Government of
Democratic Socialist Republic of Sri Lanka

Ministry of Power & Energy

Ceylon Electricity Board

Request for Proposals

Development of 50 MW Wind Farm Facility at Mannar on Build, Own and Operate (BOO) Basis

RFP Document

Volume VI of VI

Schedules of the PPA

Information Copy – Not for Bidding

Issued On: 14th April 2024
Bid No.: Tr/REP&PM/ICB/2023/009/C
Employer: Ceylon Electricity Board

Ceylon Electricity Board
P.O. Box 540
Colombo 02.

LIST OF SCHEDULES

Information Copy – Not for Bidding

Schedule 1 – Definitions

"Affiliate"	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;
"Agreement" or **"Power Purchase Agreement"**	means the power purchase agreement, together with all its Schedules, Exhibits and Attachments, as may be amended or modified from time to time in the manner set out therein;
"Annual Achieved Plant Availability"	has the meaning given to that term in Paragraph 8.1 of Schedule 8 (Availability Forecast & Wind Speed Reporting);
"Applicable Codes and Standards"	means the codes and standards referred to in Schedule 5 (*Minimum Functional Specifications*);
"Arbitral Tribunal" or **"Tribunal"**	has the meaning given to that term in Paragraph 15.7 of Part II of Schedule 15 (*Dispute Resolution Procedure*);
"Arbitration"	means the dispute resolution mechanism set forth in Part II of Schedule 15 (*Dispute Resolution Procedure*);
"Articles of Association"	means the articles of association of the Project Company;
"Available Amount"	means as defined in the format for Drawing Certificate given in Schedule 12 (Form of Irrevocable Standby Letter of Credit);
"BOI"	means the Board of Investment of Sri Lanka, as established under the BOI Act;
"BOI Act"	means the Board of Investment of Sri Lanka, Act No. 4 of 1978, as amended;

Information Copy – Not for Bidding

"BOI Law"	means the BOI Act and all regulation, rules made thereunder and orders and directions issues pursuant thereto;
"BOI Agreement"	means the agreement between the BOI and the Project Company;
"BOO"	means build, own and operate method of project delivery;
"Board" or **"Board of Directors"**	means the board of directors of CEB or the Project Company, as the case may be;
"Board Members"	means the members of the Board;
"Business Day"	means any day other than a Saturday, Sunday, public holiday or bank holiday in Sri Lanka;
"Buy-Out"	means the purchase of the Wind Farm Facility by the CEB upon the occurrence of a Buy-Out Event;
"Buy-Out Event"	means a CEB Buy-Out Event or a Project Company Buy-Out Event;
"Buy-Out Notice"	means a CEB Buy-Out Notice or a Project Company Buy-Out Notice;
"Buy-Out Price"	means the price paid by the CEB to the Project Company upon transfer of ownership of the Wind Farm Facility to the CEB following a Buy-Out Event, as calculated in accordance with Schedule 13 (*Buy-Out*);
"Capital Cost of the Project"	means the Capital Cost of the Wind Farm Facility;
"Capital Cost of the Wind Farm Facility"	means at any time, the total cost of the financing, design, development, construction, manufacture, testing and Commissioning of the Wind Farm Facility;
"CEB"	means the Ceylon Electricity Board, a body corporate established by Act No 17 of 1969 and any successor and permitted assign;

Information Copy – Not for Bidding

"CEB Approvals"	means all approvals to be obtained by the Project Company from CEB pursuant to the Power Purchase Agreement, or pursuant to the Laws of Sri Lanka;
"CEB Buy-Out Event"	has the meaning given to that term in paragraph 13.1 of Schedule 13 (*Buy-Out*);
"CEB Buy-Out Notice"	has the meaning given to that term in paragraph 13.3 of Schedule 13 (*Buy-Out*);
"CEB Delay Charge"	has the meaning given to that term in Clause 10.1.2;
"CEB Letters of Credit"	has the meaning given to that term in Clause 8.7.1(i);
"CEB Nominated Bank"	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;
"CEB Rupee Account"	means the CEB's Rupee denominated bank account with the CEB Nominated Bank;
"CEB System"	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 Wind Farm Facility;
"CEB System Problem"	means a condition of the CEB System or the national grid, due to the CEB System operating outside the limits specified in Paragraph 5.3(1.1) of Part 1 of Schedule 5 (*Minimum Functional Specifications*);

Information Copy – Not for Bidding

"CEB System Control Centre"	has the meaning given to that term in the Grid Code;
"Change in Law"	means any of the following events occurring after the 28th Day prior to Proposal closing, as may be applicable, as a result of any action by any Competent Authority: a) an amendment to, or repeal of, any existing Laws of Sri Lanka; b) an enactment or making of new, legislation, subsidiary legislation, rules, regulations, orders and directives made or issued by such Competent Authority pursuant to or under any such law (whether by any political sub-division thereof or otherwise), decree or judicial decision given or pronounced by any court of competent jurisdiction; and c) a change in the manner in which any of the Laws of Sri Lanka are applied or interpreted in relation to the Project, except where such change results from non-compliance by the Project Company with any Laws of Sri Lanka as at the 28th Day prior to bid closing; provided however that any change in law after the Commercial Operation Date affecting Sales Taxes or Reimbursable Taxes shall not be a Change in Law.
"Change in Law Event"	has the meaning given to that term in Clause 9.1;
"Change in Law Period"	means each period of three hundred and sixty-five Days where such period commences on the 28th Day prior to the Proposal closing or any anniversary hereof;

Information Copy – Not for Bidding

"Check Meter"	means any auxiliary meters and associated metering equipment purchased, installed, paid for, owned and maintained by the Project Company at the Metering Point to measure and record the delivery and receipt of Metered Output and Metered Input in accordance with Schedule 7 (*Metering*) and the requirements of this Agreement;
"Chief Executive Officer"	means the chief executive officer or person of equivalent rank in respect of CEB or the Project Company, as the case may be;
"Commercial Operation Date" or **"COD"**	means the Day immediately following the Completion Date;
"Commissioning"	means the issue of an Engineer's Certificate with respect to the Wind Farm Facility in accordance with Schedule 6 (Testing and Commissioning Procedure for Wind Farm Facility);
"Commissioning Date"	has the meaning given to that term in Clause 5.7.2(i)
"Commissioning Tests"	has the meaning given to that term in Schedule 6 (*Testing and Commissioning Procedure for the Wind Farm Facility*);
"Companies Act"	means the Companies Act No. 7 of 2007, as amended from time to time or any statutory re-enactment thereof;
"Constituent Members"	means the consortium members who participated in the Proposal, namely, _____ _____;
"Competent Authority"	means the Government or any authority, ministry or department under the control of the Government and any court or tribunal in Sri Lanka;
"Completion Certificate"	means any of the certificates issued under Clause 5.7.10 thereof;

Information Copy – Not for Bidding

"Completion Date"	Means in respect of the Power Purchase Agreement, the Day on which the Completion Certificate is issued by the Project Company, under and in terms thereof;
"Consequential Loss"	means all losses, costs or financial harm in respect of loss of contract, loss of use of machinery or property, loss of production, loss of profit or loss of revenue, loss of income, loss of goodwill, loss of business, loss of anticipated saving, and any special, indirect or consequential damage or loss or any other economic loss, cost or claim of whatever kind and nature suffered by a Party under or in connection with this Agreement however caused (including the default of the other Party or a breach of any duty owed in law by the other Party), and whether or not foreseeable at the date of this Agreement, provided however that in no circumstances shall Consequential Loss include any express obligation to make payment pursuant to any specific Clauses of this Agreement, or any express obligation to provide an indemnity under any of the provisions of this Agreement;
"Contract Month"	in relation to the Power Purchase Agreement, means the period beginning from the 1st of each calendar month and ending on the last day of such calendar month, provided that; (i) the first Contract Month of the Term shall begin from the COD and end on the last day of such calendar month, and (ii) the last Contract Month of the Term shall end on the last day of the Term;
"Contract Year"	in relation to the Power Purchase Agreement, means the period beginning on the 1st April of each calendar year and ending on the 31st of March of the next calendar year, provided that;

Information Copy – Not for Bidding

	(i) the first Contract Year of the Term shall begin on the COD and end on the next occurring 31st March; and (ii) the last Contract Year of the Term shall commence on the 1st April of such calendar year and end on the last day of the Term;
"Construction Notice"	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;
"Construction Performance Bond"	means the construction performance security for an amount of USD 6.0 million or equivalent LKR to be issued by an entity approved by the CEB and in the form of Schedule 18 (Form of Construction Performance Bond) to be delivered by the Project Company to the CEB. 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;
"Construction Period"	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 Commercial Operation Date;
"Corporate Taxes"	means tax on the income of a corporate entity;
"Curtailment:	means the inability or failure of, the Project Company to deliver due to a CEB System Problem, or the CEB to accept electrical energy from the Wind Farm Facility (including by any Dispatch Instruction), for reasons other than Forced Outage or Force Majeure;

Information Copy – Not for Bidding

"Curtailed Monthly Output"	means the total energy (kWh) CEB was unable or failed to accept within a period of a Contract Month due to Curtailment;
"Day" or "day"	means a period of twenty-four Hours beginning at 0000 Hours on a day and ending at 2400 Hours on that day;
"Delivered Monthly Output"	means the Metered Output within a Contract Month;
"Direct Agreement"	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 (*Direct Agreement*);
"Dispatch"	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, subject to the requirements of this Agreement;
"Dispatch Instruction"	has the meaning given to that term in Clause 7.2.2;
"Disputed Amount"	has the meaning given to that term in Clause 8.6.2~~;~~
"Disputes Resolution Procedure"	means the procedure for the resolution of disputes set out in Schedule 15 (*Disputes Resolution Procedure*);
"EIA"	means environmental impact assessment;
"EIA Report"	means the EIA report commissioned by the CEB in _____ for the Project;
"Emergency"	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;

Information Copy – Not for Bidding

"Energy Charge"	means the energy charge payable by the CEB to the Project Company as calculated in accordance with Schedule 9 (*Energy Charge*);
"Energy Permit"	means the permit issued by the SLSEA in accordance with the Sri Lanka Sustainable Energy Authority Act, No. 35 of 2007;
"Engineer"	Means the independent engineer appointed by the Project Company in relation to the Turnkey Contract;
"Engineer's Certificate"	Means any of the certificates issued by the Engineer pursuant to Schedule 6 (*Testing and Commissioning Procedure for Wind Farm Facility);*
"Environmental Approval"	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 Wind Farm Facility;
"Environmental Clearance Certificate"	means certificate issued in connection to the Environmental Approval;
"Environmental Law"	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;
"Environment Management Plan"	means the Environmental Management Plan and Monitoring Programme given in Attachment 5 of Schedule 5;
"Environmental Requirements"	means: (i) complying with or exceeding the requirements of the Environmental Approval, the Environmental Licence, the Environmental Law, all applicable environmental quality

Information Copy – Not for Bidding

	standards, regulations and directives of the relevant Competent Authorities; (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; (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.
"Escrow Agreement"	means the agreement to be entered into in the form set out in Schedule 17 (*Form of Escrow Agreement*);
"ESQC Regulations"	means Electricity (Safety, Quality and Continuity) Regulations by CEB, in operation as at 28 days prior to the Proposal closing;
"Execution Date"	means the date on which the Power Purchase Agreement is signed by both the Parties;

Information Copy – Not for Bidding

"Expert"	means an expert appointed in accordance with Part 1 of Schedule 15 (*Disputes Resolution Procedure*) with experience in international contracting, infrastructure projects, utilities, power generating or related fields;
"Finance Parties"	means the banks and/or financial institutions and/or other persons who are party to the Financing Agreements;
"Financial Closure"	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;
"Financing Agreements"	means any and all of the agreements executed between the Project Company and lending institution(s) for the making available to the Project Company of debt financing for construction, and completion of the Wind Farm Facility up and until the Commercial Operation Date and the Completion Date respectively, including the bridging finance agreements, the security documents, hedging agreements, swap agreements and other ancillary undertakings entered into in connection with such agreements, and any refinancing agreements relating thereto, and agreements entered into for the working capital of the Wind Farm Facility;
"Force Majeure"	has the meaning given to that term in Clause 12.1;

Information Copy – Not for Bidding

"Forced Outage"	means any interruption of or reduction in the generating capacity or energy generation of the Wind Farm Facility that is not the result of: (i) an event of Scheduled Maintenance or Planned Outages; or (ii) an event of Force Majeure; or (iii) a breach of this Agreement by the CEB; or (iv) a request by the CEB in accordance with this Agreement; or (v) a condition caused by a CEB System Problem; or (vi) a breach by the Government of its obligations under the Implementation Agreement; or (vii) a breach by the CEB of its obligations under the Lease; or (viii) any effect of wind.
"General Manager"	means the general manager or person of equivalent rank in respect of CEB;
"Generation Licence"	means the licence required to be obtained by the Project Company under the Electricity Act No. 20 of 2009 or applicable statute, as amended, to establish, operate and maintain the Wind Farm Facility for the generation of electrical energy in Sri Lanka;
"Good Design, Engineering and Construction Practices"	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 Wind Farm Facility, including the location

Information Copy – Not for Bidding

	of the Wind Farm Facility and includes the performance of the work: (i) in a sound and workmanlike manner, with due care and skill and applying generally accepted engineering, construction and management practices and procedures; (ii) with due expedition and without unnecessary or unreasonable delay; (iii) using appropriate internationally accepted standards for materials and workmanship applicable to works having characteristics comparable to those of the Wind Farm Facility or the Transmission Facility, as may be applicable; and (iv) with all materials and workmanship suitable for their respective purposes and properly certified where appropriate;
"Government"	means the Government of the Democratic Socialist Republic of Sri Lanka;
"Governmental Approval"	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, including those set out in Schedule 14;
"Grid Code" or "CEB Grid Code"	means the code annexed to the Schedule 5 (Minimum Functional Specifications), Attachment 1 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;

Information Copy – Not for Bidding

"Grid Impact Study"	means the study as given in Schedule 19 (List of Investigations and Studies);
"Guaranteed Plant Capacity" of "GPC"	means ___ MW (AC Capacity) or such lower capacity as declared pursuant to Clause 5.10.4;
"Hour"	means each continuous period of sixty minutes commencing with the first minute of each of the twenty four denominated Hours of any Day;
"Hourly Metered Output"	means the Metered Output during an Hour as measured and recorded by the Main Meter or Check Meter as the case may be;
"IEC Standards"	means the relevant standards published by the International Electrotechnical Commission of No. 3, Rue de Varembé, P.O. Box 131, CH-1211 Geneva, Switzerland;
"Implementation Agreement"	means the implementation agreement in respect of the Wind Farm Facility between the Government and the Project Company;
"Incorporation Act"	means the Ceylon Electricity Board Act No. 17 of 1969, as may be amended or re-enacted from time to time;
"Interconnection Facilities"	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 Wind Farm Facility, constructed and installed, owned and maintained by the Project Company in accordance with the Grid Code for the purpose of interconnecting the Wind Farm Facility with the CEB System;
"Interconnection Point" or "POC"	has the meaning given to that term in Schedule 5 (*Minimum Functional Specifications*);

Information Copy – Not for Bidding

"kilovar" or "kVAr"	means 1,000 vars;
"kV"	means kilovolts or 1,000 volts;
"kW"	means a kilowatt or 1,000 watts;
"kWh"	means one kilowatt hour;
"L/C Amount"	has the meaning given to that term in Clause 8.7.1(iv);
"L/C Deposit Accounts"	has the meaning given to that term in Clause 8.7.1(iii);
"Laws of Sri Lanka"	means, 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;
"Lease"	means the agreement between the CEB and the Project Company for the lease of the Project Site to the Project Company;
"Losses"	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 (including legal expenses), except Consequential Loss;
"Maintenance Programme"	means the maintenance plan of the Wind Farm Facility in relation to Clause 6.4.2 thereof;
"Main Meter"	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 to measure and record the delivery and receipt of Metered Output and Metered Input, all in accordance with Schedule 7 (*Metering*);

