the foregoing; and  in relation to the Transmission Agreement means, CEB, CEB’s Affiliate, CEB’s subcontractors, and the Representatives of each of the foregoing;
<b>“CEB Letters of Credit”</b>	has the meaning given to that term in Clause 8.7.1(i);
<b>“CEB Nominated Bank”</b>	in relation to the Agreement, means the Peoples Bank, having its head office at 75, Sir Chittampalam A Gardiner Mawatha, Colombo 2, Sri Lanka, at which the CEB shall maintain the CEB Rupee Account;
<b>“CEB Rupee Account”</b>	in relation to the Agreement, means the CEB’s Rupee denominated bank account with the CEB Nominated Bank;
<b>“CEB System”</b>	in relation to the Agreement, means the electric high voltage transmission system, including all transmission lines and equipment, transformers and associated equipment, relay and switching equipment and protective devices and safety and communications equipment owned and/or operated by the CEB on the opposite side of the Interconnection Point to the Solar Park Facility;

<p><b>“CEB System Problem”</b></p>	<p>in relation to the Agreement, means a condition of the national grid creating technical issues in absorbing electricity from the Solar Park Facility;</p>
<p><b>“CEB System Control Centre”</b></p>	<p>in relation to the Agreement, has the meaning given to that term in the Grid Code;</p>
<p><b>“Change in Law”</b></p>	<p>means any of the following events occurring after the date of this Agreement or the Transmission Agreement, as may be applicable, as a result of any action by any Competent Authority:</p> <ul style="list-style-type: none"> <li>(a) an amendment to or repeal of any existing Law in force in Sri Lanka (including subsidiary legislation, rules, regulations, orders and directives made or issued by such Competent Authority pursuant to or under any such Law) and any decree or judicial decision given or pronounced by any court of competent jurisdiction;</li> <li>(b) an enactment or making of new legislation, and</li> <li>(c) a change in the manner in which any of the Laws of Sri Lanka are applied or interpreted in relation to the Project or the Transmission Facility, as may be applicable, except where such change results from noncompliance by the Project Company with any Laws of Sri Lanka in force at the date of this Agreement or the Transmission Agreement, as may be applicable,,</li> </ul> <p>provided a change in any law regarding tax, excluding Sales Tax, import duties and levies, after the date of this Agreement or the Transmission Agreement, shall not be a Change in Law pursuant to this Agreement or the Transmission Agreement, as may be applicable.</p>
<p><b>“Change in Law Event”</b></p>	<p>has the meaning given to that term in Clause 9.1;</p>
<p><b>“Change in Law Period”</b></p>	<p>means each period of three hundred and sixty-five Days where such period commences on the date of this Agreement or any anniversary hereof;</p>

<p><b>“Check Meter”</b></p>	<p>in relation to the Agreement, means any auxiliary meters and associated metering equipment purchased, installed, paid for, owned and maintained by the Company at the Metering Point to measure and record the delivery and receipt of Metered Output and Metered Input in accordance with Schedule 7 (<i>Metering</i>) and the requirements of this Agreement;</p>
<p><b>“Chief Executive Officer”</b></p>	<p>means the chief executive officer or person of equivalent rank in respect of CEB or the Project Company, as the case may be;</p>
<p><b>“Commercial Operation Date” or “COD”</b></p>	<p>means the commencing date of the 20-year contract period;</p>
<p><b>“Commissioning”</b></p>	<p>in relation to the Agreement means that an Engineer Certificate has been issued with respect to the Solar Park Facility in accordance with Schedule 6 (Testing and Commissioning Procedure for Solar Park Facility) such that the Solar Park Facility is capable of performing the activities as described in Schedule 5 (Minimum Functional Specifications); and  in relation to the Transmission Agreement means that an Engineer Certificate has been issued with respect to the Transmission Facility in accordance with Schedule 6 (Testing and Commissioning Procedure for Solar Park Facility) such that the Transmission Facility is capable of performing the activities as described in Schedule 5 (Minimum Functional Specifications);</p>
<p><b>“Commissioning Date”</b></p>	<p>has the meaning given to that term in Clause 5.7.2(i)</p>
<p><b>“Commissioning Tests”</b></p>	<p>has the meaning given to that term in Schedule 6 (<i>Testing and Commissioning Procedure for Solar Park Facility</i>);</p>
<p><b>“Companies Act”</b></p>	<p>means the Sri Lanka Companies Act No. 7 of 2007, as amended from time to time or any statutory re-enactment thereof;</p>

<p><b>“Constituent Members”</b></p>	<p>means the consortium members who participated in the Proposal, namely, [insert names];</p>
<p><b>“Competent Authority”</b></p>	<p>means the Government or any authority, ministry or department under the control of the Government and any court or tribunal in Sri Lanka;</p>
<p><b>“Completion Certificate”</b></p>	<p>in relation to the Agreement, means any of the certificates issued under Clause 5.7.8; and</p> <p>in relation to the Transmission Agreement, means any of the certificates issued under Clause 5.7.8;</p>
<p><b>“Consequential Loss”</b></p>	<p>means all loss of production, loss of profit, loss of income, loss of goodwill, loss of business, loss of anticipated saving, and any special, indirect or consequential damage or loss;</p>
<p><b>“Contract Month”</b></p>	<p>means the period beginning from the 1<sup>st</sup> of each calendar month and ending on the last day of such calendar month, provided that;</p> <p>(i) the first Contract Month of the Term shall begin from the COD and end on the last day of such Contract Month, and</p> <p>(ii) the last Contract Month of the Term shall end on the last day of the Term;</p>
<p><b>“Contract Year”</b></p>	<p>means the period beginning from the Effective Date and ending on the immediately succeeding 31<sup>st</sup> March and thereafter each period of 12 months beginning on 1<sup>st</sup> April and ending on 31<sup>st</sup> March provided that:</p> <p>(i) In the financial year in which the Scheduled Commercial Operation Date would occur, the Contract Year shall end on the date immediately before the Scheduled Commercial Operation Date and a new Contract Year shall commence once again from the Scheduled Commercial Operation Date and end on the immediately succeeding 31<sup>st</sup> March, and thereafter each period of 12 (Twelve) Months commencing on 1<sup>st</sup> April and ending on 31<sup>st</sup> March, and</p>



	(ii) Provided further that the last Contract Year of this Agreement or the Transmission Agreement, as may be applicable, shall end on the last day of the Term;
<b>“Construction Notice”</b>	means the notice issued by the Project Company to the CEB pursuant to Clause 4.6 which signals the end of the Preliminary Period and the commencement of the Construction Period;
<b>“Construction Performance Bond”</b>	means the construction performance security for 10% of the total cost of the Project or LKR 1500 million to be issued by an entity approved by the CEB and in the form of Schedule 15 ( <i>Form of Construction Performance Bond</i> ) to be delivered by the Project Company to the CEB pursuant to Clause 5.3.2(i). The Construction Performance Bond may be applied to the payment of liquidated and any other damages and accrued interest thereon payable by the Project Company to the CEB during the Construction Period;
<b>“Construction Period”</b>	means the period commencing at 0000 Hours on the Day following the Day on which the CEB receives the Construction Notice and ending at 0000 Hours on the Scheduled Commercial Operation Date;
<b>“Corporate Taxes”</b>	means tax on the income of the corporate;
<b>“Curtailed Monthly Output”</b>	in relation to the Agreement, means the total energy (kWh) curtailed on the instruction of CEB within a period of a calendar month;
<b>“Day” or “day”</b>	means a period of twenty-four Hours beginning at 0000 Hours on a day and ending at 2400 Hours on that day;

<b>“Delivered Monthly Output”</b>	in relation to the Agreement, means the total energy (kWh) metered and exported to the national grid on the instruction of CEB within a period of a calendar month;
<b>“Direct Agreement”</b>	means the agreement to be entered into by the CEB, the Project Company and the Finance Parties consistent with the principles referred to in Schedule 3 ( <i>Direct Agreement</i> );
<b>“Dispatch”</b>	in relation to the Agreement, means the issue by the CEB of a Dispatch Instruction to the Project Company from the CEB System Control Centre to commence, increase, decrease or cease the supply of net electrical output (kW) and/or kVAr under this Agreement, subject to the requirements of this Agreement;
<b>“Dispatch Instruction”</b>	has the meaning given to that term in Clause 7.2.2 and must comply with that Clause;
<b>“Disputes Resolution Procedure”</b>	means the procedure for the resolution of disputes set out in Schedule 15 ( <i>Disputes Resolution Procedure</i> );
<b>“Downstream Off-taker”</b>	in relation to the Agreement, means each Person entering into an agreement or other arrangement with CEB or its Affiliates under which that Person receives electrical energy delivered by the Solar Park Facility;
<b>“EIA”</b>	means environmental impact assessment;
<b>“ESC”</b>	means economics service charge;
<b>“Emergency”</b>	in relation to the Agreement, means a condition or situation that presents a threat to the integrity of the CEB System or of material physical damage to persons or property;
<b>“Energy Charge”</b>	in relation to the Agreement, means the energy charge payable by the CEB to the Project Company for the Metered Output, as calculated in accordance with Schedule 9 ( <i>Energy Charge</i> );

<b>“Energy Permit”</b>	means permit issued by Sri Lanka Sustainable Energy Authority (SLSEA) in accordance with the Sri Lanka Sustainable Energy Authority Act, No. 35 of 2007 ;
<b>“Engineer”</b>	means the independent engineer in relation to the Turnkey Contract;
<b>“Engineer’s Certificate”</b>	means any of the certificates issued by the Engineer pursuant to of Schedule 6 ( <i>Testing and Commissioning Procedure for Solar Park Facility</i> );
<b>“Environmental Approval”</b>	in relation to the Agreement, means the environmental approval issued in accordance with the National Environmental Act No. 47 of 1980 in respect of the terms of the environmental clearance for the Solar Park Facility;  in relation to the Transmission Agreement, means the environmental approval in accordance with the National Environmental Act No. 47 of 1980 in respect of the terms of the environmental clearance for the Transmission Facility;
<b>“Environment Clearance Certificate”</b>	means certificate issued in connection to the Environmental Approval;
<b>“Environmental Law”</b>	means the National Environmental Act No. 47 of 1980, as amended, any regulations thereunder, as amended from time to time, and all other enactments, statutes, laws rules and regulations for the protection of the environment for the time being in force in Sri Lanka;
<b>“Environmental Requirements”</b>	in relation to the Agreement, means:  (i) complying with or exceeding the requirements of the Environmental Approval, the Environmental Licence, the Environmental Law, all applicable environmental quality standards, regulations and directives of the relevant Competent Authorities;

	<p>(ii) establishing environmental management systems and facilities to ensure that the Environmental Law, applicable regulations, standards and lawful directives referred to in (i) above are complied with or exceeded;</p> <p>(iii) providing an annual report on all relevant aspects of the Project Company’s environmental facilities, activities and performance no later than 30 Days following each 12-month period from the commencement of the Construction Period to the end of the Operational Period. The annual report on environmental performance shall contain a statement of assurance stating that the Environmental Approval, the Environmental Licence, the Environment Law and all applicable regulations and lawful directives have been complied with or, where this is not the case, shall contain details of any failure to so comply and actions instituted to prevent such failures recurring.; and</p> <p>in relation to the Transmission Agreement means,</p> <p>(i) complying with or exceeding the requirements of the Environmental Approval, the Environmental Licence, the Environmental Law, all applicable environmental quality standards, regulations and directives of the relevant Competent Authorities;</p>
<p><b>“Escrow Agreement”</b></p>	<p>means the agreement to be entered into in the form set out in Schedule 17 (<i>Form of Escrow Account</i>);</p>
<p><b>“ESQC Regulations”</b></p>	<p>in relation to the Transmission Agreement, means Electricity (Safety, Quality and Continuity) Regulations by CEB;</p>

<p><b>“Execution Date”</b></p>	<p>in relation to the Agreement, means the date when the Agreement is signed by both the Parties;</p> <p>in relation to the Transmission Agreement, means the date when the Transmission Agreement is signed by both the Parties;</p>
<p><b>“Expected Monthly Output”</b></p>	<p>as defined in Schedule 9</p>
<p><b>“Expert”</b></p>	<p>means an expert appointed in accordance with Part 1 of Schedule 15 (<i>Disputes Resolution Procedure</i>) with experience in international contracting, infrastructure projects, utilities, power generating or related fields;</p>
<p><b>“Finance Parties”</b></p>	<p>means the banks and/or financial institutions and/or other persons (including [ <i>insert relevant lending institutions</i> ] or any Subsidiary thereof) party to the Financing Agreements;</p>
<p><b>“Financial Closure”</b></p>	<p>means the date on which the conditions precedent to initial drawdown have been satisfied or waived and initial drawdown has been made under the Financing Agreements;</p>
<p><b>“Financing Agreements”</b></p>	<p>means Agreement entered into by the Project Company with his lending institution in respect of obtaining finances for the Solar Park Facility and Transmission Facility;</p>
<p><b>“Force Majeure”</b></p>	<p>has the meaning given to that term in Clause 12.1.1;</p>

<p><b>“Forced Outage”</b></p>	<p>in relation to the Agreement, means any interruption of or reduction in the generating capacity of the Solar Park Facility that is not the result of:</p> <ul style="list-style-type: none"> <li>(i) an event of Scheduled Maintenance or Planned Outages; or</li> <li>(ii) an event of Force Majeure; or</li> <li>(iii) a request by the CEB in accordance with this Agreement; or</li> <li>(iv) a condition caused by a CEB System Problem;</li> </ul>
<p><b>“General Manager”</b></p>	<p>means the general manager or person of equivalent rank in respect of CEB;</p>
<p><b>“Generation Licence”</b></p>	<p>in relation to the Agreement, means the licence required to be obtained by the Project Company under Section 9 of the Electricity Act No 20 of 2009 or applicable statute, as amended, to establish, operate and maintain the Solar Park Facility for the generation of electrical energy in Sri Lanka;</p>
<p><b>“Good Design, Engineering and Construction Practices”</b></p>	<p>means the relevant practices, methods, standards and acts generally followed or approved by the international electricity industry which the Project Company shall identify prior to commencement with respect to the planning, design, construction, commissioning, testing and repair of work with characteristics comparable to those of the Solar Park Facility or the Transmission Facility, as may be applicable, including the location of the Solar Park Facility or the Transmission Facility, as may be applicable and includes the performance of the work:</p> <ul style="list-style-type: none"> <li>(i) in a sound and workmanlike manner, with due care and skill and applying generally accepted engineering, construction and management practices and procedures;</li> <li>(ii) with due expedition and without unnecessary or</li> </ul>

	<p>unreasonable delay;</p> <p>(iii) using appropriate internationally accepted standards for materials and workmanship applicable to works having characteristics comparable to those of the Solar Park Facility or the Transmission Facility, as may be applicable; and</p> <p>(iv) with all materials and workmanship suitable for their respective purposes and properly certified where appropriate;</p>
<b>“Government”</b>	means the Government of the Democratic Socialist Republic of Sri Lanka;
<b>“Governmental Approval”</b>	means any approval, licence, permit or consent from any Competent Authority required by the Laws of Sri Lanka for the purposes of any party carrying out its obligations under this Agreement or the Transmission Agreement, as may be applicable;
<b>“Grid Code” or “CEB Grid Code”</b>	means the code annexed to the Minimum Functional Specification titled Technical Requirements for Interconnection of Generation Resources January 2003 or any code which amends or replaces it which is prepared by the CEB as a code of general application in accordance with any regulatory requirement and which sets out operational rules governing the CEB and generators connected to and users of the CEB System;
<b>“Grid Impact Study”</b>	means the study as given in Schedule 16 (List of Investigations and Studies);
<b>“Guaranteed Plant Capacity” of “GPC”</b>	means 100 MW (AC Capacity) or such lower capacity as declared pursuant to Clause 5.10.4;
<b>“Guide for Grid Interconnection of Embedded Generators”</b>	means Guide for Grid Interconnection of Embedded Generators issued by CEB;

<p><b>“Hacking”</b></p>	<p>means unauthorized access to or use of data, systems, server or networks, including any attempt to probe scan or test vulnerability of the systems being used to operate the Solar Park Facility and or the CEB System, or to breach security or authentication measures of systems, server or network being used to run the Solar Park Facility and or the CEB System without express authorization of the owner/user of system, server or network;</p>
<p><b>“Hour”</b></p>	<p>means each continuous period of sixty minutes commencing with the first minute of each of the twenty four denominated Hours of any Day;</p>
<p><b>“Hourly Metered Output”</b></p>	<p>means the Metered Output during an Hour as measured and recorded by the Main Meter or Check Meter as the case may be;</p>
<p><b>“IEC Standards”</b></p>	<p>means the relevant standards published by the International Electrotechnical Commission of No. 3, Rue de Varembe, P.O. Box 131, CH-1211 Geneva, Switzerland;</p>
<p><b>“Implementation Agreement”</b></p>	<p>means the implementation agreement in respect of the Solar Park Facility and the Transmission Facility amongst the Government, Project Company and CEB;</p>
<p><b>“Incorporation Act”</b></p>	<p>means the Ceylon Electricity Board Act No. 17 of 1969, as may be amended or re-enacted from time to time;</p>
<p><b>“Interconnection Facilities”</b></p>	<p>means all the cables, lines, equipment and facilities located between the Termination Point and the Interconnection Point, enabling the CEB to receive partial capacity or full installed capacity of the Solar Park Facility, constructed and installed, owned and maintained by the Project Company in accordance with the Grid Code for the purpose of interconnecting the Solar Park Facility with the CEB System;</p>



<b>“Interconnection Point”</b>	has the meaning given to that term in Schedule 5 ( <i>Minimum Functional Specification</i> );
<b>“kilovar” or “kVAr”</b>	means 1,000 vars;
<b>“kV”</b>	means kilovolts or 1,000 volts;
<b>“kW”</b>	means a kilowatt or 1,000 watts;
<b>“kWh”</b>	means one kilowatt hour;
<b>“L/C Amount”</b>	has the meaning given to that term in Clause 8.7.1(iv);
<b>“L/C Deposit Accounts”</b>	has the meaning given to that term in Clause 8.7.1(iii);
<b>“Laws of Sri Lanka”</b>	means, in relation to this Agreement or the Transmission Agreement, as the case may be, all laws in force in Sri Lanka (including any political sub-division thereof) and includes subsidiary legislation (including all rules, regulations, orders and directives) made or issued by any Competent Authority pursuant to or under any such law, and any decree or judicial decision given or pronounced by any court of competent jurisdiction;
<b>“Lease”</b>	means the agreement between the SLSEA and the Project Company for the lease of the Project Site entered into on or before the Execution Date but taking effect on the date of the Construction Notice;
<b>“LIBOR”</b>	means the London Interbank Offered Rate;
<b>“Losses”</b>	means all claims, liabilities, obligations, losses, damages, deficiencies, assessments, judgments, fines, penalties, proceedings, actions, suits, demands, out-of-pocket costs, expenses and disbursements of any kind or nature except Consequential Loss;

<b>“Maximum Monthly Output”</b>	means the maximum energy (kWh) to be exported to the national grid for each calendar month agreed by the Project Company and CEB, before the start of the calendar month;
<b>“Maintenance Programme”</b>	in relation to the Agreement, means the maintenance plan of the Solar Park Facility in relation to Clause 6.4.2;
<b>“Main Meter”</b>	means the main meters and associated metering equipment purchased and installed by the Project Company and owned and maintained by the CEB at the Metering Point ( <i>Metering</i> ) to measure and record the delivery and receipt of Metered Output and Metered Input, all in accordance with Schedule 7;
<b>“Metered Input”</b>	means the active power and energy (measured in kilowatt and kWh respectively) and reactive power (measured in kilovar) delivered to the Company by the CEB at the Interconnection Point;
<b>“Metered Output”</b>	means the energy measured in kilowatt hours (kWh) of the Solar Park Facility delivered to the CEB System at the Interconnection Point;
<b>“Metering Point”</b>	means the points at which the Main Meters and Check Meters shall be located as established under Schedule 5 ( <i>Minimum Functional Specification</i> );
<b>“Meters”</b>	means the Main Meter and the Check Meter;
<b>“Minimum Monthly Output”</b>	means the minimum energy (kWh) to be exported to the national grid for each calendar month agreed by the Project Company and CEB, before the start of the calendar month;
<b>“Minimum Functional Specification”</b>	in relation to the Agreement, means the minimum specification for the Solar Park Facility as set out in Schedule 5 ( <i>Minimum Functional Specification</i> ); and

	in relation to the Transmission Agreement, means the minimum specification for the Transmission Facility as set out in Schedule 5 ( <i>Minimum Functional Specification</i> )
<b>“Monthly Invoice”</b>	in relation to the Agreement, has the meaning given to that term in Clause 8.1.1;
<b>“MVAR”</b>	means megavars;
<b>“MW”</b>	means a megawatt or 1000 kilowatts;
<b>“Non-Sri Lanka Force Majeure”</b>	means any event of Force Majeure which is not an event of Sri Lanka Force Majeure;
<b>“O&amp;M Contractor”</b>	in relation to the Agreement, means the contractor appointed by the Company under the Operation and Maintenance Agreement;
<b>“Operational Period”</b>	in relation to the Agreement, means the period commencing at 0000 Hours on the Commercial Operation date and expiring at 2400 Hours on the 20 <sup>th</sup> anniversary;
<b>“Operational Interface Procedures”</b>	has the meaning given to that term in Clause 5.13.2;
<b>“Operation and Maintenance Agreement” or “O&amp;M Agreement”</b>	in relation to the Agreement, means the agreement between the Project Company and the O&M Contractor for the operation and maintenance of the Solar Park Facility;
<b>“Performance Tests”</b>	means the tests described in Schedule 6 ( <i>Testing and Commissioning Procedure for the Project</i> );
<b>“Person”</b>	means any natural person, legal person, or corporate or unincorporated body (whether or not having separate legal personality);
<b>“Permitted Changes”</b>	has the meaning given to that term in Clause 5.7.3;
<b>“Planned Outage”</b>	in relation to the Agreement, means outage pursuant to CEB planning;

