INDEPENDENT POWER PRODUCERS OFFICE

Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP)

Technical

25 September 2020

…"it (REIPPPP) has already established a flagship public-private partnership model for South Africa, and indeed the rest of Africa, and in the process is helping alleviate Eskom's current power crisis while also reducing greenhouse gas emissions."

- Enabling Renewable Energy in South Africa: Assessing the REIPPPP, WWF, August 2014

mineral resources & energy
Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

DBSA
DEVELOPMENT BANK OF SOUTHERN AFRICA
Building Africa's Prosperity

national treasury
Department:
National Treasury
REPUBLIC OF SOUTH AFRICA

IPP Programme - 10 years of Empowering Change

Presentation Outline

1. Objectives of the Programme
2. Technical Qualification Criteria 1 (General requirements)
3. Technical Qualification Criteria 2 (Compliance with PPA Performance Requirements)
4. Technical Qualification Criteria 3 (Eligible Capacity)
5. Technical Qualification Criteria 4 (Feasibility Study)
6. Technical Qualification Criteria 5 (Grid Connection)
7. Technical Qualification Criteria 6 (Decommissioning Cost Report)

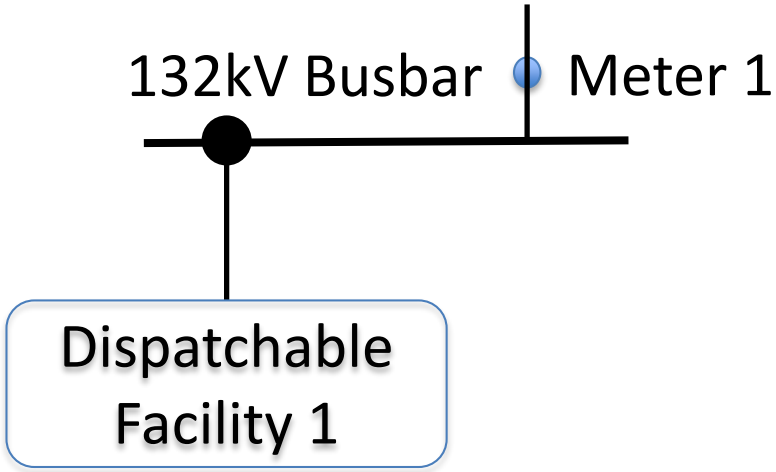
Objectives of the Programme

To procure 2 000 MW of capacity , on a Least Cost and Least Regret basis, using various technology solutions identified in table 5 of the Integrated Resource Plan for Electricity 2019 (IRP 2019).

Technical Qualification Criteria 1 (General Requirements)

Section 2.2.1	The Facility shall include plant and equipment that has complete and unqualified OEM guarantees
Section 2.2.2	The Facility shall be installed on a greenfield or previously cleared brownfield site
Section 2.4	The configuration and technology to be used by Bidders in respect of the power generation equipment must be based on a Project which must conform to the requirements of clause 5.7