Information Copy – Not for Bidding

"Metered Input"	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;
"Metered Output"	means the energy delivered by the Project Company to the CEB System at the Interconnection Point measured in kilowatt hours (kWh) of the Wind Farm Facility;
"Metering Point"	means the points at which the Main Meters and Check Meters shall be located as established under Schedule 7 (*Metering*);
"Meters"	means the Main Meter and the Check Meter;
"Minimum Functional Specifications"	means the minimum specification for the Wind Farm Facility as set out in Schedule 5 (*Minimum Functional Specifications*);
"Monthly Invoice"	has the meaning given to that term in Clause 8.1.1;
"MVAr"	means megavars;
"MW"	means a megawatt or 1000 kilowatts;
"Nadukkuda GSS"	means the CEB's Nadukkuda Grid sub-station comprising 33/220kV step up transformers and all other grid components;
"Non-Sri Lanka Force Majeure"	means any event of Force Majeure which is not an event of Sri Lanka Force Majeure;
"O&M Contractor"	means the contractor appointed by the Project Company under the Operation and Maintenance Agreement;

Information Copy – Not for Bidding

"Operational Period"	means the period commencing at 0000 Hours on the Commercial Operation Date and expiring at 2400 Hours on the 20th anniversary of the Commercial Operation Date, as such period may be extended in terms of Clause 12.3.3 thereof;
"Operational Interface Procedures"	has the meaning given to that term in Clause 5.13.2;
"Operation and Maintenance Agreement" or **"O&M Agreement"**	means the agreement between the Project Company and the O&M Contractor for the operation and maintenance of the Wind Farm Facility;
"Performance Tests"	means the tests described in Schedule 6 (*Testing and Commissioning Procedure for the Wind Farm Facility*);
"Person"	means any natural person, legal person, or corporate entity or unincorporated body (whether or not having separate legal personality);
"Permitted Changes"	has the meaning given to that term in Clause 5.7.3;
"**Planned Outage**"	means outage pursuant to CEB planning;
"Preliminary Obligation Bond"	means the bond substantially in the format given in Volume I (Instructions to Project Proponents), Annexure XII of the RFP Document, delivered to the CEB for the purposes of this Agreement.
"Preliminary Period"	means the period commencing on the Execution Date and, ending on the earlier of: (a) 2400 Hours on the Day falling 180 (one hundred and eighty) Days thereafter (as may be extended in accordance with Clause 4.5); or (b) 2400 Hours on the Day on which the Project Company gives the CEB the Construction Notice;

Information Copy – Not for Bidding

"Pre-Commissioning Tests"	means the tests described as such in Schedule 6 (*Testing and Commissioning Procedure for Wind Farm Facility*);
"Programme"	means the construction programme under the Turnkey Contract;
"Programme of Works"	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 Wind Farm Facility, and achievement of the Scheduled Commercial Operation Date thereof, as may be amended in accordance with this Agreement or by agreement of the Parties from time to time;
"Project"	Means the design, financing, procurement, construction, testing, Commissioning, completion, ownership, management, long-term operation, repair, and maintenance of the Wind Farm Facility,
"Project Agreements"	the Power Purchase Agreement, the Implementation Agreement, the Lease, the Direct Agreement, direct agreements relating to the Implementation Agreement and the Lease, and the BOI Agreement (if entered into by the Project Company);
"Project Company"	means _____, which is a party to this Agreement, being a limited liability special purpose vehicle incorporated in Sri Lanka and established for the purpose of implementing the Project;
"Project Company Buy-Out Event"	has the meaning given to that term in paragraph 13.1 of Schedule 13 (*Buy-Out*);
"Project Company Buy-Out Notice"	in relation to the Power Purchase Agreement, has the meaning given to that term in paragraph 13.5 of Schedule 13 (*Buy-Out*);

Information Copy – Not for Bidding

"Project Company Delay Charge"	has the meaning given to that term in Clause 10.1;
"Project Company Letters of Credit"	has the meaning given to that term in Clause 8.7.2;
"Project Company Nominated Bank"	means the bank in Colombo selected by the Project Company, at which the Project Company shall maintain the Rupee Ordinary Account and the Rupee Conversion Account, as notified by the Project Company to the CEB in accordance with Clause 8;
"Project Site"	means the area of land more particularly described in the Lease where the Wind Farm Facility is located;
"Proposal"	means the proposal submitted to undertake the Project with respect to Wind Farm Facility pursuant to the request for proposals issued by the CEB;
"Proposed Testing Day"	has the meaning given to that term in Clause 5.7.2(ii);
"Prospective Finance Parties"	means one or more of the financial institutions named in Volume 2, Section H of the Proposal or such other financial institutions approved by the CEB;
"Protection Study"	shall have the meaning set out in Schedule 19 *(List of Investigations and Studies*);
"Prudent Utilities Practice"	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 Wind Farm Facility;

Information Copy – Not for Bidding

"Recurrent Costs"	means costs which are not of a capital cost nature and which will recur over a period of time;
"Reference Exchange Rate"	means on any Business Day and in respect of the sale of an amount of US Dollar for Rupees, the quotation given by the Project Company Nominated Bank for the sale of such amount of United States Dollars for Rupees;
"Reimbursable Taxes"	means the expenses directly, necessarily and actually borne by the Project Company for the performance of obligation under this Agreement in relation to the Project on account of any and all taxes, duties and levies, including gross receipts, business turnover, use, consumption, property, franchise, occupational, excise duties, customs duties, defence levy, outgoings under the Lease, however imposed, withheld, levied, or assessed in relation to the Project Company's business in the Wind Farm Facility, by the Government of Sri Lanka, or any governmental instrumentality of Sri Lanka or any other taxation authority in Sri Lanka; but excluding, 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;
"Representative"	means, with respect to any Person, each director, officer, employee, servant, consultant, agent, or representative of that Person;
"Request for Proposals"	means request for proposals issued by the CEB for the Project, bearing reference number TR/REP&PM/ICB/2023/009/C dated xxth xxxx 2024;

Information Copy – Not for Bidding

"Required Equity"	means not less than twenty percent of the Capital Cost of the Wind Farm Facility, to be invested by way of equity investment in the Project Company;
"Revised Testing Day"	has the meaning set out in Clause 5.7.4;
"Rupees" "LKR" or "Rs"	means the lawful currency of Sri Lanka;
"Rupee Conversion Account"	means Rupee denominated accounts maintained by the Project Company at the Project Company Nominated Bank for the purpose of receiving and converting Rupees into US Dollars, sums payable by the CEB;
"Rupee Ordinary Account"	means accounts denominated in Rupees maintained in a bank operated in Sri Lanka by the Project Company at the Project Company Nominated Bank for the purpose of receiving sums payable by the CEB;
"Sales Taxes"	means any and all forms of sales taxation, duties, imposts and levies of whatever kind and nature imposed by any Competent Authority on the sale of electrical energy;
"Scheduled Maintenance"	means maintenance of the Wind Farm Facility under its maintenance programme;
"Scheduled Commercial Operation Date"	means the date that is twelve (12) months from the date of the Construction Notice, as may be adjusted from time to time under Clause 5.6.1;
"Senior Debt"	means the debt financing provided by the Finance Parties to the Project Company pursuant to the Financing Agreements;
"SLNCPI" or "Colombo Consumer Price Index"	means the index entitled Sri Lanka National Consumer Price Index published by the Department of Census and Statistics of Sri Lanka for the Contract Month three Contract Months prior to the Contract Month in which the calculation is made;

Information Copy – Not for Bidding

"Sri Lanka"	means the Democratic Socialist Republic of Sri Lanka;
"Sri Lanka Force Majeure"	means Force Majeure as a result of any of the events set out in Clauses 12.1.2(i), 12.1.2(ii) and 12.1.2(iii);
"Sri Lanka Prime Rate"	means latest Average Weighted Prime Lending Rate (AWPR) published by Central Bank of Sri Lanka on monthly basis;
"Sri Lanka Sustainable Energy Authority" or "SLSEA"	means the Sri Lanka Sustainable Energy Authority, a body corporate established by the Sri Lanka Sustainable Energy Authority Act, No. 35 of 2007;
"Start-Up"	means the synchronisation of the Wind Farm Facility to the CEB System;
"Subsidiary"	means a company: (i) of which the majority of its issued share capital is held by another company; or (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 (iii) which, or whose board of directors, normally acts in accordance with the instructions of another company;
"Suspension Notice"	has the meaning given to that term in Schedule 3 (*Direct Agreement*);
"Term"	has the meaning given to that term in Clause 3.1 of thereof;
"Termination Point"	means the interconnection points of the each wind turbine generators of the Wind Farm Facility with the Interconnection Facilities and as indicated under Schedule 2 (Plans and Drawings);

Information Copy – Not for Bidding

"Test Procedures"	means the test procedure described in Clause 5.7.1;
"Testing Quantity"	has the meaning given to that term in Clause 5.7.2(ii);
"Testing Schedule"	has the meaning given to that term in Clause 5.7.2(ii);
"Transmission Facility"	means the Nadukkuda GSS;
"Tribunal"	has the meaning given to that term in paragraph 15.7 of Schedule 15 (*Arbitration*);
"Turnkey Contract"	means the agreement between the Project Company and the Turnkey Contractor for the design, engineering, construction, testing and Commissioning of the Wind Farm Facility;
"Turnkey Contractor"	means the Turnkey Contractor appointed by the Project Company under Clause 4.2.1;
"UNCITRAL Rules"	has the meaning given to that term in Schedule 15 (*Disputes Resolution Procedure*);
"United States Dollars", "US Dollars" "US $" & "USD"	means the lawful currency of the United States of America;
"VAT"	means the value added tax;
"Wind Farm Facility"	means the ___ MW (AC capacity) wind power plant located at Nadukkuda in the Mannar District, Northern Province, Sri Lanka, including the land, buildings, engineering and design documents, power producing equipment, auxiliary equipment, water treatment facilities, solid waste disposal facilities, switchyards, Interconnection Facilities, and all other installations [which expression shall be deemed to be a reference to such facility, whether completed or at any stage of development and construction];
"Works"	means the permanent and temporary works required for the design, construction, completion and Commissioning

Information Copy – Not for Bidding

	of the Wind Farm Facility;

Information Copy – Not for Bidding

Schedule 2 – Plans and Drawings

Information Copy – Not for Bidding

Schedule 3 - Direct 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 of the Power Purchase Agreement, 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 Finance Parties taking security over all of the assets of the Project Company, the Wind Farm Facility, the Project Agreements and the Governmental Approvals and shall acknowledge the right of the Finance Parties to cure any default of the Project Company under the Power Purchase Agreement or step-in to the Project, as provided in such agreements or any direct agreements relating thereto;

3.3. the CEB shall give the 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, 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, under Clause 13.1 ("the CEB Termination Notice"), the CEB shall also serve a copy of such notice to the Finance Parties;

3.5. within sixty Days of receipt by the Finance Parties of a CEB Termination Notice, the 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 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 Wind Farm Facility (i) during any Suspension Period or (ii) at any time where the Project Company is in default under the Financing Agreements and the 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 ("Transferee");

3.7. following the service by the 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, shall be suspended ("Cure Period"). In the event of the

Information Copy - Not for Bidding

Finance Parties assuming the obligations of the Project Company the Energy Charge, shall be payable during the Cure Period. The Cure Period may be extended by agreement of the parties. If, during the Cure Period, the Finance Parties do not assume the obligations of the Project Company under the Power Purchase Agreement, the CEB's obligations under the Power Purchase Agreement shall be similarly suspended. The CEB shall provide such information as is available to the CEB when reasonably requested by the Finance Parties to assist the 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 Finance Parties may serve a notice to the CEB ("Transfer Notice") certifying that a Transferee has been selected to which the Project 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;

3.9. no later than seven Days prior to the end of the Cure Period, the 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 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;

3.9.2 but if they do not, then the Power Purchase Agreement and the Direct Agreement shall terminate forthwith at the earlier of (i) the date on which the 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 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 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. 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 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 Power Purchase Agreement 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

Information Copy – Not for Binding

earlier of (i) the date on which the 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 Finance Parties, all of its rights in respect of the CEB Letters of Credit provided that the Finance Parties agree to exercise any rights thereunder on the same terms as agreed by the Project Company in Clause 8.7 of the Power Purchase Agreement;

3.13 the 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 Power Purchase Agreement after a Buy-Out, agree to assign the rights to receive those insurance proceeds to the CEB to the extent that the Buy-Out price has not been reduced to take account of such proceeds;

3.14 following the service of a Buy-Out Notice, the CEB shall Buy-Out the Wind Farm Facility and the Project Company shall be obliged to transfer the Wind Farm Facility to the CEB at the Buy-Out Price in accordance with the terms and conditions of Clause 14 and Schedule 13 (Buy-Out) of the Power Purchase 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 Power Purchase Agreement except where any obligations of the CEB under the Power Purchase Agreement are outstanding and, in such event, the Direct Agreement shall continue to be valid and effective until all such obligations are settled in full;

3.16 the CEB shall agree that:

i. it shall not amend the Power Purchase Agreement without the express written consent of the Finance Parties; and

ii. it shall cause its independent legal counsel to provide a legal opinion in customary form acceptable to the Finance Parties, with respect to validity and enforceability of the Power Purchase Agreement as a condition precedent to the effectiveness of the Direct Agreement;

3.17 the Direct Agreement shall be governed by the Laws of Sri Lanka and disputes not first amicably resolved shall be the subject of a dispute resolution procedure adopting the principles of Part 2 of Schedule 15 (Disputes Resolution Procedure).

Information Copy – Not for Bidding

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.

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

The Project Company shall provide all the information requested in Part 4 of this schedule 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.

Information Copy – Not for Bidding

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.

Name of the O&M Contractor	Address	Type of Main Business	Years of Experience

The Project Company shall provide all the information requested by Part 5 of this Schedule 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.

Information Copy – Not for Bidding

PART 3 - List of Engineers

Part 3 of this Schedule accommodates List of Engineers.

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

Information Copy – Not for Bidding

PART 4 – Qualifications of Turnkey Contractors

Part 4 of this Schedule accommodates qualifications of Turnkey Contractors.

Experience in Wind Plant Design

Proposed expert company shall have experience in designing at least two 50 MW wind power plants. Such plants shall be in successful operation for a period of not less than two (2) years.

Experience of EPC Contractors for Wind Farm facility

EPC contractors shall have executed minimum two (2) nos. of 50 MW or higher wind power plants including associated civil works on EPC basis, provided that one of the above plants shall be outside the EPC contractor's country. Such plants shall be in successful operation for a period of not less than two (2) years prior.

Form: Turnkey Contractor's Experience

For the proposed each EPC contractor, provide the following:

1. Name and Address of the Proposed EPC Contractor(s):*

2. Years of experience:

3 Type of main business: **

4. Provide the following details of the EPC Contractor's experience.

   (I) Name and Address of the Client.

   (II) Name of the Project

   (III) Short Description of the Project.

   (IV) Dates of commencement and completion and no of years in operation

   (V) Completion on Time***

   (VI) Total Project Cost

   (VII) % value of turnkey contractor's contribution

   (VIII) Nature of financing****

* Attach Expression of Interest for the supply of the Turnkey Contractor services

** Literature/Brochures/technical magazines describing the business/facilities/organisation shall be attached

*** If the project did not achieve its scheduled completion date (as extended), give the period by which it was late. Attach authentic Certificate of Final Acceptance of each project.

**** Commercial loan, export credit, bond floatation, etc.

Information Copy – Not for Bidding

PART 5 – Qualifications of O&M Contractors

Part 5 of this Schedule accommodates qualifications of O&M Contractors for Operation and Maintenance.