<p><b>“Plans and Drawings”</b></p>	<p>means the design of the Solar Park Facility or the Transmission Facility, as may be applicable, identifying the details set forth in Schedule 2;</p>
<p><b>“Preliminary Obligation Bond”</b></p>	<p>means the bond substantially in the format given in Volume I (Instructions to Project Proponents), Annexure 3 of the Request for Proposals for Development of 100 MW Solar PV Power Plant on Build, Own and Operate (BOO) Basis, and construction of 132 kV Transmission Facility on Turnkey Basis;</p>
<p><b>“Preliminary Period”</b></p>	<p>means the period commencing on the Execution Date and, ending on the earlier of:</p> <ul style="list-style-type: none"> <li>(i) 2400 Hours on the Day falling two hundred and seventy Days thereafter; and</li> <li>(ii) 2400 Hours on the Day on which the Project Company gives the CEB the Construction Notice;</li> </ul>
<p><b>“Pre-Synchronisation Tests”</b></p>	<p>in relation to the Agreement, means the tests described in Schedule 6 (<i>Testing and Commissioning Procedure for Project Facility</i>);</p>
<p><b>“Programme”</b></p>	<p>means the construction programme under the Turnkey Contract;</p>
<p><b>“Programme of Works”</b></p>	<p>means the programme prepared by the Project Company and agreed by the Parties under Clauses 4.1 and 4.2 setting out the key activities and milestone dates for the development of the Solar Park Facility or the Transmission Facility, as may be applicable, and achievement of the Scheduled Operation Date thereof, or the Scheduled Commercial Operation date, as may be applicable, as may be amended by agreement of the Parties from time to time;</p>

<p><b>“Project”</b></p>	<p>means the design, financing, procurement, construction, testing, commissioning, completion, ownership, management, long-term operation, repair, maintenance of the Solar Park Facility, and the design, financing, procurement, construction, testing, commissioning, completion of the Transmission Facility in accordance with the Project Agreements;</p>
<p><b>“Project Agreements”</b></p>	<p>the Power Purchase Agreement, the Implementation Agreement, the Turnkey Contract for Development of Transmission Facility, the Lease, Right of Way Agreement, Direct Agreements and the BOI Agreement;</p>
<p><b>“Project Company”</b></p>	<p>means the project company which is a party to this Agreement and the Transmission Agreement, being a limited liability special purpose vehicle incorporated in Sri Lanka and established for the purpose of, financing, designing, construction, commissioning, and operating the Project; and financing, designing, construction, and commissioning the Transmission Facility;</p>
<p><b>“Project Company Buy-Out Event”</b></p>	<p>in relation to the Agreement, has the meaning given to that term in paragraph 13.1 of Schedule 13 (<i>Buy-Out</i>);</p>
<p><b>“Project Company Buy-Out Notice”</b></p>	<p>in relation to the Agreement, has the meaning given to that term in paragraph 13.5 of Schedule 13 (<i>Buy-Out</i>);</p>
<p><b>“Project Company Delay Charge”</b></p>	<p>has the meaning given to that term in Clause 10.1;</p>
<p><b>“Project Company’s Group”</b></p>	<p>in relation to the Agreement, means, Project Company, Project Company’s Affiliates, each Person contracting with Project Company under the Turnkey Contract or the Operations and Maintenance Agreement, Project Company’s subcontractors and the Representatives of each of the foregoing; and</p>

	in relation to the Transmission Agreement, means, Project Company, Project Company's Affiliates, each Person contracting with Project Company under the Turnkey Contract or the Project Company's subcontractors and the Representatives of each of the foregoing;
<b>“Project Company Letters of Credit”</b>	in relation to the Agreement, has the meaning given to that term in Clause 8.7.2;
<b>“Project Company Nominated Bank”</b>	in relation to the Agreement, means the bank in Colombo selected by the Project Company, at which the Project Company shall maintain the Rupee Conversion Account and the Rupee Ordinary Account, as notified by the Project Company to the CEB and approved by the CEB in accordance with Clause 8.8; and  in relation to the Transmission Agreement, means the bank in Colombo selected by the Project Company, at which the Project Company shall maintain the Rupee Conversion Account and the Rupee Ordinary Account, as notified by the Project Company to the CEB and approved by the CEB in accordance with Clause 8.8;
<b>“Project Proponent”</b>	Has the meaning given to that in Clause 2.5 of Volume I Section II – Instructions to Project Proponents
<b>“Project Site”</b>	in relation to the Agreement, means the area of land more particularly described in the Lease where the Solar Park Facility is located;
<b>“Proposal”</b>	means the proposal submitted to undertake the Project with respect to Solar Park Facility and the Transmission Facility pursuant to the request for proposals issued by the CEB;
<b>“Proposed Testing Day”</b>	has the meaning given to that term in Clause 5.7.2(ii);

<b>“Prospective Finance Parties”</b>	means one or more of the financial institutions named in Volume 2, Schedule J of the Proposal or such other financial institutions approved by the CEB;
<b>“Protection Study”</b>	shall have the meaning as per described in Schedule 19;
<b>“Prudent Utilities Practice”</b>	means the accepted international practice and standard which the Project Company shall identify prior to the Operational Period, and engineering and operational considerations, including manufacturers’ recommendations and the exercise of that degree of reasonable skill, diligence, foresight and prudence that would be exercised or generally followed by a skilled and experienced operator in the operation and maintenance of facilities similar to the Project Facility;
<b>“PV”</b>	means photovoltaic
<b>“Recurrent Costs”</b>	in relation to the Agreement, means costs which are not of a capital cost nature and which will recur over a period of time;
<b>“Reference Exchange Rate”</b>	means on any Business Day and in respect of the sale of an amount of US Dollar for Rupees, the quotation given by the Company Nominated Bank for the sale of such amount of United States Dollars for Rupees;
<b>“Reference Interest Rate”</b>	means on any day and for any amount payable in US Dollar the percentage rate per annum offered by USD London Interbank Offered Rate (USD LIBOR);

<p><b>“Reimbursable Taxes”</b></p>	<p>in relation to the Agreement, means the expenses directly necessarily and actually born by the Project Company for the performance of obligation under this Agreement in relation to the Project on account of any and all taxes including gross receipts, business turnover, use, consumption, property, franchise, occupational, excise duties, customs duties, defence levy, however imposed, withheld, levied, or assessed in relation to the Project Company’s business in the Solar Park Facility, by the Government of Sri Lanka, or any Governmental Instrumentality of Sri Lanka or any other taxation authority in Sri Lanka, but excluding Input Sales Taxes, Sales Taxes, Stamp Duty, and all taxes, imposts, duties or levies of whatever kind or nature however imposed that the Project Company may become liable to due to the sole default of the Project Company in maintaining the tax concessions available to the Project Company under the BOI concession or in respect of which the Project Company is entitled to a credit or receives an input credit;</p>
<p><b>“Reliability Tests”</b></p>	<p>means the tests described in Schedule 6 (<i>Testing and Commissioning Procedure for Project Facility</i>);</p>
<p><b>“Representative”</b></p>	<p>means, with respect to any Person, each director, officer, employee, servant, consultant, agent, or representative of that Person;</p>
<p><b>“Request for Proposals”</b></p>	<p>means request for proposals issued by the CEB for the Project;</p>
<p><b>“Required Equity”</b></p>	<p>means not less than twenty percent of the Capital Cost of the Solar Park Facility or the Transmission Facility, as the case may be, to be invested by way of equity investment in the Project Company;</p>
<p><b>“Revised Testing Day”</b></p>	<p>has the meaning as per given in Clause 5.7.4;</p>



<b>“Right of Way Agreement”</b>	in relation to the Transmission Agreement means the agreement for use and access to the Transmission Line Corridor and the Monaragala Grid Sub-station Site;
<b>“Rupees” or “Rs”</b>	means the lawful currency of Sri Lanka;
<b>“Rupee Letter of Credit”</b>	has the meaning given to that term in Clause 8.7.1(i);
<b>“Rupee Conversion Account”</b>	Means an account maintained in foreign currency in a bank operated in Sri Lanka;
<b>“Rupee Ordinary Account”</b>	means an account in Rupees maintained in a bank operated in Sri Lanka;
<b>“Sales Taxes”</b>	means any and all forms of sales taxation, duties, imposts and levies of whatever kind and nature imposed by any Competent Authority on any transaction;
<b>“Scheduled Maintenance”</b>	in relation to the Agreement, means maintenance of the Solar Park Facility under a Firm Maintenance Programme;
<b>“Scheduled Commercial Operation Date”</b>	means the date that is twenty four (24) months from the date of Construction Notice, as may be adjusted from time to time under clause 5.6.1;
<b>“Semiannual Invoice”</b>	in relation to the Transmission Agreement, has the meaning given to that term in Clause 8.1.1;
<b>“Senior Debt”</b>	means the debt financing provided by the Prospective Finance Parties to the Project Company pursuant to the Financing Agreements;
<b>“Solar Park Facility”</b>	means the Solar Park located in Siyambalanduwa whether completed or at any stage of development and construction, and including without limitation land, buildings, engineering and design documents, power producing equipment, auxiliary equipment, water treatment facilities, solid waste disposal facilities, switchyards and all other installations including Interconnection Facilities;

<b>“SLNCPI” or “Colombo Consumer Price Index”</b>	means the index entitled Sri Lanka National Consumer Price Index published by the Department of Census and Statistics of Sri Lanka for the Month three Months prior to the Month in which the calculation is made;
<b>“Sri Lanka”</b>	means the Democratic Socialist Republic of Sri Lanka;
<b>“Sri Lanka Force Majeure”</b>	means Force Majeure as a result of any of the events set out in Clauses 12.1.2(i) and 12.1.2(ii);
<b>“Sri Lanka Prime Rate”</b>	means latest Average Weighted Prime Lending Rate (AWPR) published by Central Bank of Sri Lanka on monthly basis;
<b>“Start-Up”</b>	in relation to the Agreement, means the synchronisation of the Facility to the CEB System;
<b>“Subsidiary”</b>	means a company: <ul style="list-style-type: none"> <li>(i) of which the majority of its issued share capital is held by another company; or</li> <li>(ii) in respect of which another company has the right to control the composition of the board of directors or the casting of votes at shareholders’ meetings of that company; or</li> <li>(iii) which, or whose board of directors, normally acts in accordance with the instructions of another company;</li> </ul>
<b>“Suspension Notice”</b>	has the meaning given to that term in Schedule 3 ( <i>Direct Agreement</i> );
<b>“Term”</b>	has the meaning given to that term in Clause 3.1;
<b>“Termination Charges”</b>	in relation to the Transmission Agreement, has the meaning given to that term in Schedule 11 (Compensation Table and Termination Charges);
<b>“Termination Point”</b>	in relation to the Agreement, means each of the high voltage connections to the inverter step-up transformer as identified in the Plans and Drawings;

<b>“Test Procedures”</b>	has the meaning given to that term in Clause 5.7.1;
<b>“Testing Quantity”</b>	has the meaning given to that term in Clause 5.7.2(ii);
<b>“Testing Schedule”</b>	has the meaning given to that term in Clause 5.7.2(ii);
<b>“Transmission Agreement”</b>	means the contract for development of Transmission Facility;
<b>“Transmission Assets”</b>	means all the equipment in relation to Transmission Facility;
<b>“Transmission Facility”</b>	63 kVA, 33/132 kV step up transformers, 132 kV overhead transmission line of approximately 25 km from Solar Park Facility to CEB grid sub-station at Monaragala and necessary upgrades at Monaragala grid sub-station for interconnection;
<b>“Transmission Facility Annuity Payment”</b>	means the annuity payment payable by the CEB to the Project Company for the development of the Transmission Facility, as calculated in accordance with Schedule 10 ( <i>Transmission Facility Annuity Payment</i> );
<b>“Transmission Facility Annuity Payment Period”</b>	means the period of Transmission Facility Annuity Payment;
<b>“Transmission Line”</b>	means 132 kV interconnection between Siyambalanduwa collector sub-station and Monaragala grid sub-station;
<b>“Transmission Line Corridor”</b>	means the space comprising the land beneath, bare spaces, surrounding and the area traversed by power line including horizontal and vertical clearances required;
<b>“Tribunal”</b>	has the meaning given to that term in paragraph 15.7 of Schedule 15 ( <i>Arbitration</i> );
<b>p“Turnkey Contract”</b>	means the agreement between the Project Company and the Turnkey Contractor for the design, engineering, construction, testing and Commissioning of the Solar Park Facility and the Transmission Facility;

<b>“Turnkey Contractor”</b>	means the Turnkey Contractor appointed by the Project Company under Clause 4.2.1;
<b>“UNCITRAL Rules”</b>	has the meaning given to that term in Schedule 15 ( <i>Disputes Resolution Procedure</i> );
<b>“US Dollar Equivalent”</b>	means, in respect of any payment made or payable in Rupees on any Day, the amount of US Dollar required to purchase such amount of Rupees at the Reference Exchange Rate on such Day;
<b>“US Dollar Letter of Credit”</b>	has the meaning given to that term in Clause 8.7.1(i);
<b>“VAT”</b>	means the value added tax;
<b>“Wilful Default”</b>	means an intentional, wanton or reckless disregard by a party of the Laws of Sri Lanka or an obligation under this Agreement or the Transmission Agreement, as the case may be;
<b>“Works”</b>	means the permanent and temporary works required for the design, construction, completion and Commissioning of the Solar Park Facility or the Transmission Facility, as the case may be.

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# **SCHEDULE 2**

## **PLANS AND DRAWINGS**

**Plase refer to Appendix 3 of Volume VII;**

- Appendix 3-A: Transmission Line
- Appendix 3-B: Grid Substations

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### **Schedule 3 - Direct Agreement**

This Schedule accommodates Form of Direct Agreement for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

The CEB acknowledges that the Prospective Finance Parties will require the Senior Debt to be secured, and the CEB shall in accordance with Clause 4.1.1 enter into a Direct Agreement. The Direct Agreement shall be consistent with the following principles:

- 3.1. the Direct Agreement shall take effect on the Project Company serving the Construction Notice in accordance with Clause 4.6;
- 3.2. the CEB shall agree to the Prospective Finance Parties taking security over all of the assets of the Project Company, the Solar Park Facility, the Project Agreements and the Governmental Approvals in the event of default by Project Company under the Financing Agreement;
- 3.3. the CEB shall give the Prospective Finance Parties notice within fourteen Days of the CEB becoming aware of any breach by the Project Company of its obligations under the Power Purchase Agreement or the Transmission Agreement, as the case may be, in each case specifying the nature of such breach;
- 3.4. if the CEB serves upon the Project Company a notice to terminate the Power Purchase Agreement or the Transmission Agreement, as the case may be, under Clause 13.1 ("the CEB Termination Notice"), the CEB shall also serve a copy of such notice to the Prospective Finance Parties;
- 3.5. within sixty Days of receipt by the Prospective Finance Parties of a CEB Termination Notice, the Prospective Finance Parties may serve a notice upon the CEB ("Suspension Notice"), the effect of which shall be to suspend for sixty Days from the date of the Suspension Notice, the effect of the CEB Termination Notice ("Suspension Period");
- 3.6. the Prospective Finance Parties shall have the right to serve a notice ("Step-in Notice") indicating their intention to step-in for the Project Company to develop, and / or operate the Solar Park Facility or develop the Transmission Facility, as the case may be (i) during any Suspension Period or (ii) at any time where the Project Company is in default under the Financing Agreements and the Prospective Finance Parties require to step in for the Project Company or to appoint a third party operator to replace the Project Company in relation to all of Project Company's rights and obligations pursuant to the Power Purchase Agreement or the Transmission Agreement, as the case may be ("Transferee");
- 3.7. following the service by the Prospective Finance Partners of a Step-in Notice, there shall be a Cure Period of one hundred and eighty Days from the date of the Step-in Notice during which period any right of the CEB to terminate the Power Purchase Agreement or the Transmission Agreement, as the case may be, shall be suspended ("Cure Period"). In the event of the Prospective Finance Parties assuming the obligations of the Project Company the Energy Charge or the Transmission Facility Annuity Payment, as the case may be, shall be payable during the Cure Period. The Cure Period may be extended by agreement of the parties. If, during the Cure Period, the Prospective Finance Parties do not assume the obligations of the Project Company under the Power Purchase Agreement or the Transmission Agreement, as the case may be, the CEB's obligations under the Power Purchase Agreement or the Transmission Agreement, as the case may be, shall be similarly suspended. The CEB shall provide such information as is available to the CEB when reasonably requested by the Prospective Finance Parties to

assist the Prospective Finance Parties to assess what steps may be necessary to cure the breach by the Project Company;

- 3.8. at any time during the Cure Period, the Prospective Finance Parties may serve a notice to the CEB ("Transfer Notice") certifying that a Transferee has been selected to which the Project Facility may be sold or leased, or to which may be granted rights to operate the Project and otherwise which is prepared to assume all the Project Company's rights and obligations under the Power Purchase Agreement or the Transmission Agreement, as the case may be;
- 3.9. no later than seven Days prior to the end of the Cure Period, the Prospective Finance Parties shall give notice to the CEB whether or not they wish to continue to exercise their rights of step-in or propose to serve a Transfer Notice, and:
  - 3.9.1 if they do continue to exercise their rights of step-in or if they serve a Transfer Notice then the Prospective Finance Parties or the Transferee (as the case may be) shall assume all outstanding and continuing liabilities of the Project Company under the Power Purchase Agreement or the Transmission Agreement, as the case may be;
  - 3.9.2 but if they do not then the Power Purchase Agreement or the Transmission Agreement, as the case may be and the Direct Agreement shall terminate forthwith at the earlier of (i) the date on which the Prospective Finance Parties give notice that there shall be no continuance of their step-in rights or requirement for an assignment and transfer to a Transferee, or (ii) the end of such Cure Period;
- 3.10 upon service to the CEB of a Transfer Notice, the Prospective Finance Parties shall obtain the consent of the CEB to the proposed Transferee stepping-in for the Project Company (which consent shall not be unreasonably withheld or delayed where the CEB is satisfied that such proposed Transferee has appropriate experience, expertise and financial backing) and, upon giving such consent, the CEB shall provide the Prospective Finance Parties with such reasonable assistance as is necessary to effect the prompt assignment and transfer to the Transferee of the Project Company's rights and obligations under the Power Purchase Agreement or the Transmission Agreement, as the case may be. If the CEB fails to reply within fourteen days to the request for consent time shall cease to run under the Cure Period;
- 3.11 if the Prospective Finance Parties continue to exercise their rights of step-in after the Cure Period or the Project Agreements are transferred to a Transferee, the CEB's rights of termination under the Agreement or the Transmission Agreement, as the case may be, shall be restored (except where breaches in respect of which such rights have arisen, have been cured) both with respect to earlier and continuing rights of termination from the earlier of (i) the date on which the Prospective Finance Parties give notice of continuance of their rights of step-in, (ii) the effective date of any transfer to a Transferee, and (iii) the expiry of the Cure Period;
- 3.12 the Project Company may assign for the benefit of the Prospective Finance Parties, all of its rights in respect of the CEB Letters of Credit provided that the Prospective Finance Parties agree to exercise any rights thereunder on the same terms as agreed by the Project Company in Clause 8.7 of the Agreement or the Transmission Agreement, as the case may be;

- 3.13 the Prospective Finance Parties shall, to the extent that there are insurance proceeds payable under any policy of insurance set out in Clause 11.3.1(i) and (iv) of the Agreement, or Clause 11.3.1 (i) and (iii) of the Transmission Agreement, as the case may be, after a Buy-Out or termination of Transmission Agreement, agree to assign the rights to receive those insurance proceeds to the CEB to the extent that the Buy-Out price or the Termination Charge has not been reduced to take account of such proceeds;
- 3.14 In respect of the Agreement, following the service of a Buy-Out Notice, the CEB shall Buy-Out the Solar Park Facility and the Project Company shall be obliged to transfer the Solar Park Facility to the CEB at the Buy-Out Price in accordance with the terms and conditions of Clause 14 and Schedule 11 (Buy-Out) of the Agreement; or
- In respect of the Transmission Agreement, following the termination of the Transmission Agreement, the CEB shall pay Termination Charges and/or Early Handover Charges to the Project Company, if applicable, and the Project Company shall be obliged to dismantle or handover the Works in accordance with terms and conditions of Clause 14, Schedule 8 (Handover Process) and Schedule 11 (Termination Charges) of the Transmission Agreement.
- 3.15 the Direct Agreement shall automatically terminate on the earlier of the date of full repayment of the Senior Debt and the expiry of the Agreement or the Transmission Agreement, as the case may be;
- 3.16 the Direct Agreement shall be governed by the Laws of Sri Lanka and disputes not first amicably resolved shall be the subject of a disputes resolution procedure adopting the principles of Part 2 of Schedule 12 (Disputes Resolution Procedure).



