

RFP # SAREP RFP-2023-023 WEB BASED MODEL FOR POWER EXCHANGE (PX) TRANSACTIONS
QUESTIONS AND ANSWERS

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
1.	1		Term of Contract: 15 months from the date of award	<ul style="list-style-type: none"> Is 15 months from the date of award for development Web Based Model for PX Transactions is only for Bhutan or for all 3 countries i.e., Bhutan, Nepal and Bangladesh. 	15 months for all three countries
2.	12	G: Stakeholder(s) Participation	It is recommended that a local IT partner from Bhutan is also taken on board for facilitating development/implementation of the project so that post go live, there is local support available to ensure that the model(s)tool(s) are sustainable in the long term.	<ul style="list-style-type: none"> Whether engaging a local IT partner from Bhutan as recommended under Clause G is mandatory. Is this recommendation only for Bhutan or for other countries i.e., Nepal & Bangladesh. 	Engaging a local IT partner is mandatory for all three countries.
3.	4	B: Objectives	The model(s)/tool(s) shall be hosted on cloud/data centres, and Bhutan specific data shall be hosted on their Bhutan's domestic data centres/cloud system as advised/desired by Bhutan.	<ul style="list-style-type: none"> Whether the hosting Data centres is specific to Bhutan only or for all other countries also i.e., Nepal & Bangladesh too. Can this SAREP Approved Cloud Data Centres & Services details be provided to us so that it can be considered during pricing. Will this Cloud service be provided by bidder. Any "bandwidth / network" required for completion of scope will be directly procured by Purchaser? 	The cloud services for this RFP's scope of work shall be provided by the bidder under this contract. However, transferring/hosting model(s)/tool(s)/data etc. on cloud or data center for each country shall be decided after discussions with stakeholders in each country.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
4.	5	B: Objectives	The entire system availability of 99.99% shall be ensured with required standby / redundancy arrangement and same shall be subject to USAID and SAREP approval. Necessary API interface(s) shall also be developed between cloud/data centres for efficient operation of the model(s)/tool(s).	<ul style="list-style-type: none"> • Whether Data Center – Disaster Recovery (DC – DR) is needed here or High Availability (HA) of DC is fine. • If DC – DR is required then distance and locations of DC-DR needs to be finalized. 	Both DC and DR are required in line with RFP. Bidder shall include and indicate same in their offer.
5.	5	B: Objectives	It is also envisaged that after successful customisation and stabilization of the model(s)/tool(s), these model(s)/tool(s) shall be handed over to Government of Bhutan for long term operation of these model(s)/ tool(s) and maintenance.	<ul style="list-style-type: none"> • What will be the stabilization period of this model(s) / tool(s). • Is there any provision for AMC after stabilization period of this model(s) / tool(s) and 1 year Maintenance support. 	After completion of various activities during the contract period of this RFP, the model(s)/tool(s) shall be transferred to Stakeholders and the same shall be operated and maintained by them.
6.	5	C. Expected Model Capabilities	Forecast of Bhutan's domestic load on day- ahead and real-time basis factoring prevailing weather conditions.	<ul style="list-style-type: none"> • How many years of Domestic Load Historical data (in 15 mins block) will be provided to us for creating the forecasting model of Bhutan, Nepal and Bangladesh each. 	Data available with all stakeholders shall be shared with the successful bidder.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
7.	5	C. Expected Model Capabilities	Forecast of river inflow of Hydro Electric Plants (HEP) on day-ahead and real-time basis factoring prevailing weather conditions. Capability to simulate plant wise HEP operations w.r.t. inflow and generation, considering Area Capacity Curve and storage volumes of HEPs, so as to assess dam levels on 15 minutes time block basis. Parameters and data such as gross and net heads and losses, and any other technical parameters of generating plants as required would be part of permanent data inputs for each power plant.	<ul style="list-style-type: none"> • How many years of river inflow of Hydro • Electric Plants (HEP) data, inflow and generation, considering Area Capacity Curve and storage volumes of HEPs to access dam levels on 15 mins block basis, will be provided to us for creating the forecasting model of Bhutan, Nepal and Bangladesh each. • Other inputs are also required for AI/ML modelling such as gross and net heads and losses, any other technical parameters of generating plants, Run-of- River / Pondage / Storage, Must run status, Generation Cost, Ramp Rates, Technical Minimum and operational requirements etc. shall be provided 	Data available with all stakeholders shall be shared with the successful bidder.
