National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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Registrar

No. NEPRA/DG(Lic)/LAM-01/26389-393 December 5, 2019

Chief Executive Officer
Central Power Purchasing Agency Guarantee Limited (CPPA-G)
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Islamabad

Subject: **Determination of the Authority in the matter of Competitive Trading Bilateral Contract Market Model (CTBCM) submitted by Central Power Purchasing Agency (Guarantee) Limited (CPPA-G)**

Enclosed please find herewith the subject Determination of the Authority (20 Pages) along with Annex-I (31 Pages) in the matter of Competitive Trading Bilateral Contract Market Model (CTBCM) submitted by Central Power Purchasing Agency (Guarantee) Limited (CPPA-G).

Encl: As above

05.12.19
(Syed Safeer Hussain)

CC:

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National Electric Power Regulatory Authority (NEPRA)

Determination of the Authority in the Matter of Competitive Trading Bilateral Contract Market (CTBCM) Model Submitted by Central Power Purchasing Agency (Guarantee) Limited (CPPA-G)

December 05, 2019

(A). Background

(i). The development of wholesale competitive electricity market in Pakistan was envisioned at the outset of power market reforms of the 1990s and was further provided in Section 22 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act").

(ii). The Authority in its determination dated December 31, 2002, for the grant of transmission licence to the National Transmission and Despatch Company Limited (NTDC) set a deadline of July 01, 2009, for commencement of the Competitive Market Operation Date (CMOD) which could be postponed for a maximum of three (03) years i.e. upto July 1, 2012, however, the said competitive market could not be implemented due to various reasons. The efforts for the envisioned electricity market reforms were again revived in 2015 with the modification in the transmission licence of NTDC whereby the Market Operator function was separated from the transmission licence of NTDC and assigned to the Central Power Purchasing Agency (Guarantee) Limited (CPPA-G), which was incorporated as a separate legal entity with distinct roles, functions and mandate.

(iii). In consideration of the above, the Authority formulated and notified the National Electric Power Regulatory Authority (Market Operator Registration, Standards and Procedure) Rules, 2015 ("the Market Rules"). The Market Rules prescribes the roles, functions, and mandate of the Market Operator. Later, the Authority vide its determination dated November 16, 2018, registered the CPPA-G as a Market Operator, and mandated it for development and implementation of

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the competitive power market based on policy guidelines of the Federal Government and requirements of the Authority.

(B). Submission of the CTBCM Model

(i). In compliance of its functions prescribed under the Market Rules, CPPA-G submitted a high-level conceptual design of the proposed Competitive Trading Bilateral Contract Market model and plan (the "CTBCM Model") on March 5, 2018, for review and approval of the Authority.

(ii). The Authority considered the above model in its Regulatory Meeting held on May 10, 2018 and decided to seek comments of the stakeholders on the same. In this regard, letters were sent to Government Ministries, their attached departments, representative organizations, and other relevant stakeholders on May 30, 2018.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from twelve (12) stakeholders including K-Electric Limited (KEL), HaiderMotaBNR&Co. (HM&C), Planning Commission, Ministry of Planning, Development & Reform (MoPDR), Fatima Energy Limited (FEL), Metro Power Company Limited (MPCL), Independent Power Producers Association (IPPA), Pakgen Power Limited (PGL), Lalpir Power Limited (LPL), Uch Power (Private) Limited (UPPL), Uch-II Power (Private) Limited (UPPL-II), Nishat Power Limited (NPL) and HydroChina Dawood Power (Pvt.) Limited (HCDPL). The salient points of the comments received from stakeholders are summarized as follows: -

(a). KEL commented that it appears that Turkish model is being proposed to be replicated in Pakistan without due consideration to the challenges that may arise out of such replication. Further, it was submitted that the proposed CTBCM Model is focused on incentivizing generation and does not address the critical issues dominant in the power sector of Pakistan including circular debt, lack of investment in T&D Infrastructure, demand side management, off grid renewables, lack of planning, poor

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governance, and high AT&C losses. In addition, KEL highlighted that the CTBCM Model proposes execution of bilateral contracts between generators and Bulk Power Consumers (BPCs). In this regard, it must be noted that long term contracts have been signed with Independent Power Producers (IPPs) and the execution of bilateral contracts between generators and BPCs may affect the revenue of XW-DISCOs and result in stranded costs.

(b). In addition to the above, KEL submitted that the CTBCM Model has been developed without due participation of the stakeholders. Therefore, a consensus of stakeholders may be obtained to avoid conflicts in the future. Furthermore, the CTBCM Model envisages to create conditions to attract investments based on credit cover provided by the market participants. However, no details have been provided on how this plan will be executed. Further, the model does not provide clarity as to how interests of the investors will be safeguarded in the proposed wholesale market including guaranteed off-take of power and payment discipline of XW-DISCOs. KEL further pointed out that the CTBCM Model mentions that supply of 650 MW of power from NTDC to KEL will cease to exist. In this regard, KEL may be treated at par with other XW-DISCOs and the supply of 650 MW power from NTDC system must continue. Further, clear timelines for implementation of the CTBCM Model may be provided in the proposed model.

(c). KEL further commented that Renewables are must run plants, however, there is no clarity on the mechanism of renewable energy sale between GENCOS/IPPs and Suppliers/Wholesalers and how any implications such as maintaining the security of supply and Non-Project Missed Volume (NPMV) will be addressed. Furthermore, clarity is required on how the proposed model would be linked with the emerging concept of Distributed

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Generation Net Metering. In addition, the CTBCM Model must define as to how hydel and nuclear plants will be dealt in this plan as the same are built with the support of Government of Pakistan (GoP).

(d). HM&C commented that the CTBCM Model was developed before the NEPRA Amendment Act 2018 and therefore needs to be revisited to make it consistent with the amended NEPRA Act. Further, the model has been prepared pursuant to the decision of ECC. It should be clarified if Council of Common Interests (CCI) is the proper legal forum in this regard? In this respect, attention is drawn to the case of Muhammad Nawaz v. Principal Secretary to Prime Minister of Pakistan (PLD 2017 IS8 207) where it was held that, any alteration made in the administrative arrangement relating to regulatory authorities is subject to the approval of the CCI. The policy decisions and guidelines of the CCI are binding on the Federal Government. In addition, the Authority is required to perform its functions in light of the National Electricity Policy and Plan which are yet to be approved by the CCI. Further to the said, HM&C highlighted that the incentives and guarantees provided to the generation companies by the Government of Pakistan (GoP) must be considered while assigning Power Purchase Agreements (PPAs)/Energy Purchase Agreements (EPAs) to the respective DISCOs. Moreover, relevant rules and codes may require amendments to make them consistent with the proposed model. Additionally, HM&C pointed out that clarity is required on the role of Special Purpose Supplier (SPS) and Independent Auction Administrator (IAA) and their functions.

(e). In addition to the above, HM&C highlighted that proposed assignment of PPAs/EPAs to DISCOs requires careful consideration and all aspects including credit worthiness and financial abilities of DISCOs and concerns of IPPs be addressed.

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Moreover, the CTBCM Model lacks clarity on many important aspects of the future market including credit cover to be provided by market participants, Balancing Mechanism, Bilateral Contracts, purchase of power from IPPs, tariff matters and transmission and distribution system (T&D) constraints arising in the future arrangement.

(f). MoPD&R commented that the proposed model may contain provisions to minimize the role of GoP to influence market driven operations and decisions of the regulator. Further, interests of consumers may be protected in the proposed market and a conceptual framework may be developed for knowledge/information sharing between different participants. Furthermore, financial autonomy of NTDC, GENCOs, National Power Control Centre (NPCC), CPPA-G and DISCOs may be made part of the CTBCM.

(g). FEL commented that there should be gradual shift to the competitive market until the guaranteed capacity payment contracts exist. The GoP should remove subsidies to create a level playing field for all participants. Multi-tier Wheeling Regulations may be formulated to allow nationwide market access to participants. Further, DISCOs and GENCOs may be privatized and a mechanism may be developed for strategic assets like hydel, nuclear, and indigenous resources to protect them from the impact of competitive market. FEL further added that there should be some mechanism to address the issue of debt service period of 10 years where the life of plant is generally 30 years.

(h). MPCL commented that any rights available to IPPs under PPAs should not be transferred without consent of the concerned company. Further, to ensure competition in the market, the

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number of buyers may be increased to at least three (03) instead of the one (01) buyer as currently is the case.

(i). IPPA commented that the issues of circular debt, lack of security of payment to IPPs, and lack of investors' confidence are serious impediments to the implementation of the proposed CTBCM Model. The model is silent on various aspects of the proposed competitive market including transparency in dispatch of power plants, availability of transmission capacity for spot sellers, cost of transmission system, failures of either party to buy or sell the agreed power in case of force majeure events or failure to comply with the provisions of the Grid Code. In addition, the CTBCM Model proposes assignment of existing contracts (PPAs/EPAs) to DISCOs. However, the said model does not provide details about the ability of the DISCOs to handle the responsibilities assigned to them. In addition, it was commented that the CTBCM may be made consistent with the NEPRA Act. Moreover, clarity is required on various aspects of the proposed model like Balancing Mechanism, Bilateral Contracts, roles and responsibilities of the SPS, IAA and their ability to perform the same.

(j). PGL, LPL, and NPL commented that elimination of circular debt and structural overhauling of DISCOs is pre-requisite to the implementation of the proposed CTBCM Model. Moreover, the model has been prepared without any consultation with the existing IPPs and the same may be discussed with all stakeholders before approval. Furthermore, payment security to the market participants must be ensured in the CTBCM Model. PGL submitted that instead of the proposed Take & Pay mechanism, Take or Pay regime should be continued. It further commented that clarity is required on the mechanism and implementation of Bilateral Contracts between different market participants, proposed functions of SPS and IAA, Balancing

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Mechanism, and Tariff mechanism. In addition, PGL suggested that transparency may be brought in the dispatch planning data and invoicing process. Issues of distribution losses and T&D infrastructure breakdown may also be addressed.

(k). UPPL and UPPL-II commented that the elimination of circular debt and structural overhauling of DISCOs is pre-requisite to the implementation of the proposed model. Moreover, the CTBCM has been prepared without any consultation with the existing IPPs and the model may be discussed with all stakeholders before approval. It was submitted that instead of the proposed Take & Pay mechanism, Take or Pay regime should be continued unless concerned IPPs agree otherwise. It was further commented that clarity is required on the mechanism and implementation of Bilateral Contracts between different market participants, proposed functions of SPS, and Balancing Mechanism.

(l). HCDPL commented that stakeholder consultation may be ensured before approval of the CTBCM Model. Furthermore, the existing transmission/ distribution plans of the NTDC and DISCOs may be brought in line with the proposed model. HCDPL further added that instead of the creation of new departments/agencies as envisaged in the proposed model, the same may be implemented with the existing departments for ensuring one window operation and bringing transparency in market.