## Schedule 4 – List of Contractors and Engineers

### PART 1 - List of Contractors for Turnkey Contract

Part 1 of this Schedule accommodates List of Contractors for Turnkey Contract for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear

Position

Personnel information

Name

Date of birth

Professional qualifications

Present employment

Name of employer

Address of employer

Telephone

Contact (manager / personnel officer)

Fax

E-mail

Job title

Years with present employer

separately at the time of execution of the relevant agreement.

Name of the Contractor	Address	Type of Main Business	Years of Experience

The Project Company shall provide all the information requested below if the Project Company wishes to appoint a contractor who is not on the above-mentioned list, in accordance with the Clause 4.2.1..

Summarize professional experience in reverse chronological order. Indicate particular technical Managerial experience relevant to the project

From	To	Company / Project / Position / Relevant technical and management experience

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**PART 2**

**List of O&M Contractors for Operation and Maintenance Agreement**

Part 2 of this Schedule accommodates list of O&M Contractors for Operation and Maintenance, for the Power Purchase Agreement

<b>Name of the O&amp;M Contractor</b>	<b>Address</b>	<b>Type of Main Business</b>	<b>Years of Experience</b>

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The Project Company shall provide all the information requested below if the Project Company wishes to appoint a contractor who is not on the above-mentioned list, in accordance with the Clause 4.2.2..

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project

Position

Personnel information                      Name                                      Date of birth

Professional qualifications

Present employment                                      Name of employer

Address of employer

Telephone                                      Contact (manager / personnel officer)

Fax                                      E-mail

Job title                                      Years with present employer

**From                      To                      Company / Project / Position / Relevant technical and management experience**

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**PART 3 - List of Engineers**

Part 3 of this Schedule accommodates List of Engineers for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

<b>Name of the Engineer</b>	<b>Address</b>	<b>Type of Main Business</b>	<b>Years of Experience</b>

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The Bidder shall provide all the information requested below. Use one form for each position.

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project

Position

Personnel information                      Name                                      Date of birth

Professional qualifications

Present employment                                      Name of employer

Address of employer

Telephone                                      Contact (manager / personnel officer)

Fax                                      E-mail

Job title                                      Years with present employer

**From                      To                      Company / Project / Position / Relevant technical and management experience**

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#### **PART 4 – Qualifications of Turnkey Contractors**

Part 4 of this Schedule accommodates qualifications of Turnkey Contractors for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

#### **PART 5 – Qualifications of O&M Contractors**

Part 5 of this Schedule accommodates qualifications of O&M Contractors for Operation and Maintenance, for the Power Purchase Agreement.

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## Schedule 5 – Minimum Functional Specification

### Acronyms

(not already defined in Schedule 1)

AC	Alternating Current
AVR	Automatic Voltage Regulator
CMMS	Computerised Maintenance/Asset Management System
CT	Current Transformer
DC	Direct Current
HVAC	Heating, Ventilation and Air Conditioning
Hz	Hertz
I/O	Input/Output
ISO	International Standards Organisation
MCR	Maximum Continuous Rating
MSL	Mean Sea Level
QA	Quality Assurance
PVC	Poly Vinyl Chloride
QC	Quality Control
RMS	Root Mean Square
SCADA	Supervisory Control and Data Acquisition
UPS	Uninterrupted Power Supply
VT	Voltage Transformer
PUCSL	Public Utilities Commission of Sri Lanka

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# Part 1 - Minimum Functional Specification For Solar Park Facility

## 5.1 Introduction

This Schedule accommodates Minimum Functional Specification for the Solar Park Facility and the Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreements.

The Solar Park Facility shall comply with the requirements more specifically described below and the Solar Park Facility must be fit for the purpose and enable the Project Company to comply with its obligations under the Project Agreements. The Project Company shall design, construct, complete and operate the Solar Park Facility in accordance with: the Project Agreements, the requirements of this Schedule 5, Applicable Codes and Standards (internationally and locally acceptable for power plant), Prudent Utilities Practice, Good Design Engineering and Construction Practices, the Laws of Sri Lanka, the Grid Code, Permits, consents and licenses detailed in the Permits Matrix.

All design work, calculations, drawings and detailing shall use the SI system of measurement. Plant and equipment shall be coded and the same coding shall be used for the design, construction, distributed control system and manuals. All the drawings, manuals, etc. shall be in English language.

The Contractor shall use designs, methods, technologies and techniques that are modern, reliable, well proven, safe and in accordance with latest industry practice. The completed Solar Park Facility shall, amongst others:

- (i) be capable of reliable operation under reasonably foreseeable climatic and seismic conditions;
- (ii) be automated to optimum possible levels, involving minimum operator intervention for normal operation;
- (iii) on the basis that the Solar Park Facility will be operated and maintained in accordance with Prudent Utility Practices it shall be durable with structures and plant, equipment and systems designed, procured and constructed to perform their intended functions for a minimum of 20 years;
- (iv) be designed and completed to minimise the risk of fire through use of non-combustible fire retardant materials and provision of adequate and appropriate fire detection and protection systems.
- (v) make provision for:
  - (a) the health and safety of the public, the Project Company's employees and visitors;
  - (b) the security of the Solar Park Facility assets;
  - (c) protection of the environment.
- (vi) include features, architectural finishes and landscaping that presents a modern appearance in sympathy with its natural and cultural surroundings and its function.
- (vii) all work for or in connection with the Solar Park Facility shall be undertaken in accordance with:
  - (a) Applicable Codes and Standards as set out in this Schedule 5
  - (b) quality assurance programmes using the International System of Units (SI)

### 5.1.1 General Requirements

#### 5.1.1.1 Normal Site Ambient Conditions

The Solar Park Facility shall be designed for operation at all reasonably foreseeable climatic and atmospheric conditions occurring at the Site. Normal ambient conditions are summarised as:

- Maximum Air Temperature 38°C
- Minimum Air Temperature 16°C

- Minimum Relative Humidity 70 percent
- Average annual rainfall 2395 mm
- Maximum 1 hour rainfall 150 mm

The required performance of plant and equipment, and the required performance of the Solar Park Facility as a whole, shall refer to performance under the conditions prevailing at the Site.

#### **5.1.1.2 Design Life**

All components comprised in the Solar Park Facility shall be new when installed and shall be purchased from manufacturers with a proven track record and high level of reliability. The Solar Park Facility shall be designed for an operating life on a Solar PV system of minimum of 20 years from the Commercial Operation Date.

#### **5.1.1.3 Proven Technology**

Only proven technology shall be employed in the design and completion of the Solar Park Facility. For this purpose, "proven technology" means technology which has been employed satisfactorily in similar plants of commercial operation worldwide.

#### **5.1.1.4 Scope of Work**

The scope of work shall include all necessary facilities, plant and equipment and auxiliary plant for the safe, reliable and efficient operation of the Solar Park Facility and compliance with the requirements of the Project Agreements. This shall include facilities such as the Auxiliaries, site formation and drainage, foundations, water system, landscaping and site security installations.

As a minimum the scope of work shall also cover: ingrovide CEB with documents and drawings as required, Preparation of erection and construction documents, Preparation of testing, acceptance and commissioning procedures and operation and maintenance instruction manuals, Implementation of total quality management and quality control activities in accordance with ISO-9001:2000, Preparation of detailed work schedules (including details of all delivery schedules in respect of plant, equipment and materials), Manpower planning, progress monitoring and details of key milestone activities and achievement of payment milestone dates, Submission of regular progress reports.

Prior to the commencement of the Construction Period, the Project Company shall conduct its own investigation and studies listed in Schedule 17 in order to derive information and detail about the Project sufficient to, inter alia, obtain permits, secure financing and to effectively obtain sufficient guarantees and warranties from the contractors engaged by the Project Company to execute the work. The following studies shall be performed as a minimum: Technical aspects to meet the performance requirements, Economic aspects to assure performance at the optimum tariff, Water availability/intake, Requirements to compliance with Environmental Protection License, Geotechnical Investigations, Studies to assure that the Solar Park Facility is compatible with the existing CEB grid system, with particular respect to system stability, load flow and relay protection, Heavy equipment and general transportation access, Other studies as required.

The Project Company shall provide all necessary services for the efficient, reliable and safe operation of the Project and compliance with the Project Agreements including: Maintaining all required permits, Maintaining all required insurance, Port handling and clearance, Receiving at site, unloading, and storage, Site handling, site office, construction facilities, and site management, Testing and inspection at manufacturer's works, Packaging and transportation, Complete erection and commissioning, Performance testing and reliability run, Training of operating personnel, Quality Assurance/Quality Control programs.

### 5.1.1.5 Documents to be provided to CEB

Further to the requirements of the Agreement regarding delivery of documents to the CEB, the Project Company shall provide the CEB with English copies of all investigations, studies, manuals, test certificates and operation and maintenance manuals.

### 5.1.1.6 Applicable Codes and Standards

Applicable Codes and Standards shall be those codes of practice, standards, guidelines and references that are: (i) pertinent, consistent and appropriate to the design, construction and/or testing of a particular element, or whole of, the Solar Park Facility, as appropriate, and (ii) published by the following:

- (i) International Standards Organisation (ISO); and
- (ii) Applicable organisations; and
- (iii) Professional bodies from countries such as US, France, UK, Germany and Japan whose codes and standards are recognised internationally, provided that the Project Company can demonstrate that such codes and standards are applicable, appropriate and equivalent to those published by the organisations listed under (i) and/or (ii) above; and
- (iv) Recognised professional bodies from Sri Lanka, provided that the Project Company can demonstrate that such codes and standards are applicable, appropriate, equivalent and no less stringent than those published by the organisations listed under (i), (ii) and (iii) above; and
- (v) Rules, Codes and Regulations issued by PUCSL.

**Table S-5.1: Applicable Organisations**

ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standard Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
BS	British Standards
CRSI	Concrete Reinforcing Steel Institute
EJMA	Expansion Joint Manufacturing Association
IEC	International Electrotechnical Commission

IEEE	Institute of Electrical and Electronics Engineers
ISA	Instrument Society of America
MBMA	Metal Building Manufacturers Association
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PFI	Pipe Fabrication Institute
SSI	Scaffolding and Shoring Institute
SSPC	Steel Structures Painting Council
UPC	Uniform Plumbing Code

To ensure compatibility of design and standardisation of the Solar Park Facility, all civil works, plant, equipment and systems provided for each feature of the Facility shall be designed and completed in accordance with requirements from the same suite of relevant applicable codes and standards.

Other internationally recognised standards may be adopted, as required, where the applicable codes and standards do not apply.

The Applicable Codes and Standards will include all addenda in effect.

Where the Project Company proposes to use codes and standards not belonging to (i) or (ii) above, it shall submit copies of such codes and standards to the CEB and seek approval from the CEB for their use. The Project Company shall deliver to the CEB one original copy of all standards and codes used in the testing of the Solar Park Facility.

#### **5.1.1.7 Health and Safety**

The Solar Park Facility shall be constructed, installed, commissioned, operated and maintained in full compliance with Prudent Utilities Practice, Good Design Engineering and Construction Practices and the Laws of Sri Lanka concerning work place safety standards and the protection of persons' health. The Solar Park Facility shall be designed and operated to meet the Environmental Laws of Sri Lanka, Health and Safety Guidelines in effect at the date of this Agreement.

#### **5.1.1.8 Environmental standards**

Solar Park Facility shall comply with the requirement of the Environmental approval and shall otherwise not exceed the standards for ambient noise criteria or limits provided under the Laws of Sri Lanka.

#### **5.1.1.9 Hazardous Substances**

The Project Company shall be responsible for the removal and disposal of toxic, hazardous and dangerous waste found at the Project Site throughout the Operational Period, and shall be responsible for the implementation of any special procedures or requirements for the safe and proper storage, handling and disposal of any such substances generated during the operation of the Solar Park Facility.

## **5.2 Technical Requirements - SOLAR PARK FACILITY**

### **5.2.1 Project Scope**

The scope of Project shall be to lease project land, and design, finance, construct, own, operate and maintain a grid connected utility-scale solar plant farm on BOO basis. The Project shall have a capacity to provide up to 100 MW (AC) of electric power at the Interconnection Point.

The design and specifications of the Project shall be in accordance with internationally accepted engineering standards and practice. The type of equipment proposed for the Project shall be proven technology.

Solar PV module supplier shall comply with the following:

- PV panel capacity (cumulative) with peak electricity capacity of 100 MW AC mounted on single-axis trackers
- Tier 1 PV module supplier
- the solar PV module supplier shall have production track record of production of PV modules for last 5 years;
- the solar PV module supplier shall have a minimum annual PV module production capacity of 1,500 MW;
- the solar PV module technology shall be deployed in operational projects with a cumulative capacity of at least 3,000 MW; and
- solar PV module shall fulfill IEC standards and have minimum warranties;

### **5.2.2 Description of the Project**

The Solar Park Facility will be located in the allotted land comprising up to 160 hectares as shown in the map included in Annex II of Volume VII

The Project shall have a capacity to provide up to 100 MW (AC) peak of electric power at the Interconnection Point with a power factor 1 to 0.8 (leading or lagging) to be adjusted as per CEB requirements at actual site conditions.

The main components of the Project are the Solar Park Facility.

The Solar Park Facility comprises:

- Solar PV array: modules mounted on single axis tracker
- Power conversion units (inverters)
- Power transformers to connect at 33 kV
- LV and MV switchgear and wiring
- Control, monitoring and Instrumentation (SCADA)
- Forecasting system
- Communication system
- Ancillary systems
- O&M facilities

### 5.2..3 Basic Requirement

#### i) Solar PV Module Array

All works shall confirm to the best current engineering practice. The Project shall cover: Safety and Reliability meeting Prudent Utility Practices.

- a. Annual performance ratio: 80% or more
- b. Technology : Proven technology
- c. Generating Voltage : at the option of developer
- d. Voltage at Interconnection Point : 33 kV
- e. Minimum design life : 20 years
- a. Capability of operating in parallel in coordinated operation with CEB national electricity grid.
- b. PV modules shall be a commercial, off-the-shelf product, UL-listed, meeting IEC standards of IEC 61215, IEC 61730, IEC 60364, IEC 61701, IEC 61853, IEC 62804 or higher shall be properly installed according to manufacturer's instructions.
- c. System wiring shall be installed in accordance with the applicable international standards.
- f. All modules installed in a series string shall be installed in the same plane/orientation.
- g. Panel installation design shall allow for the best ventilation possible of panels to avoid adverse performance impacts.

The manufacturer's warranty shall be as a minimum: All modules need to generate more than 90% of its specified minimum rated power after 10 years. PV modules shall have a 25-years life minimum.

#### ii) Inverters and Controls

- a) Inverters shall be a commercial off-the-shelf product, meeting IEEE 1547, and on the SB1 Compliant Lists of Eligible Inverters per SB1 guidelines: <http://www.gosolarcalifornia.org/equipment/inverters.php> or on local guidelines.
- b) Each inverter and associated controls shall be properly installed according to the manufacturer's instructions.
- c) The inverters shall have at a minimum the following features:
  - Peak efficiency of 96% (European Efficiency)
  - Operational indicators of performance and built-in data acquisition and remote monitoring
  - Capable of parallel operation with the existing AC power and the ability to automatically synchronize its output waveform with that of the utility upon restoration of utility power
  - A minimum 10-year manufacturer's warranty shall be provided.

### **iii) Mounting Structures and Tracking System**

- a) All structures, including array structures, shall be designed in accordance with all applicable state and local codes and standards set forth in paragraph 5.2.6 of this Schedule 5.
- b) All structural components shall be noncorrosive (galvanized steel, stainless steel, or aluminum). All hardware shall be stainless steel or aluminum. All components shall be designed to obtain a minimum 30-year design life.
- c) The array structure shall be equipped with single axis tracking according to the orientation.
- d) A minimum 10-year manufacturer's warranty shall be provided.

### **iv) Lightning Protection**

Lightening and surge protection shall be provided on all electrical systems

### **v) System Installation Warranty**

The PV systems shall carry a 20-year workmanship warranty by the installer, including parts and labor.

## **5.3 Specifications for Grid Interconnection**

### **1. General**

Solar PV Power Plant shall be connected to Siyambalanduwa Solar Collector Substation (SCS) which will be constructed under the Development of 100 MW<sub>AC</sub> Solar Park Facility. Siyambalanduwa SCS will be a feeder transformer substation which will be located in the village of Siyambalanduwa in Monaragala District. Grid interconnection of the Solar Park Facility will be at the 33 kV voltage level. Siyambalanduwa Solar Collector Substation shall be constructed as per the scope of works document for the SCS. Conceptual Point of Connection (PoC) of the Solar Park Facility will be at the 33 kV side of the two (2) 33/132 kV step up transformers whereas the physical connection will be at the eight (8) 33 kV feeder bays.

Siyambalanduwa SCS will be connected to the main grid through a 132 kV double circuit transmission line extending from Monaragala Grid Substation.

Proposed SCS layout and the single line diagram are shown in drawings at Schedule II of Volume VII of RFP Document.

Utilization of the feeder bays and 33 kV distribution routing shall be subject to instructions and approval by the Employer to prevent obstructions.

The Contractor shall propose the optimum electrical connection arrangement of the Solar Park Facility using prudent industry practices subject to the specifications provided in this document.

The Bidder shall calculate and submit a report on the maximum fault contribution by the Solar Park Facility at the Siyambalanduwa SCS. Notwithstanding the specifications provided in this document, the Contractor shall ensure the adequacy of the short circuit ratings of the equipment proposed for the interconnection.

## 2. Grid Requirements

Solar Park Facility and their accessories shall be ensured to be capable of operating safely and reliably within the grid conditions specified as below. These requirements are mainly based on the specific grid connection requirements for interconnecting the proposed Solar Park Facility.

## 3. Solar PV Power Plant Control and Monitoring Capability

The Solar PV Power Plant shall be equipped with a Plant Control and Monitoring System:

- i. With permanently installed and operational disturbance monitoring facilities for key variables including each input and output, and
- ii. Facilities for testing the control system sufficient to establish its dynamic operational characteristics
- iii. Having the following control options:
  1. Voltage control on remote bus (e.g. targeting PoC voltage 33 kV and PCC — 132 kV)
    - a. Option to include voltage droop characteristic
    - b. Regulates voltage within 0.5% of its set point
    - c. Regulate voltage in a manner to support network voltages during faults
      - d. Allow the voltage set point to be continuously controllable in the range of at least 95% to 105% of normal voltage
    - e. Has limiting devices to ensure that a voltage disturbance does not cause Solar PV Power Plant to trip at the limits of its operating capability
  2. Power factor control on remote bus (e.g. targeting power factor at PoC)
  3. Reactive power control on remote bus (e.g. targeting reactive flow at PoC)
- iv. With the Solar Park Facility connected to the power system, the settling times of voltage, active and reactive power measured at the targeting point, are less than 5 seconds for a 5% voltage disturbance.

Specific performance assessment tests shall be carried out to confirm the control and monitoring capability of the Solar Park Facility.

## 4. Voltage Variation Capability

Rated voltage at the PoC is 33 kV, whilst frequency is 50 Hz, with R-Y-B counter-clockwise phase rotation complying to the proposed grid code.