Experience in Operation & Maintenance of Wind Power Plants

O&M contractor shall have experience in successful operation and maintenance of one or more wind power generation projects in the past fifteen years with an aggregate capacity of 25 MW or more for a period of more than two years.

Form: O&M Contractor's Experience

For the O&M contractor (or each contractor, as the case may be), provide the following:

1 Name and Address of the O & M Contractor: *

2 Number of years of experience as an O & M Contractor:

3 Provide the following details of the O&M Contractor's experience

Name and Address of the Client	Name of Project	Short Description of Project **	Date of Commencement	Duration of The Contract

Information Copy – Not for Bidding

* Literature/brochures/technical magazines describing business/facilities of the contractor shall be attached, as well as an Expression of Interest for the supply of O&M services.

** Authentic certificates of achieved performance duly issued by owners or clients of the works described above shall be attached.

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

Information Copy – Not for Bidding

5.1 Introduction

The Wind Farm Facility shall comply with the requirements more specifically described below and the Wind Farm Facility must be fit for the purpose and enable the Project Company to comply with its obligations under the Power Purchase Agreement. The Project Company shall design, construct, complete and operate the Wind Farm Facility in accordance with: the Power Purchase Agreement, the requirements of this Schedule 5, Applicable Codes and Standards (as specified below), Prudent Utilities Practice, Good Design, Engineering, and Construction Practices, the Grid Code (Attachment 1 of Schedule 5), Permits, consents and licenses detailed in the Schedule 14 Permits Matrix and the Laws of Sri Lanka.

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 Project Company shall use designs, methods, technologies and techniques that are modern, reliable, well proven, safe and in accordance with latest industry practice. The completed Wind Farm 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 Wind Farm 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 Wind Farm Facility assets;

  (c) protection of the environment.

Information Copy – Not for Bidding

(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 Wind Farm Facility shall be undertaken in accordance with:

(a) Applicable Codes and Standards as set out in this Schedule 5.1.1.6;

(b) Quality assurance programmes using the international Standards (ISO-9001:2000);

5.1.1 General Requirements

5.1.1.1 Normal Site Ambient Conditions

Normal ambient conditions at the Project Site are summarised as:

- Mean Air Temperature 30ºC
- Minimum Relative Humidity 70 percent
- Average annual rainfall 1000 mm

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

5.1.1.2 Design Life

All components comprised in the Wind Farm Facility shall be new when installed and shall be purchased from manufacturers with a proven track record and high level of reliability.
The Wind Farm Facility shall be designed for an operating life 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 Wind Farm Facility. For this purpose, "proven technology" means technology which has been internationally employed satisfactorily, in similar plants in commercial operation.

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 Wind Farm 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.

Information Copy – Not for Bidding

The scope of work shall also cover:

- providing 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 19 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 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 insurances required by this Agreement, 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.

Information Copy – Not for Bidding

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 Wind Farm Facility, as appropriate, and

(ii) published by the following:

a) International Standards Organisation (ISO); and

b) Applicable Organisations as set out in Table 5.1; and

c) 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

d) 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

e) Rules, Codes and Regulations issued by CEB and PUCSL.

Table 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

Information Copy – Not for Bidding

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 Wind Farm Facility, all civil works, plant, equipment and systems provided for each feature of the Wind Farm 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 Wind Farm Facility.

Information Copy – Not for Bidding

5.1.1.7 Health and Safety

The Wind Farm 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 Wind Farm Facility shall be designed and operated to meet the Environmental Laws of Sri Lanka, Health and Safety Guidelines in effect.

5.1.1.8 Environmental standards

Wind Farm 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.

During the pre-construction period, Construction Period and Operational Period of the Wind Farm Facility, the Project Company shall strictly comply the Environment Management Plan as specified in the Attachment 5 of Schedule 5.

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 Wind Farm Facility.

5.2 Technical Requirements - Wind Farm Facility

5.2.1 Project Scope

The scope of Project is to finance, design, supply, construct, testing, commissioning, operate, and maintain of 50 MW wind power plant and associated facilities including the 33kV Interconnection Facilities up to the Interconnection Point at the Nadukkuda GSS.

The total Guaranteed Plant Capacity of the power plant shall be within 50±5 MW maximum variation. The technology proposed for the project shall have a proven track record with demonstrated success in similar project conditions.

The Wind Farm Facility shall have three-bladed, upwind, horizontal axis and pitch-controlled wind turbine having an individual power rating 4.5 MW or more. The wind class of the proposed wind turbine shall conform to IEC 61400-1. To achieve the Guaranteed Plant Capacity, the Project company shall utilize all ten (10) land plots or part of it as necessary, depending on the individual wind turbine generator's capacity. However, it is Project company's obligation to optimally utilize the available land plots effectively to harness the available wind potential at the Project Site.

The Wind Farm Facility shall be connected to the Nadukkuda GSS through a 33 kV medium voltage system.

5.2.2 Description of the Project

Information Copy – Not for Bidding

The Wind Farm Facility shall be located in the allotted land comprising up to ten (10) parcels of 160 m x 160 m land as more prescribe in Lease.

5.2.3 Basic Requirements

The plant, equipment, accessories, and any other parts described thereupon which are offered under this agreement shall be new at the time of delivery and shall have been manufactured using new materials and components free from any defects or any latent defects, of proven types with authentic evidence for their satisfactory performance. The quality of all main equipment mentioned above shall be assured in compliance with the Quality Management System Standard ISO 9001- 2015 or latest. Such quality accreditations shall be submitted to CEB.

The wind turbines and their components shall be designed in compliance with the latest edition of IEC 61400-1, and any other standards defined therein for associated plant & equipment. In the absence of defined standards for any part or component, other applicable International Standards acceptable to the CEB may be used. However, the Project Company shall declare the list of standards intended to be used for the design, plant & equipment, and materials, works, testing and commissioning and all others involved in the implementation of the Project.

Design of the wind turbine and other components shall be suitable for the wind conditions as well as the extreme wind conditions derived from the measured wind data and the historical wind data for the region of the interest, as per the relevant IEC standard. Further, factors of safety and any other assumptions or considerations as described in the above standards shall be thoroughly considered in design calculations. Detailed calculations containing all such critical factors clearly indicated, shall be submitted for the approval of the CEB.

Wind turbine and all major components and equipment such as blades, hub, generator, gear box (if applicable), main shaft, nacelle, mainframe, tower etc., shall be so designed to have a minimum lifetime period of 20 years.

The wind turbine model shall be of a proven type and type tested. Full type certification for the offered model and for its components as per IEC 61400-22 standard, issued by an independent accredited wind turbine testing and certifying institute shall be submitted to CEB.

The Wind Farm Facility shall consist of following minimum features:

a) The wind turbines shall be capable of operating with different noise modes and the same shall be programmable and make available at the wind turbine controller and Wind Farm Facility SCADA system.

Information Copy – Not for Bidding

b) The Wind Farm Facility controlling system, protection system and wind farm SCADA shall consist of but not be limited to the following:

i. Combining the information (signals, measurements, events, alarms and any other data) from the wind turbine control system, wind measurement data from the measuring masts, wind forecasting data shall be provided at a single point of control to operate, supervise and monitor the entire Wind Farm Facility via SCADA screen.

ii. Separate gateway shall be provided at the Wind Farm Facility for CEB System Control Centre (SCC) SCADA integration by the Project Company.

Gateway System Comprising of;

02 Nos.	Gateway computers with 1+1 redundancy. Gateway shall be independent from SAS and installed inside an industrial server rack.
02 Nos.	Software products for the Gateway runtime and configuration environments with all the necessary product licenses (such as dongles, license key codes)
01 No.	Laptop with software tool to access the Gateway computers, for engineering maintenance purposes.
01 Lot	20% of the total Gateway Data points as spare Data points
04 Nos.	10/100Mbps Ethernet Ports (electrical) for each Gateway These ports should not be built in a single interface module. There should be separate interface modules for these ports to provide 1+1 redundancy. All the ports shall be surge protected.

All the signals related to wind plant and controllers in Wind Farm Facility as per typical signal list given in Attachment 2 of Schedule 5 shall be configured in the gateway as per the IEC 60870 – 5 – 104 protocol. Gateway configuration parameters are given in Attachment 3 of Schedule 5. The communication interfaces shall be configured as in Attachment 4 of Schedule 5. Finalized signal list shall be submitted at least 02 weeks prior to the Commissioning. Configuration of CEB System Control Centre's SCADA master Station for integration of the signals will be done by the CEB. The integrated signals shall be tested up to the of SCC by the Project Company. The separate remote control level for SCC operations and interlocking operations shall be activated for the SCC operations. Real time operations shall be arranged for commissioning and simulations of any signals shall not be accepted.

Information Copy – Not for Bidding

The architecture of SCC operations of Wind Farm Facility, single line diagram of Wind Farm Facility and storage design if available shall be submitted at the design stage to finalize the SCC SCADA requirement.

Final configuration of database and project file (gateway backup files) shall be submitted to the CEB. (As CD/DVD or Portable external hard disk)

iii. The telecommunications facility shall be compatible with the international standard system and common practices of a wind power plant development and shall be equipped with fixed-line telecommunications with PABX facility. Fiber optic line shall be provided from the Wind Farm Facility up to the Interconnection Point facilitating direct link communications with the CEB SCC.

iv. Wind forecasting system shall be integrated with the control system and SCADA system to enable operating the Wind Farm Facility as per the operating modes stipulated in item (d) below. The wind forecasting system/data shall be provided from a licensed reputed third-party agency or may be from a proprietary database by the wind turbine manufacturer.

v. Project Company shall provide details of protection schemes and be liable to adjust the relay parameters, if necessary, in compliance with the CEB requirements prior to Commissioning of the Wind Farm Facility or any other equipment under this Agreement.

c) Forecasting of Wind Farm Facility output

The Project Company shall provide wind farm output forecast using in-house capacity or with the assistance of reputed service provider. The wind forecasting system shall be installed at the wind farm control system to precisely measure real time wind data with other weather conditions as to decide real time actual Wind Farm Facility and individual wind turbine unit power capabilities.

d) Operating Modes of the Wind Farm Facility

The Facility shall be designed to operate with two (02) operational modes which can be chosen by the operator at Wind Farm Facility or by remotely via the System Control Centre.

Mode 1:

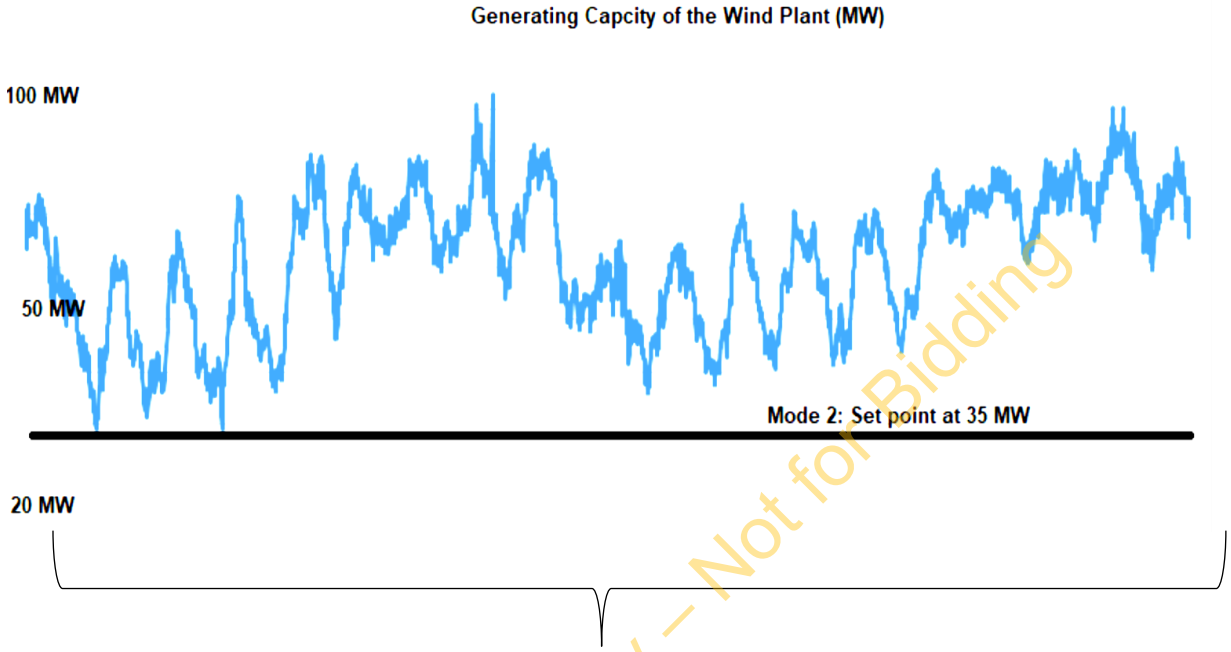
The Wind Farm Facility shall be capable of operating on its own to produce the maximum available power, through local or remote operation.

Mode 2:

Information Copy – Not for Bidding

The Wind Farm Facility shall be able to operate manually setting the operational set point. The set point shall be determined upon considering the wind forecast data to guarantee the plant's operation in a firm energy production mode for a prolonged period as per the Dispatch Instructions of the SCC.

Typical operation under Mode 2, is illustrated below for clarity.



5.2.4 Achieved Capacity After Construction

The Project Company shall ensure that the Guaranteed Plant Capacity of the Wind Farm Facility is achieved within one Year of Commercial Operation Date considering data obtained from on site Met Mast and actual generation data at the Interconnection Point.

5.2.5 Wind Monitoring System (Met Mast/s)

Project Company shall install and maintain necessary wind monitoring system (Met Mast/s) in accordance with MEASNET or relevant IEC standards which shall represent the wind conditions at Project Site. The wind measurement shall consist of wind speed and direction measurements at various heights including the wind speed measurements using two (02) anemometers (one anemometer as a backup) corresponding to the hub height of the wind turbine proposed in this Wind Farm Facility. Wind data shall be time-stamped and logged in 10-minute bins.

Information Copy – Not for Bidding

The Project Company shall engage an accredited agency to perform routine certification/validation of the Met Mast structures and instrumentation before expiry of each calibration cycle to ensure the compliance of the measurements to MEASNET or relevant IEC standards and submit the validation reports issued by the independent testing agency for approval of CEB. The Project Company shall also demonstrate that continuous logging of ten (10) minute average values for wind speed, direction, temperature, pressure, and other relevant data from the Met Mast(s) into the SCADA system.

The Project Company, with the engagement of an independent testing agency, shall establish a clear relationship between wind speed and wind farm power output, considering the following.

a. Active power output at the meter point
b. Wind speed data of Met mast corresponding to hub height
c. Wind speed data at each wind turbine
d. Active power output of each wind turbine

All the above data shall be averaged value measured at 10-minutes interval.

5.2.6 Electromagnetic Fields

The wind turbines shall be compliant with EMC Directive 2004/108/EC. The wind turbines and ancillary equipment emitting electromagnetic fields shall pose no problem or health risks for site personnel and site visitors.

5.2.7 Lightning Protection

Wind turbine generators, associated plant & equipment and the Interconnection Facility shall be fully and comprehensively protected against the damages and other effects caused by lightning and over voltages due to lightning as per the IEC 61400 -24 and the other standards as referred therein.

The Project Site area which is along the shore, is exposed to frequent lightning and these wind turbine structures are the tallest structures in the area therefore dimensioning of the lightning protection systems shall consider lightning protection level LPL 1, as per the clause 6.2 of IEC 61400-24. Assessment of the lightning exposure shall be done considering the requirements in the relevant IEC and the Site data.

Each wind turbine shall have one earthing system to where lightning protection system and system earthing points shall be connected. The earth resistance of the system shall not exceed 2Ω for individual

Information Copy – Not for Bidding

wind turbine location. The Project Company shall assess the practicability of combining individual earth grids in case of inability to achieve the above values.