8.	5	C. Expected Model Capabilities	4. Forecast of Day Ahead Market (DAM) and Real Time Market (RTM) clearing prices (MCP) on power exchange and factor the same while deciding the bid pricing and the bidding volumes for each individual time block for DAM and RTM market. Any other market parameter(s) required for efficient working of the model shall also be factored while designing the model.	<ul style="list-style-type: none"> • Whether the Day Ahead Market (DAM) and Real Time Market (RTM) clearing prices (MCP) of only one Power exchange market i.e., Indian Energy Exchange (IEX) is to be considered or other markets such as Power Exchange of India (PXIL) and Hindustan Power Exchange (HPX) shall also be taken into consideration. 	Bidder shall assess power market and provide information for DAM/RTM price forecast for deciding optimal bid volume and prices.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
9.	5	C. Expected Model Capabilities	6. After placements of bids on the Power Exchange (through exchange APIs, or as specified by Bhutan) and schedules getting finalized for transactions, monitoring of the actual purchase/sale on a real time basis and dealing with the variations in demand and generation and DSM to be facilitated. Constraints with regard to reservoir levels, weather changes, transmission lines, plant availability etc. and any other force majeure aspects also needs to be	<ul style="list-style-type: none"> • Does the Power exchange will provide API (PUSH) for placing bids? • Does the Power exchange will provide API (PULL) for finalizing bids? 	As per existing CBET regulations and guidelines, bids by neighboring countries are submitted on Indian power exchange through Indian trader. However, the model(s)/tool(s) being developed in this RFP shall be suitable for generating and submitting bids through APIs as and when allowed for Cross border trade.
10.	8	Proposed Process flow chart	The envisaged module(s)/tool(s) should be a web-based integrated Python based software model with JS/PHP/HTML based front end and should comprise the following two independent web modules:	<ul style="list-style-type: none"> • Can any other Development language (like. angular, .net, nextJS etc.) be used apart from mentioned languages? 	Yes, provided RFP requirements are met/satisfied.
11.	9	6. Predictive and Optimisation Analytics and Operational Automation	3. Total 25 projects shall be considered for design and operation of the model(s)/tool(s).	<ul style="list-style-type: none"> • 25 projects mentioned here needs clarification. 	Details of the power projects to be considered while designing the model, for each country, shall be provided to successful bidder.
12.	25	2. Technical Proposal	6. Exposure of working in Bhutan, Bangladesh, and Nepal power sector(s) and with key stakeholders in these countries	<ul style="list-style-type: none"> • Whether exposure of working in all countries i.e., Bhutan, Nepal and Bangladesh are necessary or in one of these countries is sufficient. 	Bidder shall submit details of their experience of working in these countries along with project details and same shall be evaluated by SAREP suitably.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
13.	13	J. IT infrastructure	vi. The models should have the capability to display the dashboards over multiple interfaces such as web-based, desktop and mobile application	<ul style="list-style-type: none"> Does separate mobile application (Android and Ios) for this tool(s)/ Model(s) are needed? What type of Desktop application is mentioned here? 	Dashboard as finalized shall be available for working remotely on laptop/desktop of authenticated users. Mobile interface shall be only for viewing and MIS.
14.	6	Planning and Operational Horizon	Generation Forecasts and Assessment (all types of generating plants) and Demand Forecast factoring prevailing weather conditions	<ul style="list-style-type: none"> Does Weather forecast data sources requires approval from SAREP or respective countries. Needs details on this. How many weather forecast data sources needed to integrate. These Licenses are on Bidders part? 	Authenticated and reliable weather forecast(s) shall be considered for generation/demand forecast and same shall be part of delivery as per this RFP.
15.	9	5. Data Server key features and Specifications to be maintained by Bhutan to interface with Python based Web-Module(s)/tool(s) (Applicable for domestic hosting)	Database: Relational database management system to support the JS and Python based webapp : MySQL and Command line tools	<ul style="list-style-type: none"> Is there any restriction on development tools such as for Database :MSSQL Server or MySQL. 	RFP requirements shall be met/satisfied.