(D). Response of CPPA-G

(i). The above comments of the stakeholders were reviewed/analyzed, and the Authority considered it appropriate seeking the perspective/rejoinder of CPPA-G on the same. Accordingly, the above comments were forwarded to CPPA-G for rejoinder vide letter dated September 05, 2018. CPPA-G submitted

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its rejoinder on the comments of different stakeholders on January 14, 2019. The salient points of the rejoinder submitted by the CPPA-G are summarized below: -

(a). CPPA-G commented that the proposed model is not incentivizing generation rather it promotes sharing of risks between buyers and sellers to bring transparency in the market. Regarding addressing the structural and financial issues of the power sector, it was submitted that the proposed model is prepared for the design and implementation of the Wholesale Electricity Market (WEM) rather than reforming the powers sector. However, the implementation of the proposed model may help alleviate the said issues. On the objection of the implementation of Turkish power model in the country without due consideration, it was submitted that different models were studied, however, the proposed model has been prepared keeping in view the peculiarities of the power sector of Pakistan. On the point of bilateral contracts between generators and buyers and impact on the revenue of DISCOs, it was submitted that bilateral contracts are desirable in any economy and the issue of the stranded costs of DISCOs may be dealt through a proper mechanism addressing issues including but not limited to capacity payments and cross subsidy charges. Regarding comments on the supply of 650 MW from the National Grid to KEL, CPPA-G submitted that same will not be through it, but under a proper framework. This does not mean that the supply of 650 MW to KEL from the National Grid shall stop, but the intention is that as all the power purchased by CPPA-G belongs to DISCOs and this power will be purchased by KEL from the DISCOs under a proper contractual framework. Alternatively, if these contracts are assigned to the SPS, the supply of 650 MW to KE can be through SPS under a proper framework.

(b). Regarding comments on the timeline for implementation of the CTBCM Model, it was submitted that the roadmap provided in the

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CTBCM Model demonstrates the implementation phase highlighting all the prerequisite activities to be completed till its commercial operation date. The overall target is to have the CTBCM ready to start by 2020. A detailed schedule with timelines has already been developed. However, further elaborations will be embedded in due time subject to the outcome of the consultations and regulatory review process. On the comments regarding treatment of renewable energy projects and Distributed Generation, CPPA-G submitted that as variable costs for renewables are zero or very low, therefore, they become a priority in the security constrained economic dispatch. Any other consideration, such as NPMV will remain unchanged for existing EPAs. New contract market will be designed in line with the market objectives during the detailed design phase of CTBCM. Further, Distributed Generation/Net metering usually are "behind" the distribution segment, netting the demand that the DISCOs (Suppliers) has to procure in the market, therefore, it is transparent for the WEM. However, the detailed design of the CTBCM will provide a mechanism to address the relevant issues. On the comment regarding strategic projects like hydro, nuclear, etc., CPPA-G submitted that strategic projects whose utility spans across different sectors of the economy are based on intersectoral decisions and as such their mechanism of induction is prescribed in the policy. A proper mechanism will exist in the CTBCM to cater for policy decisions and strategic nature projects.

(c). In response to the comments of stakeholders that they were not consulted during preparation of the proposed model, CPPA-G highlighted that stakeholders were engaged through consultative workshops, Electricity Market Professional program, and other trainings. On the comments regarding preparation of the CTBCM before approval of the National Electricity Policy and Plan by CCI, CPPA-G commented that the Amended NEPRA Act establishes

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strong legal footings for setting up the CTBCM. The national electricity policy and plan are under preparation and will take some time to be approved by CCI. It is envisaged that the policy will provide objectives, principles and targets for establishing competitive electricity market aligned with NEPRA Act's provisions and will also consider the development already made in this regard in the sector. Therefore, these tasks can move in parallel with close coordination. However, from global experience it can be learnt that market models are never static and evolve over time due to technical, legal, policy or other changes.

(d). On the issue of Balancing Mechanism and its implementation, it was clarified that the proposed model is only a conceptual design and the detailed plan will be prepared after the Authority approves the CTBCM Model. The detailed design will provide mechanism on all aspects related to the proposed market. On the point of the implementation of the proposed model in the presence of existing PPAs/EPAs, it was submitted that the existing PPAs/EPAs will remain in place and will only be assigned to the DISCOs/SPS; however, new PPAs/EPAs will be signed according to the proposed model. In reference to the financial ability of the DISCOs to take on the assigned roles, CPPA-G submitted that the financial aspects will be dealt through Credit Cover provided by Market Participants, Balancing Mechanism, and Govt. Guarantees for low performing DISCOs.

(e). Regarding compatibility of the CTBCM with the amended NEPRA Act, CPPA-G submitted that a consistency check has been performed and it is confirmed that the CTBCM Model fits perfectly within the provisions of the amended NEPRA Act. Regarding incentives given by the GoP to the generation companies, it was submitted that the existing PPAs/EPAs will be adopted in the same manner in the competitive market. Regarding clarity on the

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role of IAA, CPPA-G clarified that the said entity will act only as a facilitator and can be registered with the NEPRA in future.

(f). Regarding comments on minimizing the role of GoP in market operations and financial autonomy of govt. entities, it was submitted that the group of actions given in the proposed CTBCM Model provide clarity of institutional roles that are required to be strengthened to implement the WEM. During detailed design phase all of these will be properly worked out based on these principles. Further, the aspect of financial autonomy of DISCOs does not fall under the purview of the CTBCM Model. On the point of knowledge sharing among the market participants, it was submitted that several capacity building initiatives have been launched for the knowledge sharing with the target audience. Moreover, measures are being taken to ensure that all the participants and the public in general have access to market data for ensuring transparency and avoiding information asymmetry. These measures include a new SCADA system, the SMS metering system at CDP points, centralized data exchange portals in the Market Operator to facilitate access to all information etc.

(g). About the suggestion on removal of subsidies, it was submitted that the matter of subsidies is not related to the market. However, at CTBCM level, all generation will be dispatched based on security constrained economic dispatch. Regarding Multi-tier wheeling regulations, it was pointed out that with the start of CTBCM, the need for the wheeling regulation will subside as all registered market participants will have access to the national market and could have bilateral contracts with any other market participant subject to market rules and regulations. The transmission system pricing will establish a common transmission service costs for each participant, and the balancing mechanism will cover deviations of all transactions in the market.

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(h). On the observations of the stakeholders regarding role of SPS, it was clarified that the SPS will take over the agent function of CPPA-G and therefore, will be a small proportion of the today's CPPA-G. To all effects, SPS will act as the CPPA-G, only that at a reduced size, therefore, there will not be changes compare to the situation at present. Regarding Balancing Mechanism, it was submitted that the details in this regard will be provided in the detailed design after the approval of the CTBCM Model. On the settlement mechanism, it was submitted that the settlement mechanisms will be established in the Commercial Code. Moreover, the allocation factors for already contracted capacity and associated energy will be calculated during the detailed design phase based on transparent formulas and simulations.

(i). Regarding comments on structural overhauling of DISCOs and issues of circular debt, CPPA-G submitted that the creation of the WEM will introduce strong incentives to improve the performance of all stakeholders associated to it. Further, strengthening of DISCOs is one of the action plans in the proposed model. Moreover, CTBCM will be strong and efficient driver to improve the financial situation of the sector through different measures to force buyers to pay their dues.

(ii). The above submissions of the CPPA-G were reviewed, and the Authority considered it appropriate to proceed further in the matter.

(E). Analysis/Findings of the Authority

(i). The Authority has examined the proposed CTBCM Model in detail along with the comments of stakeholders, response of CPPA-G on the same, provisions of the Market Rules, Commercial Code and other applicable law.

(ii). In this regard, it is pertinent to mention here that in terms of Schedule-II of the Market Rules and Article-V of the Registration Certificate, CPPA-G had

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been mandated with the function of preparation of a model for competitive market operations encompassing both the sale/purchase of power at wholesale and sale/purchase of power at retail and submit the same for the approval of the Authority.

(iii). In compliance of its functions as mentioned above, CPPA-G prepared the draft CTBCM Model for the development of WEM in Pakistan and submitted it for approval of the Authority. The Authority has deliberated the model in detail and the analysis of the Authority on the same is as below: -

(a). It is observed that the CTBCM Model proposes a competitive WEM where buyers and sellers of electricity will have bilateral contracts to carry out wholesale electricity transactions. In this regard, the main objectives of the CTBCM will be (i). to create fair allocation of risks and benefits between buyers and sellers; (ii). to level the playing field by removing conflict of interest to facilitate the entry of new investors and participation of private players, including Bulk Power Consumers in the market; (iii). to create the conditions to attract investments based on credit cover provided by market participants without the need of the government providing sovereign guarantees; (iv). to create pressure on the payment discipline of Market Participants especially govt. owned DISCOs; (v). to improve efficiency through competition; (vi). to enhance power sector security of supply, generation adequacy, to develop power sector sustainability in the short, medium, and long term; and (vii). to ensure accountability of all participants and service providers and ensure transparency and predictability in the market.

(b). In the existing Single Buyer Regime, the GoP, through CPPA-G, is the sole purchaser of electricity on behalf of DISCOs and offer sovereign guarantees to the investors to ensure security of payment. However, the existing regime is not sustainable as it does not incentivize efficiency and competition resulting in weak

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financial situation of the sector. In this regard, the Authority is of the considered opinion that introducing competition through CTBCM in the sector as has been envisioned in the amended NEPRA Act is the way forward. The CTBCM will be a Bilateral Contract market where all the future contracts for the sale/purchase of electricity will be bilateral between the parties [e.g., DISCOs (in Supplier Role), Traders, Suppliers, Generators, BPCs] and the payment security will primarily be ensured through credit cover provided by the market participants.

(c). The Authority observes that the main feature of the current Single Buyer Regime is the existence of long-term PPAs/EPAs which are secured through sovereign guarantees and are considered a strong limitation/impediment to the introduction of a wholesale competitive electricity market. The treatment of the said contracts (PPAs/EPAs etc.) in the CTBCM market requires careful consideration. In this regard, the CTBCM Model proposes two options (i). assignment of existing contracts to DISCOs as Retail Suppliers; (ii). creation of SPS to take over on a transitory basis the agent and demand aggregation functions of CPPA-G, to act as purchaser on behalf of Discos for pre-existing PPAs/EPAs until such contracts are assigned to the DISCOs to become direct bilateral contracts. The SPS would not be allowed to sign any new PPA/EPA/contract or modify or extend the duration of existing PPAs/EPAs. In view of the said, the Authority considers that assignment/novation of existing contracts is a hectic exercise involving long negotiations with IPPs on the terms and conditions of the assignment/novation. In this regard, the Authority is of the opinion that to start the market and protect the investor's confidence, the existing contracts be parked with the SPS with the same terms and conditions as exist in the PPAs/EPAs/contracts of the IPPs. However, once the CTBCM commences and the confidence of the market participants in developed, the existing contracts may be negotiated for

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assignment/novation to DISCOs as per terms and conditions of the PPAs/EPAs.

(d). The Authority has observed that an important function in the CTBCM Model is to ensure security of supply for the forecasted demand of the DISCOs (as Suppliers). In this regard, the CTBCM Model proposes a regulated function of IAA. The IAA will be a state-owned company responsible for tenders for new capacity procurement contracts for distribution companies (Supplier role), aggregating the demand of DISCOs to comply with their capacity obligation. The IAA will procure as a demand aggregator for DISCOs, but each DISCO will sign a bilateral contract on its own. Another function of the IAA will be managing the required processes to get the guarantees granted to the DISCOs eligible for guarantee support of the GoP. In this regard, the Authority is of the considered opinion that two Govt. owned entities i.e., Alternative Energy Development Board (AEDB) and Private Power Infrastructure Board (PPIB) already exist and perform the said roles. In consideration thereof, AEDB and PPIB may be registered with the Authority to take over the proposed role of IAA in the short term as per their mandate. However, in the future, if the need arises, the said entities may be merged or a new entity for performing the functions of IAA may be created.