Solar Park Facility shall be capable of delivering the declared active and reactive power outputs within the voltage variations specified in Clause 1.3 of Chapter 1 of this document complying to the requirements in proposed grid code. The maximum voltage variation at the 132 kV bus at Siyambalanda Solar Collector Substation is +10% of the nominal voltage (not violating the 33 kV bus maximum voltage limits).



## 5. Frequency Variation Capability

The nominal frequency of the Sri Lankan transmission network is 50 Hz and shall be controlled within the limits of 49.5 Hz and 50.5 Hz unless abnormal conditions prevail. Under abnormal network conditions such as during faults and system disturbances, the system frequency could fall or rise beyond the normal frequency band. The Contractor shall ensure that the Solar Park Facility is capable of sustaining in continuous and uninterrupted operation during the manifestation of frequency events indicated in following table unless the rate of change of frequency is outside + 4 Hz/s for 250ms. Generating Units shall be able to disconnect from the system when frequency excursions are outside the ranges specified in the following table;

<b>Frequency (Hz)</b>	<b>System Conditions</b>
50.5 - 52.0	Emergency
49.5 - 50.5	Normal
47.0 - 49.5	Emergency

<b>Frequency (Hz)</b>	<b>Duration</b>
50.5 - 52.0	60minutes
49.5 - 50.5	Continuous
47.5 - 49.5	60 minutes
47.0 - 47.5	30 seconds

## 6. Voltage Waveform Distortion

Allowed waveform distortion at PoC, shall be limited to indicative planning levels given in Table 2 of Clause

4.1.1 of IEC 61000 -3-6 (Harmonics).

Accordingly, the Contractor shall ensure that level of harmonics generated by Solar PV Power Plant and its supporting equipment at the PoC must be lower than 50% of the limits indicated in the following table. Harmonic analysis for the Solar PV Power Plant shall be conducted by the Contractor and the study reports shall be submitted to the Employer during design stage. Once the Solar PV Power Plant are connected to the system (post commissioning), the distortions shall be measured to ensure that they do not exceed the allowable limits as given in the table. The analysis shall be conducted as per TR IEC 61000.3.6:2012.

Odd harmonics Non-multiple of 3		Odd harmonics multiple of 3		Even harmonics	
Harmonic order H	Harmonic voltage %	Harmonic order H	Harmonic voltage %	Harmonic order H	Harmonic voltage %
5	6	3	5	2	2
7	5	9	1.5	4	1
11	3.5	15	0.4	6	0.5
13	3	21	0.3	8	0.5
$17 \leq h \leq 49$	$227*17/h-0.27$	$21 < h \leq 45$	0.2	$10 \leq h \leq 50$	$0.25*10/h + 0.25$
NOT The compatibility level for the total harmonic distortion is THD E = 8%					

It is the responsibility of the Contractor to conduct background harmonic measurements at least for 2 weeks as per TR IEC 61000-3-6: 2012 for the harmonic analysis. If the Contractor fails to conduct adequate background harmonic measurements, then the post commissioning harmonic measurements must be below the harmonic levels agreed in the above table.

## 7. Voltage Fluctuations

### 7.1 Flicker

The Contractor must ensure that, irrespective of the operating status of the Solar PV Power Plant, it does not contribute to the flicker at the PoC above the limits indicated in the following table.

(Allowed voltage fluctuations are limited to indicative values of planning levels given in Table 2 of Clause 4.2.1 of IEC 61000-3-7 -Voltage fluctuation).

Description	Limit
Pst	0.45

Plt	0.35
-----	------

Contractor shall evaluate short term and long-term flicker contribution of the Solar PV Power Plant to the transmission network and design Solar PV Power Plant such that fluctuations do not exceed the allowed limits. Flicker analysis for the Solar PV Power Plant shall be conducted by the Contractor and study reports shall be submitted to the Employer during the design stage of the project. The Contractor shall measure and ensure that fluctuations do not exceed the allowed limits after the connection of the Solar PV Power Plant to the transmission network.

The flicker assessment procedure shall be accordance with TR IEC 61000.3.7: 2012 clause 4.2.2 “Assessment procedure for evaluation against planning levels”.

It is the responsibility of the Contractor to conduct at least 2 weeks of background flicker measurements as per TR IEC 61000-3-7: 2012 for flicker analysis. If the Contractor fails to conduct adequate background flicker measurements, then the post commissioning flicker measurements must be below the flicker levels agreed in the above table.

### 7.2 Rapid Voltage Fluctuation

The Contractor must ensure that, irrespective of the operating status of the Solar PV Power Plant, it does not produce rapid voltage fluctuations above the limits given in the following table. The guidelines relating to rapid voltage fluctuations are given in TR IEC 61000-3-7: 2012.

Number of changes (n)	$\Delta U/U_N$ % MV
$n \leq 4$ per day	5-6
$n \leq 2$ per hour and $> 4$ per day	4
$2 < n \leq 10$ per hour	3

### 8. Unbalanced Loading Capability

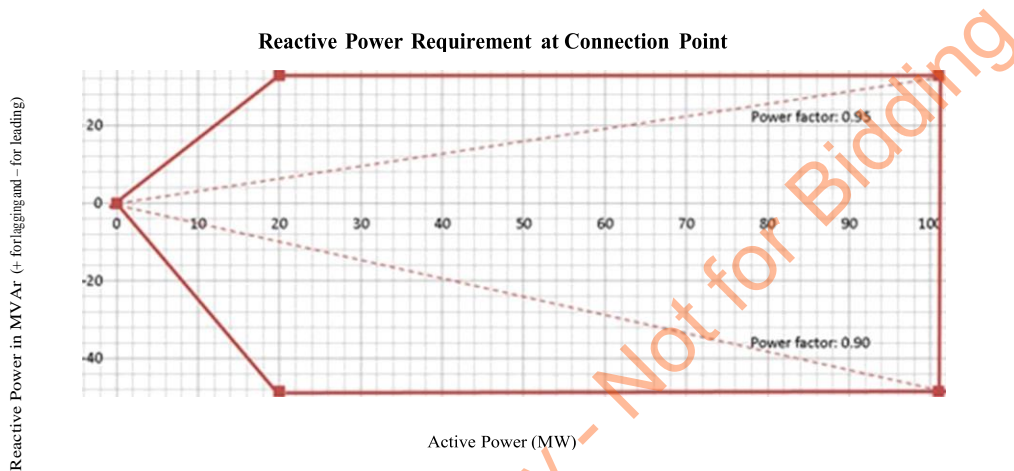
Design of the Solar PV Power Plant shall enable it to remain synchronized in the Transmission network under voltage unbalance as specified in IEC 60034-1 or Clause 6.5 of IEC 61400-1, whichever is the highest.

In addition, under unbalanced fault conditions in the Transmission Network, Solar PV Power Plant shall be capable of withstanding the resulting negative sequence loading and also remain connected to the Transmission Network, until the fault is cleared.

### 9. Power Factor Variation/ Reactive Power Capability

The Solar PV Power Plant shall be capable of continuously delivering reactive power to the Transmission Network at the PoC as per the Solar PV Power Plant Capability Curve given below. For voltages below nominal voltage, full capability of lagging reactive power as indicated in the following chart is required. For voltages above nominal voltages, full leading

reactive power as indicated in the following chart is required. The Bidder shall submit reactive power capability curves at 0.9 pu voltage as well as 1.1pu voltage.



### 10. Load Following Capability / Dispatchability

Solar PV Power Plant shall have the capability of providing frequency control ancillary service (i.e. load following capability). The Solar PV Power Plant shall be capable of reducing the active power output with adjustable Speed Droop settings in the range of 3% to 10%.

Solar PV Power Plant proposed by the Bidder must be controllable in terms of active power output according to the requirements of the System Operator with a view to counteracting a risk or disturbance of the system imbalance. It must then be possible to reduce the power output under any operating condition and from any working point to a target value defined by the system operator. This target value will be given by the system operator at the grid connection node and corresponds to a percentage value related to the network connection capacity. The reduction of the power output to the target value must take place with at least 10% of the network connection capacity per minute without disconnection of the plant from the network.

#### Allowable rate of change of active power output due to resource side variation

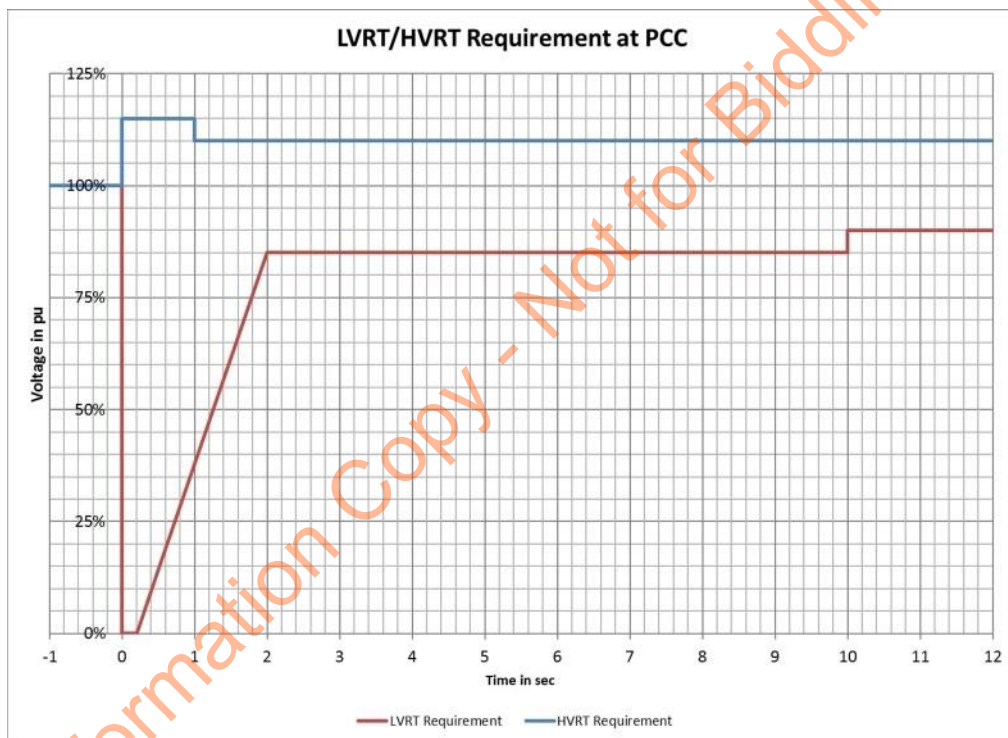
Change to active power output due to change in resource side (such as passing cloud) must not exceed the following values.

- (a) Upward – Maximum 3% per minute (3 MW per minute for 100 MW capacity)
- (b) Downward – Maximum 3% per minute (3 MW per minute for 100 MW capacity)

Facility must include a sufficient batter energy storage system or any other means to realize the above.

### 11. Fault Ride-through Capability

Solar PV Power Plant shall be capable of remain synchronized with the power system during and following any symmetrical or asymmetrical fault/disturbance in the Transmission Network or the Solar PV Power Plant internal network resulting in voltagedips or rises at the connection point within the following figure. Following the fault clearance, the generating unit should return to pre-fault conditions subject to its normal governor control system and automatic voltage regulator (AVR) response within pre-agreed time.



### 12. Current Distortion Limits

Allowed Current Distortion is limited to the current distortion limits described in clause 6, 7, 8 and 9 of IEC 61000-3-6 (Harmonics).

Measurement and evaluation and preparation of reports of the current harmonic distortion shall be carried out as per IEC 61000-3-6.

### 13. Emission Limits of Fluctuating Loads

Allowed emission is limited to the emission limits described in clause 6, 7, 8 and 9 of IEC 61000-3-7 (Voltage fluctuation).

Measurement and evaluation of the emissions shall be carried out as per IEC 61000-3-6. Measurement and evaluation reports shall be prepared as per IEC 61000-3-7.

#### **14. Protection Arrangements and Fault Level Considerations**

Protection schemes of the Solar PV Power Plant should be properly coordinated with the protection systems of the Transmission Network.

Solar PV Power Plant shall be provided with protection against grid disturbances/ abnormalities and against internal faults within the Solar PV Power Plant. Contractor shall obtain the Employer's approval for the protection systems employed. Relay setting calculations and the proposed system related settings shall be submitted to the Employer for approval.

Protection schemes employed in the Solar PV Power Plant shall have appropriate backup protection schemes and breaker fail schemes. The Employer will provide all necessary information including maximum and minimum fault levels, maximum clearance times, auto-reclosing or sequential switching features.

#### **15. Equipment Standards**

All equipment used up to the PoC shall conform to applicable statutory obligations and comply with the Employer's Technical Specifications and relevant IEC standards of latest editions.

#### **16. Neutral Grounding**

The Contractor shall submit a design proposal for the review of Employer ensuring that the neutral grounding of the Solar PV Power Plant is compatible with that of the Transmission Network. Any instructions provided by the Employer on this regard shall be duly incorporated in to the design.

#### **17. Metering**

Metering and associated equipment of the Solar PV Power Plant shall be supplied and installed at the PoC by the Contractor unless otherwise agreed with Employer. Meters shall comply with the standards.

It is necessary to install power quality meters, which are capable of recording 1024 samples per cycle for one

(1) year, at two solar inverters (near and furthest from the grid substation) low voltage level and two 33 kV feeders to monitor post commissioning power quality.

#### **18. Synchronizing**

Solar PV Power Plant shall be capable of automatic, unattended operation unless manual overriding is enabled for local manual controlling. The Solar PV Power Plant shall be automatically synchronized to the power system through a soft start arrangement to limit the

starting current. Such synchronization shall be initiated when the power system is in a healthy condition. The maximum inrush/starting current shall not exceed 1.5 times full load current.

## 19. Minimum Operational Short Circuit Ratio

Solar PV Power Plant manufacturers shall provide information of minimum workable short circuit ratio of the Solar PV Power Plant.

## 20. Technical Data and Dynamic Model Requirements

Technical and dynamic model data is required such that the Transmission Network operator can set up system study for the impact of the Solar PV Power Plant connection. Typical technical data requirements, such as:

Solar PV Power Plant

Main transformer

Solar PV Inverter

- Reactive capability
- Controls under normal conditions
- Fault Ride Through control
- Protection settings

Other major components

within the plant

Dynamic

- model
- Solar PV inverter and its control

- PV and inverter model
- Active and reactive power control
- Low- and high-voltage ride through control
- Model documentation
  - Model user guide
  - Model parameters
  - Model validation report
- Solar PV Power Plant controller
- Active power control
- Frequency control

- Reactive power control
- Power factor control
- Voltage control
- Model documentation
  - Model user guide
  - Model parameters
- Model validation report
- Other major components within the Solar PV Plant
  - Component and control
    - Model user guide
    - Model parameters
- Model validation report

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## **PART 2 - MINIMUM FUNCTIONAL SPECIFICATION FOR TRANSMISSION FACILITY**

Please refer appendices 4 & 5 of Volume VII;

Appendix 4A – Scope of Work of Transmission Line

Appendix 4B – Scope of Work for Grid Substations

Appendix 5A – General Technical Specification of Transmission Line

Appendix 5B – General Technical Specification of Grid Substations

### **5.3 Introduction**

This Schedule containing the Minimum Functional Specification for the Transmission Facility sets out the minimum technical requirements for the Solar Park Facility.

The Transmission Facility shall comply with the requirements more specifically described below and the Transmission Facility must be fit for the purpose and enable the Project Company to comply with its obligations under the Project Agreements. The Project Company shall design, construct, complete and handover the Transmission Facility in accordance with:

- (i) the Project Agreements;
- (ii) the requirements of this Schedule 5;
- (iii) Applicable Codes and Standards (internationally and locally acceptable for Transmission Facility);
- (iv) Prudent Utilities Practice;
- (v) Good Design Engineering and Construction Practices;
- (vi) the Laws of Sri Lanka
- (vii) the Grid Code
- (viii) Permits, consents and licenses.

All design work, calculations, drawings and detailing shall use the SI system of measurement. Equipment shall be coded and the same coding shall be used for the design, construction, control system and manuals. All the drawings, manuals etc. shall be in English language.

The Contractor shall use designs, methods, technologies and techniques that are modern, reliable, well proven, safe and in accordance with latest industry practice.

The completed Transmission Facility shall, amongst others:

- (i) be capable of reliable operation under reasonably foreseeable climatic and seismic conditions;
- (ii) be automated to optimum possible levels, involving minimum operator intervention for normal operation;
- (iii) on the basis that the Transmission Facility will be operated and maintained in accordance with Prudent Utility Practices it shall be durable with structures and plant, equipment and systems designed, procured and constructed to perform their intended functions for a minimum of 20 years;
- (iv) be designed and completed to minimise the risk of fire through use of non-combustible fire retardant materials and provision of adequate and appropriate fire detection and protection systems.
- (v) make provision for:
  - the health and safety of the public, the Project Company's employees and visitors;
  - the security of the Transmission Facility assets and CEB Transmission Network Assets;
  - protection of the environment.

- (vi) include features, architectural finishes and landscaping that presents a modern appearance in sympathy with its natural and cultural surroundings and its function.
- (vii) all work for or in connection with the Project shall be undertaken in accordance with:
  - (a) Applicable Codes and Standards as set out in this Schedule 5
  - (b) quality assurance programmes using the International System of Units (SI)

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## **Schedule 6 – Testing and Commissioning Procedure for Solar Park Facility**

This Schedule accommodates the Testing and Commissioning Procedure for Solar Park facility under Power Purchase Agreement.

### **6.1 General Scope**

The tests described in this Schedule 6 fall into the following categories:

- Pre-Synchronisation Tests: These tests are to be carried out and successfully completed prior to the first synchronisation of any component of the solar park facility to the CEB System;
- Demonstration Tests;
- Reliability Tests; and
- Performance Tests: These tests demonstrate the compliance of the Solar Park Facility with the requirements of the Minimum Functional Specification or as subsequently agreed. These tests must be successfully completed prior to the Commercial Operation Date.

The tests mentioned in this Schedule are not intended to form a complete list of the numerous tests, which the Project Company would normally perform to ensure equipment quality and reliability.

The Project Company shall supply the CEB copies of the Applicable Codes and Standards under which all testing will be conducted. Method Statement for each test based on the applicable standards shall be submitted in advance and agreed with CEB.

### **6.2 General Test Conditions**

All systems must be ready for normal and continuous operation. The use of temporary equipment will not be allowed unless previously approved in writing by the CEB. The Solar Park Facility shall run in a normal manner with no equipment shutdown to reduce auxiliary load.

During all testing, the Project Company's start-up personnel shall be present and shall be responsible for the operation of the Solar Park Facility. The Project Company shall provide all operating personnel for the testing as well as for the operation of the Solar Park Facility.

During all testing the net electrical energy delivered to the CEB at the Interconnection Point shall be continuously recorded, as a function of time.

### **6.3 Pre-Synchronisation Tests**

As a minimum the following verifications / tests shall be conducted prior to Synchronization for civil work; structures or trackers; weather stations; communications & SCADA; security systems, combiner, junction & isolation boxes; buildings; PV module installations; PV module flash test data and factory tests; PV module & other equipment thermographic and hotspot tests; DC cabling; Underground cabling; Polarity tests; Insulation tests; Continuity tests; Earthing & resistance tests; Open Circuit and Short Circuit string tests and curve traces; Inverter tests; Switchgear operation.

All the above tests shall be conducted in accordance with the test plans and manufacturers requirements. Where possible a representative from the manufacturer will be present during installation and/or testing.

### **6.3.1 Test Reports**

A written report of the results of each of the tests referred to in this Schedule 6 shall be prepared by the Project Company and issued to the CEB within seven Days of the completion of each Test. These reports will include, as a minimum, the following information:

- The date and time of the commencement and completion of each Test;
- A summary of instrument calibration data, including signed and approved instrument calibration forms;
- The names of the people responsible for recording test data;
- A description of the conditions under which the tests were performed, including meteorological information;
- A summary of all test data and results, the daily maximum and average electrical output;
- Calculations of correction factors applied to measured data;
- A listing of Dispatch Instructions, transmission system events, plant problem events; and
- Conclusions from the test results.

The CEB recognises that other test requirements may be imposed by other parties and will reasonably co-operate in arranging for its Dispatch to allow such other requirements to be satisfied.

### **6.3.2 Engineer's Certificate and Completion Certificate**

When the Engineer is satisfied the commissioning and performance/reliability tests and otherwise meets all the relevant requirements of the Minimum Functional Specification, he shall certify the Solar Park Facility as conforming to the Minimum Functional Specification and shall copy such certification (the "**Engineer's Certificate**") to the CEB and the Project Company. The Engineer's certification shall state amongst other things the measured net kW output of the Solar Park Facility.