5.2.8 Radar Based Bird Collision Avoidance (RBBCA) System

Project Company shall install a Radar Based Bird Collision Avoidance (RBBCA) system for the Wind Farm Facility. This RBBCA system shall be able to detect incoming birds towards individual turbines and automatic shutdown of the respective turbines against approaching birds and avoid potential collisions. The Project Company shall successfully demonstrate the operation of RBBCA system prior to the Commercial Operation of the Wind Farm Facility.

5.2.9 Noise Compliance Requirements During the Operational Period of the Project

Project company shall comply the noise compliance requirements as set out in the EIA study during the operational phase of the project. Following shall be considered in this regard.

Project company shall choose suitable wind turbine model having one or more noise modes to achieve optimum AEP from the proposed wind Farm Facility subjected to the noise compliance requirements as set out in the EIA study.

5.3 Specifications for Grid Interconnection

1. General

Wind Farm Facility shall be connected to Nadukkuda GSS. Interconnection Point of the Wind Farm Facility will be at the 33kV outdoor gantry of Nadukkuda GSS as shown in drawings in Schedule 2.

Nadukkuda GSS is connected to the main grid through a 220 kV double circuit transmission line extending to Mannar grid substation.

Utilization of the feeder bays at outdoor gantry of Nadukkuda GSS and 33 kV distribution routing of Interconnection Facilities shall be subject to instructions and approval by the CEB to prevent obstructions.

The Project Company shall propose the optimum electrical connection arrangement of the Wind Farm Facility using Prudent Utilities Practice, subject to the specifications provided in this Schedule 5.

Notwithstanding the specifications provided in this document, the Project Company shall ensure the adequacy of the short circuit ratings of the equipment proposed for the Interconnection Facilities.

1.1 The CEB System Technical Limits

Information Copy – Not for Bidding

- Nominal rated voltage: 33kV
- Normal operating voltage range: 33 ± 10% kV
- Power frequency withstand: 70 kV (rms)
- Impulse withstand voltage: 170 kV (peak)
- Maximum short-circuit current: 25 kA for 1 second

Frequency (Hz)	System Conditions
50.5 - 52.0	Emergency
49.5 - 50.5	Normal
47.0 - 49.5	Emergency

2. Grid Requirements

Wind Farm 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 Wind Farm Facility.

3. Wind Power Plant Control and Monitoring Capability

There shall be gateway system to communicate with CEB System Control Centre master station SCADA System using IEC 60870 – 5 – 104 protocol. There shall be a software based selection within the power station automation system to transfer the controls to CEB System Control Centre through the gateway. Separate authorization level shall be defined for the CEB System Control Centre communication. It shall be possible to monitor and control the Wind Farm Facility from CEB System Control Centre, even all the station PCs fail.

The Wind Farm Facility shall be equipped with a plant control and monitoring system that comprises of following by not limited to:

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:

    i. Voltage control as set out in this Schedule, including;

        - Option to include voltage droop characteristic
        - Has limiting devices to ensure that a voltage disturbance does not cause Wind Farm

Information Copy – Not for Bidding

Facility to trip at the limits of its operating capability

- Allow the voltage set point to be continuously controllable in the range of at least 95% to105% of normal voltage
- Regulates voltage within 0.5% of its set point
- Regulate voltage in a manner to support network voltages during faults in the manner set out in Grid Code.

ii. Power factor control in the manner set out in this Schedule

iii. Reactive power control in the manner set out in this Schedule

4. Voltage Variation Capability

i) Phase rotation is R-Y-B counter-clockwise.

ii) Wind Farm Facility shall be capable of delivering the active and reactive power outputs within the voltage variations specified in clause 3.17.1.3 of the Grid Code.

5. Frequency Variation Capability

The nominal frequency of the CEB System is 50 Hz and is controlled within the limits of 49.5 Hz and 50.5 Hz unless abnormal conditions prevail.

Under abnormal CEB System conditions such as during faults and system disturbances, the system frequency could fall or rise beyond the normal frequency band.

Wind Farm Facility shall be capable of sustaining in continuous and uninterrupted operation during the manifestation of frequency events indicated in clause 3.17.1.1 of the Grid Code.

6. Voltage Waveform Distortion

i) Allowed waveform distortion at the Interconnection Point, shall be limited to indicative planning levels given in Table 2 of Clause 4.1.1 of IEC 61000 -3-6 (Harmonics)

ii) Accordingly, the Project Company shall ensure that level of Total Harmonics Distortion (THD) generated by Wind Farm Facility at the Interconnection Point must be lower than 50% of the limits indicated in the following table.

iii) Harmonic analysis for the Wind Farm Facility shall be conducted by the Project Company and the study reports shall be submitted to the CEB during design stage.

Information Copy – Not for Bidding

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

v) Once the Wind Farm Facility is 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
II	3.5	15	0.4	6	0.5
13	3	21	0.3	8	0.5
17≤ h ≤49	227*17/h-0.27	21 < h ≤ 45	0.2	10≤ h ≤ 50	0.25*10 /h + 0.25
Note: The compatibility level for the total harmonic distortion is THD = 8%					

Information Copy – Not for Bidding

7. Voltage Fluctuations

7.1 Flicker

i) The Project Company must ensure that, irrespective of the operating status of the Wind Farm Facility, 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

ii) Project Company shall evaluate short term and long-term flicker contribution of the Wind Farm Facility to the CEB System and design Wind Farm Facility such that fluctuations do not exceed the allowed limits.

iii) Flicker analysis for the Wind Farm Facility shall be conducted by the Project Company study reports shall be submitted to the CEB during the design stage of the Project.

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

v) The Project Company shall measure and ensure that fluctuations do not exceed the allowed limits after the connection of the Wind Farm Facility to the CEB System.

vi) 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".

7.2 Rapid Voltage Fluctuation

The Project Company must ensure that, irrespective of the operating status of the Wind Farm Facility, 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)	ΔU/UN % MV
n ≤ 4 per day	5-6
n ≤ 2 per hour and > 4 per day	4
2 < n ≤10 per hour	3

Information Copy – Not for Binding

8. Unbalanced Loading Capability

Design of the Wind Farm Facility shall enable it to remain synchronized in the CEB System 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 CEB System, Wind Farm Facility shall be capable of withstanding the resulting negative sequence loading and also remain connected to the CEB System, until the fault is cleared.

9. Power Factor Variation/ Reactive Power Capability

The Wind Farm Facility shall be capable of continuously delivering reactive power to the CEB System at the Interconnection Point in accordance with clause 3.17.1.3 of the Grid Code.

10. Load Following Capability / Dispatchability

i) Wind Farm Facility shall have the capability of providing frequency control ancillary service (i.e. load following capability) in accordance with clause 3.17.1.6 & 3.17.1.7 of the Grid Code.

ii) Wind Farm Facility must be controllable in terms of active power output according to the requirements of the CEB System Control Centre 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 CEB System Control Centre. This target value will be given by the CEB System Control Centre at the Interconnection Point. The reduction of the power output of the Wind Farm Facility to the target value must take place with at least 10% of the power output per minute without disconnection of the plant from the CEB System.

12. Fault Ride-through Capability

Wind Farm Facility shall be capable of remaining synchronized with the CEB System during and following any symmetrical or asymmetrical fault/disturbance in the CEB System or the Wind Farm Facility's internal network resulting in voltage dips or rises at the Interconnection Point in accordance with clause 3.17.3 of the Grid Code.

13. 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 outas per IEC 61000-3-6.

14. 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.

15. Protection Arrangements and Fault Level Considerations

Information Copy – Not for Bidding

i) Protection schemes of the Wind Farm Facility should be properly coordinated with the protection systems of the CEB System.

ii) Wind Farm Facility shall be provided with protection against grid disturbances/ abnormalities and against internal faults within the Wind Farm Facility.

iii) At the request of the Project Company, the CEB will provide all necessary information including maximum and minimum fault levels, maximum clearance times, auto-reclosing or sequential switching features.

iv) Project Company shall obtain the CEB's approval for the protection systems employed. Relay setting calculations and the proposed system related settings shall be submitted to the CEB for approval.

v) Protection schemes employed in the Wind Farm Facility shall have appropriate backup protection schemes and breaker fail schemes.

16. Equipment Standards

All equipment used up to the Interconnection Point shall conform to applicable statutory obligations and comply with the Minimum Functional Specifications and relevant IEC standards of latest editions.

17. Neutral Grounding

The Project Company shall submit a design proposal for the review of the CEB ensuring that the neutral grounding of the Wind Farm Facility is compatible with that of the CEB System.

Any instructions provided by the CEB on this regard shall be duly incorporated in to the design.

18. Metering

Metering and associated equipment of the Wind Farm Facility shall be supplied and installed at the Interconnection Point by the Project Company.

It is necessary to install power quality meters, which are capable of recording 1024 samples per cycle for one (1) year, at one 33 kV feeders to monitor post commissioning power quality.

19. Synchronizing

Wind Farm Facility shall be capable of automatic, unattended operation unless manual overriding is enabled for local manual controlling. The Wind Farm Facility shall be automatically synchronized to the CEB System without exceeding the generating current 1.5 times of full load current.

20. Technical Data and Dynamic Model Requirements

Information Copy – Not for Bidding

During the Preliminary Period, the Project Company shall supply to CEB the technical and dynamic model data for a system study for the impact of the Wind Farm Facility connection to the CEB System. The technical data requirements are as specified in CEB's Data and Model Requirements to be Complied by Inverter Based Renewable Energy Plants in accordance with Schedule 19.

Information Copy – Not for Bidding

Attachment 1 of Schedule 5

<Included separately in the CD>

Information Copy – Not for Bidding

Attachment 2 of Schedule 5

<Included separately in the CD>

Information Copy – Not for Bidding

Attachment 3 of Schedule 5

<Included separately in the CD>

Information Copy – Not for Bidding

Attachment 4 of Schedule 5

<Included separately in the CD>

Information Copy – Not for Bidding

Attachment 5 of Schedule 5

<To attach Annex XIII of Volume 1>

Information Copy – Not for Bidding

Schedule 6 – Testing and Commissioning Procedure for Wind Farm Facility

6.1 General Scope

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

- Pre - commissioning Tests: These tests are to be carried out and successfully completed prior to the first synchronisation of any component of the Wind Farm facility to the CEB System;
- Commissioning Tests: These tests demonstrate the compliance of the Wind Farm 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.

If CEB needs any additional test to be carried out, the Project Company and CEB have to mutually agree on such test plans with adequate preparation time. Parties shall reasonably co-operate in arranging for its dispatch until such other requirements to be satisfied.

Information Copy – Not for Bidding

6.2 General Test Conditions

i) All systems must be ready for normal and continuous operation.

ii) The use of temporary equipment will not be allowed unless previously approved in writing by the CEB.

iii) The Wind Farm Facility shall run in a normal manner with no equipment shutdown to reduce auxiliary load.

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

v) 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 - Commissioning Tests

i) Prior to pre-commissioning tests, the Project Company shall submit the following to CEB;

- Type test certificates of main equipment
- Factory acceptance tests of main equipment

ii) Pre - commissioning tests shall be carried out in accordance with relevant IEC standard.

iii) As a minimum the following verifications / tests shall be conducted as a part of the pre-commissioning tests of the Wind Farm facility, to establish the functionality;

- Wind turbine generators;
- Weather stations;
- Communications & SCADA;
- Security systems, combiner, junction & isolation boxes;
- DC cabling;
- Underground cabling;
- Polarity tests;
- Insulation tests;
- Continuity tests;
- Earthing & resistance tests;
- Open circuit and short circuit string tests and curve traces;
- Inverter / converter tests;
- Switchgear operation;
- Protection systems.

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

Information Copy – Not for Bidding

6.4 Commissioning Tests

6.4.1 Objectives

i) The objectives of the Commissioning Tests are to demonstrate the performance and operational characteristics of the Project, which are as follows and described below:

a) Capacity Test;

b) Reactive Power Tests; and

c) Other Tests.

ii) Commissioning tests shall be carried out in accordance with relevant IEC standard, unless specifically mentioned in this Schedule.

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

iv) Failure of any of the tests shall require the Project Company to immediately rectify the Wind Farm Facility at their expense and retest until the test is passed.

v) The Project Company shall provide the necessary equipment for testing and all verification equipment shall be properly calibrated and certified by the Engineer.

vi) CEB shall have the right to attend and monitor any Commissioning Test.

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

viii) 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.

ix) 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.

x) The Project Company shall allow the CEB's authorised representative to witness 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.

6.4.2 Reactive Power Test

i) The Reactive Power Test is to verify the Wind Farm Facility is in compliance with the reactive power requirements in this Agreement.

ii) The reactive power tests shall demonstrate that the reactive power capability of the Wind Farm Facility is in accordance with the graph in Paragraph 5.3 (9) of Schedule 5.

iii) It shall be conducted in accordance with procedures and methodologies and acceptable industry test procedures as mutually agreed by the Parties.

6.4.3 Other Tests

i) Protection relays of the Wind Farm Facility shall be tested for their set points for following relay operations;

- Over Voltage
- Under Voltage
- Over Frequency

Information Copy – Not for Bidding

- Under Frequency
- Neutral Voltage Displacement
- Low Voltage Ride Through (LVRT)
- Rate of Change of Frequency (RoCoF)
- Loss of Mains

ii) Output of the Wind Farm Facility shall be tested at the interconnection point to measure the following does not exceed the limits depicted in Schedule 5;

- Voltage waveform distortion
- Voltage flicker

6.4.4 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 Fourteen 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.

Information Copy – Not for Bidding

6.4.5 Engineer's Certificate and Completion Certificate

i) When the Engineer is satisfied the pre-commissioning and commissioning tests of the Wind Farm Facility otherwise meets all the relevant requirements of the Minimum Functional Specification tested according to this Schedule, he shall certify the Wind Farm 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 MW output of the Wind Farm Facility.

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

6.5 Annual Engineering Audit

CEB shall carry out an annual engineering audit of the Wind Farm Facility, which shall be a comprehensive audit covering all the engineering and related aspects of the Wind Farm Facility.

The Project Company shall allow the CEB to carry out the annual engineering audit with prior notice and facilitate the same.

Information Copy – Not for Bidding

Schedule 7 - Metering

Metering equipment shall consist of one main and one back up system having the same configuration.

Both the Main Meter and the Check Meter (including summators) shall be purchased by the Project Company and installed at the Metering Points to record the Metered Output from the Wind Farm Facility to the CEB System (in kW and kWh output).

7.1 Metering Point

i) The Meters shall be located at the metering panel in the Nadukkuda GSS as indicated in drawings of Schedule 2. This metering panel shall only be accessible by the Project Company and the CEB in the presence of each other by means of a dual key system.

ii) The Meters shall utilise current and voltage transformer terminals provided by the CEB which incorporated into the gas insulated switchgear of each individual 33kV feeders.

iii) Both the Main Meter and the Check Meter shall use the same VT's and CT's for measurements.

7.2 Accuracy and Capability of Meters

Calibration and testing of the Main Mater 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 Metered Output and Metered Input of kW and kWh at 33kV and time of use recording function.

The calculation of Energy Charges requires every 15-minute interval metering and so the Meters shall be suitable to record 15-minute intervals Metered Output (including lowest kW achieved in each 15-minute duration) and Metered Input.

Supplied and Installed Main Mater and Check Meter shall comply with the specifications given in Attachment 1 of this Schedule 7.

7.3 Meteorological Measurements and Forecasting Software

A high precision meteorological station should be installed at the power plant premises to record wind speed readings (average wind speed, standard deviation, and gust at every 10 minutes logging interval) of two (02) anemometers provided at the hub height, wind direction readings (average wind direction and standard deviation), ambient temperature, air pressure and other relevant meteorological data to measure the performance of the Wind Farm Facility.