(e). The Authority observes that a critical aspect of the CTBCM market is to allow Bulk Power Consumers (BPCs) to contract on their own with sellers for meeting their electricity demand. In this regard, as provided in Section-22 of the NEPRA Act, the CTBCM Model proposes that BPCs will be free to contract with any Generator or Trader/Supplier of electricity. It is pertinent to mention here that the Authority has formulated and notified the NEPRA (Wheeling of Electric Power) Regulations, 2016 (the Wheeling Regulations) to provide a mechanism for wheeling of electric power between the BPCs and generators. Furthermore,

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the amended NEPRA Act has also introduced the Supplier of Electric Power Regime (Section 23E). In the future, as the said Supplier Regime is introduced, BPCs will also have a choice to contract their electricity demand through Suppliers. Whether a BPC buys electricity from a Supplier, participates in the Wheeling arrangement or opts to buy directly from a generator, there will always be some imbalances of contracted energy or capacity. The Authority has observed that the settlement of Imbalances with regards to BPCs is also provided in the CTBCM Model. Henceforth, the Authority is of the considered opinion that the settlement of Imbalances, whether arising under the Wheeling Regulations or Supplier Regime, may be balanced through CTBCM as may be specified by the Authority and that the Bilateral Contracts of the BPCs will be subject to the provisions of the Wheeling Regulations, Supplier Regulations (to be introduced), or any other regulations as amended or introduced subsequently from time to time.

(f). The Authority has observed that the nomenclature used in the CTBCM Model was not in line with that of the amended NEPRA Act. In order to align the said documents, *inter-alia,* the term Special Purpose Supplier i.e. SPS is changed to Special Purpose Trader (SPT), the term Retail Supplier is changed to Electric Power Supplier and the term Wholesale Supplier/Wholesaler is changed to Electric Power Trader.

(F). Decision of the Authority

(i). The Authority has extensively examined and deliberated the CTBCM Model and roadmap, comments of the stakeholders and rejoinder of CPPA-G in the matter. The Authority has observed that the CPPA-G has got prepared the CTBCM Model through an international consultant namely MRC Consultants and Transaction Advisers with the support of Asian Development Bank. The said model has been prepared in response to the ECC Decision ECC-78/9/2015 dated April

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30, 2015, related to the Pakistan Power Sector Reform and takes into consideration the peculiarities of the power sector of Pakistan. In consideration thereof, the Authority is of the opinion that in order to have a sustainable power sector in the country, introduction of the competitive electricity market is the need of the hour. In view of the said, the Authority hereby approves the High-Level Conceptual Design of the CTBCM Model (attached with this determination as annexure-I) with the following directions: -

(a). <u>Submission of Updated and Detailed Design and Implementation Roadmap</u>

Within sixty (60) days of the issuance of this determination, the CPPA-G, after consultation with the market participants, service providers, and other relevant stakeholders, will submit an updated and detailed design of the CTBCM Model and its Implementation Roadmap, along with specific timelines, for approval of the Authority. The detailed design and Implementation Roadmap will include, *inter-alia,* the types and designs of new market contracts, mechanism for treatment of existing contracts, plan for the bifurcation of CPPA-G into Market Operator and SPT, mechanism for establishment of a Balancing Mechanism, IT interventions required for the commencement of the Market Operations, listing of detailed design actions/reports and timelines for their completion for approval of the Authority, and actions to be completed by stakeholders especially service providers. CPPA-G shall also submit an updated version of Integrated Electricity Market Simulation Model (IE-MSM) Report and Detail Design Report within two months of this determination.

CPPA-G shall submit Quarterly reports to the Authority informing about the progress made, hurdles found, corrective measures that need to taken, external support required, necessary interventions from other entities or stakeholders and any other measure required to ensure smooth execution of detailed Implementation Roadmap.

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CPPA-G while preparing and submitting the above Implementation Roadmap, Detailed Design, and other reports, as may be directed by the Authority, shall comply at all times with the directions and determinations made by the Authority and with the provisions of the NEPRA Act, relevant rules & regulations, applicable documents, the Commercial Code and the terms and conditions of its registration as approved or amended from time to time.

(b). <u>Submission of Progress and Implementation Report by DISCOs</u>

The DISCOs, within sixty (60) days of the issuance of this determination, will set up dedicated market implementation groups (MIGs) for taking necessary measures for preparation of the start of the CTBCM. Further, within twenty (20) days of the setting up of MIGs, the Distribution Licences will submit a detailed report identifying the areas requiring immediate intervention including, *inter-alia*, capacity building for demand forecasting and management of bilateral contracts portfolio. The DISCOs will also submit quarterly reports on the progress being made on the said identified areas.

(c). <u>Submission of Progress and Implementation Report by NPCC</u>

After submission of detailed Implementation Roadmap as per decision in Para F(i)(a) above, the NPCC will submit a detailed report within twenty (20) days about the scope of IT/Technology and other Interventions required in the NPCC, *inter-alia*, for bringing transparency, data institutionalization, efficiency in the Dispatch of power plants and improving processes and structure. Further, the NPCC shall submit quarterly progress and implementation report on the said interventions.

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(d). Submission of Progress and Implementation Report by NTDC

After submission of detailed Implementation Roadmap as per decision in Para F(i)(a) above, the NTDC, will submit a detailed report within twenty (20) days about the scope of IT/Technology and other Interventions required in the NTDC, inter-alia, for bringing transparency, data institutionalization, metering, planning, forecasting, and improving processes, structure, proposing amendments in grid code and proposing connections agreements. Further, the NTDC shall submit quarterly progress and implementation report on the said interventions.

(e). Amendments/Modification in the CTBCM Model

If, at any time in the future, the Authority considers it appropriate to amend/modify or change any aspect of the CTBCM Model, the Authority may direct CPPA-G to reflect the said changes in the CTBCM Model and submit it to the Authority for approval. CPPA-G shall be bound to submit the said modifications/amendments to the Authority within thirty (30) days of the receipt of the directions. If CPPA-G fails to submit the said amendments within the stipulated time without providing a valid justification of the delay in writing, the Authority shall, on its own motion and after consultation with the relevant stakeholders, amend or modify the CTBCM Model pursuant to the provisions of the NEPRA Act, the rules and regulations made thereunder and other applicable documents.

(f). Revocation of Approval and Penalties on Unsatisfactory Performance

The Authority considers that stringent and proactive regulation/oversight on part of the regulator is fundamental towards ensuring that the CPPA-G and other entities fulfil their responsibilities in the interest of market development. In this regard, the Authority shall analyze, on bi-annual basis, the

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progress and implementation reports required to be submitted by the above entities and if their performance is found unsatisfactory, the Authority may penalize the non-performing entities and on consistent non-performance revoke the approval of this model.

Authority

Rafique Ahmed Shaikh
(Member)

Rehmatullah Baloch
(Member)

Saif Ullah Chattha
(Member)

Engr. Bahadur Shah
(Member/Vice Chairman)

Engr. Tauseef H. Farooqi
(Chairman)

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Annex - I

MRC | GROUP OF COMPANIES

Abuja - Edinburgh - Helsingborg - Madrid - Milan
Montevideo - Moscow - New York - Rio de Janeiro

TA - 8772 PAK: Strengthening the Central Power Purchase Agency

MARKET MODEL CONCEPTUAL DESIGN

Structure and Roadmap

Prepared for	ASIAN DEVELOPMENT BANK
Beneficiary	CENTRAL POWER PURCHASING AGENCY

10/04/2017

ADB

CPPA

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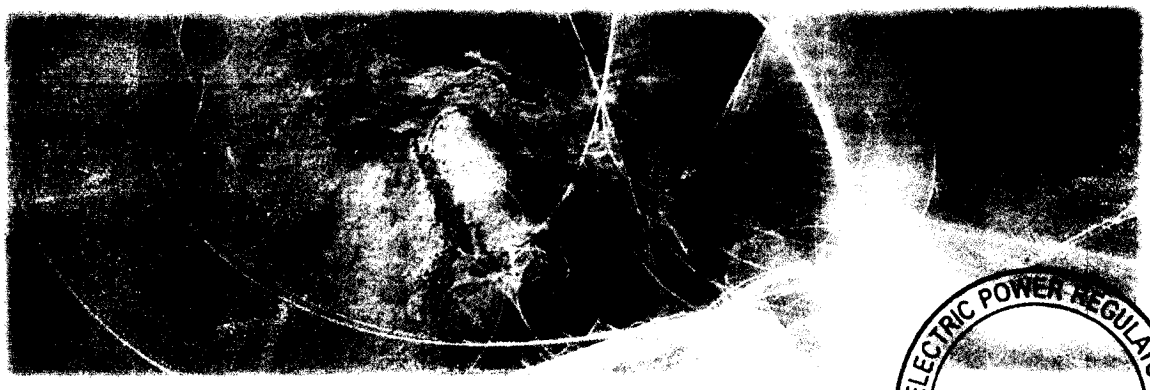

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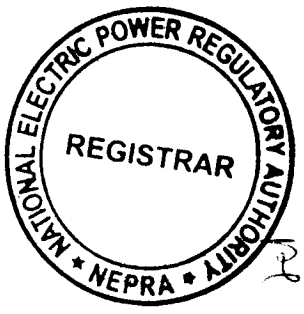

Document Status

Title: Strengthening the Central Power Purchase Agency
Market Model Conceptual Design - Structure and Roadmap

Reference: ADB Project Reference - TA 8772 - PAK
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Issue: Wholesale Competitive Electricity Market Model Proposed for Pakistan with Roadmap for Implementation. This report has to be read together with its annexes containing General Description of the Model and Detailed Rationale and Implementation Actions, published separately under the title Market Development Model Conceptual Design Paper - Annexes

Date: 10/04/2017

Authorization

Name	Position	Signed	Date
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Market Model Conceptual Design Structure and Roadmap

1. INTRODUCTION

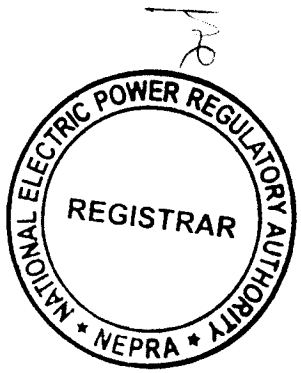
1.1. PURPOSE OF THIS REPORT

The competitive power market model herein proposed for the Pakistani Power Sector has been prepared in response to the ECC Decision vide letter No. ECC-78/9/2015 dated April 30, 2016, related to the Pakistan Power Sector Reform - CPPA-G, that says

> "The Economic Coordination Committee of the Cabinet Considered the" "Summary dated 30th April, 2015 submitted by the Ministry of Water and" "Power regarding "Pakistan Power Sector Reform-CPPA-G" and approved the" "proposals contained in Para -11 read with Para 6, 7, 8 and 9 of the Summary."
>
> ***

Paragraph 9 of the Summary establishes the mandate and timeline for CPPA G to develop the competitive electricity market Competitive Trading Bilateral Contract Market (CTBCM):

> "9. Within two (02) years of the notification of Market Rules and" "associated operationalization of CPPA-G, CPPA-G shall prepare a" "comprehensive Competitive Trading Bilateral Contract Market (CTBCM) Plan" "for transition of the power market to a Competitive Trading Bilateral Contract" "Market. This plan, to be prepared in consultation with stakeholders and" "subsequently approved by NEPRA, will outline the actions that ought to be" "taken and completed at the end of each phase of the transition to a fully" "competitive wholesale electric power market. The actions that shall be taken" "within three to four (3-4) years for implementation, from the date of the" "approval of the CTBCM Plan, will consist of regulatory, legal, technical," "commercial and financial actions that will set the groundwork for the" "transition to the wholesale power market by 2020."