On receipt of the Engineer's Certificate the Project Company shall issue a Completion Certificate pursuant to the Agreement.

## **6.4 Testing and Commissioning Procedure of Solar Park Facility**

### **6.4.1 Test Objectives**

The objectives of the Tests are to demonstrate the performance and operational characteristics of the Project, which are three types of tests:

**"Capacity Test"** (including the "**Initial Capacity Test**" and an "**Annual Capacity Test**") and;

**"Commissioning Tests"** (any of which would include a Capacity Test in addition to the tests described in Section 6.3 of this Schedule 6);

**"Performance Ratio Test"**. Each is described below.

The tests shall be performed within the Technical Limits; with all normal auxiliaries in service; and in accordance with Prudent Utility Practices.

Failure of any of the tests shall require the Project Company to immediately rectify the Solar Park Facility or Transmission Facility at their expense and retest until the test is passed.

#### 6.4.2 Reactive Power Testing Procedure

The Commissioning Test aims to verify the Solar Park Facility in compliance with CEB reactive power regulation requirements. The Capacity Test and reactive power tests shall demonstrate a power factor 1 to 0.8 (leading or lagging) at Standard Test Conditions. It shall be conducted in accordance with procedures and methodologies and acceptable industry test procedures as mutually agreed by the Parties.

The Commissioning Test will be performed by the Project Company, or at the Project Company's option, Turnkey Contractor or O&M Contractor on behalf of the Project Company as the case may be. The Project Company shall provide the necessary equipment to monitor and verify the load tests and all such test and verification equipment shall be properly calibrated and certified by the Engineer.

CEB shall have the right to attend and monitor any Commissioning Test. The Project Company shall provide CEB with a copy of all Commissioning Test results.

The Project Company has the sole authority to direct, manage or operate the Solar Park Facility during all tests and has the responsibility of providing any test equipment or testing sub-contractors for the tests.

The testing shall be carried out under stable grid conditions and the durations of the tests shall be referred to the information available in a SCADA system. The Project Company may elect a time to perform the test which will be confirmed by mutual agreement. The Project Company shall notify CEB of the detailed testing procedures to be followed. CEB shall have the right to review and comment on such procedures.

The verification report will include the following information and such other information as the Project Company may elect to include or CEB may reasonably request:

- 1) date and time of test start and finish;
- 2) description of environmental conditions under which the test was conducted;
- 3) summary of instrument calibration data;
- 4) summary of test result; and
- 5) conclusion drawn from the test result.

The Project Company shall allow Authorised Representative to monitor and test and to this end shall provide CEB with not less than seven (7) days' written Notice of every proposed Commissioning Tests. CEB shall have full access to the Project Site during the testing and shall be allowed to review all data relating thereto.

Within seven (7) Business Days of the completion of the Commissioning Test, the Project Company will provide CEB with a verification report. CEB is entitled to reject a test and to require a retest (unlimited in number) in the event that there is any discrepancy between the test results and the verification report or the event of non-compliance with the test procedures agreed between the Parties and/or set out in this **Error! Reference source not found..** In such event, the Solar Park Facility compliance shall be determined in accordance with such retest and the Project Company shall include in its notification to CEB a declaration of the compliance.

The Project Company shall allow CEB's Authorised Representatives to monitor.

### **6.4.3 Performance Ratio Tests**

The Performance Ratio Tests aim to certify the performance of the Solar Park Facility. One test will be performed during commissioning time for the Company to certify the acceptance of the Solar Park Facility from the Construction Contractor.

Performance Ratio Tests will be also performed by the O&M Contractor after completion of every Contract Year for the Project Company to verify that the expected annual performance of the Solar Park Facility is achieved.

The Performance Ratio Tests shall be carried out based on IEC TS 61724-3 Photovoltaic system performance – Part 3: Energy evaluation method.

### **6.4.4 Capacity Tests**

The Capacity Tests aim to certify that the Solar Park Facility can deliver the maximum capacity as specified. One test will be performed during commissioning time for the Project Company to certify the acceptance of the Solar Park Facility from the Construction Contractor.

Capacity Tests will be also performed by the O&M Contractor after completion of every Contract Year for the Project Company to verify that the expected capacity of the Solar Park Facility is achieved.

The Capacity Tests shall be carried out based on IEC TS 61724-2 Photovoltaic system performance – Part 2: Capacity evaluation method.

### **6.4.5 Annual Engineering Audit**

CEB shall carry out an annual engineering audit of the Solar Park Facility, which shall be a comprehensive audit covering all the engineering and related aspects of the Solar Park Facility. The Project Company shall allow the CEB to carry out the annual engineering audit with or without prior notice and facilitate the same.

## **Schedule 7 - Metering**

### **7.0 Metering**

This Schedule accommodates Metering for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

Metering equipment shall consist of one main and one back up system having the same configuration. Metering equipment will be located at the Interconnection Point. The meters shall utilize current and voltage transformer terminals provided by the CEB and incorporated into the switchgear. Both the Main Meter and the Check Meter shall be purchased by the Project Company and shall be installed within the collector sub-station. Both the Main Meter and the Check Meter shall be installed in a separate room or cabinet and shall only be accessible by the Project Company and the CEB in the presence of each other by means of a dual key system.

### **7.1 Location of Meters**

The Metering Points to record the kW and kWh output from the Solar Park Facility to the CEB System shall be located in the collector sub-station. The metering system shall be mounted on the individual 33kV feeders.

The Meters shall utilise current and voltage transformer terminals provided by the CEB and incorporated into the switchgear. Both the Main Meter and the Check Meter shall be purchased by the Project Company and shall be installed by the Project Company in accordance with this Agreement within the collector sub-station. Both the Main Meter and the Check Meter shall be installed in a separate room or cabinet and shall only be accessible by the Project Company and the CEB in the presence of each other by means of a dual key system.

### **7.2 Accuracy and Capability of Meters**

The measuring accuracy and capability of both the Main Meter and the Check Meter will be set to mutually agreed international standards of at least:

- Class 0.2 current transformers (three phases)
- Class 0.2 voltage transformers
- A three phase energy meter of Class 0.2s, complete with impulse output facility and maximum demand facility to record watt-Hours and watts and incorporating provision for local and remote monitoring

Both the Main Meter and the Check Meter shall have an accuracy of plus or minus 0.2 percent for watt-Hour metering and plus or minus 0.2 percent for watt metering. Calibration and testing of the Main Meter and Check Meter shall be conducted by internationally recognised testing and calibration facility acceptable to the CEB and the Company. Each of the Main Meter and the Check Meter shall include summators to measure the output and input of kW and kWh at 33kV.

The calculation of Energy Charges requires every 30-minute interval metering and so the Meters shall be suitable to record 30-minute intervals Metered Output (including lowest kW achieved in each 30-minute duration) and Metered Input. The Main Meter and Check Meter

shall each have the capability at any point in time to retain in memory the last 45 days recordings of Metered Output and Inputs.

Each metering system shall include seal-able Main and Check digital type meters having mass storage capability, magnetic tape or data card and related recorders, data transfer facilities and testing facilities. Both the Main Meter and the Check Meter shall use the same VT's and CT's for measurements.

The meters shall also be able to record continuously the CEB system voltage and frequency and have the capability to provide all information and data required in terms of this Agreement including:

- the recording of the times and durations that the Solar Park Facility is synchronised to and de-synchronised from the CEB system, minimum kW and kWh output for each 30-minute interval and
- providing all information and data required for the purposes of billing and payment, to produce Weekly Reports as stated in paragraph 8.7 of Schedule 8, and for other purposes as required under the Project Agreements.

The equipment and components supplied shall be in accordance with the latest editions/amendments of the standards specified below.

- a. IEC 62052-11(2003) Electricity metering equipment (AC)- General requirements, tests and test conditions- Part 11: Metering equipment.
- b. IEC 62053-22(2003) Electricity metering equipment (AC) Particular requirements- Part 22: Static meters for active energy (classes 0.2 and 0.5)
- c. IEC 62053-23- (2003) Electricity metering equipment (AC) particular requirements-Part 23 static meters for reactive energy ( classes 2 & 3)

The Meter shall be capable of measuring and recording Export kWh, kVAh, average kW, power factor. The accuracy class of the Meters shall be Class 0.2 for Active Energy (kWh) and Class 2 or less for reactive Energy (kVAh). The standard rated current of the meter shall be 1 A. The Meter shall operate with specified accuracy for power factors in the full range of all quadrants. The Meter shall record the consumption accurately irrespective of the phase sequence of supply.

The meter shall be capable to program for the CT ratios from 200:1 A to 2000:1 A and VT ratio 33kV:110 V. The meter shall be properly scaled to record Export energy in MWh with at least 10 digits with two decimal places. Export energy definition for reactive energy and active energy as per the IEC 62053-23.

The Meter shall record the monthly electricity transfer in calendar month along with the cumulative consumption of kWh separately and the maximum of average kVA demand and average kW over a demand integration period of fifteen (15) minutes for generally every 30 or 31 days period. Facilities shall be provided to reset the maximum demand indication automatically as well as manually. Meter shall record the average demand in kW for export (average demand integration period of 15-minute interval for generally 60 days period.). Load Profile (15-minute interval for at least 60 days) for the following measurements should be made available.



- i. Average values of Phase L1 Current, Phase L2 Current, Phase L3 Current
- ii. Average values of Phase L1 Voltage, Phase L2 Voltage, Phase L3 Voltage
- iii. Average values of Active Power, Reactive Power, Apparent Power, Power Factor, Frequency
- iv. Active Energy, Reactive Energy

It shall be possible to fully program (display settings, time of day tariff settings, load profile data, including automatic billing/resetting date, etc.), download data and reset the maximum demand both locally and remotely through suitable software running on PC without any assistance of the manufacturer.

The Meter shall be capable of recording occurrence of missing voltages and shall display the details of tampering attempts, power restorations and other details such as time and date of such occurrences. The meter shall record the power quality data such as voltage dips, drops, sag, swell, power usage, voltage & current harmonics, etc. The Meter shall have a Calendar clock to provide time and date information and it shall also facilitate GPS time synchronizing. GPS system shall also be provided with the metering panel. The meter shall be equipped with built in battery backup. Battery life shall be not less than 10 years. The meter shall also be provided with blinking LEDs which blinks and shall be analogous to the kWh and kVArh metered, for calibration purposes.

The Meter shall have facilities to store a minimum of twelve months of monthly billing data and to download the necessary data when required. The meter should have the facility to set two or more user levels to restrict the unauthorized access to data or altering the programme. The meter shall support traditional and new network communication technologies such as:

GPRS (TCP/IP)

SCADA (Modbus/DNP3 Protocol)

Separate functional communication ports- one for modem and other for SCADA should be made available.

A user friendly, Windows based graphic user interface software shall be supplied on a CD with all the licenses with the meters in order to program the meters (locally) and to download the data from the remote GPRS facilitated meters. The software shall have the facility to communicate via a GPRS modem connected to the PC.

A high precision metrological station should be installed at the power plant premises to record Global Horizontal Irradiance, Plane of Array Irradiance, ambient temperature, panel surface temperature, wind speed, air pressure and other relevant metrological data to measure the performance of the power plant at different environmental conditions. Project Proponent shall develop a suitable methodology or use an appropriate software to calculate and accurately predict the actual energy generation of the power plant. This proposed transfer function shall be validated within 3 months of the commissioning of the power plant. Proposed model predictability should be at least within 95% of accuracy to the actual generation of the power plant. Apart from the weather parameters, conditions like operation conditions of the tracking system, availability of inverter and other switchgears shall be recorded. Generation reduction percentage with the partial availability of the above equipment shall be clearly outlined in the

energy calculation methodology/software. Energy meter placed at the Point of Common Coupling (PCC) shall support the validation process on the actual generated units (kWh) against the calculated energy through the methodology/software, which CEB and the Project Company shall mutually agree at the time of plant commissioning. All the details recorded in the metrological station as well as all other parameters that are used for the energy calculation shall be able to be fed to the CEB System Control Centre in order to make appropriate decisions in curtailing the Solar Park facility whenever necessary.

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## Schedule 8 – Availability Forecast

### 8.0 Available Capacity

This Schedule accommodates Available Capacity for the Power Purchase Agreement.

### 8.1 Annual Energy Forecast

Prior to the Commercial Operation Date and thereafter on or before 1<sup>st</sup> December of each subsequent Contract Year, the Project Company shall furnish to CEB an annual forecast that includes the following:

- (i) anticipated monthly generation (kWh), mean solar irradiance level ( $\text{W}/\text{m}^2$ ), available capacity (kW), and
- (ii) Scheduled Outages for each year; provided,

however, the Project Company shall have no liability to CEB in the event that actual amount of electrical energy delivered to CEB, available capacity or the times of said delivery, differ from the amounts or times shown in said forecasts if the change in output is due to differing weather patterns.

### 8.2 Monthly Energy Forecast

The Project Company shall provide the CEB following data on monthly basis:

- (i) half hourly irradiance level ( $\text{W}/\text{m}^2$ ) measured at site,
- (ii) half hourly energy generation by each day, throughout the Term of this Agreement, in a suitable electronic format.

### 8.3 30-minute Energy Forecast

The Project Company shall provide the CEB following data every 30 minutes:

- (i) expected irradiance level ( $\text{W}/\text{m}^2$ ) at site for the next 30 minutes,
- (ii) expected half hourly energy generation for the next 30 minutes
- (iii) expected (AC) power output in 5 minute intervals over the next 30 minutes throughout the Term of this Agreement, via the SCADA system.

## Schedule 9 - Energy Charge

### 9.1 General

This Schedule accommodates Energy Charge for the Power Purchase Agreement.

#### 9.1.1 Curtailed Monthly Output

For any dispatch requirement or grid outage that results in the Delivered Monthly Output being lower than the Minimum Monthly Output, an amount of Curtailed Monthly Output will be calculated as follows:

$$\text{Curtailed M.O.} = \text{Expected M.O.} - \text{Delivered M.O.}$$

Where:

Curtailed M.O. = Curtailed Monthly Output

Delivered M.O. = Delivered Monthly Output

Expected M.O. = Expected Monthly Output, calculated as follows:

$$\text{Expected M. O.} = \sum_{k=0}^n \text{Capacity}_{\text{available}_k} \times \frac{T}{t}$$

Where:

k = a regular interval of time less than or equal to 1 hour beginning with the first interval of the month and ending with the last, e.g. 5 minutes or half hours

n = the total number of intervals in the calendar month (dimensionless)

T = 1 hour (h)

t = number of regular intervals, k, in 1 hour (dimensionless), e.g. 12, 2, etc

$\text{Capacity}_{\text{available}_k}$  = the Maximum Capacity of the Facility (MW) that was available during the interval k at the Interconnection Point. Note that if part of the Facility was not working or unavailable, the available capacity would be proportional to the operational portion of the Facility.

Also note, the available capacity is dependent on the available irradiation during the interval (as measured by the on-site Meteorological Stations) and will need to be calculated using a Performance Ratio (PR) methodology, as follows:

$$\text{Capacity}_{\text{available}_k} = P_{\text{STC}} \times \left( \frac{G_{\text{POA}_k}}{G_{\text{STC}}} \right) \times PR_{\text{month}} \times (\text{Degradation}_{\text{Year}}) \times \text{Portion}_{\text{Available}_k}$$

Where:

$P_{\text{STC}}$  = summation of installed modules' nominal power rating

$G_{\text{POA}_k}$  = measured on site plane of array (POA) irradiance ( $\text{kW}/\text{m}^2$ ) for the period k

$G_{\text{STC}}$  = irradiance at standard test conditions (STC) ( $1,000 \text{ W}/\text{m}^2$ )

$PR_{\text{month}}$  = the overall system performance ratio as determined by the Generation Model Report for the Facility (as provided by Project Company and attached at Schedule 22) for the specific month of the bill (unitless)

$Degradation_{\text{Year}} = 1 - (0.7\% \times \text{number of years or part thereof since the operation date})$

$Portion_{\text{available}_k}$  = the percentage of capacity of the Facility that is available or operational for the period k

And noting that  $Capacity_{\text{available}_k}$  shall never exceed the maximum AC output capacity of the Solar Park Facility.

### 9.1.2 Purchase of Electrical Energy and Curtailed Energy

CEB will pay for the Metered Output every calendar month based on the following scenarios:

If:

$$\text{Minimum M.O.} \leq \text{Delivered M.O.} \leq \text{Maximum M.O.}$$

Then:

All Delivered M.O. measured by the Main Meter shall be purchased by CEB at the rate of Rate (Metered Output) as specified below.

If:

$$\text{Delivered M.O.} + \text{Curtailed M.O.} \leq \text{Minimum M.O.}$$

Then:

All Delivered M.O. measured by the Main Meter shall be purchased by CEB at the rate of Rate (Metered Output) as specified below.

plus

All Curtailed M.O. as calculated in accordance with Clause 7.2 Dispatch and Curtailment shall be purchased by PPL at the rate of Rate (Metered Output) as specified below,

And

The Project Company will pay performance liquidated damages for the Shortfall to CEB at the rate of Rate (performance LD) specified below (Performance Liquidated Damages), where

$$\text{Shortfall} = \text{Minimum M.O.} - (\text{Delivered M.O.} + \text{Curtailed M.O.})$$

If:

$$\text{Delivered M.O.} \leq \text{Minimum M.O.}$$

and

$$\text{Delivered M.O.} + \text{Curtailed M.O.} \geq \text{Minimum M.O.}$$

Then:

The Minimum Monthly Output shall be purchased by PPL at the rate of Rate (Metered Output) as specified below.

If:

$$\text{Delivered M.O.} \geq \text{Maximum M.O.}$$

Then refer to Clauses 7.3 and 7.4

## **Minimum Monthly Output and Maximum Monthly Output**

### **Rates**

Rate (Metered Output) = [xx]LKR per kWh delivered

Rate (Surplus Energy) = [Zero]LKR per kWh delivered

(Details related to Surplus Energy have been included in generic form in the PPA; however, it is decided that no payments will be made for Surplus Energy.

Rate (performance LD) = [1.5 times Rate (Metered Output)]LKR per kWh not delivered

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## Schedule 10 – Financial Evaluation

### Financial Evaluation Methodology (Calculation of Net Present Value)

The responsive Project Proponents of the above stages will then be evaluated as per the following criteria.

1. The Present Value (PV) of the payments for Transmission Facility shall be equal or less than the engineering cost estimate of USD 21 million.
2. The Net Present Value (NPV) of the total cost incurred by CEB (i.e. the energy cost and cost of payments for Transmission Facility) shall be calculated and **only those Project Proponents who comply with the above criteria 1 shall be ranked** in the ascending order (lowest to highest) of NPV.

Following data shall be adopted for calculating the above, for evaluation purpose only.

- Present Values shall be calculated considering the year of Tender Closing as the beginning of the project timeline (Year 0 : Year End)
- Commercial Operation Date (COD) of the solar PV power plant and the transmission facility is considered to be achieved 2 years from Year 0.
- Payments for energy cost and payments for Transmission Facility are considered to be made in arrears, annually for 20 years in case of energy cost and 6 monthly for 10 years in case of payments for Transmission Facility, starting from beginning of Year 3.
- A discount rate of 4% shall be used for the solar park facility and 3.8% shall be used for the transmission facility.
- Plant Factor of the Solar PV power plant shall be considered as 17%, & the annual degradation of energy generated 0.7%
- Any currency conversion that may be required during evaluation shall be carried out at the indicative exchange rate on the date of tender closing, published by the Central Bank of Sri Lanka.

*Eg. Tender closing date July 20, 2022*

*Year 0 : End 2022, Year 1 : End 2023, Year 2 : End 2024*

*Defined year for calculating the NPV of annual energy cost for CEB*

*- Year 3 (ie. End 2025) up to Year Year 22 (ie. End 2044)*

*Defined period for calculating the NPV of 6 monthly annuity payments*

*- Year 3 (Installment 1 : Mid year(2025), Installment 2 : Year end(2025) up to Installment 20 : Year end (2034)*

NPV =	Present Value of Energy Cost for the electricity generated from the Solar PV power plant, considered to be paid annually in arrears for 20 years	+	Present Value of the Payments for the Transmission Facility, considered to be paid 6 monthly in arrears for 10 years (20 payments)
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The successful Project Proponent shall be the Project Proponent with a responsive offer, complying with criteria 1 above and that has the lowest NPV.

## **Schedule 11 - Handover Process (Transmission Agreement)**

### **Completion of the Facilities**

As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Employer's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.

Within 7 days after receipt of the notice from the Contractor, the Employer shall supply the operating and maintenance personnel specified in the Appendix (Scope of Works and Technical Specification) to the Contract Agreement for Pre-commissioning of the Facilities or any part thereof.