Information Copy – Not for Bidding

The Project Company shall develop a suitable methodology or use an appropriate software to calculate and accurately predict the actual energy generation of the Wind Farm Facility.

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 80% accuracy on day ahead forecast to the actual generation of the power plant.

Generation reduction percentage with the partial availability of the above equipment shall be clearly outlined in the energy calculation methodology/software.

The Main Meter and Check Meter 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 meteorological 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 Wind Farm Facility whenever necessary.

Information Copy – Not for Bidding

Attachment 1 of Schedule 7

<Included separately in the CD>

Information Copy – Not for Bidding

Schedule 8 – Availability Forecast & Wind Speed Reporting

Commencing from the Commercial Operation Date and throughout the Term of this Agreement, the Project Company shall provide forecasting data as depicted in following table of this Schedule.

Forecast Type	Annual	Monthly	Weekly	3-Days Ahead Rolling Schedule	6-Hours Ahead Rolling Schedule	60 Minutes Rolling Schedule
Submission Deadline	30th June	7 days Prior to the beginning of **each** month	3 days Prior to the beginning of **each** week	**Every day** before 12:00 hrs	4 times a day **(before** 03:00 hrs, 09:00 hrs, 15:00 hrs, 21:00 hrs)	15 minutes prior to the beginning of each hour
Forecast Resolution	Monthly (12 data points)	Weekly (4 or 5 data points)	Daily (7 data points)	15 minutes (288 Data points)	15 minutes (**24** Data points)	5 minutes (12 Data Points)
Forecasted generation **(MWh)**	Minimum **guaranteed** monthly output (12 data points)	Minimum **guaranteed** weekly output (4 or 5 data points)	Minimum **guaranteed** daily output (7 data points)	Minimum **guaranteed** daily output of first day (1 data point)	-	-
Forecasted Active Power (kW)	-	-	-	15 minutes (288 Data points)	15 minutes (24 Data points)	5 minutes (12 Data points)
Maximum Mean Error in relation to the actual value (+/-)	5%	5%	5%	10% for first 96 each Data point of Active power (MW), **up to** 40% for next 192 each Data point of Active power (MW). 5% of Minimum **guaranteed** daily energy output (MWh)	10% for 24 each Data point of Active power (MW)	5% for 12 each Data point of Active power (MW)
Wind speed (m/s), Rainfall(mm), Ambient Temp. (C), etc	-	-	-	15 minutes (288 Data points)	15 minutes (24 Data points)	5 minutes (12 Data points)
Medium/Format	In a suitable electronic format prescribed by **CEB** SCC	In a suitable electronic format prescribed by **CEB** SCC	In a suitable electronic format prescribed by **CEB** SCC	In a suitable electronic format prescribed by **CEB** SCC	**CEB** SCC SCADA system	**CEB** SCC SCADA system

Information Copy – Not for Bidding

However, the Project Company shall have no liability to CEB in the event that actual amount of electrical energy delivered to CEB, differ from the amounts or times shown in the annual forecast if the change in output is due to differing weather patterns.

8.1 Availability Declaration

Project Company shall declare the availability of the Wind Farm Facility as specified below and declared value shall be verifiable to CEB System Control Center through the SCADA system of Wind Farm Facility. Aggregate of such declared and verified data shall be used in calculating the Annual Achieved Plant Availability.

Declaration Type	60 Minutes Schedule
Plant Availability (%)	10 minutes resolution (06 data points)
Submission Deadline	15 minutes prior to the beginning of each hour
Medium/Format	CEB SCC SCADA system

Information Copy – Not for Bidding

Schedule 9 - Energy Charge

9.1 General

This Schedule accommodates Energy Charge for the Wind Farm Facility.

9.1.1 Curtailed Monthly Output

For any Dispatch Instruction or CEB System Problem that is not attributed due to a Non-Sri Lanka Force Majeure event identified in Clause 12.1, the Project Company shall record each 10-minute interval which is curtailed, and the setpoint (in MW) at which the Wind Farm Facility is curtailed to.

In order for the interval to be a valid curtailment interval, the following conditions must all be met:

- the average wind speed for the 10-minute interval is greater than Cut-in wind speed of the wind turbine.
- availability of status of each turbine with reference to part load operation of specific turbines if any.
- the SCADA system recorded the interval as a curtailed interval.
- the power output (in MW) of the Wind Farm Facility is not above 3% of the curtailment setpoint (in MW) for that interval.

Then the quantity of Curtailed Monthly Output (M.O.) shall be calculated as follows:

$$Curtailed\ Monthly\ Output = \sum_{n=1}^{N} (P1 - P2) * n - E3$$

Where:

P1 = Potential output calculated from Met Mast data expressed in MW

P2 = Reduction of power due to wind turbine faults expressed in MW

E3 = Metered Output during the interval ‘n’ expressed in MWh

n = a 10 minute interval which is curtailed expressed in hours

N = total number of curtailed interval ‘n’

9.1.2 Energy Charge

Energy Charge for every Contract Month will be calculated based on the following scenarios:

(i) If there have been no valid curtailment intervals recorded in the Contract Month:

The payment of Energy Charge for the Contract Month shall be calculated for all Delivered Monthly Output at the rate of Rate (Metered Output)

Information Copy – Not for Bidding

(ii) If there have been valid curtailment intervals recorded in the month:

The payment of the Energy Charge for the Contract Month shall be calculated for all the Delivered Monthly Output at the rate of Rate (Metered Output)

Plus;

All Curtailed Monthly Output as calculated in accordance with Paragraph 9.1.1 at the rate of Rate (Metered Output).

9.1.3 Liquidated Damages due to non-achievement of Guaranteed Annual Plant Availability

The Project Company shall ensure annual plant availability of 95% in every Contract Year of the Wind Farm Facility and throughout the Term. Failure to achieve the required plant availability during a Contract Year result in Liquidated Damages (LD) which shall be calculated as follows;

Guaranteed Annual Plant Availability	95 %
Annual Achieved Plant Availability	d %
Loss of availability due to Force Majeure event affecting Project Company in accordance with Clause 12.1	f %
If d < 94% LD charges will be applied, otherwise no LD charges	
Difference in availability	[94% - (d% + f%)]
Guaranteed Plant Capacity (MW)	c
Plant factor based on AEP assessment in Schedule 10	q
Rate (Performance LD)	p
Number of hours in the relevant contract year	r
LD applicable (USD)	c * [94% - (d% + f%] * q * p * r * 10

Information Copy – Not for Bidding

9.1.4 Rates

- Rate (Metered Output) = [xx] USD Cents per kWh delivered
- Rate (Performance LD) = 1.25 times [Rate (Metered Output)] USD Cents per kWh

Schedule 10 - Project Company Generation Model Report

<To insert from Project Company's Proposal>

Information Copy – Not for Bidding

Schedule 11 - Project Company Financial Model

<To insert from Project Company's Proposal>

Information Copy – Not for Bidding

Schedule 12 - Form of Irrevocable Standby Letter of Credit

PART A

Form of CEB Irrevocable Standby Letter of Credit

Number:	[•]
Maximum Amount:	US Dollar ..... (); and
Commencement Date:	[•]
Expiry Date:	[•]
Account party:	Ceylon Electricity Board
Beneficiary:	[•] (Private) Limited
Address:	[•], Colombo, 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 United States Dollars ……. [USD …….] (the "**L/C Amount**").

Drafts drawn on us shall be payable in United States Dollars at sight and must be accompanied by a certificate substantially 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.

Partial drawings are permitted under this Letter of Credit.

Each disbursement which is made under a Drawing Certificate shall be reinstated provided that each such reinstatement shall only be up to the Maximum Amount described above. Notwithstanding a drawdown being made under this Letter of Credit, the value of this Letter of Credit shall at all times be for the Maximum Amount described above.

This Letter of Credit shall automatically terminate on the Expiry Date.

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 Drawing Certificate referred to herein; and any such references shall not be deemed to incorporate herein by reference any document, instrument, or agreement except for

Information Copy – Not for Bidding

such Drawing 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 [•] 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 the Lenders of the Beneficiary (or the Agent on behalf of the Lenders), 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:

Information Copy – Not for Bidding

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) United States Dollars …… which amount is the unpaid amount [s] of Invoice No. [s] [•] submitted by the Beneficiary to the Ceylon Electricity Board ("**CEB**") on [•] and 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;

   (ii) You are instructed immediately to pay the amounts referred to in paragraph 3(i) by way of bank transfer to the following accounts as applicable:

   [account Number [•], Account Name: [•] (Private) Limited, " 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 apply the same directly to the satisfaction of the CEB's obligations under the invoice referenced in paragraph 3(i) above.

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

[Beneficiary]

By:

Name: Name:

Title: Title:

Information Copy - Not for Bidding

Schedule 13 - Buy-Out

13.1 Introduction

This Schedule outlines the procedures and methodology for calculating the Buy-Out Price if an event requiring or entitling the CEB to Buy-Out the Wind Farm Facility pursuant to Paragraph 13.2 (a "**CEB Buy-Out Event**") or entitling the Project Company to require the CEB to Buy-Out the Wind Farm 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 Wind Farm 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 be those events described as such in Schedule 13 (Buy-Out) – Annex 1 and shall occur either at;

i) the expiry of the Operational Period (the **"CEB Expiry Buy-Out Event"**); or

ii) where the CEB gives Notice of Termination to terminate this Agreement in accordance with the terms of the Agreement (a **"CEB Termination Buy-Out Event"**).

13.3 CEB Buy-Out Notices

i) Where a CEB Termination Buy-Out Event occurs, the CEB shall be deemed to have served a Buy-Out Notice ("**CEB Buy-Out Notice**") on the Project Company to Buy-Out the Wind Farm Facility.

ii) In the case of the CEB Expiry Buy-Out Event at the expiry of the Operational Period, the CEB shall serve its CEB Buy-Out Notice on the Project Company no later than one hundred and eighty (180) Days prior to the date of expiry of the Operational Period, 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 be those events described as such in Schedule 13 (Buy-Out) – Annex 1 and shall occur where the CEB or the Project Company, as the case may be, gives Notice of Termination to terminate this Agreement.

13.5 Project Company Buy-Out Notices

Information Copy – Not for Bidding

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 Wind Farm Facility. The Project Company shall serve its Project Company Buy-Out Notice on the CEB, within thirty (30) days of the date of service of the Notice of Termination by the Project Company on the CEB or by the CEB on the Project Company as the case may be, 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 Wind Farm Facility and the Project Company shall be obliged to transfer the Wind Farm 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 shall be calculated as at the date of the Buy-Out Event (unless otherwise stated in the Buy-Out Price Elements table set out in Annex 2 to this Schedule 13 (Buy-Out)) and shall be payable as shown in Annex 1 to this Schedule 13 (Buy-Out) 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 (Buy-Out).

13.7.2 In respect of a Buy-Out of the Wind Farm Facility at the CEB Expiry Buy-Out Event, the Buy-Out Price shall be one US Dollar (US$1).

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 Wind Farm Facility shall include all assets of the Project Company including:

Information Copy – Not for Bidding

(i) all leasehold rights to the Project Site, buildings, plant and machinery, equipment and materials, and spare parts (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 Wind Farm Facility subsisting at the Transfer Date or the Wind Farm 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 Project 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, the Lessor 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, the Lessor and the Government following Buy-Out in respect of any amount being due to the CEB, the Lessor 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 Accrued Liabilities and Obligations

Information Copy – Not for Bidding

13.9.1 The Project Company shall be responsible for and shall discharge all liabilities and perform all obligations (including payment obligations) of the Project Company that are incurred by the Project Company prior to the Transfer Date unless expressly assumed by the CEB, the Lessor or the Government, as the case may be.

13.9.2 The CEB shall be responsible for and shall discharge all liabilities and perform all obligations (including payment obligations) relating to the Wind Farm Facility that are incurred by the CEB or arise as a result of the CEB's ownership of the Wind Farm Facility from and after the Transfer Date.

13.10 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 Wind Farm Facility (subject to the provisions of those contracts and the Project Company's obligations pursuant to Clause 14.3).

13.11 Project Company's Responsibility for Transfer Costs and Taxes

If a CEB Termination Buy-Out Event occurs, the Project Company shall be responsible for all Transfer Costs and Transfer Taxes (each as defined below) in connection with the Buy-Out.

13.12 CEB's Responsibility for Transfer Costs and Taxes

If the CEB issues a CEB Buy-Out Notice under Paragraph 13.3(ii) in respect of the CEB Expiry Buy-Out Event or the Project Company issues a Project Company Buy-Out Notice under Paragraph 13.5, the CEB shall be responsible for all Transfer Costs and Transfer Taxes in connection with the Buy-Out.

13.13 Definitions for Transfer Taxes, Transfer Costs and Transfer Date

For purposes of this Schedule 13 (Buy-Out), 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 Wind Farm 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; and

Information Copy – Not for Bidding

(ii) 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 Wind Farm Facility (provided that the terms of those contracts have been specifically approved by the CEB).

(c) "**Transfer Date**" means the date occurring thirty (30) Days after;

(i) the occurrence of a CEB Buy-Out Event; or

(ii) The date of the Project Company Buy-Out Notice under Paragraph 13.5

13.14 Transfer on receipt by Project Company of Buy-Out Price

Subject to Paragraph 13.16, on the Transfer Date CEB shall pay the Buyout Price to the Project Company and the Project Company shall transfer to the CEB the Wind Farm Facility on an 'as is' basis, free of all charges and liens, on receipt of the Buy-Out Price by the CEB to the Project Company in accordance with Paragraph 13.15. The parties agree that the transfer of the Wind Farm Facility to the CEB shall only occur on the payment of the Buy-out Price in accordance with this Paragraph, provided however that from and after the Transfer Date, the Wind Farm Facility shall be at the sole risk of the CEB.

13.15 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 to the Project Company under this Agreement in US Dollars, in immediately available funds. If the CEB pays such amount in Rupees, then the provisions of Clause 8.1.2 shall apply.

13.16 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 (including to an offshore account if so 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 Wind Farm 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.

Information Copy – Not for Bidding

13.17 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 Wind Farm 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.

13.18 Access to the Project Site and Deductions for Clean Up Costs

13.18.1 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 Wind Farm Facility and to make an inventory of the Project Company's assets that will be transferred to the CEB on a Buy-Out.

13.18.2 Notwithstanding any of the foregoing provisions of this Schedule 13 (Buy-Out), where the Project 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 (20) 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 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 Wind Farm 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

Information Copy – Not for Bidding

respect of such decontamination which would prevent the repayment of the Senior Debt and interest thereon from the proceeds of the Buy-Out Price.

13.18.3 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 Wind Farm Facility of the age at the time of a Termination Buy-Out Event, 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 Wind Farm 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.

Information Copy – Not for Bidding

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 Project Company Buy-Out Events arising as a result of termination in accordance with the following Clauses:

CEB Buy-Out Events: Clauses 13.1.2, 13.1.3, 13.1.4, 13.1.5, 13.1.6(ii) read with 12.3.9 (i); 13.1.7(where CEB terminates for Non - Sri Lanka Force Majeure affecting the Project Company), 13.1.8 and 13.1.9.

Project Company Buy-Out Events: Clause 13.1.6 read with Clauses 12.3.9 (ii) or 12.3.9 (iii), Clause 13.1.7 (where CEB terminates for Sri Lanka Force Majeure affecting the Project Company or CEB and for Non-Sri Lanka Force Majeure affecting the CEB); Clauses 13.2.2, 13.2.3, 13.2.4, 13.2.5, 13.2.6, 13.2.7, 13.2.8 and 13.2.9.