1.2. THE COMPETITIVE WHOLESALE ELECTRICITY MARKET

For the sake of clarity, the CTBCM referred in the ECC Decision corresponds to the competitive Wholesale Electricity Market where multiple Marker Participants (referred to also as Participants) carry out wholesale electricity transactions of the products traded in this market.

This report proposes the High Level Conceptual Market Design (hereinafter called the **Target Market**) and a Market Implementation Roadmap for the CTBCM.

Detailed aspects of the market design will be further elaborated once the High Level Conceptual Market Design and the Market Implementation Roadmap have been consulted with stakeholders and approved by NEPRA, as stated in the ECC decision. This will be presented in the Detailed Market Design Report, to be submitted after that approval.

The description of the Target Market covers the objectives pursued with the creation of this market, the analysis of the context in which the market will start and develop, and presentation of its main features for the implementation, and the roadmap for its implementation.

There are a number of actions required to implement the competitive Wholesale Electricity Market as part of it as well as out of its "boundaries", that need to be harmonized and frameworks to be adapted to the new market features. The High Level Conceptual Market Design explicitly addresses these actions to ensure consistency between the market and associated maters. These actions shall require the involvement of various stakeholders in the power sector, which is also discussed in this model as well.

1.3. Wholesale Electricity Market Objectives

The proposed competitive power market design is based on the following main objectives:

a. Create the conditions for a fair allocation of risk and benefit sharing between investors/sellers and buyers/consumers;

b. Level the playing field by removing conflict of interest to facilitate entry of new investors and participation of private players, including Bulk Power Customers;

c. Create the conditions to attract investments based on credit cover provided by Market Participants, without the need of the government providing sovereign guarantees;

d. Pressure on the payment discipline of Market Participants;

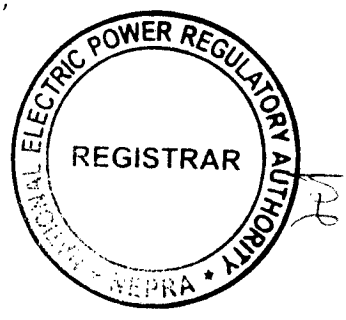
e. Improve efficiency arising from competition for the market (new capacity procurement) and in the market (optimization through centralized economic dispatch within system security constraints, to maximize the economic benefits of available resources and promote efficiency);

f. Enhance power sector security of supply, generation adequacy, to develop power sector sustainability in the short, medium and long term;

g. Ensure accountability of all Participants and Service Providers;

h. Ensure transparency and predictability in the market; and

i. Open access to information;



1.4. INFLEXIBILITIES OF PAKISTANI POWER SECTOR

The Target Market design takes specially into consideration the features of the power sector as they are today. The most relevant one that has been considered is the type of commercial transactions as they are carried out today, namely physical PPAs or EPAs with very inflexible capacity payments or take or pay conditions. Take or pay conditions are ~~a~~ strong limitation for the introduction of competitive electricity markets.

The novation of existing PPAs to remove these inflexibilities has not been considered as an option, as it would require long negotiations and not feasible within the timeframe defined in the ECC decision. However, it is not discarded that existing PPAs could be novated in the near future to market-based approach by mutual agreement between buyers and sellers, if the parties see advantages arising from the well-functioning of the market.

In summary, the challenge is to start with a market structure and trading design with the existing PPAs/EPAs, but that can evolve as new market based power supply contracts are signed and represent a larger volume, and as older existing PPAs/EPAs end resulting in a lower share or volume of inflexible PPAs/EPAs.

The design of the Competitive Trading Bilateral Contract Market (CTBCM) – the Target Market - is based on realistic inputs and assumptions and built on prudent trading arrangements tailored for the Pakistan's power sector. Its implementation will be following a comprehensive roadmap and gradually all the objectives of the wholesale competitive electricity market shall be achieved.

~~In the Annex 1 there is a detailed analysis of the current situation in the power sector ("market as is now"), characterization of its components from a power market perspective as found in the international experience, and at the same time introducing concepts and terminology needed for defining the foundations of the proposed Wholesale Electricity Market for Pakistan, the Target Market: the CTBCM.~~

1.5. ASSIGNMENT OF EXISTING CONTRACTS

The CTBCM is a competitive wholesale Electricity Market with bilateral contracts as the main component for electricity trading.

Existing PPAs and EPAs will be assigned to DISCOs as retail suppliers, in principle proportionally to the quota each DISCO has at present. This proportion will be further revised during the detailed market design, and may be updated from time to time as the actual conditions and demand of each DISCO is better known.

As a consequence of this, in the future each Genco and IPP having at present a PPA or a EPA signed by the CPPA G, NTDC or ~~WPPO~~ Wapda, after the assignment will have 10 PPAs/EPAs, one with each DISCO. All other conditions of the PPAs and EPAs will remain unchanged, particularly the guarantees.

The assignment of the existing contracts, as per the interpretation made of the relevant clauses in the PPAs/EPAs, can be based on the following principles:

Entitlement of the Power Purchaser to Unconditional Assignment

1. The rights and obligations under the PPA can be assigned by the power purchaser to the succeeding entities without consent of the company where:

(i) GOP continues to guarantee the secured obligations of the succeeding entities under the sovereign guarantee on the same terms and conditions;

(ii) succeeding entities are competent to assume assigned rights and obligations under their charter of incorporation i.e. Memorandum and Articles of Association etc.; and

(iii) such transfer or assignment is through operation of law (read regulations, byelaws, regulatory orders, court orders).

It is understood that this process will not be automatic and will require an action plan for implementation as to be submitted by CPPA-G for approval by the Authority.

1.6. The Target Market

The Target Market will be achieved once the actions defined in the Implementation Roadmap have substantially been fulfilled. This means that during the transition for the implementation there will be some features that will have to be gradually implemented, while the preparations are done, and the conditions are met for their full activation in the new market.

Therefore, it is important to keep into consideration that during the implementation transitions, there will be periods during which not all the features of the target market will be fully implemented.

~~In Annex 2 there is a detailed analysis of the features of the proposed Targeted Market ("to be market"), discussing pros and cons of different proposals and options and comparing them with relevant international experiences, particularly examples of markets with similar limitations for the market opening.~~

1.7. Roadmap for Implementation

However, the main challenge for the materialization of Target Market is how to go from market as is now, to the new to be Target Market, and find the necessary solutions for different aspects which need to be solved in order to fully implement the Target Market.

~~In Annex 3 there is a detailed analysis of the proposed roadmap for implementation with enough level of details of the group of action to be worked out with the different stakeholders along with time frame within which these actions should be implemented.~~

The proposed Implementation Roadmap is summarized later in this report, showing the different groups of actions involved. ~~Details are described in the Annex~~.

It will be crucial to keep the implementation actions of the roadmap well-coordinated, and the achievements monitored to ensure consistency among all action points. For this purpose, there will be a coordination committee with participation of the different involved stakeholders.

1.8. Need of Legal Adaptation

A power sector reform, especially when competition is introduced, requires a stable and adequate legal and institutional framework to create a level playing field among the consumers and Market Participants and investors interests, and ensure a predictable basis for investments, risk sharing, private sector participation, reliable network services, and supporting security of supply at reasonable and competitive electricity prices.

~~The existence of a competitive Wholesale Competitive Electricity Market is not explicitly foreseen in the NEPRA Act. It is also true that this Act does not ban the existence of such a market, particularly as the Act allows Generators to sell power directly to Bulk Power Customers.~~

One of the main objectives for the new market is to create the proper conditions to reduce the government liabilities by reducing or eliminating the need of sovereign guarantees. The goal is to attract or develop knowledgeable investors or operators that take the risk of bringing financial resources and managerial skills to ensure the sustainability and modern performance of the power sector and its companies. However, to achieve this goal, it is necessary to have a very stable and firm legal basis of the market, establishing roles and powers of its institutions and rights and obligations of the Participants, through a proper enactment of all the conceptual design.

~~It is proposed to add a Section on Electricity Market as an amendment to the NEPRA Act, as this Act covers the main institutional framework and current actors in the power sector (licensees and Bulk Power Consumers) and the scope of the regulatory framework.~~

~~Several actions in the roadmap for implementation cover this requirement.~~

1.9. Capacity Obligations

During the last years, the power sector in Pakistan has been suffering from a serious capacity adequacy problem (at certain times surplus, some other deficits) leading to a lack of reliable supply and financial problems. To address this issue, the CTBCM will include the trading of **firm (reliable) capacity** to ensure long term reliability of supply at competitive and efficient prices.

Each Demand Participants (DISCOs and KE as Suppliers, Bulk Power Consumers participating in the market, other suppliers selling to demand) will have capacity obligations determined as the obligation to have in advance the capacity required to supply the forecasted system peaks plus operational reserves. The capacity obligation will be covered through contracts and trading of capacity in the market. Further details are described in following sections.

2. TARGET MARKET

2.1. PARTICIPANTS

Market Participants or Participants will be licensees/registered entities and Bulk Power Consumers that will register with the Market Operator as Participant. The type of Participants accepted in the market will be the following:

2.1.1. GENERATORS

All generation licensed in accordance with NEPRA Act will be Participants, subject to registering with the Market Operator and complying with admission requirements.

Strategic large power plants such as large Hydro with multiple purposes that are prioritized above electricity generation, will be commercialized in the CTBCM like other power plants. In these cases, the generation company will have bilateral contracts with Demand Participants (initially DISCOs and possibly KE) as bilateral contracts.

2.1.2. SUPPLIERS

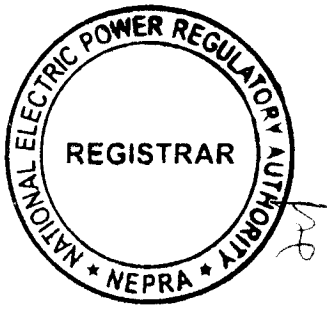
There will be two type of Suppliers:

a. Electric Power ~~Retail~~ Supplier[1] (the "Supplier"): sell to end consumers

b. Electric Power Trader ~~Wholesale Supplier~~[2] (the "Trader"): sell to other Participants and can export or import.

~~Retail~~ Suppliers include ~~DISCOs and K-Electric~~ *holder of the distribution licenses on the date of coming into effect of the amended NEPRA Act as provided in Section 23E of the same*, but may also be independent Suppliers in the future to evolve into other competitive areas such as demand aggregation or retail competition. However, it must be said that the implementation of such type of ~~retail~~ Suppliers may take some time until the business of competitive independent Suppliers develops:

- A Supplier can enter into sales contract with several Bulk Power Consumers (BPCs), and procure power to resell to each of them. In this way, with a larger volume and mix in consumer portfolio, the ~~Retail~~ Supplier may obtain better contract prices and conditions and commercial conditions, enabling the development of competition to sell to BPCs.
- Distribution licensees in special areas, such as new real estate or industrial development, can become Market Participants as ~~Retail~~ Suppliers or purchase from a Supplier to supply its own end customers in that area and may not participate directly in the market.