As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and other matters have been provided by the Employer as per the agreement, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning.

As soon as all works in respect of Pre-commissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the Employer in writing.

The Employer shall, within 14 days after receipt of the Contractor's notice, either issue a Completion Certificate in the form specified below, stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice, or notify the Contractor in writing of any defects and/or deficiencies.

If the Employer notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies and shall repeat the procedure described.

If the Employer is satisfied that the Facilities or that part thereof have reached Completion, the Employer shall, within 7 days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.

If the Employer is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within 7 days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.

If the Employer fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within 14 days after receipt of the Contractor's notice or within 7 days after receipt of the Contractor's repeated notice or, if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.

As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such Completion and deduct the costs thereof from any monies owing to the Contractor.



Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

### **Commissioning and Operational Acceptance**

Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Employer or immediately after the date of the deemed Completion.

The Employer shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services, and other matters required for Commissioning as agreed upon.

In accordance with the requirements of the Contract, the Contractor's and Employer's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Employer.

The Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof.

Operational Acceptance shall occur in respect of the Facilities or any part thereof when;

- the Guarantee Test has been successfully completed, and the Functional Guarantees are met; or
- the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion or any other agreed upon period as; or
- any minor items mentioned by the Employer during the issuing of the Completion Certificate hereof relevant to the Facilities or that part thereof have been completed;
- or any other requirement specified in the Contract Agreement;

At any time after any of the events set out above have occurred, the Contractor may give notice to the Employer requesting the issue of an Operational Acceptance Certificate in the form provided below in respect of the Facilities or the part thereof specified in such notice as of the date of such notice.

The Employer shall, after consultation with the Engineer and within 7 days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.

If within 7 days after receipt of the Contractor's notice, the Employer fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Employer has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.

## Form of Completion Certificate

Contract: [ . . . *insert name of contract and contract identification details*. . . . ]

Date: .....

Certificate No.: .....

To: [ . . . . *insert name and address of Contractor*. . . . ]

Dear Ladies and/or Gentlemen,

Pursuant to Clause 6 in Volume IV of the Draft Contract for Development of Transmission Facility (**Handover**) of the Contract entered into between yourselves and the Employer dated [ . . . *insert date*. . . . ], relating to the [ . . . *brief description of the Facilities* . . . . ], we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: [ . . . *description* . . . . ]
2. Date of Completion: [ . . . *date* . . . . ]

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

[ . . . *Signature* . . . . ]

Employer

## Form of Operational Acceptance

Contract: [ . . . . *insert name of contract and contract identification details.* . . . . ]

Date: .....

Certificate No.: .....

To: [ . . . . *insert name and address of Contractor.* . . . . ]

Pursuant to Clause 6 in the Volume IV of the Draft Contract for Development of Transmission Facility (**Handover**) of the Contract entered into between yourselves and the Employer dated [*date*], relating to the [*brief description of the Facilities*], we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below ;

1. Description of the Facilities or part thereof: [*description*]
2. Date of Operational Acceptance: [*date*]

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

[ . . . . *Signature* . . . . ]

Employer

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## Schedule 12 - Form of CEB Irrevocable Standby Letter of Credit

### PART A

#### FORM OF CEB IRREVOCABLE STANDBY LETTER OF CREDIT

Part A of this Schedule accommodates Form of CEB Letters of Credit for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

Number: .....

Amount: US Dollar/Rupees .....

Validity Period: Three Hundred and sixty five (365) Days from Commencement Date

Commencement Date: .....

Expiry Date: .....

Account party: Ceylon Electricity Board

Beneficiary: [ ] (Private) Limited

Address: [ , Colombo in Sri Lanka]

We hereby establish our Irrevocable, Unconditional, Standby Letter of Credit Number..... issued in your favour for the account of the Ceylon Electricity Board (the "**Account Party**") for an amount not exceeding a total of [FC/Rs ( ) US Dollar/Rupees] (the "**L/C Amount**"). Drafts drawn on us shall be payable at sight and must be accompanied by a certificate in the form of the Drawing Certificate attached purporting to be signed by two duly authorised officers of the Beneficiary on behalf of the Beneficiary.

One draft and one Drawing Certificate shall be presented for each drawing hereunder and the draft shall be in the amount specified in the accompanying Drawing Certificate.

The original of this Letter of Credit shall be presented for each drawing hereunder. The L/C Amount shall be automatically reduced by the amount of all drawings hereunder.

Partial drawings are permitted under this Letter of Credit.

This Letter of Credit shall automatically terminate on the earlier to occur of (i) the Expiry Date and (ii) the date the drawing(s) made by you under this Letter of Credit equal in aggregate the L/C Amount.

This Letter of Credit sets forth in full our undertaking and such undertaking shall not, in any way, be modified, amended, amplified, or limited by reference to any document, instrument or agreement referred to herein, except only the certificate referred to herein; and any such references shall not be deemed to incorporate herein by reference any document, instrument, or agreement except for such certificate.

We hereby agree with you that drafts drawn under and in compliance with the terms and conditions of this Letter of Credit shall be duly honoured on due presentation at our office at ....., ....., Telecopier: .....Telex: ....., Attention: ....., specifically referring thereon to this Letter of Credit by number.

Except for any assignment or transfer by the Beneficiary of this Letter of Credit to Finance Parties, this Letter of Credit shall not be assigned or transferred by the Beneficiary.

This credit is subject to "Uniform Customs and Practice for Documentary Credits" (2007 Revision), International Chamber of Commerce, Publication No. 600.

[LETTER OF CREDIT BANK]

By :.....

Name:

Title:

### DRAWING CERTIFICATE

[Letter of Credit Bank]

.....

.....

Attention: Letter of Credit Department

Re: Irrevocable Standby Letter of Credit No.

The undersigned, each an authorised officer of [ ] (Private) Limited (the "**Beneficiary**"), each hereby certifies to the [Letter of Credit Bank] that:

1. Unless otherwise defined herein, all capitalised terms used herein and defined in the above referenced Letter of Credit (the "**Letter of Credit**") shall be used herein as so defined.
2. The undersigned is the Beneficiary under the Letter of Credit (or a permitted assignee of the Beneficiary under the Letter of Credit) and the persons executing this certificate on behalf of the Beneficiary are duly authorised to do so.
3. The Beneficiary is making a drawing under the Letter of Credit in the amount of:

- (i) [FC...../Rupees .....], which amount is the unpaid amount [s] of Invoice No. [s]..... submitted by the Beneficiary to the Ceylon Electricity Board ("CEB") on..... Such amount has not been disputed by the CEB and remains unpaid as of the date hereof, which date is no less than three days after the date such payment was due and payable; or
- (ii) (ii) [FC...../Rupees .....], which amount is the entire stated amount of the Letter of Credit which has not been drawn at the date of this Drawing Certificate (the "**Available Amount**"). Such Available Amount is being drawn in full because the Letter of Credit has not been renewed or replaced in the same form at least 30 days prior to its Expiry Date. You are instructed immediately to pay the Available Amount by way of bank transfer to the following account: [FC/Rs account], Number [ ], Account Name: [ ] (Private) Limited, "re the CEB Letter of Credit", Bank:[ branch in Colombo of bank in Sri Lanka].

4. Upon its receipt of the amount demanded under the Letter of Credit, the Beneficiary will (i) apply the same directly to the satisfaction of the CEB's obligations under the invoice referenced in paragraph 3(i) above or (ii) in the case of a drawing under paragraph 3(ii), hold the same in the stated account as security for the CEB's performance of its payment obligations under the Power Purchase Agreement.

IN WITNESS WHEREOF, the Beneficiary has executed and delivered this Drawing Certificate as of the .....day of....., 20..... [Beneficiary]

By:.....

Name:.....

Name.....

Title: .....

Title.....

**PART B**

**FORM OF PROJECT COMPANY IRREVOCABLE STANDBY LETTER OF CREDIT**

Part B of this Schedule accommodates Form of Project Company Letters of Credit for the Power Purchase Agreement.

[to insert once it is confirmed that this provision would be retained.]

**DRAWING CERTIFICATE**

[to insert once it is confirmed that this provision would be retained.]

## Schedule 13 - Buy-Out

This Schedule accommodates Buy-Out provisions for the Power Purchase Agreement.

### 13.1 Introduction

This Schedule outlines the procedures and methodology for calculating the Buy-Out Price if an event entitling the CEB to Buy-Out the Facility pursuant to paragraph 13.2 (a "**CEB Buy-Out Event**") or entitling the Project Company to require the CEB to Buy-Out the Solar Park Facility pursuant to paragraph 13.4 (a "**Project Company Buy-Out Event**") occurs after the date the Project Company gives the Construction Notice and a notice exercising the right to Buy-Out the Solar Park Facility (the "**Buy-Out Notice**") under paragraph 13.3 or paragraph 13.5 below is served by the CEB or the Project Company, as the case may be.

### 13.2 CEB's Buy-Out Events

A CEB Buy-Out Event shall occur either at the expiry of the Operational Period or where the CEB gives notice to terminate this Agreement in accordance with the terms of the Agreement.

### 13.3 CEB Buy-Out Notices

Where a CEB Buy-Out Event occurs, the CEB shall be entitled at its option to serve a Buy-Out Notice ("**CEB Buy-Out Notice**") on the Project Company to Buy-Out the Facility. In the case of a Buy-Out at the expiry of the Operational Period, the Project Company shall provide notice to CEB that the Term is near expiry and request CEB to issue a Buy-Out Notice on the Project Company if the CEB wishes to exercise this right no later than two hundred seventy (270) Days, but not before three hundred sixty (360) Days prior to Termination. The CEB will have one hundred eighty (180) Days to issue the notice from the date of receipt of notice from the Project Company. In any other case, a CEB Buy-Out Notice shall be served on the Project Company within thirty Days of the date of a termination notice served on the Project Company failing which the CEB shall lose its right to serve a CEB Buy-Out Notice.

### 13.4 Project Company's Buy-Out Events

A Project Company Buy-Out Event shall occur where the Project Company gives notice to terminate this Agreement.

### 13.5 Project Company Buy-Out Notices

Where a Project Company Buy-Out Event occurs, the Project Company shall be entitled at its option to serve a Buy-Out Notice ("**Project Company Buy-Out Notice**") on the CEB requiring the CEB to Buy-Out the Solar Park Facility. The Project Company shall serve its Project Company Buy-Out Notice on the CEB within thirty days of the date of the notice to terminate served on the CEB, failing which the Project Company shall lose its right to serve a Project Company Buy-Out Notice.

### **13.6 Buy-Out Obligations**

Following the service of a Buy-Out Notice under either paragraph 13.3 or 13.5, the CEB shall Buy-Out the Solar Park Facility and the Project Company shall be obliged to transfer the Solar Park Facility to the CEB at the Buy-Out Price, in accordance with the terms and conditions of Clause 14 and this Schedule 13.

### **13.7 Buy-Out Price**

- 13.7.1** The Buy-Out Price payable is shown in Annex 1 to this Schedule 13 in a matrix format. The table refers to various compensation elements labelled A, B, C and D which are set out in Annex 2 to this Schedule 13.
- 13.7.2** In respect of a Buy-Out of the Solar Park Facility at the expiry of the Period, the Buy-Out Price shall be nil.
- 13.7.3** The CEB, in the event of a CEB Buy-Out Notice, and the Project Company, in the event of a Project Company Buy-Out Notice, shall within fifteen (15) Days of the issue of the respective Buy-Out Notice, provide the other Party with their calculation of how the Buy-Out Price is arrived at. If the Parties cannot agree on the Buy-Out Price within thirty (30) Days of the date of the Buy-Out Notice in question, either Party may refer the matter to an Expert appointed under Part 1 of Schedule 15 (Disputes Resolution Procedure).

### **13.8 Scope of the Buy-Out**

- 13.8.1** For the purposes of a Buy-Out, the Facility shall include all assets of the Project Company including:
- (i) all land, buildings, plant and machinery, equipment and materials, spare parts and oil stockpiles (including any of the foregoing which have been ordered by the Project Company and which the Project Company is contractually bound to pay for);
  - (ii) all records, drawings, manuals (including operation and maintenance manuals) and all other consumables, and
  - (iii) all rights which are capable of being assigned or transferred to the CEB (which the Project Company shall use all reasonable endeavours to achieve) under licences, permits and consents of Competent Authorities, contracts (including maintenance contracts), warranties, performance or other guarantees and all intellectual property rights.
- 13.8.2** If, at the Transfer Date, any claim by the Project Company in respect of any of its rights referred to in paragraph 13.8.1(iii) has not been concluded and if such claim does not relate to a diminution in the value of the Solar Park Facility subsisting at the Transfer Date or the Solar Park Facility's future electricity generating capacity, such claim shall remain for the benefit of the Project Company, but otherwise such claim shall remain for the benefit of the CEB and if it is not possible to assign or transfer to the CEB the right to pursue or continue pursuing such claim which is to remain for the benefit of the CEB hereunder, the Project Company shall co-operate with the CEB in pursuing such claim in the Company's name, subject to the CEB indemnifying the Project Company in respect of the costs incurred in so doing.



**13.8.3** Upon a Buy-Out, cash in hand or in the Project Company's bank accounts (excluding any cash balances in the L/C Deposit Accounts due to the CEB, and the Government after the deduction of all non-disputed amounts owing to the Project Company at the Transfer Date, and subject to the Project Company accounting to the CEB, and the Government following Buy-Out in respect of any amount being due to the CEB, and the Government following resolution of any related disputes)) and receivables accruing to the Project Company prior to the Transfer Date, including the proceeds of any insurance (subject to Clause 13.5), shall, subject to the Project Company making provision for the full discharge of its liabilities in accordance with paragraph 13.9.1, remain for the benefit of the Project Company.

### **13.9 Project Company to Novate or Assign Material Agreements to the CEB**

Without prejudice to the generality of paragraph 13.8, the Project Company shall, if so required by the CEB, use all reasonable efforts to procure the novation (or failing that, assignment of all of the underlying rights held by the Project Company) to the CEB of any relevant construction contract or other material contracts relating to the Solar Park Facility (subject to the provisions of those contracts and the Project Company's obligations pursuant to Clause 14.3).

### **13.10 Project Company's Responsibility for Transfer Costs and Taxes**

If a CEB Buy-Out Notice is issued under paragraph 13.3, the Project Company shall be responsible for all Transfer Costs and Transfer Taxes (each as defined below) in connection with the Buy-Out.

### **13.11 CEB's Responsibility for Transfer Costs and Taxes**

If a Project Company Buy-Out Notice is issued under paragraph 13.5, the CEB shall be responsible for all Transfer Costs and Transfer Taxes in connection with the Buy-Out.

### **13.12 Definitions for Transfer Taxes and Transfer Costs**

For purposes of this Schedule 13, the terms:

- (a) "**Transfer Taxes**" means any stamp duty and any other taxes, including any sales or value added taxes, and any registration fees that are payable to the Government upon a transfer of the Solar Park Facility to the CEB; and
- (b) "**Transfer Costs**" means all costs and liabilities of the Project Company which are incurred as a result of the Buy-Out, including:
  - (i) the fees, costs and expenses of the Appraiser;
  - (ii) any fees, costs and expenses payable by the Project Company to the Finance Parties arising out of the prepayment of any loans (including winding up costs); and

- (iii) any termination payments or any fees payable on the assignment or transfer of any of the rights referred to in paragraph 13.8.1 or on the termination, assignment or novation of any contracts in connection with the Solar Park Facility (provided that the terms of those contracts have been specifically approved by the CEB).

### **13.13 Transfer on receipt by Company of Buy-Out Price**

Subject to paragraph 13.16, on the Transfer Date the Project Company shall transfer to the CEB the Solar Park Facility free of all charges and liens, on payment of the Buy-Out Price by the CEB to the Project Company in accordance with paragraph 13.15.

### **13.14 Payment of Buy-Out Price**

On the Transfer Date the CEB shall, subject to paragraph 13.16, pay the Buy-Out Price and all other amounts required to be paid in US Dollar to the Project Company under this Agreement in US Dollar in immediately available funds. If the CEB pays such amount in Rupees, then the provisions of Clause 7.4 shall apply.

### **13.15 Payment of Buy-Out Price to the Finance Parties**

If the Transfer Date occurs at a time when any of the Senior Debt is still outstanding, the CEB shall pay the Buy-Out Price directly to a bank account designated by the Finance Parties. As consideration for such payment, and upon their receipt thereof, the Finance Parties shall release all liens, charges or encumbrances over or in respect of the Facility and on all assets of the Project Company being transferred to the CEB. Payment of the Buy-Out Price, calculated in accordance with the provisions of this Agreement, to the Finance Parties' designated bank account shall be a full discharge of the CEB's obligation to pay such Buy-Out Price to the Project Company.

### **13.16 Project Company to provide the CEB benefit under Guarantees**

If a Project Company Buy-Out Notice is served and the Project Company is entitled to receive or receives compensation from the Government as a result of the events giving rise to the Project Company Buy-Out Notice and such compensation is in respect of a reduction in the value of the Solar Park Facility, then to the extent such reduction in value has not been accounted for in determining the Buy-Out Price, the CEB shall be entitled to receive the benefit of such compensation, in the form of deduction from or offset against the applicable Buy-Out Price.

### **13.17 Access to the Project Site and Deductions for Clean Up and Remediation Costs**

**13.17.1** Immediately following the service by either Party of a Buy-Out Notice, the Project Company shall allow the CEB or its representatives access to inspect the Project Site, to check the condition of the Facility and to make an inventory of the Project Company's assets that will be transferred to the CEB on a Buy-Out.

**13.17.2** Notwithstanding any of the foregoing provisions of this Schedule 13, where the Site has been contaminated by toxic or hazardous or other waste as a result

of any failure by the Project Company to comply with its obligations under this Agreement, then (unless the Parties agree within twenty Days that the Project Company shall be responsible for decontaminating the Site) the CEB shall be entitled to deduct from the Buy-Out Price an amount reasonably calculated to recover the costs of decontamination and removal of such waste which it shall advise the Project Company by notice. If the Project Company disagrees that the Project Site has been so contaminated, or that such contamination has resulted from any failure by the Project Company to comply with its obligations under this Agreement or with such clean-up costs it shall be entitled to refer the matter to an Expert appointed under Part 1 of Schedule 15 (Disputes Resolution Procedure) to determine the existence of such contamination, its cause and the necessary clean-up costs provided that the burden shall be on the Project Company to prove such matters. Notwithstanding such dispute, the transfer of the Solar Park Facility to the CEB shall proceed, with the amount of the clean-up costs so assessed by the CEB being withheld from the Buy-Out Price, subject to the Parties agreeing adequate security in favour of the Project Company in respect of the Disputed Amount of such costs. The CEB shall not be entitled to any sum in respect of such decontamination which would prevent the repayment of the Senior Debt and interest thereon from the proceeds of the Buy-Out Price.

- 13.17.3** Notwithstanding any of the foregoing provisions of this Schedule 13, where the Project Site has been damaged or has suffered deterioration beyond normal wear and tear, or is not operating at the expected output for a Solar Park Facility of the age at the time of termination or expiry, then (unless the Parties agree within twenty Days that the Project Company shall be responsible for decontaminating the Project Site) the CEB shall be entitled to deduct from the Buy-Out Price an amount reasonably calculated to recover the costs of remediation. If the Project Company disagrees that the Project Site has been so damaged, it shall be entitled to refer the matter to an Expert appointed under Part 1 of Schedule 12 (Disputes Resolution Procedure) to determine the necessary remediation costs provided that the burden shall be on the Project Company to prove such matters. Notwithstanding such dispute, the transfer of the Solar Park Facility to the CEB shall proceed, with the amount of the repair costs so assessed by the CEB being withheld from the Buy-Out Price, subject to the Parties agreeing adequate security in favour of the Project Company in respect of the Disputed Amount of such costs. The CEB shall not be entitled to any sum in respect of such remediation costs which would prevent the repayment of the Senior Debt and interest thereon from the proceeds of the Buy-Out Price.

