National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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Subject: **Determination of the Authority in the matter of Competitive Trading Bilateral Contract Market (the "CTBCM") Integration Plan submitted by K-Electric Limited (the "KE")**

Enclosed please find herewith the Determination of the Authority (total 58 Pages) in the matter of Competitive Trading Bilateral Contract Market (the "CTBCM") Integration Plan submitted by K-Electric Limited (the "KE").

Enclosure: **As above**

Wasim Anwar

(Wasim Anwar Bhinder)

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Determination of the Authority in the matter of Competitive Trading Bilateral Contract Market (the "CTBCM") Integration Plan Submitted by K-Electric Limited (the "KE")

May , 2025

1. **Background:**

(A). The Authority through its determination dated November 12, 2020, approved the Detailed Design of the CTBCM (the "Detailed Design") along with its Implementation Roadmap. However, considering the peculiar situation of KE as a vertically integrated utility, pending issues of additional supply from the national grid and required augmentation of interconnection arrangements with the NTDC network, the Authority did not approve the mechanism for participation of KE in the CTBCM as part of the Detailed Design.

(B). In this regard, the Authority directed KE to deliberate the integration mechanism in coordination and consultation with the Central Power Purchasing Agency (Guarantee) Limited (the "CPPA-G", refers to the market operator or the agency function as per the context), National Transmission & Despatch Company (the "NTDC"), and National Power Control Centre (the "SO") of the NTDC and come up with a comprehensive plan (the "Integration Plan" or the "Plan") covering all financial, technical, legal, and market-related aspects of the matter with solid recommendations for approval of the Authority.

2. **Submission of the KE Integration Plan:**

(A). In light of the above, KE submitted the Integration Plan on August 31, 2021, for approval of the Authority. The Authority reviewed the Integration Plan and observed that the same comprised of detailed proposals regarding (i). KE's integration in central dispatch to be carried out by the SO; (ii). KE's role as a metering service provider (the "MSP"); (iii). applicability of the Grid Code on KE, (iv). coordination with the SO regarding long-term integrated power system planning (the "ISP"); (v). future electric power procurement; (vi). intention to apply for competitive supplier and electric power trader licenses; and (vii). impact of market commencement on KE's multi-year tariff (the "MYT"), etc. Further, the Plan also contained recommendations, *inter-alia,* on various policy and regulatory matters including (i). treatment of cross-subsidy and stranded costs; (ii). mechanism for timely payment of government dues; (iii). types of market contracts; and (iv). mechanism for transmission and distribution (the "T&D") losses adjustment.

(B). Regarding consultation with the relevant entities, KE informed that discussions were held with the CPPA-G, the NTDC and the NPCC during preparation of the Integration Plan. The CPPA-G provided its input on the draft Plan, whereas no comments were received from the NTDC as the Transmission Network Operator (the "TNO") and the SO. In order to seek input from the aforementioned stakeholders, NEPRA held two consultative sessions with the CPPA-G, the NTDC, the SO, and the KE on September 30, 2021, and October 1, 2021. In the said sessions, the CPPA-G, the NTDC and the NPCC raised their observations and concerns, *inter-alia,* on the proposals of KE regarding (i). obtaining licences as competitive supplier and electric power trader; (ii). applicability of the Grid Code on KE; (iii). participation of KE in the long-term ISP; (iv). role of the MSP in KE's service territory; and (v). future electric power procurement by KE.

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(C). In light of the issues raised and impact of the Plan on consumers (especially bulk power consumers) in KE's service territory, the Authority decided to hold a Public Hearing in the matter. The Authority also approved the framed Issues of the Public Hearing and decided to seek comments from the stakeholders on the said issues and the Plan.

3. <u>Proceedings of the Public Hearing:</u>

(A). The notice of Public Hearing was published in the press on November 27, 2021. Further, letters were also sent to various government ministries, attached departments and other relevant stakeholders soliciting their comments in the matter. In addition, the public notice, the Integration Plan, and the framed Issues of Public Hearing were also published on the website of NEPRA for reference of the public and stakeholders.

(B). In response to the notice and the framed Issues of Public Hearing, comments were received from seventeen (17) stakeholders including (i). NTDC; (ii). CPPA-G (iii). Engro Energy Limited (EEL), (iv). Energy Department Govt. of Sindh (EDGoS), (v). All Pakistan Textile Mills Association (APTMA); (vi). S.I.T.E Association of Industry (SAI); (vii). S.I.T.E Superhighway Association of Industry (SHAI); (viii). Lasbela Chamber of Commerce & Industry (LCCI); (ix). Karachi Chamber of Commerce & Industry (KCCI); (x). Korangi Association of Trade & Industry (KATI), (xi). Pakistan Association of Large Steel Producers (PALSP); (xii). The Federation of Pakistan Chamber of Commerce & Industry (FPCCI); (xiii). Pakistan Hosiery Manufacturers & Exporters Association (PHMEA); (xiv). North Karachi Association of Trader & Industry (NKAT); (xv). Federal B. Area Association of Trade & Industry (FBATI); (xvi). Pakistan Cloth Merchant's Association (PCMA); and (xvii). Ministry of Planning, Development and Special Initiatives (MoPD&SI).