[1] In some markets, an alternative term used for an electric power supplier is 'Retailer'

[2] An electric power trader can alternatively be called as the "Wholesaler"

- Eventually, for DISCOs the distribution network services business will be separated from the Supplier business *as per the provisions of the NEPRA Act*. ~~(e.g. unbundled as a subsidiary)~~

An Electric Power Trader can enter into an agreement with one or several generators and sell the aggregated generation in the market through bilateral contracts. Depending on the design of the agreement, the generators contracted by the ~~Wholesale~~ Trader may be also Participants or not, but the ~~Wholesale~~ Trader will have to be a Participant.

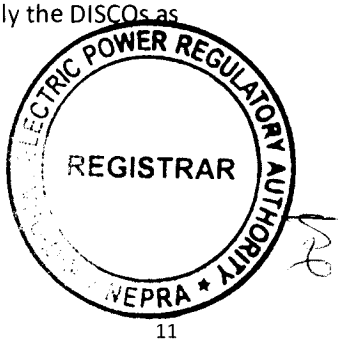
- In cases of imports and exports, the foreign seller or buyer, cannot be a Participant, provided that it is not a company registered according to the Pakistani law. Therefore, export/import trading must be done through a ~~Wholesale~~ Trader that is a company registered in Pakistan and a Participant that has a contract with a foreign company to buy or sell at the interconnection with the foreign power system.
    - Imports: The ~~Wholesale~~ Trader has an import contract with the foreign company (subject to required permits) and sells the imported power to the market through bilateral contract with DISCOs, Suppliers or other Traders.
    - Exports: the ~~Wholesale~~ Trader purchases through bilateral contracts in the market in Pakistan the power to be exported and resells it to the foreign company through an export contract (subject to required permits)
- A similar arrangement can be used for cases in which the generation is produced by a company that has a special regime that cannot be assimilated to the market and become a participant (e.g. Nehlum Jehlum in AJK). The commercialization of its production will be done through a ~~Wholesale~~ Trader registered as a Participant in the market.

2.1.3. Bulk Power Consumers (BPCs)

The NEPRA Act identifies Bulk Power Consumers as those free to contract on their own. Therefore, a Bulk Power Consumer that signs a bilateral contract with a Generator or ~~Retail~~ Suppliers will be a Participant and will be subject to all requirements for Demand Participants, such as capacity obligations, provide credit cover, etc.

2.1.4. Distribution Companies

Subject to admission and registration with the Market Operator, DISCOs and K-Electric licensees will be Participant in the CTBCM as Supplier buying energy and capacity in the market and participating in the balancing mechanism, to resell them to its end customers. Each and all DISCOs will be registered as Participants with the Market Operator as ~~Retail~~ Supplier. Simultaneously the DISOCs will be Distribution Service Providers (*wire business*), however the DISCOs as a Service Provider will not be Participant in the wholesale market, only the DISCOs as a Supplier will be a Participant.



2.1.5. K-Electric (KE)

K-Electric as an integrated power utility will participate in the market as a ~~Retail~~ Supplier, when buying from the market, or as a ~~Wholesale~~ Trader, in the event of selling to it. Therefore, K-Electric will have to register as a Participant with the Market Operator both as a Supplier and a Trader and comply with all the obligations required for the registration and participation in the market.

As CPPA-G function evolves to become a Market Operator, the purchase of power by K-Electric from the CPPA-G will not be possible any longer provided that selling and buying in the CTBCM will be only between generators and DISCOs or suppliers and the Balancing Mechanism. At the market start the present agreement between KE and NTDC for 650 MW, as amended or modified in the future, will have either to cease or to be replaced by one or more Power Supply Contracts with Generators or Traders with available capacity. Alternatively, KE will be able to purchase imbalances in the Balancing Mechanism.

2.1.6. Special Purpose ~~(Wholesale)~~ Trader (SPT).

The SPT (government owned company licensed as Wholesale Trader) will register with the Market Operator as a Participant, subject to meeting all conditions of being a Participant. The SPT will have the following functions:

i) During the transition be the purchaser of PPAs/EPAs that have not been assigned yet or cannot be assigned to the DISCOs. The SPT, as part of this responsibility, will verify invoices sent by Generators for those PPAs/EPAs and will pay them.

   The SPT will have back-to-back bilateral Supply Contracts with all the DISCOs to resell the energy and capacity bought from non-assigned PPAs/EPAs. The SPT will administer those purchase agreements as if each PPA/EPA had been assigned among DISCOs (the share that should corresponding each PPA/EPA to each DISCO should there be bilateral contracts).

ii) Assist the DISCOs in carrying out the verification on the invoices to each DISCO by the generators for the bilateral contracts (PPAs/EPAs already assigned or new bilateral Supply Contracts). The DISCO will decide when to terminate this verification services.

The SPT will have a new power purchase agency agreement (PPAA) reflecting the requirements of the CTBCM and the transitional measures.

The SPT will not be allowed to sign any new contracts for any DISCO.

2.2. Service Providers

Service Providers will not be the Participants but will be the companies licensed (or registered/certified ~~in the case of the Market Operator~~ *as the case may be*) with the responsibilities set out in their licenses or registration/certification as well as NEPRA Rules, Regulations and Codes.

2.2.1. Market Operator

The main functions and responsibilities of the Market Operator in Pakistan will be the following:

- Admission of Participants, including signing the Market Participation Agreement, and suspension and cancellation of Participants;
- As part of the admission process, registration of the Participant, including registration of settlement metering systems (to identify metered energy to be used to calculate imbalances) taking into consideration location of meters and the type of participant;
- Sign a balancing agreement with each Participant including rights, responsibilities and obligations, including obligation of the Participant to provide credit cover. Purchase and sale of imbalances will be among the Participants, and therefore not involve payment or liabilities for the Market Operator;
- Calculation of (hourly *or for any other period as may be specified by NEPRA)* energy imbalance prices, and determination of firm capacity daily imbalance prices;
- Calculation of energy and capacity imbalance quantities for each Participant;
- Balancing Mechanism Settlement on a weekly and monthly basis, and issuing payment instructions on behalf of Participants
- Calculation of monthly use of system charges and market fee;
- Administration of resources required for market payments system;
- Administration of credit cover/collaterals for transactions in the Balancing Mechanism, transmission charges and market fee: determination of amount required, and call/use of the credit cover in case of payment not completed by market payment deadline.
- Administration of the procedure to receive complaints or observations to settle documents, and resolve the complaint;
- Administration of a dispute resolution mechanism for settlement of complaints that have not been mutually agreed and resolved.
- Implement, update and maintain a Contract Register. Participants are obliged to register with the Market Operator information of all contracts, necessary to calculate and settle imbalances. Therefore, information in the Contract Register will include parties, duration, connection points of sale and purchase, energy quantities and contracted capacity (payment for available capacity).
- Be responsible for Information disclosure of market results, in particular made public through its website

The Market Operator will have a Governance system to ensure transparency and accountability. The Board of the Market Operator will include members nominated by the categories of Participants and service providers to act in representation of that type of Participant but independent of any company participating in the market. The Board will also include independent members representing consumers.

The Market Operator will implement panels, committees and working groups with Participants to support its functions and provide transparency. Additionally, the Market Operator will carry out capacity building to level the knowledge basis, facilitate integration to the market and attract new participants and the interest and credibility by investors.

2.2.2. Transmission Services Providers

NTDC will be a Transmission Services Provider or Transmission Network Owner (TNOs), and will be responsible for providing the transmission infrastructure that enables wholesale trade.

NTDC will ensure adequate economic transmission. For this, NTDC will be responsible for the implementation of the system expansion plan approved by NEPRA, which will be mandatory. It will be also in charge of the operation and maintenance of its assets in accordance with the Grid Code and the Performance Standard Rules, *as amended or replaced from time to time.*

NTDC is the main TNO and must ensure that special purpose transmission licensees adequately design, build and maintain their transmission facilities. *NTDC will submit to the Authority , within* Eighty (80) *days of the approval of this model, a report listing the IT/Technology/other interventions required to strength NPCC to efficiently and transparently perform its functions in accordance with the NEPRA Act, relevant rules, regulations, and other applicable documents.*

Provincial Grid Companies (PGCs) will provide transmission services in their respective provinces as per the terms and conditions of their licences. PGCs will be service providers in the CTBCM and will coordinate with the TNO as per terms and conditions specified in their licences.

2.2.3. System Operator

National Power Control Centre (NPCC) of NTDC will be the System Operator to provide non-discriminatory and transparent system operation, planning and dispatch services to all Participants (and transmission users). Therefore, the System Operator must be independent from any Participant, and does not trade electricity (buy to resell).

The System Operator (SO) is responsible for a reliable operational planning and coordination of maintenance outages, economic generation scheduling and dispatch, and keeping the system in balance within security and reliability constraints. The economic dispatch will be carried out in accordance with the Grid Code. Special arrangements, as needed, will be designed for the dispatch of hydro.

The SO administers open access to the transmission grid and therefore must be independent of commercial interests of existing and potentially new Participants that trade in the market.

NTDC license requires functional separation of the Transmission Network Owner (TNO) business from the System Operator. The implementation of this Licence requirements is important for transparency and credibility of the market, and it is entirely in the domain of NTDC to be done. As part of the *Detailed* Roadmap for the CTBCM Implementation, *NPCC will submit to the Authority, within* Eighty (80) *days of the approval of this mode, a report listing the IT/Technology/other interventions required to strength NPCC to efficiently and transparently perform its functions in accordance with the NEPRA Act, relevant rules, regulations, and other applicable documents.* ~~there is a presentation about the activities that will have to~~

~~undertaken to strength the SO Performance in accordance to its roles in the CTBCM. A detailed plan will be discussed and agreed with NTDC to obtain this target.~~

2.2.4. METERING SERVICES PROVIDERS

The network companies will provide metering services: NTDC as transmission licensee for revenue meters at the Commercial Delivery Points (CDP) of Participants with the transmission grid and the DISCOs (eventually also K-Electric) for revenue meter at Commercial Delivery Points of Participants with their distribution network.

In accordance with the Grid Code, the responsibilities of NTDC as metering services provider are to provide the revenue meters at each CDP, read/collect commercial metering data as well as its validation, testing and calibration. This information is provided to the System Operator, to the Planner and to the Market Operator. The MO will make this information available for Participants that require it for their contracts, in particular to the SPT the availability and despatch data of power plants.

2.2.5. PLANNER

The Planning function is assigned in NTDC license to the transmission business and is governed by the Grid Code. NTDC as the TNO is responsible for the execution of the Transmission Expansion Plan, which will be mandatory in contents and timing, except for transmission investment tendered and for special purpose transmission licensees.

The Planner will ensure adequate economic transmission development plan. The Planner will develop for NEPRA review and approval a ten (10) year least cost transmission expansion plan together with an indicative least cost generation expansion plan including power plants under construction and with signed PPAs, and information provided by DISCOs, K-Electric and BPCs and international interconnections. The planning procedures and standards will be in accordance with the Grid Code, guaranteeing predictability and transparency. ~~The transmission plan for first [3/5] years will be considered mandatory and for the last [5] years indicative.~~ The Planner will produce annual updates of both expansion plans informing congestion and impact on dispatch costs and supply, any delays in investment, impact on system security constraints and measures to address delays and constraints/congestion, and inform locations best suited for new generation, and all reports and related documents required in the Grid Code.

The least cost transmission expansion plan and the indicative least cost generation expansion plan, once approved by NEPRA, will be publicly posted on the Planner website.