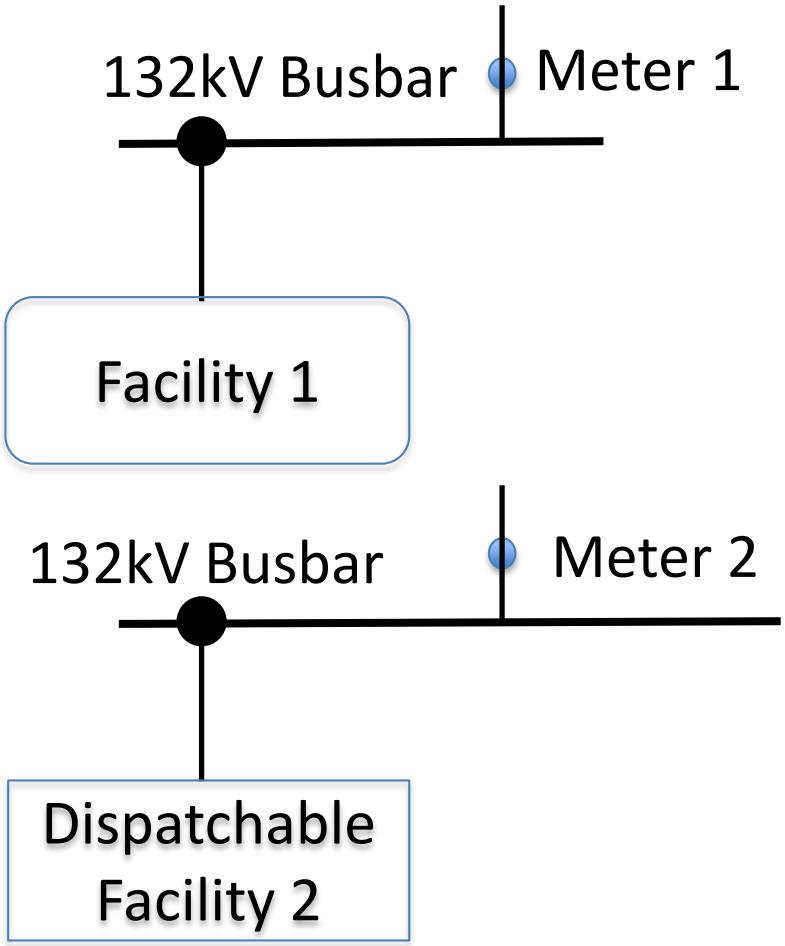
Scenarios of the Project Configurations



<u>Project with Single Facility Config on 1 site</u>

- Meter 1 meters the Energy as seen by Eskom
- Facility 1 must have a Dispatchable Generation Technology with or without a Non- Dispatchable Generation Technology

Scenarios of the Project Configurations



- **<u>Project with 2 Facility Configuration on 2 Sites</u>**
- Meter 1 meters the Energy as seen by Eskom
- Facility 1 has a Non- Dispatchable Generation Technology
- Meter 2, meters the Energy as seen by Eskom
- Facility 2 must have a Dispatchable Generation Technology with or without a Non- Dispatchable Generation Technology

Technical Qualification Criteria 2
(Compliance with PPA Performance Requirements)

INDEPENDENT POWER PRODUCERS OFFICE

System Requirements	
Availability to provide energy, capacity and ancillary services	Between 5h00 to 21h30
Mingen	<= 25% (twenty five percent) of the Project CC
Start-up and shut down from cold start	in <15 min
Time to synchronisation	in <5 min from trigger
Ancillary services- 1. Instantaneous Reserves 2. Regulating Reserves	1. Atleast 3% Project Contracted Capacity in 10sec for a maximum of 3723 hours/annum and/ or 155 events/annum; 2. Atmost 10% Project Contracted Capacity (PCC)) at a ramp > 1.67% PCC/min for a maximum of 3723 hours/annum
Stable Reactive power capability of the Facility on the HV side of the step-up transformer	Lagging :As per SAGC
	Leading: As per SAGC
Minimum no. of Project starts and stops per year	Minimum 365 starts and 365 stops per year
Maximum no. of Project starts and stops per year	At least 800 starts and 800 stops per year
Project Minimum Load Factor	Minimum of 50% per annum

Technical Qualification Criteria 3 (Eligible Capacity)

Section 4	The minimum Contracted Capacity of the Project shall be 50 (fifty) MW and the maximum Contracted Capacity shall be 450 (four hundred and fifty) MW, subject to there being availability and transmission evacuation capacity at the connection point.