## Schedule 13 – Annex 1

### Buy-Out Price Table

The compensation elements specified in this Annex 1 and Annex 2 shall apply to the determination of the Buy-Out Price for CEB Buy-Out Events and Company Buy-Out Events arising as a result of termination in accordance with the following Clauses:

CEB Buy-Out Events:                   Clauses 13.1.1, 13.1.2, 13.1.3, 13.1.4, 13.1.5, 13.1.6, 13.1.7, 13.1.8, 13.1.9, 13.1.10, and 13.1.11

Project Company Buy-Out Events:   Clauses 12.3.10, 13.2.1, 13.2.2, 13.2.3, 13.2.4, 13.2.5, 13.2.6 and 13.2.7

ITEM	TERMINATION EVENT	BUY-OUT PRICE PAYABLE BY CEB
<b>Termination occurring prior to Commercial Operation Date:</b>		
1.	Termination giving rise to a CEB Buy-Out Event or a Project Company Buy-Out Event	A + D
2.	Termination following Non-Sri Lanka Force Majeure	A + D
3.	Termination following Sri Lanka Force Majeure	A + D
<b>Termination occurring on or after Commercial Operation Date:</b>		
4.	Termination giving rise to a CEB Buy-Out Event (other than a Restoration schedule default) where the CEB elects to purchase the Facility.	A
5.	Termination giving rise to a Project Company Buy-Out Event.	A + C
6.	Termination following Non-Sri Lanka Force Majeure where the CEB elects to terminate.	A + B
7.	Termination for a Restoration schedule default following Non-Sri Lanka Force Majeure.	A
8.	Termination following Sri Lanka Force Majeure where the Expert determines the costs of Restoration but the CEB elects to terminate.	A + C
9.	Termination following Sri Lanka Force Majeure where the parties agree that Restoration is not feasible.	A
10.	Termination for a Restoration schedule default following Sri Lanka Force Majeure.	A

## Schedule 13 – Annex 2

### Buy-Out Price Elements

In this Schedule 11, the letters A, B, C and D are used to signify different elements of the Buy-Out Price to be paid upon the occurrence of the events described in this Schedule 11. The letters shall represent the following amounts:

A =	<p>Outstanding debt, as represented by the audited financial statements, being the sum of (i) the total amount outstanding to the Finance Parties under the Financing Agreements (including interest during the construction period through to the earlier of the date of termination of this Agreement or the Operation Date); (ii) the total amount outstanding under any loan agreements for capital improvements to the Facility that are required under this Agreement, as agreed by the CEB; and (iii) the total amount of any other outstanding debt incurred by the Project Company, that was approved by the CEB, less any insurance proceeds available to the Company following a Force Majeure and not spent for Restoration.</p> <p>For the avoidance of doubt, outstanding debt shall exclude loan repayments due and unpaid by the Project Company at the date of Termination.</p>
B =	<p>Book value of the shareholders' equity in the Project Company, as represented by the shareholders funds stated in the balance sheet of the Project Company's most recent audited financial statement, such audit being undertaken by a recognized international firm of auditors in accordance with International Accounting Standards.</p>
C =	<p>The Equity Rate, being the expected net cash flows accruing to the Project Company from the date of Termination to the twentieth anniversary of the Commercial Operation Date discounted to a Net Present Value at 10%.</p> <p>The Equity Rate shall be deemed to be zero until the Commercial Operation Date has occurred, and shall otherwise apply from the date of Termination until the twentieth anniversary of the Commercial Operation Date,</p> <p>For the purposes of calculating the Buy Out Price, the Equity Rate in respect of each Year shall be the sum of the US Dollar Component Dollar and Rupee components of such earnings, as detailed in the Project's Financial Model for each Contract Month over the Term and attached as Schedule [insert]__.</p>
D =	<p>Construction Period value shall equal 100% of the sum of all equity subscriptions paid into the Project Company and spent on the Project until Transfer Date, with deductions, as represented by the audited financial statements, to reflect the following:</p> <ul style="list-style-type: none"> <li>(i) The extent to which amounts actually incurred by the Project Company exceed the amounts budgeted in the base case financial model prepared by the Finance Parties at the time of execution of the Financing Agreements;</li> <li>(ii) Any non-compliances with the Minimum Functional Specification;</li> <li>(iii) Any loans disbursed by Finance Parties but not expended by the Project Company;</li> <li>(iv) Any liquidated damages liabilities that the Project Company might have reasonably been expected to incur.</li> </ul>

## **Schedule 14 – Compensation Table and Termination Charges**

This Schedule accommodates Compensation Table and Termination Charges for the Transmission Agreement.

(Not applicable for this project)

## **Schedule 15 - Disputes Resolution Procedure**

This Schedule accommodates Disputes Resolution Procedure for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

### **PART 1 - Expert Determination**

#### **15.1 Appointment of Expert**

Where this Agreement provides for a dispute to be determined by an Expert or the parties otherwise agree that a dispute under this Agreement should be determined by an Expert, then the procedure for the appointment of an Expert shall be as follows:

- 15.1.1** the party wishing the appointment to be made shall give notice in writing to that effect to the other party and shall, with such notice, give details of the matter which is proposed to be determined by the Expert;
- 15.1.2** the parties shall meet in an endeavour to agree upon a single Expert to whom the matter in dispute shall be referred for determination;
- 15.1.3** if, within fourteen Days from the service of the said notice, the parties have failed to agree upon an Expert, the party wishing the appointment to be made may request the Chairman for the time being of the Singapore International Arbitration Centre, to nominate an Expert within fourteen Days of such request;
- 15.1.4** upon an Expert being agreed or nominated under the foregoing provisions of Part 1 of this Schedule 15 (Disputes Resolution Procedure) the parties shall forthwith notify such Expert of his selection and shall request him within fourteen Days of such notification to indicate whether or not he is willing and able to accept the appointment; and
- 15.1.5** if such Expert is either unwilling or unable to accept such appointment or has not indicated his willingness and ability to accept such appointment within the said period of fourteen Days then (unless the parties are able to agree upon the appointment of another Expert) the matter shall be referred (by either party) in the manner aforesaid to the Chairman for the time being of the Singapore International Arbitration Centre, who shall be requested to make a further nomination and the process shall be repeated until an Expert is found who accepts appointment.

#### **15.2 Conflicting Interest**

Any person appointed as an Expert shall, before accepting such appointment, fully disclose any interest or duty he has or may have which conflicts or may conflict with his function under such appointment, and he shall also fully disclose any such interest or duty incurred at any time before he gives his determination under such appointment provided always that no person shall be appointed an Expert who at the time of appointment is or has at any time during the ten years prior

to the time of appointment been an employee of either party or of any Affiliate or Subsidiary of either party or of any company with which either party has a direct significant financial interest.

### **15.3 Decision**

#### **15.3.1 Representations Data and Information**

The Expert so appointed shall promptly fix a reasonable time (no later than thirty Days after the Expert's acceptance of its appointment) and/or place for receiving submissions or information in the form and/or manner directed by the Expert from the parties and the said Expert may make such other enquiries and require such other evidence (which may include a description of the dispute, a statement from each party of its position and copies of supporting evidence) as he may consider useful to assist in determining the matter. Each party shall have access to the documentation submitted to the Expert by the other party which is marked "Non-Confidential". Any documentation so received by either party shall be treated on a confidential basis. All other information and data submitted by either party to the Expert shall be regarded as confidential and shall be and remain confidential to the Expert and shall not be disclosed to the other party. The Expert shall have the right to inspect the Facility.

#### **15.3.2 Substitution of Expert**

If within a period of forty Days after the acceptance by an Expert of the appointment, unless otherwise agreed by both parties, such Expert shall not have made his determination then (at the request of either party) a new Expert shall be appointed under the provisions of this Part 1 of Schedule 15 (Disputes Resolution Procedure) and on the acceptance of appointment by such new Expert the appointment of the previous Expert shall cease, provided that if the previous Expert shall have rendered a decision prior to the date upon which the new Expert accepts his appointment then such decision shall be binding upon the parties and the instructions to the new Expert shall be withdrawn.

#### **15.3.3 Competence**

The Expert shall be deemed not to be an arbitrator but shall render his decision as an expert and the law or legislation relating to arbitration shall not apply to such Expert or his determination or to the procedure by which the Expert reaches his determination.

#### **15.3.4 Determination**

The determination of the Expert shall be made in writing setting out the reasons for such determination and shall be final unless expressly stated otherwise and subject to Clause 15.3.6(ii), binding upon the parties and not subject to appeal save in the event of fraud, manifest error or failure by the Expert to disclose any relevant interest or duty in accordance with paragraph 15.2 of this Part 1 of Schedule 15 (Disputes Resolution Procedure).

#### **15.3.5 Costs and Expenses**

Each party shall bear all costs incurred by it in connection with the Expert's determination but the costs and expenses of the Expert shall be apportioned equally between the parties.

## **PART 2 – Arbitration**

### **15.4 References to Arbitration**

Any dispute or difference of whatever nature between the parties arising out of or in connection with this Agreement (which are not first amicably resolved between the parties or are not the subject of determination by an Expert in accordance with Part 1 of this Schedule 15 (Disputes Resolution Procedure)) including any question regarding its existence, validity or termination, shall be referred to and finally resolved by arbitration in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (the "**UNCITRAL Rules**") for the time being in force, which rules are deemed to be incorporated by reference to this Clause save as may be amended by this Part 2 of Schedule 15 (Disputes Resolution Procedure), subjected to the Arbitration Act No. 11 of 1995, as amended.

### **15.5 Notices of Arbitration**

Either of the parties to this Agreement who wishes to initiate an arbitration shall give a notice of arbitration to the other party in accordance with Article 3 of the UNCITRAL Rules.

### **15.6 Place and Language of Arbitration**

The place of the arbitration shall be Colombo. The language of the arbitration shall be English and any award shall be rendered in English.

### **15.7 Arbitral Tribunal**

The Arbitral Tribunal (the "**Tribunal**") shall compose of a sole arbitrator appointed by agreement of the parties within twenty one Days of receipt of Notice of Arbitration (or such longer period as the parties may agree) and, in the absence of such agreement, each party shall appoint one arbitrator and the two arbitrators thus appointed shall choose the third arbitrator who will act as the presiding arbitrator of the Tribunal in accordance with Article 7 of the UNCITRAL Rules.

### **15.8 Consolidation of Disputes under this Agreement**

- (i) After a Tribunal has been appointed, either party may give a further notice of arbitration to the other party and to the Tribunal referring any other dispute arising out of or in connection with this Agreement to those arbitral proceedings. If the other party consents within thirty Days of receipt of such notice (determined in accordance with Clause 15.2 ) to any such other dispute being so referred, the Tribunal may, as it considers appropriate, order that the other dispute should be referred to and consolidated with the same arbitral proceedings.

### **15.9 Conduct of Arbitration**

In accordance with Article 15 of the UNCITRAL Rules, the Tribunal may (subject to the UNCITRAL Rules) conduct the arbitration in such manner as it considers appropriate. In all matters not expressly provided for herein or in the UNCITRAL Rules, the Tribunal shall act in accordance with the spirit of the UNCITRAL Rules bearing in mind, in particular, that there may be more than two parties to the proceedings and that there may be more than one set of proceedings.

### **15.10 Awards**

All and any awards or other decisions of the Tribunal shall be made in accordance with the UNCITRAL Rules in writing and shall be binding on the parties who exclude all and any rights of appeal from all and any awards insofar as such exclusion can validly be made in connection with any question of fact or law arising in the course of the arbitration or with respect to any award. The final award shall be made within six months from the appointment of the Tribunal, but insofar as



it is impractical to do so, shall be made as soon as possible. All and any awards or other decisions of the Tribunal shall be made in US Dollars (unless the Tribunal determines that the obligation or liability in respect of which an award is made should be compensated in Rupees) free of any tax, deduction or set off and the Tribunal shall be authorised in its discretion to grant pre-award and post-award interest at commercial rates.

### **15.11 Costs of Enforcement**

Any costs, fees, or taxes incident to enforcing any award shall to such extent as is permitted by law, be charged against the party resisting such enforcement.

### **15.12 Parties Obligations During Arbitral Proceedings**

**15.12.1** Except as expressly provided in this Agreement, pending the award in any arbitration proceeding hereunder (i) this Agreement and the rights and obligations of the parties shall remain in full force and effect and (ii) each of the parties shall continue to perform their respective obligations under this Agreement. The termination of this Agreement shall not result in the termination of any arbitration proceeding pending at the time of such termination nor otherwise affect the rights and obligations of the parties under or with respect to such pending arbitration.

**15.12.2** Each party irrevocably agrees not to initiate any suit or other proceedings:

- (i) in any court of competent jurisdiction arising out of or in relation to any dispute requiring to be determined by an arbitral proceeding in accordance with this Schedule 15 (Disputes Resolution Procedure) until any such dispute has been concluded by means of a final decision of the Tribunal; or
- (ii) in which relief or remedy is sought by way of an injunction or other judicial order (interlocutory or final) which would have the effect (directly or indirectly) of restraining or impeding the maintenance or prosecution by either party of any arbitral proceeding initiated in accordance with this Schedule 15 (Disputes Resolution Procedure);

provided that a party may initiate a suit or proceeding for the purpose of:

- (a) enforcement of any procedural order made by the Tribunal or the arbitration agreement set forth in this Schedule 15 (Disputes Resolution Procedure); or
- (b) granting of any relief by way of interlocutory injunction or other interim relief or remedy sought exclusively in aid of a claim which is a subject matter of an arbitral proceeding brought pursuant to this Schedule 15 (Disputes Resolution Procedure) (including without limitation injunctive or other interim relief or remedy with a view to preventing or restraining the removal or dissipation of the assets of the respondent to the claim for such relief or remedy from Sri Lanka or other place where those assets are situated).

## **Schedule 16**

### **Minimum Insurance to be Maintained by the Project Company**

This part of the Schedule accommodates the Minimum Insurance to be maintained by the Project Company during the Construction Period, for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

#### **16.1 Insurance to be maintained in the Construction Period**

##### **16.1.1 Marine and Air Cargo**

- Cover:** All materials, equipment, plant, machinery, spares and other items for incorporation in the Facility against all risks of physical loss or damage whilst in transit by sea or air from country of origin anywhere in the world to the Site from the time the insured items leave the warehouse or factory for shipment to the Project Site, subject to normal exclusions including exclusion of coverage in respect of Sri Lanka Force Majeure.
- Sum insured:** In respect of any shipment, an amount equal to CIF.
- Insured:** The Project Company, the contractors, the sub-contractors and suppliers to the Project Company and to the Turnkey Contractor.
- General:** To the extent available at commercially reasonable terms (including premium levels), the cover shall include damage during transit caused by strikes of the kind specified in Clause 12.1.2(i), civil commotion and riot occurring in Sri Lanka up to fifteen per cent of the capital value of the Facility at the date of such loss or damage.

##### **16.1.2 Contractors' All Risks**

- Cover:** The Works executed, including all buildings, structures and installations on the Site, and in the course of execution, materials and temporary works and all Turnkey Contractor's equipment, while on the Project Site, against all risks of physical loss or damage (including as a result of fire or arson) other than normal exclusions including exclusion of coverage in respect of Sri Lanka Force Majeure, war or kindred risks, nuclear risks, unexplained shortage, cost of replacing or repairing items which are defective in workmanship, material or design; penalties; consequential losses; cash; vehicles; vessels; aircraft. The cover shall include the costs incurred in the removal of all debris resulting from an insured event and shall also cover all fees of professional advisors, including international consultants, incurred in connection with an insured event and shall provide the equivalent terms, conditions and perils/causes of loss provided under an Erection All Risks insurance policy.

- Sum insured:** The actual cost to construct the Facility (reflecting all reinstatement and replacement costs).
- Period of Cover:** Actual construction, testing and commissioning until expiry of the warranty period under the Turnkey Contract.
- Insured:** The Project Company, the Turnkey Contractor, the sub-contractors, the CEB, Finance Parties and all suppliers and consultants in respect of their activities at the Project Site.
- General:** (1) During the warranty period, cover shall be limited to the loss or damage for which the Turnkey Contractor is liable under the warranties of the Turnkey Contract. (2) Cover shall include transit within Sri Lanka of locally procured equipment and materials. (3) To the extent available at commercially reasonable terms (including premium levels), the cover shall include damage caused by strikes of the kind specified in Clause 12.1.2(i), civil commotion and riot occurring in Sri Lanka up to fifteen per cent of the replacement capital value of the Facility at the date of such loss or damage.

### 16.1.3 Public Liability

- Cover:** Against legal liability to third parties for bodily injury or death and damage to property arising out of the construction, testing and Commissioning of the Facility in Sri Lanka.
- Sum insured:** A sum should be maintained for an amount which an independent power generator exercising Prudent Utilities Practice would maintain from time to time for a similar facility to the Facility).
- Insured:** The Company, the Finance Parties, the Turnkey Contractor (including all sub-contractors working at the Site), the CEB, and all suppliers and consultants in respect of their activities at the Site.
- Period of Cover:** The actual construction, testing and Commissioning of the Solar Park Facility from the sooner of (i) first mobilisation of the Turnkey Contractor, and (ii) first commencement of Works at the Site by the Company until the Commercial Operation Date.

### 16.1.4 Miscellaneous

Other insurance as is customary, desirable or necessary to comply with Laws of Sri Lanka, such as Workmen's Compensation Insurance in relation to all workmen employed in the construction of the Facility and Motor Vehicle Insurance on any vehicle or any other insurance's which the Finance Parties may require to be effected.

## 16.2 Insurance to be maintained in the Operation Period

This part of the Schedule accommodates the Minimum Insurance to be Maintained by the Project Company during the Operating Period, for the Power Purchase Agreement.

### 16.2.1 All Risks Insurance-Fixed Assets:

- Cover:** All building contents, plant, machinery, stock, fixtures, fittings and all other personal property forming part of the Facility against "All Risks" of physical loss or damage including but not limited to those resulting from fire, arson, lightning, explosion, spontaneous combustion, storm, wind, tempest, flood, hurricane, water damage, strikes, riot, malicious damage, earthquake, tsunami, collapse and/or loss of contents of tanks, other than normal exclusions including exclusion of coverage in respect of Sri Lanka Force Majeure. The cover shall include the costs incurred in the removal of all debris resulting from an insured event and shall also cover all fees of professional advisors, including international consultants, incurred in connection with such insured event.
- Sum insured:** Full replacement of the Solar Park Facility.
- Insured:** The Project Company, the O&M Contractor, the CEB and the Finance Parties.
- General:** To the extent available at commercially reasonable terms (including premium levels), the cover shall include damage caused by strikes of the kind specified in Clause 12.1.2(i), civil commotion and riot occurring in Sri Lanka up to fifteen per cent of the replacement capital value of the Solar Park Facility at the date of such loss or damage.

### 16.2.2 Consequential Loss Following All Risks:

- Cover:** Loss of revenue due to loss of capacity and/or loss of output as a direct consequence of loss of or damage to the Solar Park Facility and caused by a peril insured under paragraph 1 above.
- Sum insured:** An amount equal to estimated debt service as specified in the Financing Agreements.
- Insured:** The Project Company, the CEB and the Finance Parties.
- General:** Insurers to agree to waive the right of recourse against the O&M Contractor(s).

### 16.2.3 Machinery Breakdown:

- Cover:** All machinery, plant, boilers and ancillary equipment forming part of the Solar Park Facility against sudden and unforeseen physical loss or damage resulting from mechanical and electrical breakdown or derangement, explosion or collapse of boilers and pressure vessels, electrical short circuits, vibration, misalignment, excessive current or voltage, abnormal stresses, centrifugal forces, failure of protective or

regulating devices, overheating, entry of foreign bodies, impact, collision and other similar causes.

**Sum insured:** Full replacement value of all machinery, plant, boilers, etc.

**Insured:** The Project Company, the Finance Parties, the CEB and the O&M Contractor.

#### **16.2.4 Consequential Loss Following Machinery Breakdown**

**Cover:** Loss of revenue due to loss of capacity and/or loss of output as a direct consequence of loss of or damage to the Solar Park Facility caused by a peril insured under paragraph 3 above.

**Sum insured:** An amount equal to the estimated Debt Service.

**Insured:** The Project Company, the CEB, the O&M Contractor and the Finance Parties.

**General:** The Insurers to agree to waive the right of recourse against the O&M Contractor(s).

#### **16.2.5 Public Liability:**

**Cover:** Legal liability of the insured for damage to property of third parties or bodily injury or death to third parties arising out of the ownership, operation and maintenance of the Solar Park Facility.

**Sum insured:** For any one claim US\$ 3,000,000 (or such other amount which an independent power generator exercising Prudent Utilities Practice would maintain from time to time for a similar facility to the Solar Park Facility).

**Insured:** The Project Company, the O&M Contractor, the Finance Parties, the CPC and the CEB.

#### **16.2.6 Miscellaneous:**

Other insurance as are customary, desirable or necessary to comply with the Laws of Sri Lanka, such as Workmen Compensation Insurance in relation to all workmen employed in the Facility or in connection with its operation, and Motor Vehicle Insurance on any vehicle owned by the Project Company.