As part of the Detailed Roadmap for Implementation, ~~*it will be discussed with*~~ *NTDC will provide the best possible arrangement to properly allocate this function within NTDC and according to the transmission license.*

2.2.6. INDEPENDENT AUCTION ADMINISTRATOR - IAA

During the initial stages of the CTBCM, new contracts by DISCOs for new capacity entry will be centralized conducted by an Independent Auction Administrator (IAA). *IAA will be registered with NEPRA to perform its functions. IAA* will not be *considered* a Market Participant and provide

auction services for new contracts procurement. *Initially, AEDB and PPIB will perform the functions of IAA in their respective domains. However, based on the conditions in the future, a single entity may be created to perform the specialized functions of IAA.*

The IAA will be a state-owned company responsible for tenders for new capacity procurement contracts for distribution companies, aggregating the needs of DISCOs to comply with their capacity obligation. The IAA will procure as a demand aggregator for DISCOs, but each DISCO will sign a bilateral contract on its own.

Considering that there may be some low performing DISCOs that will not be able to provide credit cover as required to be a Participant, there will a guarantee support from the GoP to facilitate these DISCOs their participation in the CTBCM. The IAA will be the entity in charge of managing the required processes to get the guarantees granted to these DISCOs eligible for guarantee support. Eligibility will be approved by the Ministry of Energy (Power Division) and will apply only to government owned DISCOs.

The IAA will be considered a service provider and its duration will be until the Distribution Companies, *preferably within five (5) years of the start of CTBCM Market,* develop the required capacities to conduct themselves the new capacity procurement to meet their projected demand growth and capacity obligations and to provide guarantees based on their own financial capacities.

The IAA main tasks will be the following:

- Prepare and obtain the regulatory approval of PPAs / EPAs templates for the centralized auctions for procurement of new contracts (new generation) for DISCOs, and coordination as applicable with relevant agencies ~~(e.g. for renewable auctions, with AEDB)~~ on procedures and system to exchange data and clear allocation of rights and responsibilities of each one;
- Prepare the standard bidding documents and submit as necessary for NEPRA review compliance with regulation for competitive tariffs and ensure that costs of awarded contracts will be considered allowed costs to be recovered in regulated retail electricity tariffs of each DISCO. Overall, the design of the auction and its procedures will need to comply with any regulatory requirement (NEPRA regulations or guidelines) to qualify as a competitive price and therefore allowed to pass through to regulated consumers retail tariffs.
- Calculate the gap for each DISCO (demand forecast that is not already covered with contract to meet Capacity Obligations) based on information provided by the DISCOs and in consultation and consistency with demand projections in the system planning.
- Preparation of the Capacity Procurement Plan based on the calculated gap and taking into consideration the Generation System Indicative Expansion Plan prepared by NTDC and energy policies of the government, including renewable targets, to determine quantity to be auctioned (e.g. capacity) and if differentiated by technology or technology neutral. Special tenders may apply for specific hydro projects.
- Obtain the required regulatory approvals.

- Conduct the competitive auctions for the approved Capacity Procurement Plan; obtain all regulatory approvals required according to the new capacity procurement regulations issued by NEPRA;
- Assist the DISCOs in finalizing the bilateral PPAs/ EPAs with each generator that has been awarded in the auction. If the awarded bidder does not have a generation license, signing of the bilateral contracts will be conditioned to obtain the license from NEPRA *until the generation activity is delicensed in accordance with the NEPRA Act;*
- The IAA will be forbidden to sign contracts on behalf of the DISCOs, as it will not be a licensed Supplier.

During the market detail design phase, it will be analyzed how existing resources in the power sector can be adapted to functions like these based on their capacities and previous experiences.

2.3. General Structure

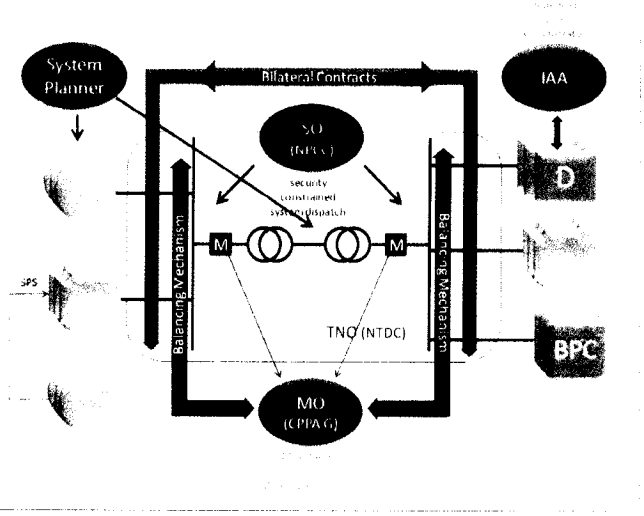


Figure 1 CTBCM General Structure

2.4. CTBCM Main Features

2.4.1. Transactions

The target market will have the following commercial structure:

- A bilateral contract market, in which sellers (Generators and ~~Wholesale~~ Traders) will sell directly to the buyers (Distributors, as ~~Retail~~ Suppliers, other Retail Suppliers, Bulk Supply Customers) through bilateral contracts;
- There will be a Balancing Mechanism to settle deviations between contracted amounts and actual amounts;

- Settlement and payment of bilateral transactions will be done bilaterally between sellers and buyers; and
- Settlement of contract deviations in the Balancing Mechanisms will be done by and through the Market Operator, and payment by Participants;

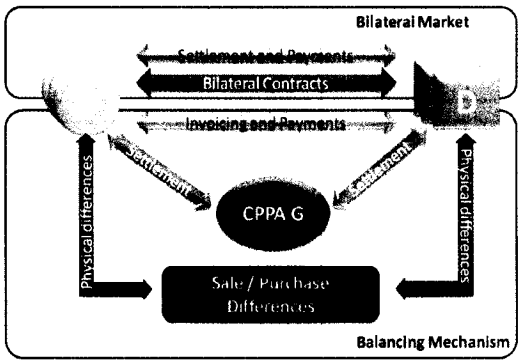


Figure 2 Bilateral Market

2.5. PRODUCTS

Two separate products will be traded in the market: energy to supply electricity consumption and "firm capacity" to provide sufficient and adequate capacity for medium- and long-term security of supply through capacity obligations to Demand Participants.

As described previously in this document, Demand Participants will have the obligation to cover in advance with contracts their participation in the system peak demand.

The proportion of the buyer's demand to be covered by contracts for different future time horizons will be determined by the NEPRA.

2.6. CONTRACTS

Demand Participants (DISCO; K-Electric; Suppliers and BPCs) will sign contracts directly with Generators and/or ~~Wholesale~~ Traders to cover their energy needs and capacity obligations. A BPC may buy from a ~~Retail~~ Supplier that will then assume the obligation of contracting for the BPC.

At the CTBCM start, there will be two types of contracts: pre-existing PPAs/EPAs and new contracts signed under the new market framework: the Supply Contracts.

All existing contracts that have assignment clauses will be assigned to all DISCOs, with all their rights and obligations unchanged (e.g. guarantees, available capacity and net energy supply pass through). Other PPAs will be invited to be novated and adhere to the CTBCM.

New contract as from the start of the CTBCM will be Bilateral Supply Contracts with supply obligations but not obligation to produce (for the seller side) and obligation to pay for the contracted quantities, but not to take / consume. Seller and Buyers will settle differences in quantities between actual and committed contractual quantities in the Balancing Mechanism.

2.6.1. BALANCING MECHANISMS

The market will include balancing mechanisms centrally administered by the Market Operator, covering both energy and capacity, for the following sales or purchases:

Energy Balancing:

- For Demand Participants (including exports), differences between actual energy (metered plus allowed transmission losses) and contracted. Generators/power plants that are taking energy from the grid for own consumption during maintenance or test periods will be considered as a demand and will pay the energy taken through the Balancing Mechanism.
- For the transmission losses that are above the level allowed by NEPRA in transmission tariff determination, the difference will be bought by the transmission company at balancing prices.
- For Generators, and ~~Wholesale~~ Traders (including imports) difference between scheduled energy and actual (metered) at connection point. As noted in the first section, there may be constraints on implementing balancing mechanism for generation depending on signed existing PPAs/EPAs. However, design of future contracts, Supply Contract, will incorporate the Balancing Mechanism by referring to mandatory compliance with Market Rules / Commercial Code.

Capacity Balancing:

- For Demand Participants, differences between contracted firm capacity and actual peak demand.
- For Generators, difference between committed/contracted generation and actual available generation. The capacity balancing mechanism creates a market based price and payment by the generator for liquidated damages due to unavailability.

The imbalances will result due to actual demand, generation availability, actual import/export exchanges, and the System Operator generation scheduling, least cost economic dispatch within system security constraints and real time operation, in accordance to the Grid Code.

The Participant will sign a Balancing Agreement with the Market Operator, including the balancing mechanism obligations, rights, responsibilities and obligations of the Market Operator and of the Participant.

The Participant will have to provide the credit cover to guarantee the payment that may arise from its participation in the Balancing Mechanism (the credit Cover will also guarantee payment of transmission charges and market fee).

Purchase and sale of imbalances will be among the Participants, and therefore will not involve payment by or liabilities for the Market Operator. However, it will be the Market Operator responsibility to ensure that each and all Participants provide sufficient credit cover for imbalances and execute them in cases of non-payment.

The System Operator will provide the Market Operator with the information on actual energy and available capacity.

2.6.2. SETTLEMENTS

For the bilateral contracts, the settlement, invoicing and payment will be done directly between the parties in the contracts, e. g. the Generator and ~~Wholesale~~ Traders on one side and ~~DISCOs~~, ~~Retail~~ Suppliers, BPCs and any other buyers.

For the Balancing Mechanisms, the settlement procedures and payment system will be initially on weekly basis (provisional) and then on monthly (final) basis. At the end of each week (possibly each day in the case of remote reading of settlement meters), metering services providers will submit to the Market Operator metered energy. The System Operator will send to the Market Operator daily information on available capacity. With this information and the information about the bilateral contracts available in the Contract Register, the Market Operator will calculate the imbalances of each Participant.

- The Market Operator will calculate imbalance energy and capacity quantity and prices (to be defined as part of the market detailed implementation).
- The provisional weekly settlement document will include energy and capacity imbalances and will be informed to all Participants.
- The monthly settlement will conciliate the weekly settlement, including payments made by or received in the weekly provisional settlement for imbalances, and including additionally monthly transmission use of system charges and market fee. The monthly settlement will also include any adjustment resulting from resolving complaints and disputes to previous settlements. The settlement document sent to each Participant will include all the detailed data required for the Participant to review and verify the settlement.
- The Market Operator will administer the payment system and monitor compliance with market payment obligations (which do not include payments in contracts, which will be made bilaterally).

2.6.3. SECURITY COVER / GUARANTEES

The market will include mechanism to address non-payment risk.

The "bilateralization" of existing contracts will not include any change in the guarantee that are part of the existing PPAs/EPAs.

For new market based bilateral contracts to be entered into between the parties as from the CTBCM start: The Supply Contracts, there will not be any more sovereign guarantees granted by the GOP. Instead, each Supply Contract will include credit cover.

Government owned low performance DISCOs that have a history of low collections and low payment to CPPA G and that cannot provide the credit cover, can be eligible to receive the required credit cover through the IAA, through guarantees or credit mechanisms that can be called in case of non or later payment.

- The Generator can call the default of a PPA/EPA/contract in case of non-payment. In such situation, the Generator will be able to continue to sell through the Balancing Mechanism until signing another contract, and the DISCO that defaulted in the contract will result buying in the balancing mechanism.

Participants must also provide credit cover for the exposure to imbalances settled through the Balancing Mechanism, transmission charges and market fee, as applicable.