Technical Qualification Criteria 4 (Feasibility Study)

Criteria 4.1 Project Development Plan	Provide Form 6 (Project Development Plan) in Appendix 3A (Technical Forms) of Volume 3 (Technical Requirements) Part 2 (Technical Appendices) of Part B (Functional and Qualification Criteria Requirements)
Criteria 4.2 Proven Design and Technology Requirements	Definition of proven technology in 5.7 Volume 3 (Technical Requirements) Part 1 captured in Form 4 (EQUIPMENT OPERATIONAL EXPERIENCE) in Appendix 3A (Technical Forms) of Volume 3 (Technical Requirements) Part 2 (Technical Appendices) of Part B (Functional and Qualification Criteria Requirements)
Criteria 4.3 Design Standards and Certifications	Project specification to be included as part of the Construction Contract will comply with any and all applicable South African Standards requirements for projects of this nature.
Criteria 4.4 Water Requirements and Supply	Provide Form 10 (Project Water Balance Diagram) and Form 11 (Information in respect of Water Use Licenses) in Appendix 3A (Technical Forms) of Volume 3 (Technical Requirements) Part 2 (Technical Appendices) of Part B (Functional and Qualification Criteria Requirements) of the RFP
Criteria 4.5 Fuel Supply Arrangements, Logistics and Evidence	The information required with respect to fuel arrangements is detailed in section 5.10 Volume 3 (Technical Requirements) Part 1 (Technical Qualification Criteria) of Part B (Functional and Qualification Criteria Requirements)

Technical Qualification Criteria 4 (Feasibility Study) (cont'd)

Criteria 4.6 Heat Balance Diagrams and CO2 Emissions	Provide Form 8 (Project Heat Balance Diagram) of Appendix 3A (Technical Forms) of Volume 3 (Technical Requirements) Part 2 (Technical Appendices) of Part B (Functional and Qualification Criteria Requirements) of the RFP
Criteria 4.7 Projected Energy Output and Loss of Energy Output due to Reduced Availability	Bidders must complete Table A.1.1 - Projected Energy Output (AGPpn) and Projected Loss of Energy Output due to Reduced Availability (LCPpn) (annual basis) of Appendix 6D (Table 4: Tables for the purposes of Schedule 9 (Calculation of Payments) of the PPA) of Volume 6 of Part B (Functional and Qualification Criteria Requirements)
Criteria 4.8 Ancillary Services Charge Rates Verification	The AS Charge Rates Independent Reviewer must undertake a review of and verify that the AS Charge Rates are reflective of the incremental cost of operation and maintenance of the Facility and Fuel costs presented as part of Form 9 (Ancillary Services Charge Rates) in Appendix 3A (Technical Forms) of Volume 3 (Technical Requirements) Part 2 (Technical Appendices) of Part B (Functional and Qualification Criteria Requirements) of the RFP

Technical Qualification Criteria 4 (Feasibility Study) (cont'd)

Criteria 4.9 Construction Contractor Qualifications	As part of Form 2 (Organogram) in Appendix 3A (Technical Forms) of Volume 3 (Technical Requirements) Part 2 (Technical Appendices) of Part B (Functional and Qualification Criteria Requirements) of the RFP, the Bidder shall submit an organogram showing the proposed contracting structure for the Project during Construction.
Criteria 4.10 O&M Contractor Requirements	The Bidder must either propose that the Project Company will Operate and Maintain the Project itself or propose an O&M Contractor to Operate and Maintain the Project.
Criteria 4.11 Project Schedule	The Bidder must provide a completed Schedule 2 (Completion Milestones and Forms of Notices) Part 1 (Completion Milestones) of the PPA attached to this RFP as Appendix 2A (PPA) in Volume 2 (Legal Requirements) Part 3 (Legal Agreements) and a completed Form 7 (Project Schedule) in Volume 3 (Technical Requirements) Part 2 (Technical Appendices) of Part B (Functional and Qualification Criteria Requirements) of the RFP.

Technical Qualification Criteria 5 (Grid Connection)

Section 6.2.1 Compliance with Codes	The Bidder must provide a letter signed by the Bidder, the Construction Contractor, or the key electrical contractor for the Project. The letter shall state that the Project is able to comply with all applicable Codes prior to the Scheduled COD.
Section 6.2.2 Time and Cost for Grid Connection	The Bidder must provide a statement that clarifies which parts of the grid Connection Works will be implemented by the Bidder,
Section 6.2.3 Cost estimate letter from the relevant Network Service Provider	The Bidder must provide a valid Cost Estimate Letter (CEL) from the relevant Network Service Provider ~~and~~ including the scope and any appendices, for the indicative cost and indicative timeline for grid connection.