16		Attachment A Section C & D	General	We understand that necessary Hardware and software (Third Party) required for development of Web Based Model for PX transactions would be under the scope of Purchaser. This may also kindly be clarified.	Please refer replies to question at sl. No 3.
17		Attachment A C.3	SoW for each Beneficiary	The SoW largely specifies the design required for Bhutan, while no clear specification is provided for Nepal and Bangladesh.	Same specification shall be followed for development of customized model(s)/tool(s) for Nepal and Bangladesh.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
				<p>Please clarify whether the same tool for Bhutan will be replicated for Nepal and Bangladesh also?</p> <p>If not, what would be the variation in design and functionality?</p>	
18		Attachment A C.4	Forecast of generation profiles from all types of generating plants, using artificial intelligence/ machine learning (AI/ML) models, by taking into consideration the parameters like Must run status, Generation Cost, Ramp Rates, Technical Minimum and operational requirements etc.	Given that generation sources are not defined, a generic statistical approach to assess generation is the most apt approach to take. AI/ML can't be applied everywhere, say for Coal, Gas generation, etc.	Details of generating plants, for each country, to be considered in the model shall be shared with the successful bidder and RFP requirements shall be met/satisfied.
19		Attachment A Section-D	Forecast of Day Ahead Market (DAM) and Real Time Market (RTM) clearing prices (MCP) on power exchange and factor the same while deciding the bid pricing and the bidding volumes for each individual time block for DAM and RTM market. Any other market parameter(s) required for efficient working of the model shall also be factored while designing the model.	Forecasting Spot market prices are the most complex and involves dynamic parameters, which needs to be calibrated and modified from time to time. As such, it is apt to consider the Price Forecasts as a service, rather than delivering a model/tool. May please reconsider.	RFP requirements shall be satisfied/complied with.
20		Attachment A Section-D.5	Planning and Operational Horizon: II. DISPATCH and BID OPTIMISATION AND AUTOMATION – Transmission constraints through load flow analysis	The requirement of Load Flow Analysis in Dispatch & Bid Optimisation has been specified, but nowhere the detailed requirement is provided, and also not factored in the financial breakup. There is no specification of Load Flow Analysis tool in Architecture of the Model also. Load Flow Analysis software are stand-alone software tools, and need highly technical capabilities to model and run. Also, the cost of such may vary based on	Load flow analysis is required to be done only one time for each country to identify constraints if any, for flow of active and reactive power and voltage variations on all buses for different generation/demand met conditions. This will help to maintain a close check/watch on DSM and reactive power charges as per applicable regulations. Details to carry out load flow analysis for each country shall be

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
				nodes, the software can handle. May please clarify if the same is specified erroneously? If not, please add detailed scope and provision in financial quotation, including manpower requirement to run the same.	shared with successful bidder. The cost of this study shall be part of model development.
21		Attachment A Section-D.5.a.2	Data Server key features and Specifications to be maintained by Bhutan to interface with Python based Web-Module(s)/tool(s) (Applicable for domestic hosting)	The Server specification that will be available at beneficiary end is provided for Bhutan only, and no information provided for Nepal and Bangladesh. Please clarify whether the beneficiaries of Nepal and Bangladesh will provide similar Servers.	These are generic specification shared in the RFP and actual details shall be shared if stakeholders decide to host model(s)/tool(s) /data(s) etc. on their servers.
22		Attachment A Section-E	a) Predictive Analytics: Output/result (Demand Forecast) - 15minutes time block-wise forecast, separately for Domestic , Industrial, Commercial and Agriculture	Demand forecast on category basis, separately for Domestic , Industrial, Commercial and Agriculture required the same resolution historical demand data, at least up to previous day. As such, the same is a pre-requisite and to be made available by the beneficiary country.	Data available with all stakeholders shall be shared with the successful bidder.
23		Attachment A Section-F	Key Performance Indicators of the Model	Expected error % is specified, but the methodology to compute the same is not provided. Significance of the % error will change based on methodology. For example, DAM/RTM Forecast in the range of 5% MAPE per day for a month is not achievable, but 5% APE is achievable.	RFP requirements shall be satisfied/met. Detail methodology for measurement of each parameter shall be finalized with successful bidder.