Information Copy – Not for Bidding

Item	Termination Event	Buy-Out Price Payable by CEB
Termination occurring prior to Commercial Operation Date:		
1.	Termination giving rise to a CEB Buy-Out Event or a Project Company Buy-Out Event, except for 2 and 3 below.	A + D
2.	Termination following Non-Sri Lanka Force Majeure	A + D
3.	Termination following Sri Lanka Force Majeure.	A + D
Termination occurring on or after Commercial Operation Date:		
4.	Termination giving rise to a CEB Buy-Out Event set out in Clauses 13.1.2, 13.1.3, 13.1.4, 13.1.5, 13.1.8 and 13.1.9.	A

5.	Termination giving rise to a Project Company Buy-Out Event in respect of Clauses 13.2.2, 13.2.3, 13.2.4, 13.2.5, 13.2.6, 13.2.7, 13.2.8 and 13.2.9.	A + C
6.	Termination in respect of the CEB Buy-Out Event set out in Clause 13.1.7 following Non-Sri Lanka Force Majeure.	A + B
7.	Termination in respect of the Project Company Buy-Out Event set out in Clause 13.1.7 following Sri Lanka Force Majeure.	A + C
8.	Termination in respect of the Project Company Buy-Out Event set out in Clause 13.1.6 (ii) read together with Clause 12.3.9(i), where following Sri Lanka Force Majeure or Non-Sri Lanka Force Majeure, the Parties agree or the Expert Determination is that Restoration is feasible, but the CEB elects to terminate this Agreement in terms of Clause 12.3.8(ii).	A + C
9.	Termination in respect of the Project Company Buy-Out Event set out in Clause 12.3.9 (ii) read with Clause 13.1.6, where the Parties agree that Restoration is not feasible following Sri Lanka Force Majeure.	A + C
10.	Termination in respect of the Project Company Buy-Out Event set out in Clause 13.1.6 read together with Clause 12.3.9(iii) where the Parties agree that Restoration is not feasible following Non-Sri Lanka Force Majeure.	A + B

Information Copy – Not for Bidding

Schedule 13 – Annex 2

Buy-Out Price Elements

In this Schedule 13 (Buy-Out), 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 13 (Buy-Out). The letters shall represent the following amounts:

A =	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 payment in full of the Buy-Out Price or the Commercial Operation Date); (ii) the total amount outstanding under any loan agreements for capital improvements to the Wind Farm Facility that are required under this Agreement, as agreed by the CEB; (iii) the total amount of any other outstanding debt incurred by the Project Company, that was notified to the CEB, less any insurance proceeds available to the Project Company following a Force Majeure and not spent for Restoration; and (iv) 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 hedge break funding costs) under Financing Agreements. For the avoidance of doubt, outstanding debt shall exclude loan repayments due and unpaid by the Project Company at the date of termination, except in situations where such non-payment has arisen due to a breach by CEB, Force Majeure or Change in Law or the acceleration of the outstanding debt by the Finance Parties.
B =	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, converted to USD, at the Buying Rate for USD

Information Copy – Not for Bidding

	published by CBSL on the date of such Balance Sheet, such audit being undertaken by a recognized international firm of auditors in accordance with International Accounting Standards.
C =	The Equity Value, being the expected net cash flows accruing to the Project Company from the date of Termination to the date of expiry of the Power Purchase Agreement, discounted to a Net Present Value at ten percent (10%). The Equity Value shall be deemed to be zero (0) until the Commercial Operation Date has occurred (except where Buy Out Event was caused by SLFM), and shall otherwise apply from the date of Termination until the date of expiry of the Power Purchase Agreement. 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 Company Financial Model for each Contract Year over the Term and attached as Schedule 11.
D =	Construction period value shall equal one hundred percent (100%) of the sum of all equity subscriptions paid into the Project Company and spent on the Project until the Transfer Date, with deductions, as represented by the audited financial statements, to reflect the following: (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; (ii) any adjustments for non-compliance with the Minimum Functional Specification; (iii) any loans disbursed by Finance Parties but not expended by the Project Company; and (iv) any liquidated damages liabilities that the Project Company might have reasonably been expected to incur.

Information Copy – Not for Bidding

Schedule 14 – Permits Matrix

Permit, Consent or Approval	Responsible Party
BOI Status from BOI: Status of the Project confirmed under the terms of the BOI Agreement.	Project Company
Energy Permit from SLSEA: Permit issued to the Project Company under SRI LANKA SUSTAINABLE ENERGY AUTHORITY ACT, No. 35 OF 2007	Project Company
Generation License from PUCSL: License issued to the Project Company under Section 2 of the ELECTRICITY ACT NO. 19 OF 2009, as amended.	Project Company
Visas and work permits from BOI / Controller of Immigration & Emigration: Visas and work permits for foreign personnel properly employed in connection with the Project by the Project Company for the period such personnel are so employed	Project Company
Building consents from Ministry of Defence (Fire Dept.): Consent under the Fire Regulations	Project Company
Financial consents from Central Bank of Sri Lanka: All necessary permits and consents required for the effectiveness of the Financing Agreements and related agreements, including in any event: (i) Approval for the Project Company to borrow and make payments in foreign currency, and (ii) Approval required for the ownership by foreign persons and entities of equity in the Project Company (iii) Approval to Obtain and Maintain Offshore Accounts	Project Company
Approval to facilitate importation or local purchase of capital goods under bonded warehouse scheme from Sri Lanka Customs/ Ministry of Power and Energy / SLSEA: To facilitate importation or local purchase of capital goods on the basis of exemption of duties and taxes under the Gazette No.2083/33 – Published on August 10, 2018 by GoSL	Project Company
Environmental Approval / Environmental Clearance from Costal Conservation Department as the Project Approving agency	CEB

Information Copy – Not for Bidding

Schedule 15 - Disputes Resolution Procedure

This Schedule accommodates Disputes Resolution Procedure for both, the Power Purchase Agreement and the Transmission Agreement. Accordingly, in this Schedule, reference to "this Agreement" means the Power Purchase Agreement and the Transmission Agreement, as relevant.

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

Information Copy – Not for Bidding

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. Any documentation so received by either party shall be treated on a confidential basis. The Expert shall have the right to inspect the Wind Farm Facility or the Transmission Facility, as the case may be.

Information Copy – Not for Bidding

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 12.3.8(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). In the event of any claim of 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), a Party may refer such dispute to Arbitration in accordance Part 2 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.

Information Copy – Not for Bidding

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).

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 seat and place of the arbitration shall be Colombo, Sri Lanka, provided however that until such time as all Project Senior Debt has been repaid and no amounts remain outstanding to the Financing Parties, the place of arbitration shall be Singapore. 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.

Information Copy – Not for Bidding

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 United States 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, and costs.

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

Information Copy – Not for Bidding

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).

Information Copy – Not for Bidding

Schedule 16 - Minimum Insurance to be Maintained by the Project Company

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 Project 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 the CIF value.
Insured:	The Project Company and the Turnkey Contractor
Additional	
Insured:	The sub-contractors and suppliers to the Project Company and to the Turnkey Contractor, in respect of their respective rights and interests
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 (iv), civil commotion and riot occurring in Sri Lanka up to fifteen per cent (15%) of the capital value of the Wind Farm Facility at the date of such loss or damage subject to a maximum value prescribed by the National Insurance Trust Fund or any Competent Authority.

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

Information Copy – Not for Bidding

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 Wind Farm 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 CEB, Finance Parties and the Turnkey Contractor

Additional

Insured: The sub-contractors, and all suppliers and consultants in respect of their activities at the Project Site, in respect of their respective rights and interests.

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(iv), civil commotion and riot occurring in Sri Lanka up to fifteen per cent (15%) of the replacement capital value of the Wind Farm Facility at the date of such loss or damage subject to a maximum value prescribed by the National insurance Trust Fund or any Competent Authority.

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 Wind Farm Facility in Sri Lanka.

Information Copy – Not for Bidding

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 Wind Farm Facility
Insured:	The Project Company, the CEB, the Finance Parties, and the Turnkey Contractor
Additional	
Insured:	Sub-contractors, suppliers and consultants in respect of their activities at the Project Site, in respect of their respective rights and interests.
Period of Cover:	The actual construction, testing and Commissioning of the Wind Farm Facility from the sooner of (i) first mobilisation of the Turnkey Contractor, and (ii) first commencement of Works at the Project Site by the Project 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 Wind Farm 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 Operational 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 Wind Farm 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, , 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.

Information Copy – Not for Bidding

Sum insured: Full replacement of the Wind Farm 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(iv), civil commotion and riot occurring in Sri Lanka up to fifteen per cent (15%) of the replacement capital value of the Wind Farm Facility at the date of such loss or damage subject to a maximum value prescribed by the National insurance Trust Fund or any Competent Authority.

16.2.2 Consequential Loss Following All Risks:

Cover: Loss of revenue due to loss of energy as a direct consequence of loss of or damage to the Wind Farm 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 and ancillary equipment forming part of the Wind Farm Facility against sudden and unforeseen physical loss or damage resulting from mechanical and electrical breakdown or derangement, 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, etc.

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

Information Copy – Not for Bidding

16.2.4 Consequential Loss Following Machinery Breakdown

Cover: Loss of revenue due to loss of energy as a direct consequence of loss of or damage to the Wind Farm Facility caused by a peril insured under paragraph 16.2.3 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 Wind Farm Facility.

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 Wind Farm facility.

Insured: The Project Company, the O&M Contractor, the Finance Parties, 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 Wind Farm Facility or in connection with its operation, and motor vehicle insurance on any vehicle owned by the Project Company.

Information Copy – Not for Bidding

Schedule 17 – Form of Escrow Agreement

This Schedule accommodates the Form of Escrow 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.

THIS ESCROW AGREEMENT is dated this day of 20

BETWEEN THE CEYLON ELECTRICITY BOARD (the **"CEB"**), a body corporate established by Act No.17 of 1969 and having its head office at 50, Chittampalam A Gardiner Mawatha, Colombo 2, Sri Lanka;

AND [ ] (PRIVATE) LIMITED (the **"Company"**)

AND [ ](the **"the Escrow Agent"**)

WHEREAS

A. The CEB has entered into a power purchase agreement dated …….. with the Project Company (the "Power Purchase Agreement")

B. Clause 8.6.5 of the Power Purchase Agreement requires that the CEB and the Project Company enter into an escrow agreement on the terms and conditions set out therein

NOW THIS AGREEMENT WITNESSES as follows:

1. INTERPRETATION

In this agreement, unless the context otherwise requires:

1.1 Definitions: expressions defined in the Power Purchase Agreement shall bear the same meaning where used in this agreement;

1.2 Headings: Clause and other headings are for ease of reference only and shall not be deemed to form any part of the context or to affect the interpretation of this agreement; and

1.3 Parties: references to parties shall mean all of the parties to this agreement and their respective executors.

2. TERM

This agreement shall commence at the time when the Escrow Agent receives any money pursuant to Clause 8.6.5 of the Power Purchase Agreement or the Transmission Agreement, as the case may be (the "Disputed Amount").

Information Copy – Not for Bidding

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:

Information Copy – Not for Bidding

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 Transmission 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.

Information Copy – Not for Bidding

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.

Information Copy – Not for Bidding

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.

Information Copy – Not for Bidding

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:

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

Information Copy – Not for Bidding

Schedule 18 - Form of Construction Performance Bond

BACKGROUND

A. _____ of _____ , a company incorporated in Sri Lanka (the "Company") has entered into agreements dated _____ to finance, design, engineer, construct, commission, operate and maintain a Wind Farm Facility to be built at Mannar 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). Every demand hereunder shall be accompanied by a statement by the General Manager (or by any person for the time being acting in or performing the functions of the General Manager) setting out in reasonable detail, the manner in which the Company is in breach of the relevant Agreement.

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 and any claim under this guarantee will be payable in Sri Lankan Rupees using the exchange rate of Sri Lankan Rupees against United States Dollars prevailing at our counters.

Information Copy – Not for Bidding

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 relevant 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 relevant Agreement.

Any claim under this Construction Performance Bond must be received by us on or before *(insert three months 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 _____ 2024

_____	_____
Authorised Signatory	Authorised Signatory
Name:	Name:
Designation:	Designation:

Information Copy – Not for Bidding

Schedule 19 – List of Investigations and Studies

This Schedule accommodates the List of Investigations and Studies, for both, the Power Purchase Agreement and the Transmission Agreement.

The list of Investigations and Studies required for the development and construction of the Project Facility, including but not limited to;

i) Boundary and Topographical Survey
ii) Flood Study
iii) Geotechnical Study
iv) Protection Study
v) Grid Impact Study – conducted as per Attachment 1 & 2

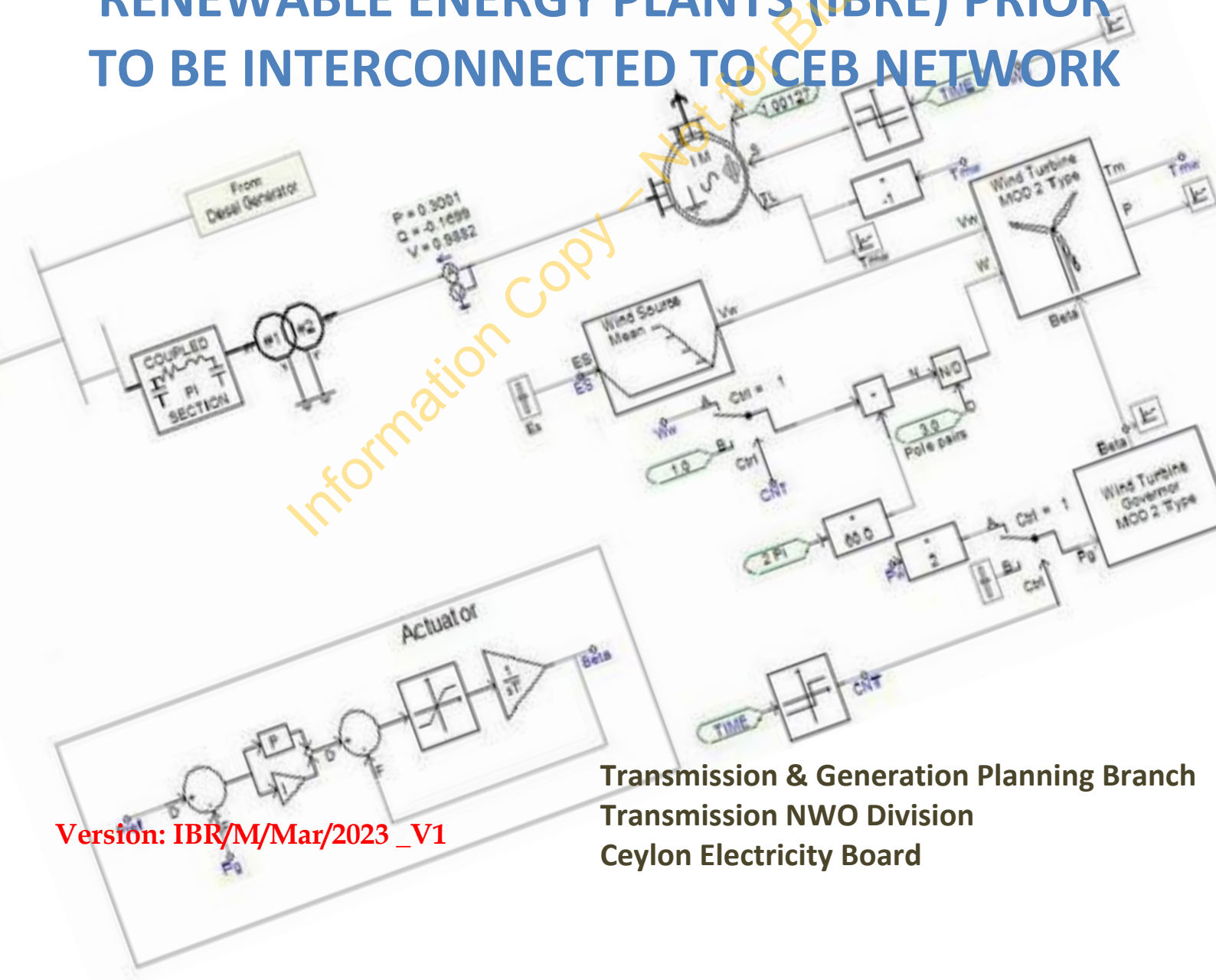
- Attachment 1 of Schedule 19: Data and Model Requirements to be Complied by Inverter Based Renewable Energy Plants (IBRE) Prior to be Interconnected to CEB Network.
- Attachment 2 of Schedule 19: Dynamic Plant Model Quality & Dynamic Response Test (MODRT) to be Complied by the Inverter Based Renewable Energy Plants (IBRE) Prior to be Interconnected to CEB Network.