### 3. RETENTION OF DISPUTED AMOUNT

Upon receipt of the Disputed Amount by the Escrow Agent, the Project Company and the CEB shall, by signing this agreement, have been deemed to have instructed the Escrow Agent to lodge the Disputed Amount on trust in an interest bearing account on 48 hour call with [ ] (the Disputed Amount and interest earned thereon referred to hereinafter as the "Deposit"), to be disbursed pursuant to the terms of the Power Purchase Agreement or the Transmission Agreement, as the case may be, or otherwise as contemplated under this agreement.

### 4. RELEASE OF ESCROW AGENT

**4.1 Release of Escrow Agent:** Upon payment of the Deposit pursuant to either of the decision of the Expert or the Tribunal or a notice signed by both the CEB and the Project Company, this agreement shall be deemed to be terminated and the Escrow Agent shall be released and discharged from all further obligations hereunder.

### 5. COMPLIANCE BY ESCROW AGENT WITH INSTRUCTIONS

**5.1 Disposition of Deposit:** If at any time, the Escrow Agent receives a notice signed by both the CEB and the Project Company containing instructions to the Escrow Agent regarding the disposition of the Deposit or any portion thereof or any matter related thereto, the Escrow Agent must comply with such instructions.

**5.2 Termination of Agreement:** If at any time, the Escrow Agent receives a notice signed by both the CEB and the Project Company that this agreement has been terminated, the Escrow Agent may deliver the Deposit in accordance with the joint instructions contained in such notice and upon such delivery this Escrow Agreement shall be deemed to be terminated and the Escrow Agent shall be released and discharged from all further obligations hereunder.

### 6. ESCROW AGENT NOT BOUND TO ENQUIRE

The duties of the Escrow Agent under this agreement are as specifically provided in this agreement only and are purely ministerial in nature. Except for its own gross negligence or wilful misconduct, the Escrow Agent shall not be liable in any circumstance whatsoever in relation to the matters contained in this agreement including without limiting the generality of the foregoing, for:

**6.1 Act or Omission:** any error or judgment, fact or law, or any act done or omitted to be done;

**6.2 Event or Condition:** the Escrow Agent's determination as to whether an event or condition has occurred, or been met or satisfied or as to whether sufficient evidence of the event or condition has been furnished to it even if it shall be found that such determination was improper or incorrect, provided only, that the Escrow Agent shall not have been guilty of gross negligence or wilful misconduct in making such determination; or

**6.3 Compliance with Conditions:** the Escrow Agent's determination as to whether a provision of the Power Purchase Agreement or the Termination Agreement,

as the case may be, or this agreement has been complied with or as to whether sufficient evidence of compliance with the provision has been furnished to it even if it shall be found that such determination was improper or incorrect, provided only, that the Escrow Agent shall not have been guilty of gross negligence or wilful misconduct in making such determination.

#### **7. DISPUTE RESOLUTION**

If any difference or dispute of whatever nature between the parties arising under or in connection with this agreement or the existence or validity of this agreement or any provision hereof, the Escrow Agent shall not be required to determine the same or take any action in the matter (unless such dispute or difference alleges the wilful misconduct of Escrow Agent), but rather Escrow Agent may await the settlement or resolution of any such controversy by the parties

#### **8. LEGAL PROCEEDINGS**

Escrow Agent shall not be required to institute legal proceedings of any kind.

#### **9. NO VERIFICATION**

The Escrow Agent may rely, and shall be protected in acting or refraining from acting, upon any instrument, not only as to its due execution, validity and effectiveness, but also as to the truth and accuracy of any information contained therein. In particular, the Escrow Agent shall not be required to verify the matters referred to in, or the validity of, written directions received from the CEB and/or the Project Company, all such directions executed by those parties being conclusive as to the matters referred to therein.

#### **10. INDEMNITY**

The Project Company and the CEB, jointly and severally, hereby agree to indemnify, defend and hold the Escrow Agent harmless from and against, all costs, damages, assignments, solicitors' fees, expenses, obligations, liabilities and claims of any kind which the Escrow Agent may sustain, incur or pay in connection with or arising out of this agreement, including, without limitation, any fees and expenses which it may incur or sustain in any legal action arising from this agreement or involving the subject matter hereof, whether or not commenced by the Escrow Agent provided, however, that the foregoing indemnification shall not apply to the Escrow Agent in the event of its wilful misconduct in connection with the performance of its services hereunder.



**11. VALIDITY OF DOCUMENTS**

The Escrow Agent shall not be responsible for the genuineness or validity of any document or item deposited with it which appears to be in accordance with the Power Purchase Agreement or the Transmission Agreement, as the case may be, or any notice or instruction given to it, and it is fully protected in acting in accordance with any written instruction or instrument given to it hereunder and reasonably believed by it to have been signed by the proper parties. Each party hereto (other than the Escrow Agent) represents and warrants that this agreement has been duly and validly authorised, executed and delivered by such party and constitutes a valid and binding obligation of such party, enforceable against such party in accordance with its terms.

**12. CONFLICT**

If at any time the Escrow Agent receives conflicting notices, claims, demands or instructions with respect to the Deposit, or if for any other reason it shall be unable in good faith to determine the party or parties entitled to receive any part of the Deposit, the Escrow Agent may refuse to make any payment and retain the Deposit in its possession until the Escrow Agent shall have received instructions in writing signed jointly by the CEB and the Project Company, or until directed by a final, non-appealable order of the Expert or the Tribunal whereupon the Escrow Agent may make such disposition in accordance with such joint instructions or order.

**13. RESIGNATION**

The Escrow Agent may resign at any time upon by giving the CEB and the Project Company 10 days' prior written notice to that effect. In such event, the successor escrow agent shall be such person, firm or corporation as who shall be mutually selected by CEB and the Project Company who shall sign an agreement in the same or similar terms to this agreement.

**14. NOTICES**

All notices and other communications required hereunder shall be in writing and shall be deemed to have been duly given when personally delivered, two days after posting if sent by post within Sri Lanka or ten days after posting if posted from one country to another, or by facsimile upon receipt of a transmission report acknowledging the facsimile was received in its entirety. Unless other addresses are subsequently specified in writing, such notices or other communications shall be sent to the CEB or Project Company to the addresses set out in the Power Purchase Agreement or the Transmission Agreement, as the case may be, and to the Escrow Agent, to:

[ ]  
[ ]  
Fax No:

**15. ENTIRE AGREEMENT**

This agreement and the Power Purchase Agreement or the Transmission Agreement, as the case may be, contain the entire agreement among the parties with respect to the subject matter hereof. This agreement may not be amended, supplemented or discharged, and no provision hereof may be modified or waived, except by an instrument in writing signed by all of the parties hereto. No waiver of any provision hereof by any party shall be deemed a continuing waiver of any matter by such party.

**16. NO ASSIGNMENT**

This agreement shall not be assignable by any party without the prior written consent of the other parties.

**17. GOVERNING LAW**

This agreement shall be governed by and construed in accordance with the laws of Sri Lanka.

**18. COUNTERPART EXECUTION**

This agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Executed counterparts transmitted by facsimile shall be effective as originals.

**19. CONFIDENTIALITY**

The Escrow Agent shall not disclose the provisions of this agreement or any matters relating to this agreement to any person except as required by law or to the extent that the provision or matter has entered the public domain.

**EXECUTED** as an agreement

**SIGNED** by the **CEYLON ELECTRICITY BOARD** by:

\_\_\_\_\_  
Full name of director

\_\_\_\_\_  
Signature of director

\_\_\_\_\_  
Full name of director

\_\_\_\_\_  
Signature of director

**SIGNED** by [            ]  
**(PRIVATE) LIMITED** by:

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\_\_\_\_\_  
Full name of director

\_\_\_\_\_  
Signature of director

\_\_\_\_\_  
Full name of director

\_\_\_\_\_  
Signature of director

**SIGNED** for and on behalf of [                    ]  
by .....in the presence of:

\_\_\_\_\_  
Witness to signature of .....

\_\_\_\_\_  
Signature of .....

\_\_\_\_\_  
Name of witness

\_\_\_\_\_  
Occupation of witness

\_\_\_\_\_  
Address of witness

\_\_\_\_\_

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## Schedule 18 - Form of Construction Performance Bond

This Schedule accommodates the Form of Construction Performance Bond for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

### BACKGROUND

- A. \_\_\_\_\_ of \_\_\_\_\_, a company incorporated in Sri Lanka (the "Company") has entered into an agreement dated \_\_\_\_\_ to finance, design, engineer, construct, commission, operate and maintain a Solar Park and Transmission Facility to be built at Siyabalanduwa and to sell and deliver electrical power ("the Power Purchase Agreement") to the Ceylon Electricity Board;
- B. Under the Power Purchase Agreement, the Company is bound and obliged to furnish a Construction Performance Bond to secure the due performance by the Company during the Construction Period in terms of the Power Purchase Agreement;
- C. At the request of the Company, we \_\_\_\_\_ of \_\_\_\_\_ a commercial bank having its registered office at \_\_\_\_\_ are agreeable to and desirous of giving such a Construction Performance Bond;

**WE HEREBY** notwithstanding any objection by the Company, irrevocably undertake and are bound and obliged, without any right of set off, counterclaim, legal or equitable discharge whether on our behalf or on behalf of the Company, to pay to the Ceylon Electricity Board unconditionally and without demur any sum of money and not exceeding a sum of US\$ \_\_\_\_\_ on their first demand.

Every demand hereunder shall be in writing and signed by the General Manager of the Ceylon Electricity Board (or by any person for the time being acting in or performing the functions of the General Manager).

For all purposes connected with and relating to this Construction Performance Bond, every such demand shall be conclusive proof that the amount so demanded is lawfully due under this Construction Performance Bond.

All payments hereunder shall be made in Sri Lanka by cheque or bank draft drawn in favour of the Ceylon Electricity Board.

If a demand for payment is made, we shall within ten Days from the date of the demand replenish the Construction Performance Bond so as to return it to the original level of US\$ \_\_\_\_\_.

The rights and remedies of the Ceylon Electricity Board hereunder shall be deemed to be in addition to and not in substitution of any of the rights and remedies of the Ceylon Electricity Board under the Power Purchase Agreement and this Construction Performance Bond shall not be prejudiced or affected by any indulgence or forbearance of the Ceylon Electricity Board towards the Company in connection with the Power Purchase Agreement.

Any claim under this Construction Performance Bond must be received by us on or before (*insert month after the Scheduled Commercial Operation Date*) when this Construction Performance Bond shall expire and shall be returned to us.

**IN WITNESS** whereof this Construction Performance Bond has been signed by the authorised signatories of the aforesaid \_\_\_\_\_

on this day of \_\_\_\_\_ 20

\_\_\_\_\_  
Authorised Signatory

Name:  
Designation:

\_\_\_\_\_  
Authorised Signatory

Name:  
Designation:

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## **Schedule 19 – List of Investigations and Studies**

This Schedule accommodates the List of Investigations and Studies, for both, the Power Purchase Agreement and the Contract for Development of Transmission Facility. However, the Schedules will appear separately at the time of execution of the relevant agreement.

[to insert from the Proposal, with full list of Investigations and Studies required for the development and construction of the Project Facility, including:

- Boundary and Topographical Survey
- Flood Study
- Geotechnical Study
- Protection Study

Environmental Impact Assessment (EIA) for the Project (Solar Park Facility and Transmission Facility, and the EIA Report is included separately as follows.

### **ATTACHMENT 4 OF VOLUME VII (SCHEDULE 19): REPORT OF ENVIRONMENTAL IMPACT ASSESSMENT**

Solar Resource Data are provided to the Bidders, and it is included separately as follows.

### **ATTACHMENT 5 OF VOLUME VII (SCHEDULE 19): SOLAR RESOURCE DATA**

### **Connection Study Report and Plant Modelling**

The model package shall represent the structure and performance of their generating plant. Modelling information shall represent the physical arrangement of the generating system and its connection to the network. The simulation models shall be sufficiently accurate to demonstrate the performance of the generating plant under all expected operating conditions. Modelling data and simulation models shall be able to determine power system operational limits, as well as to assess the connection requirements for future generators. It is recommended to submit sensitive information in a secure manner.

PSS<sup>®</sup>E / DIgSILENT Power Factory and PSCAD<sup>™</sup> shall be used for RMS and EMT simulations and DIgSILENT could be used for harmonic study.

A Connection Study Report shall be submitted, detailing and demonstrating how the plant intends to meet the Grid Code and other system requirements.

The assessment of the suitability of proposed plant and its proposed performance and determination of plant capability to achieve its performance shall be demonstrated. The

model shall be site-specific and consisting of components necessary to facilitate accurate studies for the specific phenomenon under consideration.

The models shall be capable of conducting following studies.

Load Flow Study

Fault Level Study

RMS and EMT Stability Study

Power Quality Study

The model must be developed and tested to the extent that it will meet the accuracy requirements. Parameters that contribute most significantly to the accuracy of the model for fault, voltage and frequency disturbances in the power system, must be derived from on-site tests, where possible. Test results from the commissioning tests used to confirm compliance of the plant with performance.

Power quality assessments need to consider all operating Generating System levels and the likely levels of existing background emissions.

To assess compliance, the following is required:

- Background measurements prior to connection as per IEC61000.3.6, IEC61000.3.7 at the proposed connection point (or other agreed location).
- Generator unit power quality data sheets (including model/data where used, e.g. converter model for harmonic studies).
- Assessment of power quality emissions, taking into account power system conditions at the connection point for which series or parallel resonances may occur depending on network configuration.
- The Applicant's power quality assessment report, which must include details of data inputs, study methodology (taking into account system normal and N-1 conditions as a minimum).
- Post-connection measurements in accordance with CEB requirements.

### **Pre-connection model confirmation**

The manufacturer shall confirm the response of their plant by factory or laboratory testing where:

1. Connections are proposed to parts of the network with low system strength where the standard plant might not be adequate any more
2. When the plant is designed to provide functionality not offered previously

### **Post-connection model validation**

The model validated shall be done by comparing RMS and EMT model response to the plant installed at the site. The model validation requirement is described in following table.

Study	RMS Simulation Tool	EMT Simulation Tool	Harmonic Analysis Tool
Reactive power capability	√		
Quality of electricity generated			√
Generating unit response to frequency disturbances	√		
Generating system response to voltage disturbances	√	√	
Generating system response to disturbances following contingency events	√	√	
Quality of electricity generated and continuous uninterrupted operation		√	
Partial load rejection	√		
Protection of generating systems from power system disturbances	√	√	
Frequency control	√	√	
Impact on network capability	√		
Voltage and reactive power control	√	√	
Active power control	√	√	

## 1.2 Model Requirement

### Load flow model requirement

Load flow models must represent the plant Steady State conditions for the full operating conditions in PSS<sup>®</sup>E the software package and DIgSILENT Power Factory.

### Fault level model requirements

The short circuit data should be integrated into the load flow model and shall be compatible to IEC 60909:2016.

### RMS and EMT stability model requirements

Electromechanical and control system performance of components comprising plant under Steady State, set-point change and Disturbance conditions for all levels of system strength and energy source availability that the plant is rated to operate.

Plant shall include:

1. The generating unit or any other primary or relevant secondary plant within the generating system that may affect the overall interaction (active power, reactive power or voltage) of the generating system with the power system (e.g. reactive power compensating plant).
2. Any dynamic reactive power or voltage compensation plant within the network that can have an impact on transient and voltage stability.

### Power quality model requirements

Harmonic current injection models used for harmonic frequency scans and harmonic distortion analysis must provide.

1. frequency-dependent Norton equivalences of each type of generating unit,



2. harmonic current injection profiles (for each harmonic order) at each generating unit, including:
  - harmonic current magnitude, e.g. in Amperes, or in percentage of fundamental current;
  - harmonic current phase angle (only if the harmonic emission calculation method advised by the relevant NSP requires this information);
3. Adequate model of collector grid,
4. Generating unit transformer models and generating system transformer models
5. Data for harmonic filters (if present) must be provided, including connection point(s) of the filters, filter layout (e.g. single-tuned, double-tuned), quality factor and electrical parameters.

The origin and methodology of the Norton equivalent sources must be documented and provided. Where harmonic current injections sources are provided in the form of harmonic current magnitude only, a method needs to be applied to summate the effects of the many individual harmonic sources in the plant. Assessment of emission limits shall be evaluated according to IEC61000-3-6.

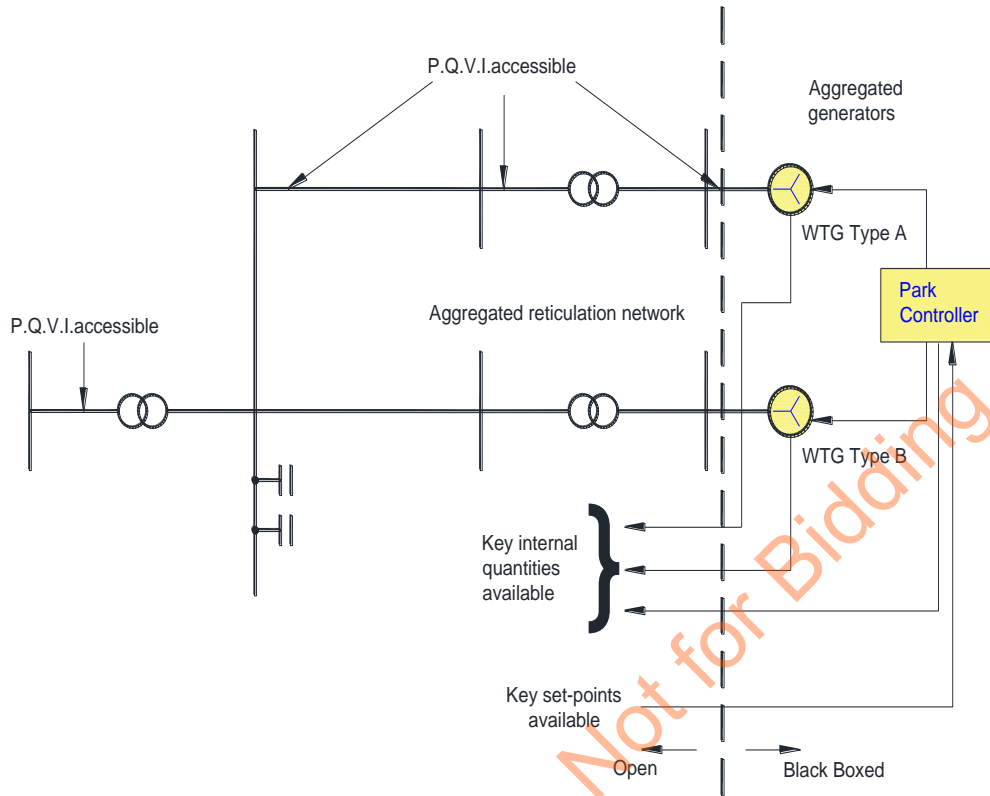
Harmonic models shall be provided in DlgSILENT Power Factory.

To account for the harmonic signature of asynchronous plant in harmonic susceptibility and resonance studies, it is necessary to include appropriate harmonic models of the harmonic generating devices, the harmonic impedance profile of the network, and the frequency dependent behaviour of the network elements.

To study flicker, the simulated rms voltage magnitude/voltage waveform obtained from either RMS or EMT time-domain simulation can be fed into a flicker meter model following IEC 61000-4-15 for assessing the short-term and long-term flicker severity. These time-domain models are expected to include adequate representation of characteristics/functions/control systems involving/causing flicker.

### **Model aggregation**

For generating systems comprising of scores of small generating units, the general rule is that the submitted plant model should contain no more than four generating units of any one type. That is, generating units should be combined into aggregates with each aggregate representing multiple individual generating units. In the simplest cases, a single aggregate may adequate to represent the totality of generating units.



Typical Aggregated and Black Boxed model representation

**Schedule 20 – Form of Undertaking Regarding Golden Share**

**-Not Applicable.-**

## Schedule 21 – Permits Matrix

[Following table to be completed]

Permit, Consent or Approval	Responsible Party	Date to be obtained
Financial Concents		
BOI Status		
Visas and Work Permits		
Building concents under fire regulations		
Etc.		

## Schedule 22 – Project Company Generation Model Report

[to insert from the Proposal and which shall be in the form of a PVsyst Report or similar, including at a minimum the following items:

- System and Project Summary
- Input Parameter list
- System Loss Assumptions
- Weather File details, including monthly irradiance amounts and temperature averages
- Result details including monthly electrical output at the Interconnection Point and monthly system PR values
- List or diagram of annual loss percentages
- P50 – P90 analysis]

## Schedule 23 – Project Company Financial Model

[to insert from the Proposal, and which shall include at a minimum the following items:

- Capital costs (including breakdown for major equipment)
- Financing costs
- Equity and debt portions
- Operating costs
- NPV and IRR projections over project life
- Assumed discount rate
- Depreciation rate used
- Residual Price
- Any termination payment amounts
- other financial assumptions]

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