Technical Qualification Criteria 6 (Decommissioning Cost Report)

Section 7 Decommissioning Cost Report	The Bidder must submit a written report ("Decommissioning Cost Report") that details the cost estimates of the decommissioning of the Project and the rehabilitation of the Project Site upon the termination of the PPA,

INDEPENDENT POWER PRODUCERS OFFICE

Bidders Questions & Answers

Bidders Questions & Answers (1)

Query	Response
1. Facility Reliability Run (FRR) to be able to operate for: a) 72h hours continuously at Testing Full Load when the Facility will never be allowed to Dispatch for longer than 16.5 hours (from 5am to 9:30pm) on any given day. 2. Project Reliability Run to be carried out for 30 consecutive days but it is very unclear what exactly this entails: a) Can such Project Reliability Run be done at any capacity between zero and the Contracted Capacity as the Seller may choose? Or must it be at Full Testing Load as well? b) If the answer to a) is Full Testing Load, what's the point of the Facility Reliability Run? c) Either way, must the plant operate at such capacity for 30 days only during the Dispatch Period or for the full 30 x 24h? d) If the answer to c) is the full 30 x 24h, what's the point of such a test when the Project is only ever allowed to operate during the Dispatch Period? 3. How long must the Reliability Run be carried out for? The former says 72h and the latter 10 consecutive days, which one is it?	The Reliability testing criteria in Clause 5.3 in schedule 8 of the PPA has been updated and is applicable to all dispatchable facilities. The Facility Reliability Run shall be carried out for each Facility at the Facility Contracted Capacity for a period of fifteen (15) consecutive days. During these periods, each Facility and related equipment and systems shall be Operated for the duration of the 16.5 hour dispatch period per day and in accordance with this Agreement and the Codes. Project Reliability Run has been removed.

Bidders Questions & Answers (2)

Query	Response
1. Clarification is thus sought on the application of Clause 5 as it pertains to a Project based solely on the combination of a non-dispatchable facility, in combination with Energy Storage as the dispatchable facility. 2. Would a renewable energy facility combined with a Battery Energy Storage System (BESS), qualify as a Dispatchable Facility? 3. There is reference to a battery that charged from the Eskom grid and what are the rates and prices and capacity charges payable by us (The Seller) back to Eskom (The Buyer) for drawing this energy and what are the escalations of all these prices and charges. 4. Does the RFP allow the battery to take energy from the system and also make it available to the system at a different time when it is not using energy from the PV meaning our system is a dual use solar PV-battery and grid-battery system.	Bidders proposing battery-based dispatchable facilities must take into consideration Clause 5.7.12 in volume 3 part 1: The supply of electrical energy to the Seller by the Buyer or from the system is prohibited for the purpose of storing energy at an electrical energy storage facility.

Bidders Questions & Answers (3)

Query	Response
In the case of a Dispatchable Project consisting of a Battery Energy Storage System and a Renewable Energy facility (non co-located), would it be possible for the Battery facility to absorb Input Energy from the system while the Renewable Energy facility exports energy via a wheeling agreement (ie net load of zero on the system). Please clarify how the metering for a virtual power plant would work.	The proposed solution will ultimately require energy to be absorbed from the system. According to 5.7.12, this is prohibited. The wheeling contract arrangement is an external contract and it is not within the ambit of this programme. Please refer to the definition of a Facility. If the storage system and renewable facility are not feeding power at the same connection point, therefore the facility is not a Dispatchable Facility.

INDEPENDENT POWER PRODUCERS OFFICE

Thank You

mineral resources & energy
Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

DBSA
DEVELOPMENT BANK OF SOUTHERN AFRICA
Building Africa's Prosperity

national treasury
Department:
National Treasury
REPUBLIC OF SOUTH AFRICA

IPP Programme - 10 years of Empowering Change