Information Copy – Not for Bidding

ලංකා විදුලිබල මණ්ඩලය
இலங்கை மின்சார சபை
CEYLON ELECTRICITY BOARD

DATA AND MODEL REQUIREMENTS TO BE COMPLIED BY INVERTER BASED RENEWABLE ENERGY PLANTS (IBRE) PRIOR TO BE INTERCONNECTED TO CEB NETWORK

Information Copy – Not for Bidding



Transmission & Generation Planning Branch
Transmission NWO Division
Ceylon Electricity Board

Version: IBR/M/Mar/2023 _V1

INTRODUCTION

This document contains requirements that must be mandatorily complied by all Inverter based renewable power plants above a given threshold capacity (which would be declared by CEB from time to time) when they submit to CEB the software Model of the proposed power plant (in the format specified in this document) to demonstrate compliance to the requirements of the Grid Code. As inverter based power plants inherently creates additional technical challenges that were not present with synchronous technology based conventional generating plants, it would be to the best interest of both the project developer and CEB to ensure that the proposed power plant could be operated successfully (in compliance with the requirements of the prevalent Grid Code) during varying system conditions that are likely to occur during the operational period of the facility. All project proponents shall ensure that the performance demonstrated by the proposed power plant through this Model are available in the actual plant constructed and commissioned. Once all commissioning has been carried out, the developer shall provide to CEB the accurate As Built Model Software Model (in the format stated here).

Information Copy – Not for Bidding

1. RMS MODEL REQUIREMENTS (PSSE™)

This Model must be provided in PSSE™ (Power System Simulator for Engineering) format.
The PSSE Model provided by the project proponent of the proposed Power Park Module should be an accurate representation of the overall plant as well as specific components. The Model must contain all sub systems provided by the vendor of each system (vendor specific) and should not use generic representations instead. The Model should be accurate enough to study system level transients where the variation to the frequency range (electromechanical, rms voltage, active and reactive power) can be in the order 0.5 Hz to 5 Hz.

The vendor should provide a Model User's Guide describing various Model details, input parameters and output parameters.

The rms Model should be 'benchmarked against the response of the detailed EMT Model and a Model benchmark report provided to CEB as specified in the CEB document "*Model Quality & Dynamic Response Test*"(MQDRT) document.

The response of the Model should be verified on a PSSE network Model (representative of the CEB network around the point of connection), which would be provided by CEB.

The Model must initialize to the conditions of a corresponding steady state load flow condition.

The RMS Model should run at reasonable time steps (5 ms or higher) used for dynamic stability studies. The Model response should be constant over a range of simulation timesteps.

2. EMT MODEL REQUIREMENTS (PSCAD™)

This Model must be provided in PSCAD™ format.
The PSCAD Model provided should be an accurate representation of the overall plant design as well as specific components. The Model should be vendor specific. The Model should include site specific settings and should not be based on generic settings. The Model should be accurate to study system level transients where the frequency range can be in the order of few Hz to potentially kHz range.

The vendor should provide a Model User's Guide describing various Model details, input parameters and output parameters.

I. The Model should accurately represent the actual plant design.

   a. The Model should include plant level controls as well as the inverter level (inner loops) controls loops that derive the firing pulses for valve switches.

   b. The input signal measuring and filtering modules should be based on actual signal processing algorithms and filters as in the physical implementation. Signal processing and communication delays must be represented in the Model.

   c. The power electronic switches may be represented as switching type Models, detailed equivalent method or through controlled voltage or current source (average type) representation. If the Model is based on average type representation of the inverters, the proponent should verify that the control and protection functionalities

Information Copy – Not for Bidding

are not simplified, and the Model is suitable for dynamic response analysis where the transients can be in the frequency range identified above.

II. The Model should include all plant level and inverter level control and protection functions as implemented in the actual equipment.

   a. Voltage and frequency protection settings,

   b. Fault ride-through activation and deactivation settings

   c. Active and reactive current injection/absorption settings during a fault

III. The Phase locked loop (PLL), the DC link chopper and DC link protection and inverter current limiting functions (and other FRT related settings) are known critical designs that impact the fault ride through (FRT) response, overall plant stability and grid code compliance.

IV. The Model should include both electrical and mechanical (turbine characteristics in the case of wind turbine generator Models) component details as applicable.

V. The Model should provide access to all inputs and parameters that are accessible to the end user.

   a. Selection of operating mode (example: voltage control, Q control of power factor control)

   b. Access to user adjustable settings such as plant power and voltage references, droops, ramp rates, fast frequency response mode settings and dead bands

   c. Ability to enable or disable specific control options (example: damping controls, fault current injection)

VI. Model should provide access to internal signals that are required by system study engineers to interpret Model response and complete system level studies.

   a. Trip and alarm signals with appropriate description in Model User's Guide

VII. The vendor should specify if the EMT Model provided is suitable for harmonic impact studies. The vendor will provide alternate Models for harmonic studies if applicable.

VIII. PSCAD simulation specific details

   a. The Model should be compatible across a range of FORTRAN compliers and PSCAD software versions as agreed with the end client.

   b. The user will have the flexibility to change the simulation time step. The simulation time step should not be hard-coded. It is expected that the Model will be able to produce accurate dynamic response results at a time step of 10 us and higher. The vendor must specify the recommended range of simulation time step.

   c. The Model should be 'scalable' to represent a number of units operating in parallel.

Information Copy – Not for Bidding

d. It is expected that the Model can reach the expected (user setting) steady state in less than 3s from the start of the simulation. The vendor must make necessary efforts to ensure that the Model will be compatible with the 'snap shot' feature of PSCAD.

e. The user should be able to use multiple instances of the Model in a single simulation setting (without having to revert to parallel core simulations)

IX. Other details

a. Clearly identify the manufacturer's EMT Model release version and the applicable corresponding hardware firmware version.

b. Provide an illustrative simulation example where the plant Model is connected to an equivalent Thevenin voltage source. The Model should display stable fault recovery when the Thevenin' source impedance is set to represent the minimum short circuit current condition at the point of connection (POC) and show acceptable response for tests outlined in CEB -MQDRT document.

3. HARMONIC PERFORMANCE MODELS AND DATA REQUIREMENTS

The harmonic injection from the plants should be provided by the plant owner in the form of a guaranteed maximum harmonic current injection table covering the range up to the 100th harmonic.

The frequency-dependent impedance to develop a Norton equivalent current source should also be provided for each unit in a power park module or a BESS.

An illustrative harmonic data table is listed below (Table 1).

- Table 1 Guaranteed maximum harmonic injection levels.

Harmonic Order	% of rated current	Phase (Deg)
1	100	0
2		
3		
125		

Information Copy – Not for Bidding

4. POST COMMISSIONING MODEL SUBMISSION

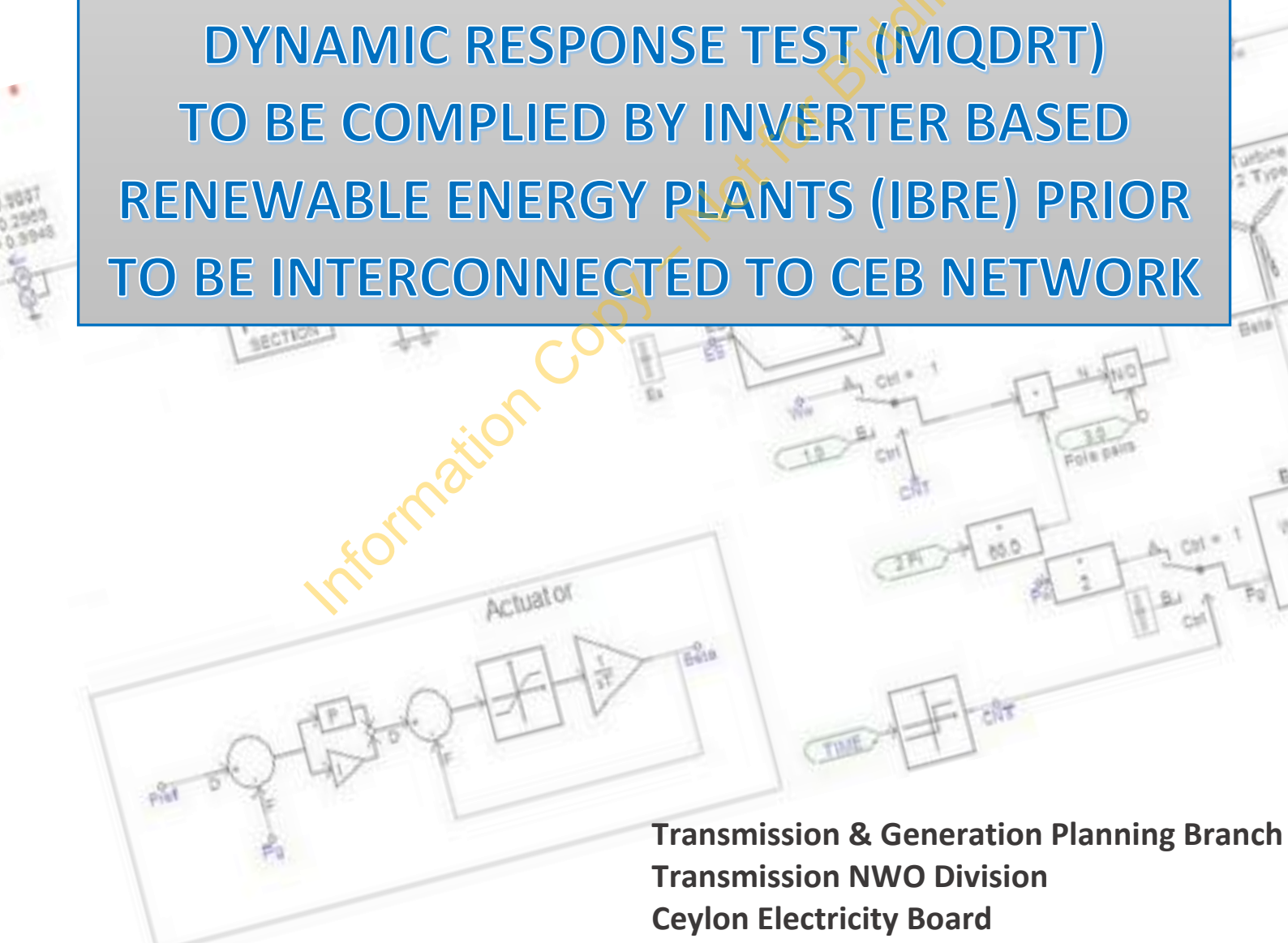
The final response should be tested with field data and also against factory acceptance test data following commissioning. The Model should be adjusted to reflect As Built conditions. The Model should include site specific settings and the Model response should be comparable to field test results.

Attachment 2 of Schedule 19

ලංකා විදුලිබල මණ්ඩලය
இலங்கை மின்சார சபை
CEYLON ELECTRICITY BOARD

DYNAMIC PLANT MODEL QUALITY AND DYNAMIC RESPONSE TEST (MQDRT) TO BE COMPLIED BY INVERTER BASED RENEWABLE ENERGY PLANTS (IBRE) PRIOR TO BE INTERCONNECTED TO CEB NETWORK

Information Copy - Not for Bidding



Transmission & Generation Planning Branch
Transmission NWO Division
Ceylon Electricity Board

Version: MQDRT /July/2023 _V1 (Ext)

PURPOSE

This Guideline lists the minimum requirements that should be met by a proponent submitting simulation models of plants that are to be connected to the to the electric network operated by the Ceylon Electricity Board (CEB). The plants include generation, Inverter Based Resources (IBR) or other major equipment for which the connecting party is expected to provide simulation models in PSSE and PSCAD format. The requirements listed in the document are in addition to the general model feature requirements listed in the 'Model Requirements' document published by the CEB.

The document outlines the model response tests that should be performed, test procedure to be followed and the test results that should be submitted along with the software models for CEB review and approval.

Information Copy – Not for Bidding

1.0 Purpose and Scope

CEB is expecting a rapid expansion of the Sri Lankan Power system with high penetration levels of Inverter Based resources (IBR). Rapid expansions and the expected addition of Wind and Solar PV generation will present significant technical challenges that should be identified at planning and operational stages. To this effect, it is critical that CEB maintains an accurate network model of the Sri Lankan power system. In an IBR heavy power system, the dynamic response characteristics of IBR plants will have a significant impact on overall stability and security of the power system. In addition, CEB will have to ensure that the specific plant will operate stably, meeting dynamic response characteristics outlined by CEB in the Grid code and other applicable documents. Thus, CEN will be depending on the third-party proponents who are connecting plant and equipment to the CEB network to provide accurate and robust simulation models that close captures the repose of the plant under a variety of potential operating conditions.

The main objective of the tests outlined in the document is to ensure that the models provided are,

- Robust and compliant with CEB model requirements (as outlined in Power System Model Guidelines)
- Accurate representation of the plant response under a range of reasonable operating conditions
- The plant design meets the minimum dynamic response requirements.
- Meet plant characteristics as outlined in the Grid Code and other applicable documents.
- Model documentation and model structure and model data are in accordance with CEB guidelines or established industry practice.
- The models provided will be readily incorporated into the overall network model of the Sri Lankan Power system in order for CEB to perform power system planning, operation and connection studies.

Information Copy – Not for Bidding

This document covers the Model Acceptance Tests for both Root Mean Square (RMS) and Electro Magnetic Transient (EMT) type models that are to be provided to CEB by the proponent. The models should be provided in PSS®E (RMS) and PSCADTM/EMTDCTM (EMT) software platforms.

The Model Acceptance Tests are performed with the Plant Model connected to a simplified representation of the rest of the system. Thus, it is important to note that the submission and subsequent acceptance of the MAT report by CEB does not imply that,

- The plant design meets final compliance and acceptance.
- The Models provided are fully compliant – The models are to be further updated based on design modifications and filed test results during commissioning.

2.0 Related policies and procedures

The models provided should be an accurate representation of the physical plant. In addition to demonstrating the robustness and accuracy of the model through the tests outlined in this document,

the model response should be aligned with the Grid code, interconnection contracts as well as protection and measurement reequipments.

Once the models and model test reports are provided to CEB, CEB with inform if the model and the test results are acceptable to CEB.

CEB will not disclose model test results nor specific proprietary details embedded in the model with third parties.

3.0 Model Acceptance Test Criteria

The Model Acceptance Tests are designed to ensure that the models provided are, robust and compliant with CEB model requirements (as outlined in Power System Model Guidelines) and that the model is an accurate representation of the plant response under a range of reasonable operating conditions.

The tests outlined below are designed verify different aspects of the model and the plant repose that the model represent.

- Robustness of the model
- Steady state response
- Dynamic response
- Robustness of the control system and the overall plant design
- Response under large disturbances
- Specific tests to verify specific compliance requirements.

The tests that should be performed as minimum for CEB approval are listed in the following sections. All tests will be performed with the plant model connected to a simplified representation of the external CEB network. Unless otherwise directed by the CEB, all tests will be carried out in a Single Machine- Infinite Bus (SMIB) type test setup as shown in Figure 1 and Figure 2.