2.6.4. New Market Contracts

The market based contracts, Supply Contracts, that will come in force as from the CTBCM will be agreements to protect against price risks, setting a price for agreed in advance hourly volumes of energy and capacity. The settlement of imbalances will be made in the Balancing Mechanism. This design will enable to optimize the dispatch of the generation resources without being affected by contractual obligations (e.g. take-or-pay obligations in PPAs or contracts), which would lead to higher production costs.

Because of these types of contract, Generators (or ~~Wholesale~~ Traders) are responsible for supplying the agreed hourly volumes (either producing it or buying the difference as imbalance). The buyer is responsible for paying the agreed volumes at contractual price but can sell any surplus in the Balancing Mechanism. In summary, the buyer and the seller agree in the Supply Contract to a price for fixed quantities, independent of actual energy generated or demand consumption. Differences between agreed volumes and actual volumes are settled in the Balancing Mechanism.

However, when the market is not liquid (when there is not enough generation capacity to meet the demand) the financial agreement becomes a physical obligation. In these circumstances, the balancing price will become high to reflect cost of not supplied energy and the generator that is not available to deliver will have to buy in the Balancing Mechanisms to meet the contract obligations. This creates incentives for generation to be available in periods with inadequate reserves and risk of shortages.

2.7. Legal and Regulatory Framework

~~The current legal and regulatory framework will require adjustments to make them fully consistent with the CTBCM design. The following documents will need to be created or adjusted for that purpose:~~

1. ~~The NEPRA Act to define the existence of a market and to firm up the market model concept and roles and institutions.~~
2. ~~A GOP policy for the creation of the CTBCM and start of its commercial operation.~~
3. ~~The Market Rules to adapt the functions of the Market Operator and reflect the types of Participants and Services providers~~
4. ~~The Commercial code~~
5. ~~The Grid Code~~

~~Additionally, other GOP policies for the power sector would need to be reviewed to reflect the market structure and institutional arrangements. Similarly, NEPRA regulatory framework on power procurement and generation pricing would need to be reviewed.~~

In the future, based on market requirements, there may be changes/amendments required in the legal framework including relevant Rules, Regulations, and Codes. Moreover, other GOP polici

for the power sector would need to be reviewed to reflect the market structure and institutional arrangements.

2.8. Capacity Obligations & New Generation Capacity Procurement

All Demand Participants (DISCOs as Suppliers, BPCs, Other Suppliers, Traders) must have sufficient capacity and adequate energy contracted (and/or own generation) in advance, to cover a certain portion of the forecasted demand for different horizons (to be established through regulation). For example (to be defined during the Detailed Market Design),

- Distribution companies, as ~~Retail~~ Suppliers will have to have the following percentages of their forecasted peak demand contracted in advance: [100%] of the forecasted peak demand for the next [3] years; [90%] for years [4 and 5]; [75%] years [6 to 8]; etc *or as may be specified/determined by the Authority.*
- KE as Retail Supplier: [95/97%] of the forecasted peak demand to be purchased in the market for next [5] years be covered by own generation and contracts *or as may be specified/determined by the Authority.*

Bulk Power Consumers contribution to security of supply will be through informing the forecasted peak capacity it expects to purchase in the market through bilateral contract or purchasing capacity from the market for the next [5] year. A BPC or a group of BPCs can delegate to a Supplier its power purchase obligations, subject to signing a retail supply contract.

2.8.1. Rationale

In the CTBCM all Participants must contribute to the secure and reliable supply in the power system by planning and committing to the coverage of the demand.

All Network Services Providers must contribute by ensuring grid / network upgrade and expansion sufficiently in advance *as per the provisions relevant Codes and other applicable documents.*

The Capacity Obligations for Demand Participants will require to contract (and/or own generation) enough capacity and energy to supply their forecasted demand and participation in peak system demand (including operational reserves). The goal is to ensure sufficient available capacity but avoid over contracting that would increase unnecessarily generation costs. As described before, the Balancing Mechanism will settle deviations between contracts and actual. This requirement is consistent with obligations in the distribution licences.

2.8.2. Demand Projections, Aggregation and Supply Gap Assessment

Each DISCO will prepare its demand forecast. Before the end of each year and for next 10 years will inform NEPRA the annual and monthly demand forecast for its captive customers, power already procured through contracts and plans for new procurement (power acquisition program). NEPRA will review and approve the forecasts, in consultation *with relevant stakeholders.* ~~NTDC as Planner and the System Operator~~. The System Operator will consolidate the approved forecasts, and produce the System Demand Projection.

In case K-Electric plans to purchase capacity and energy in the CTBCM through Bilateral Supply Contracts, will have to inform same information as the rest of the DISCOs and other buyers.

Each year the IAA, *until the DISCOs develop their capacity to procure on their own preferably within five (5) years of the start of CTBCM*, will determine for each DISCO the gap between already contracted capacity and capacity obligations, and the total gap.

Based on procurement regulations to be issued by NEPRA and the gap informed by the IAA, NEPRA will decide what is the Gap to be covered with new contracts for the different horizons that the procurement regulation will establish. The resulting Gap will be passed to the Independent Auction Administrator (IAA), which will prepare a consolidated power acquisition plan covering the additional capacity requirements for each DISCO for each future scenario and submit for NEPRA approval.

The IAA will be open to include in this consolidated plan, capacity requirements from other Demand Participants.

2.8.3. Centralized Purchaser Service

The procurement of the power acquisition plan approved by NEPRA will be done by IAA through centralized competitive auction for the aggregated capacity gap, using a standardized template commercial supply contract consistent with the CTBCM (financial contracts with supply obligations). The competitive procurement may result in one or more contracts awarded to generators/power plants. Each awarded Generator will sign with each DISCO a Bilateral Supply Contract for a part of the total energy and capacity awarded in the auction, proportionally to the DISCO requirement to cover its gap approved by NEPRA. For the sake of clarity, the IAA will not sign the PPAs, which will be signed directly by the purchasers, i.e. the DISCOs. If K-Electric participates in the auction, it would also sign bilateral contracts with the awarded Generators.

The competitive process will follow NEPRA regulations as applicable and approvals for the resulting prices of the awarded contracts to qualify as competitive generation tariffs.

2.8.4. Future Market Development

It is important to remark that this section deals only with additional reforms that could be introduced in the market in the future. None of them are applicable at the start-up of the CTBCM, however it shows that the CTBCM can naturally evolve towards more competitive electricity markets with very simple measures, most of them to be decided through regulations.

In the future and depending on security of supply developments, the Capacity Obligations (level of contracting in advance) may be reduced by NEPRA, after consultation and hearing with stakeholders. The threshold for Bulk Power Consumers ~~will~~ may be lowered to expand the retail market open to competition. The Capacity Obligations of a DISCO of its captive consumers demand will reduce accordingly. That will promote the retail supply business to increase.

As more Supply Contracts are signed, the Balancing Mechanism will evolve towards an increasing spot market and operate similarly to markets with net pools. However, it must be noted that in USA net pools include capacity obligations. In the EU market development evolve towards financial price hedging instruments, that are different to Supply Contracts, and future

markets with standardized products. Such level of sophistication will not be possible under current PPA/EPA arrangements.

Additionally, at some point on time, it may be possible to implement a medium- and short-term power procurement platform administered by the Market Operator, enabling the trading between multiple buyers and multiple sellers for competitive short term procurement to complement commitments arising from contractual agreements.

2.9. System Expansion

The System Expansion Planning will be executed according to the Grid Code, within the following principles:

1. Each DISCO and ~~Retail~~ Supplier prepare and inform their demand forecast for the next 10 years, including assumptions and historical actual energy and capacity demand. KE can also sends it demand forecast and projections of energy and capacity required, if any, at connection points with NTDC grid;
2. The System Operator aggregates and consolidates into system demand forecast, incorporating also consideration on historical trends and macro projections;
3. The consolidated demand forecast is sent to the Planner;
4. The Planner, taking into consideration what is established in the Grid Code, the policies issued by the GoP, applicable regulation(s), etc. prepares an indicative generation capacity expansion plan integrated with the transmission expansion plan. There will be consultations with stakeholders on assumptions used and with Grid Code Review Panel;
5. The Planner submits the plan for NEPRA review and approval. NEPRA may carry out consultations as part of the review for decision making;
6. Once the plan is approved, the Planner publishes it in its website.

2.10. K-Electric/KE

Power procurement by KE in the CTBCM will be through Supply Contracts directly with Generators or Wholesale Traders to cover their contribution to security of supply or through the Balancing Mechanisms.

KE will register as Market Participant and participate in the Balancing Mechanism as ~~Retail~~ Supplier and ~~Wholesale~~ Trader, depending on the direction of the deviations regarding the contracted amounts. Alternatively, KE may contract with a ~~Wholesale~~ Trader in the market and designate it as responsible for its imbalances.

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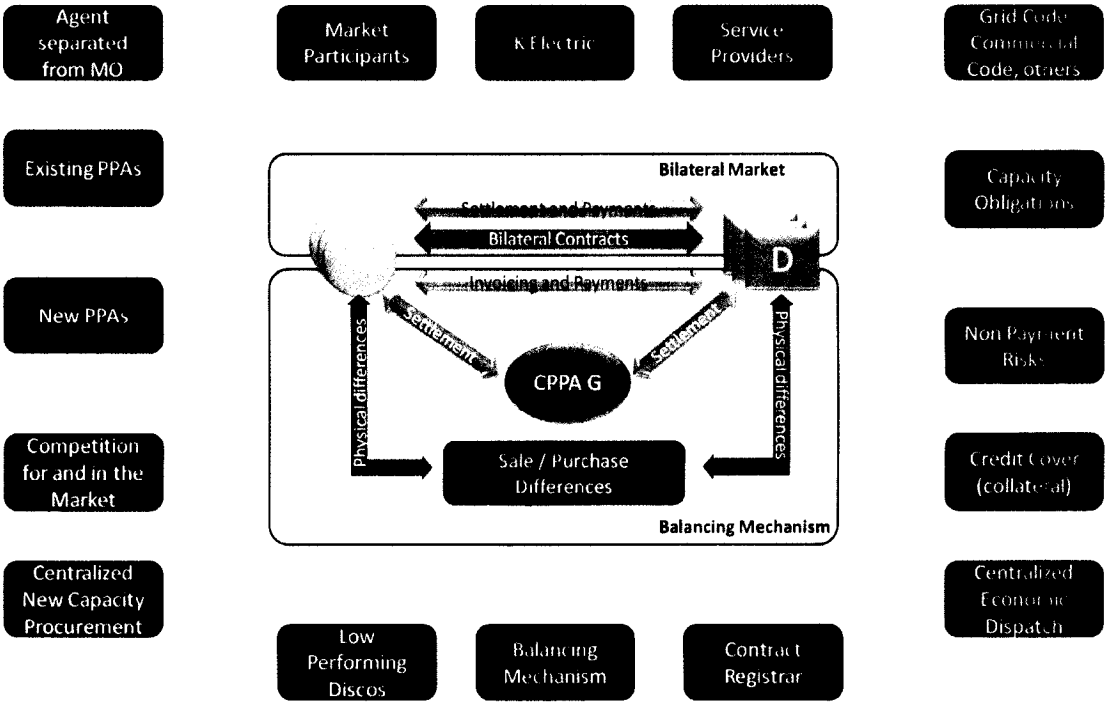
2.11. TARGET MARKET - GENERAL INTERACTIONS



3. ROADMAP FOR IMPLEMENTATION

The implementation of the proposed CTBCM will require the implementation of actions that are part of the market and also actions that are beyond the limit of the market but that need to be done to ensure consistency. This will require the involvement of several stakeholders.