24		Attachment A Section-F	4. Model handover and operational support for six months	Please specify the engagement post 6 months operational support of 6 months. Will there be further support requirement? Or will the beneficiary manage themselves?	Post timelines of RFP, model(s) /tool(s) shall be operated and maintained by stakeholders themselves.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
25		Attachment A Section-G	5. Documentation on the configuration of the model(s)/tool(s) along with source code.	<ul style="list-style-type: none"> Who will take the delivery of Source code, and owns the same, including IP? What will be the security & confidentiality of the delivered source code? Will Source Code be resold, or used further in other engagements? 	Authorized representative(s) of each country shall be the custodian of model(s) /tool(s) and source code. This software will be used only for the purpose for which it is being designed.
26		Attachment A Section-H	It is recommended that a local IT partner from Bhutan is also taken on board for facilitating development/implementation of the project so that post go live, there is local support available to ensure that the model(s)tool(s) are sustainable in the long term. Further it is also envisaged that engineers from each stakeholder(s) shall be engaged/associated with the project.	<ul style="list-style-type: none"> Please clarify whether Local IT partner is compulsory? If yes, may please recommend the SoW for the local IT Partner, along with suitably skilled firms. Can local IT partner be an individual also? At what level will the stakeholder's engineers be engaged in development and deployment? What will be their skill set? 	RFP requirements shall be satisfied/met.
27		Attachment A Section-K	Timelines for Development and Delivery of Model(s)	T+15 Weeks for "2. Design and Development of Model(s)/tool(s)" is a very tight schedule, given that there are multiple Generators and data server issues which the stakeholders may face to deploy and provide. May consider T+ 24 weeks for the 2. Design & Development , given the dependency and scale of work.	RFP timelines shall be complied with.
28		Attachment A	Bidder's Team Expertise and Composition	<ul style="list-style-type: none"> The specified experience for b) Generation/Load/ Price forecasting and dispatch expert(s) c) IT technical expert(s) d) Power Market and Analytic expert(s) should be brought down to 3 years, 	RFP requirements shall be complied with.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
				<p>instead of 5 years, given that most of the technologies like python have been prominently adopted in India in the last 3-5 years only.</p> <ul style="list-style-type: none"> Also, at least one of the expert(s) should have Linear Programming based Optimisation Experience, given the importance of the same in this project. 	
29		Attachment A Section C & D	Reimbursable International Travel Costs	The engagement may require 6 to 8 trips during the 1.5 years of engagement, given the scope of work and team required to deliver the same. Please consider the travel provisions accordingly.	Travel to each country shall be in line with RFP requirement. However, during execution, if additional travel is required to complete the SOW then it will be considered on merit.
30		Page 12/61		<ul style="list-style-type: none"> It says that they want the models to have inaccuracy $\leq \pm 5\%$ which is a good expectation to have. But applying the forecast models from historical data may not always give us a very good result like the expected one in case data collection is not flawless. If we forcibly make the model behave with such low accuracy by increasing the number of epochs or slowing down the learning rate, it may eventually lead to model overfitting. So, it is only the model that gets the taste of TEST DATA that we can keep on augmenting its capacity. Will the client allow that to happen? For all the above models to be made, it is very important to understand the factors (features/attributes) based on 	We appreciate importance of reliable data for development of the model(s)/tool(s) as per RFP. Successful bidder will work closely with SAREP team and country-specific stakeholders to ensure relevant past data(s) as required is shared with the bidder.

S.No	Page No	Clause No	Clause	Bidder's Query / Suggestion	RTI Response
				<p>which the prediction would be made. As my understanding goes, this too is dependent on the bidder whose team is supposed to comprise power exchange experts. But in order for the model to be closely accurate and a good predictor, data needs to be present for model training. Thus, I intend to know whether such data would be made available by the client/customer?</p>	
31		RFP Attachment "D"	Please refer to EESL General conditions of contract (GCC) and other Special conditions of contract (SCC)	Please elaborate, Do we (bidder) need to submit the confirmation and acceptance on "EESL General conditions of contract (GCC) and other Special conditions of contract (SCC)"	Attachment 'D' as it appears is not relevant. The RFP is amended (Amendment 1) to replace the text of Attachment 'D' with the text of Attachment 'E'