Information Copy – Not for Bidding

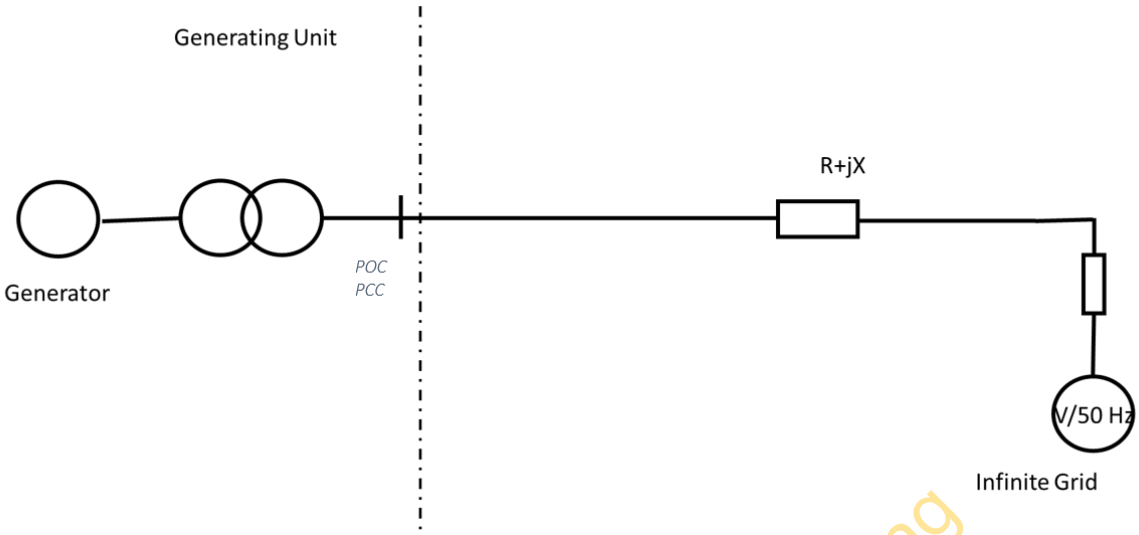


Figure 1 Test setup for plants without Grid substation

Information Copy – Not for Bidding

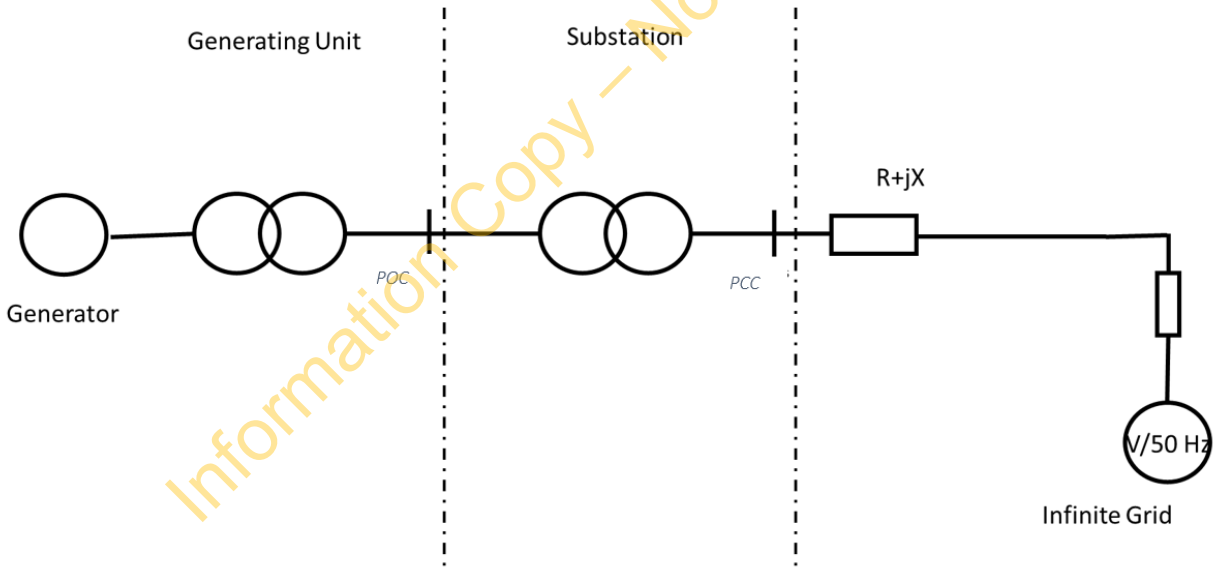


Figure 2 Test Setup for plants with Grid substation (PCC [1]– Point of Common Coupling; POC – Point of Connection)

[1] PCC – The project proponent should meet conditions stipulated in the grid code at PCC. These may include Power output, reactive power and voltage conditions.

POC- This is the connection point to the CEB network. PCC and the POC may be the same or different locations.

4.0 Model Acceptance Tests

All tests should be performed on the most current version of the software or as specified by CEB. CEB will also specify the required Fortran complier compatibility. The POI voltage should be set to 1 PU and the equivalent voltage source frequency set to 50 Hz.

For BESS system, some of the tests may require to be performed under both discharging and charging conditions. Unless specifically stated, the tests for BESS systems are performed under dis-charging condition.

Unless stated specifically, the tests described blow are applicable for both PSS/E and PSCAD.

Note: Input test conditions listed in the tables below should be used unless specific conditions (such as lower SCR levels) are specified by CEB.

4.1 Robustness of the model

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
T01	The Model should reach the expected study state. • The PSCAD simulation should reach the expected steady state in less than 3 s of simulation time. This test should be performed at 10 us and at the largest time step recommended by the proponent. • The PSSE model should 'flat start' without any uninitialized states	SCR= 3 X/R = 14	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) at the POC
T02	The PSCAD model should be able to start from a saved 'snapshot' file. Run the simulation under T001 with a snapshot taken when the system has reached a steady state.	SCR= 3 X/R = 14	Waveform of Voltage (V_{rms}), Active Power (P), Reactive Power(Q) at the POC

Information Copy – Not for Bidding

4.2 Steady State Response

The objective of the steady state tests is to verify that the plant can operate while meeting steady state operating criteria. The steady state tests should be run for a minimum of 5s after the simulation has reached steady state.

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
T03	With Plant power output at 100%, operate the plant at maximum expected lagging reactive power output. This test may be performed with the plant operating under voltage reference setting or reactive power reference setting	SCR= 3 X/R = 14 P=100% Q= -33%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) at the POC

T04	With Plant power output at 100%, operate the plant at maximum expected leading reactive power output. This test may be performed with the plant operating under voltage reference setting or reactive power reference setting	SCR= 3 X/R = 14 P=100% Q= +33%	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T05	BESS plants With the BESS charging at 100%, operate the plant at maximum expected lagging reactive power output. This test may be performed with the plant operating under voltage reference setting or reactive power reference setting.	SCR= 3 X/R = 14 P=100% Q= -33%	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T06	BESS plants With the BESS charging at 100%, operate the plant at maximum expected leading reactive power output. This test may be performed with the plant operating under voltage reference setting or reactive power reference setting.	SCR= 3 X/R = 14 P=100% Q= +33%	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T07	Continuous operation under over voltage conditions. This test should be performed with the power output at 100%. The POI voltage should be set to 1.1 PU. The plant may be operated in either Q or V reference control mode.	SCR= 3 X/R = 14 P=100% Vpoc =1.1pu	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T08	Continuous operation under low voltage conditions. This test should be performed with the power output at 100%. The POI voltage should be set to 0.9 PU. The plant may be operated in either Q or V reference control mode.	SCR= 3 X/R = 14 P=100% Vpoc =0.9pu	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC

4.3 Dynamic Response:

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
T09	Voltage step response (High voltage). Once the simulation is in steady state (Power output close to 100%), apply a step change from 1 PU to 1.1 PU to the POI voltage at 5s. This may be achieved by changing the equivalent voltage source magnitude or by changing the transformer tap setting. The plant should be set to voltage control mode. The plant should be capable of operating at full MVA capacity.	SCR= 3 X/R = 14 P=100% Vpoc = 1pu @ 0s Vpoc = 1.1pu @ 5s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) at the POC
T10	Voltage step response (low voltage). Once the simulation is in steady state (Power output close to 100%), apply a step change from 1 PU to 0.9 PU to the POI voltage at 5s. This may be achieved by changing the equivalent voltage	SCR= 3 X/R = 14 P=100% Vpoc = 1pu @ 0s Vpoc = 0.9pu @ 5s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) at the POC

Information Copy – Not for Bidding

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
	source magnitude or by changing the transformer tap setting. The plant should be set to voltage control mode. The plant should be capable of operating at full MVA capacity.		
T11	Voltage step response (High voltage). Repeat T09 with plant in Q control mode	SCR= 3 X/R = 14 P=100%	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T12	Voltage step response (Low voltage). Repeat T10 with plant in Q control mode	SCR= 3 X/R = 14 P=100%	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T13	PF control mode , Set up the plant to operate in PF control mode with power output at 100%. PF may be set to 1. Change the PF reference to 0.95 lagging and verify the response.	P= 100% PF- 1 to .95 lagging	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T14	PF control mode , Set up the plant to operate in PF control mode with power output at 100%. PF may be set to 1. Change the PF reference to 0.95 leading and verify the response.	P= 100% PF- 1 to .95 leading	Waveform of Voltage (*Vrms*), Active Power (P), Reactive Power(Q) at the POC
T15	Voltage step response (High voltage). Repeat T09 with the external system SCR = 15. The plant should be capable of operating at full MVA capacity.	SCR= 15 X/R = 14 P=100% Vpoc = 1pu @ 0s Vpoc = 1.1pu @ 5s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) at the POC
T16	Voltage step response (Low voltage) Repeat T10 with the external system SCR = 15. The plant should be capable of operating at full MVA capacity.	SCR= 15 X/R = 14 P=100% Vpoc = 1pu @ 0s Vpoc = 0.9pu @ 5s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) at the POC
T17	Frequency response (over frequency) Once the simulation is in steady state (Power output close to 100%), apply a step change (or a at a rate of change of 4 Hz/s) of 1 Hz to the equivalent voltage source frequency (50 Hz to 51 Hz) at 5s. The power output should remain at pre disturbance level or ramp down if CEB has requested over frequency response to be activated	SCR= 3 X/R = 14 P=100% Fpoc = 50Hz @ 0s Fpoc = 51Hz @ 5s Rate of change of 4 Hz/s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Frequency (F) at the POC
T18	Frequency response (under frequency) Once the simulation is in steady state (Power output close to 100%), apply a step change (or a at a rate of change of 4 Hz/s) of 1 Hz to the equivalent voltage source frequency (50 Hz to 49 Hz). The power output should remain at pre disturbance level or ramp up if CEB has	SCR= 3 X/R = 14 P=100% Fpoc = 50Hz @ 0s Fpoc = 49Hz @ 5s Rate of change of 4 Hz/s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Frequency (F) at the POC

Information Copy – Not for Bidding

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
	requested frequency repose under maximum power output conditions.		
T19	Frequency response (under frequency) repeat T18 with the power output set to less than 100%. The power output should remain at pre disturbance level or ramp up if CEB has requested frequency repose	SCR= 3 X/R = 14 P<100% Fpoc = 50Hz @ 0s Fpoc = 49Hz @ 5s Rate of change of 4 Hz/s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Frequency (F) at the POC

4.4 Robustness of the control system and the overall plant design

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
T20	Phase angle jump Once the simulation is in steady state with plant power at 100%, implement a step change of +/- 50 deg to the POI bus voltage phase at 5s. This can be achieved by changing the phase angle of the equivalent voltage source. The plant should operate stably and continue to maintain pre-disturbance output conditions for P and Q.	SCR= 3 X/R = 14 P=100% Phase angle = 50deg @ 5s	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T21	Step change to power set point. Once the simulation is in steady state with power output close to 100%, change the power reference point to 10%. Once the system has reached the steady state, again change the power reference point close to 100%. The plant output should follow the requested output power. The response time should not be greater than 300 ms. The overall responses (P,Q, Vrms) should be well damped	SCR= 3 X/R = 14 P=~100% 10% ~100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T22	Step change to wind speed or solar irradiation – Once the simulation is in steady state, apply a 25% step change to the wind speed or solar irradiation. If this test cannot be readily implemented due to model limitations, the proponent may obtain CEB consent to omit this test.	SCR= 3 X/R = 14 P=100% Plant operating under a Power set point.	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC

Information Copy – Not for Bidding

4.5 Response under large disturbances

The following tests should be performed at SCR =3 (unless CEB identifies a lower SCR based on the POI short circuit conditions) and an X/r = 10. The plant should recover from the fault and reach pre fault operating condition in less than 300 ms.

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
T23	Balanced 3-ph to ground fault applied for 0.12 ms at the POI.	SCR= 3 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T24	Balanced 3-ph to fault applied for 0.15 ms at the POI. The remaining voltage at POI = 20%. The fault impedance should be reactive.	SCR= 3 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T25	Balanced 3-ph to ground fault applied for 0.12 ms at the POI. The remaining voltage at POI = 60%. The fault impedance should be reactive.	SCR= 3 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T26	Phase AB- ground fault applied for 0.12 ms at the POI.	SCR= 3 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T27	Phase A- ground fault applied for 0.12 ms at the POI.	SCR= 3 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T28	Balanced 3-ph to ground fault applied for 0.12 ms at the POI.	SCR= 15 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T29	Phase AB- ground fault applied for 0.12 ms at the POI.	SCR= 15 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T30	Phase A- ground fault applied for 0.12 ms at the POI.	SCR= 15 X/R = 10 P=100%	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC

Information Copy – Not for Bidding

4.6 Specific tests to verify compliance requirements.

CEB may identify specific tests to verify that the plant design complied with CEB requirements. Some specific tests are listed below.

Test No	Description of the Tests	Input to the Test	Expected Minimum Recorded Data
T31	Verification of current injection during low voltage conditions – The proponent should verify that the plant injects reactive current as outlined by CEB in the connection contracts/ PPA. This can be realized by plotting the instantaneous current waveforms under T23 to T30.	Refer T23 toT30	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T32	Fast frequency response – If specified by CEB. The test set is similar to T17, T18 or T19.	Refer T17,T18,T19	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T33	Limited frequency sensitive mode (LFSM_U) – If specified by CEB. The test set is similar to T17, T18 or T19.	Refer T17,T18,T19	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC
T34	Limited frequency sensitive mode (LFSM_O) – If specified by CEB. The test set is similar to T17, T18 or T19.	Refer T17,T18,T19	Waveform of Voltage (Vrms), Active Power (P), Reactive Power(Q) and Phase angle at the POC

Information Copy – Not for Bidding

5.0 Model Benchmark Tests -PSS®E and PSCADTM/EMTDC™ Model Benchmarking

CEB will use the PSSE model for a wide range of planning and operational studies. Thus, the PSSE model should be an accurate representation on the plant response for the purpose of such studies. The PSSE model should be benchmarked against the validated PSCAD model.

At a minimum, the response of voltage, power and reactive power will be compared between PSS®E and PSCADTM/EMTDCTM at the inverter terminal and POC level. The comparison should be acceptable to CEB and ideally lie within the 10% tolerance band. The model should comply with CEB requirements, and any noticeable deviations should be documented to the satisfaction of CEB.

The following DMAT test results of PSS®E and PSCAD/EMTDC are to be benchmarked in the same plot for comparison.

- Voltage reference step test
- Active power reference step test
- Over voltage step response test
- Under voltage step response test
- Balanced fault tests
    - ABC -G fault at POI
    - ABC to ground fault at POI with a remaining voltage.
- Unbalanced fault tests
    - AB-G fault
    - A-G fault

6.0 Documentation of test result

The test results (waveforms should be documented under each applicable test. Where applicable, the proponent should provide comments to explain if the results meet expectations or otherwise.

Information Copy – Not for Bidding

Schedule 20 – Contingency Plan

<To insert from Project Company's Proposal>

Information Copy – Not for Bidding