For the sake of consistency and coordination, actions have been grouped assigning to different stakeholders to take the lead in the implementation. *Furthermore, CPPA-G will submit an updated and detailed Implementation Roadmap for approval of the Authority after CTBCM is approved.*

3.1. ROADMAP FOR IMPLEMENTATION - DETAILED TASKS FOR EACH GROUP OF ACTIONS

The proposed roadmap covers all actions to implement the CTBCM, i.e. the competitive Wholesale Electricity Market, as well as actions beyond the market limits, identifying the different stakeholders that will be responsible for implementation, and the timetable.

The proposed roadmap has been designed to avoid that any action lagging behind does not delay the start of the commercial operation of the market despite all other actions having been completed successfully.

~~Considering that the timing of the approval of amendments and additions to NEPRA Act depends on decisions in the National Assembly, which are not controllable, the roadmap starts the preparatory actions as from the approval of the power market conceptual design policy. The proposed strategy is for the conceptual design to go through a comprehensive consultation process, capacity building and high-level approval to provide sufficient predictability and consensus for all responsible parties to be mandated to start the corresponding actions in the roadmap, prior to approval of NEPRA Act amendment. The market eventually could start in a transitory mode before the enactment of the amendments is completed.~~

The actions can be differentiated into the following groups and the following stakeholders that should lead the execution of these actions:

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No.	GROUP OF ACTIONS	Stakeholders directly involved	Actions and Responsibility
1	Policy on market development, White Paper describing the market conceptual design	NEPRA; CPPA G (draft); MOE (PD) public consultation and with other institutions, and approval from CCI	• CPPA G submits the conceptual market design to NEPRA for approval. • CPPA G prepares and submits to MoE (PD) initial draft of the market development policy (the draft White Paper) including rationale, based on the market design approved by NEPRA. • Explanatory workshops by CPPA G prior to and/or at the start of the consultation process. • MoE (PD) consultation of draft White Paper. • Additionally, CPPA G posts in its website notice requesting comments • CPPA G consolidates relevant comments and feedback to MoE (PD) consultation, and addresses, as relevant, in a final draft of conceptual market design policy. The comments received, and the responses are published in CPPA G's website. • MoE (PD) finalizes policy on market development (White Paper) and policy approval • MoE (PD) and CPPA G publishes approved policy through CCI in their websites.
~~2~~	~~Amendment to legal framework~~	~~MOE (PD) with CPPA G support~~	~~• MoE (PD) prepares proposed NEPRA Act amendment covering additional text/modifications on competitive electricity markets, based on approved policy~~ ~~• MoE (PD) carries out standard consultation process and submits proposed amendments to National Assembly for enactment.~~ ~~• NEPRA Act amendment to incorporate market development policy is approved~~
3	Modifications to adapt or replace energy policies to be consistent with the market development policy	MOE (PD)	• MoE (PD) reviews and modifies or replaces relevant power policies (generation, transmission, among others to be determined) to ensure full consistency with the market development policy • If and as necessary, MoE (PD) drafts additional policies to implement the market development policies. • New or amended policies made public in MoE (PD) website

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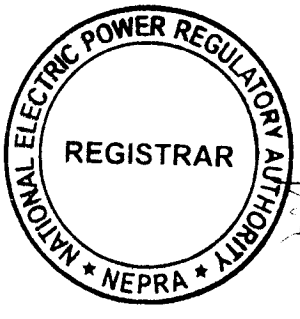
4	Modifications (review, amendments and additions) to power sector regulatory framework to be consistent with the market development policy approved by CCI	NEPRA.	• NEPRA may review and issue Regulations on pass through to regulated electricity retail tariffs of distribution licensees of power procurement costs, including approved / competitive contracts and pre-existing PPAs/EPAs, balancing costs, ancillary services costs, fuel adjustments, etc. • NEPRA may review and if and as necessary amends regulations or rules on competitive bid generation price, approval of PPAs, power acquisition program, and other regulations related to generation tariffs, contracts and power procurement. • Review and amend Market Operator Rules to harmonize with approved market development policy (conceptual market design and the functions assigned to the Market Operator), and types of Market Participants and Services Providers. • Regulations / guidelines for the monitoring of competitive process for new capacity procurement of DISCOs, and monitoring of the wholesale markets administered by the Market Operator. • Others to be determined by NEPRA in review of framework.
5	Assignment of pre-existing PPAs/EPAs signed or administered by CPPA G among DISCOs	MoE (PD) and CPPA G, IPPs and GENCO's Imports DISCOs	• Development and agreement of implementation strategy • Guidelines for implementation, guarantees adaptation, assignment distribution factors, etc. • Formation of the legal task forces to lead the work. • Assignments to DISCOs: competed and effective.
6	Separation of CPPA G into Market Operator and Special ~~Wholesale~~ Purpose Trader ~~Supplier~~ Functions	CPPA G	• Creation of the Market Operator Business Unit as a service provider in the wholesale market • Creation of Special Purpose Trader (SPT) Business Unit (the SPT Business Unit) as the administrator of power purchase from existing PPAs/EPAs on behalf of DISCOs. • Establish functional and accounting separation of both units. • Preparations to separate into two companies prior to commercial start of the wholesale electricity market. Until actions in 5 fully completed, purchaser on behalf of DISCOs in pre-existing PPAs/EPAs will be assigned to the SPT Unit.
7	Creation of the Market Operator as a separate company	CPPA G in particular Market Operator Business Unit	• After completion of 6, create Market Operator as a company. • Start registration of Participants and implement settlement metering register • Market Operator website launched • Contract Register implemented • Market Management Software, including calculation for Balancing Mechanisms (prices and quantities), and Settlement procured, implemented and tested) • Market Operator capacity building
8	Creation of the Special Purpose ~~(wholesale)~~ Trader to be DISCOs agent and purchaser of any PPA/EPA that has yet not been assigned	CPPA G in particular SPT Business Unit; DISCOs	• Following completion of actions in 6, create SPT as a company. • Review and sign new agency agreement between SPT and each DISCO. • Draft back to back contract to resell energy and capacity, and SPT signs with each DISCO • Implement / upgrade generation Invoice verification services (transferred from SPT Business Unit)

9	Creation of the Independent Auction Administrator (IAA) and scheme for credit cover / guarantees for low performing DISCOs	MoE (PD) (PPIB); CPPA G DISCOs	• Organization and draft standard auction procedures, templates and bidding documents • Software / web based system to receive information from DISCO and calculate new capacity / contract needs • Develop the required credit cover / guarantees scheme to low performing DISCOs
10.1	Codes: New Market Commercial Code	CPPA G draft and consultation, NEPRA review and approval.	• New Market Commercial Code drafted, consultation and submission through Commercial Code Review Panel to NEPRA for review and approval • Market operation procedures drafted • Market Admission Agreement published in website • New Market Commercial Code published in Market Operator website after approval, with market operation procedures
10.2	Codes: Update Grid Code	NTDC draft with the Grid Code Review Panel. NEPRA review and approval.	• Review the Grid Code to incorporate market design relevant issues, including revise and update the Metering Code of the Grid Code • Grid Code and amendments published in NTDC website
11	Strengthening of System Operator, enforce rights and obligations	NTDC and NPCC	• Review of NPCC systems, software, data base and data exchanges to ensure implementation of demand forecasting, dispatch and balancing in accordance to market design and full implementation of Grid Code, • System Operator website launched, and publishes daily, monthly and annual operational planning, demand forecasts, availability, and results of system operation. • System Operator implements arrangements to monitor Transmission Users compliance with Grid Code • NPCC staffing and capacity building
12	Strengthening DISCOs credit worthiness and readiness as Market Participants	DISCOs, MoE (PD) in representation of the owner of DISCOs Special Purpose ~~(wholesale)~~ Trader	• DISCOs capacity building to determine demand forecast, and for the management of contract (bilateral) portfolio and power acquisition plans. • Assessment of wholesale payment history, financial situation and efficiency (losses and collection) of each DISCO. Measures for financial strengthening as necessary, and identify worst performing and financially very weak DISCOs that would be unable to provide credit cover on their own.
13	Open access to transmission services: formalize transmission services rights and obligations	NTDC as Transmission Network Owner NPCC as System Operator.	• NTDC drafts standard (template) transmission connection agreement and sends to NEPRA for comments/review; • NTDC agrees with connected party on Schedules of the transmission connection agreement with each power plant (currently, data mostly agreed in PPAs/EPAs) and signs connection agreements with each power plant, and distribution substation to the grid as required in the Grid Code.



14	NTDC as Planner (Least cost expansion plan) and Metering Services Provider (adequate revenue settlement meters)	NTDC, NEPRA review and approval of plan CPPA G (as observer of meter testing) and metering register for the market	• NTDC/NPCC finalizes least cost expansion plan draft and consultation, and submits for NEPRA review and approval. • NTDC provides information on Revenue Metering System (types, location, etc) for CPPA G / Market Operator to develop and maintain the revenue Metering Register; • NTDC tests existing Revenue meters (CDP) and identifies need for improvements or calibration • Metering data exchange system implemented • CPPA G / Market Operator establishes formula and calculations to determine energy and capacity of each Participant to calculate of market Balancing Mechanisms.
15	Measures to enhance wholesale payment culture: credit cover mechanisms and payment system	CPPA G/Market Operator DISCOs MoE (PD) IAA	• MO establishes the market payment system • MO develops methodology and formula to determine market credit cover (coliateral). • DISCOs together with MoE (PD) (in representation of the government as owner of the DISCOs) establish for financially bad performing DISCOs (inefficient demands) a payment security cover for contracts and market payments of those DISCOs, where the guarantee/security cover scheme would be organized through and provided by the IAA.
16	Readiness for commercial operation of electricity market:	Lead by CPPA G, includes all Market Participants; CPPA G reporting of readiness tests and results to MoE (PD) and NEPRA	• Test all Revenue Meters, dispatch software and market data exchange and management systems • Capacity building of participants and services providers • Calculate credit cover of each Participant and test • Pilot shadow market, to test live systems, mechanisms, information exchange and procedures. • Collect comments and feedback from Participants and Services Providers, and develop improvement or correction. • Inform the MoE (PD) and NEPRA of test results and whether readiness has been achieved
17	Declaration of date to start commercial operation of the market	MoE (PD)	• Depending on readiness, the market could start with a transition where the implementation of one or more mechanisms or market arrangements is for a period not greater than 12 months. • During the initial 12-24 months, the standard market procedures will be adjusted to address issues identified in practical implementation, ensure feasibility and clarity, and eliminate gaps.

3.2. MONITORING AND COORDINATION

Close monitoring and coordination of the Implementation Roadmap will be needed, with reporting by each responsible party through monthly progress report describing actions completed, actions underway, any barrier or situation identified that is causing or may cause delays, and measures taken or under development to address barriers and delays.

It is recommended to create a Market Monitoring Implementation Group, with representatives of all involved stakeholders and lead by the MoE (PD)and with an executive committee formed by CPPA G and NEPRA - Market Development. This group will be the responsible for monitoring

the implementation of the roadmap based on reports from its members. It will also have the role of proposing correction action to address causes of delays and difficulties identified in implementing the roadmap.

The rules of functioning of this Market Monitoring Implementation Group will be defined as part of the market detailed design.