(C). The Public Hearing in the matter was held on December 28, 2021, at the head office of NEPRA in Islamabad through video link wherein representatives of the KE, the CPPA-G, the NTDC as the TNO, the SO, interested stakeholders, commentators, and the general public participated and presented their point of view.

4. <u>Discussion/Analysis of the Authority:</u>

(A). The Authority examined the entire case in detail including the Integration Plan, the Detailed Design, comments of the stakeholders, provisions of the Regulation of Generation, Transmission, Distribution of Electric Power Act, 1997 (the "NEPRA Act"), the National Electricity Policy 2021 (the "NE Policy"), the National Electricity 2023 (the "NE Plan"), Grid Code 2023 (the "Grid Code"), NEPRA Licensing (System Operator) Regulations, 2022 (the "System Operator Regulations"), the Eligibility Criteria (System Operator Licence) Rules, 2023 (the "System Operator Rules"), the Eligibility Criteria (Electric Power Supplier Licences) Rules, 2023 (the "Supplier Rules"), and other applicable documents. In addition, the Authority engaged local as well as international experts/consultants for its assistance in the matter.

(B). The following paragraphs present salient points of the stakeholders' comments on the framed issues of Public Hearing, response of KE, and the issue-wise observations/findings by the Authority:

(a). **Whether the central dispatch and operations of the power system for the entire country by one (01) system operator be allowed keeping in view provisions of the Act and the NE Policy 2021?**

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(i). **NTDC** submitted that central dispatch of the entire power system of the country should be performed by one system operator as stipulated in section 23G of the NEPRA Act, the Detailed Design and the NE Policy. For this purpose, the standard operating procedure (the "SOP") between KE and the NTDC/NPCC shall be formulated for data and information exchange, communication liaison, generation outage scheduling, coordination for congestion management, etc.

(ii). **CPPA-G** in its comments supported central dispatch of entire system by one system operator as this will bring efficiency and cost optimization in the power system operations. The CPPA-G argued that as the size of power sector grows, the components of bigger system provide more opportunities for cost optimization and adequate resource utilization. The CPPA-G further explained that a joint evaluation study for central dispatch was also conducted along with the NTDC/NPCC and the KE with the use of SDDP software, which is being used globally by ISOs, Regulators, and Consultants for conducting dispatch optimization studies of highest significance. The said study was focused on assessing the optimization in the variable generation cost if the KE and the NTDC systems are centrally dispatched by a single system operator. The study showed an overall optimization of up to PKR nine hundred (900) million on annual basis in case of central dispatch.

(iii). **EEL** commented that in terms of Section 23G of the NEPRA Act, there will be a single system operator which will ensure operations, central dispatch, and long-term planning and the same should accordingly be adopted.

(iv). **SHAI** endorsed single, centralized dispatch mechanism for electricity supply in the country as it will support prioritization in the use of efficient and economic generation capacity in the interest of public and help lower the cost of electricity in the country and save unforeseen losses.

(v). **PHMEA** and **FPCCI** commented that in terms of section 23G of the Act, there will be a single system operator for smooth operations, dispatch, and long-term planning.

(vi). **MoPD&SI** submitted that KE is a major consumer from national grid and to ensure economic dispatch, central dispatch model will be more suitable.

(vii). **KE** submitted that keeping in view cost optimization, tariff considerations and overall market design, it agrees to central dispatch. For that purpose, a joint SOP is being formulated between the KE and the NPCC to finalize the modalities of the central dispatch.

Observations/Findings of the Authority:

(viii). The Authority is of the considered opinion that the amended NEPRA Act, the NE Policy, the NE Plan, the Grid Code and other applicable documents obligate and mandate the single system operator to undertake system operations across the country, integrated and optimal system planning, harmonized and coordinated operations, dispatch, and protection of the national grid under normal and contingency conditions. The objective of system operations by a single system operator is to maintain sufficient

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scheduled generation capacity to meet system demand at all times, while maintaining adequate operating reserves, to ensure security and quality of supply in the grid, minimize system operating cost on the principles of optimal power flow, and publish the single indicative operation schedule (the "IOS") to deal with dispatch and credible contingency on the transmission system. Furthermore, the system operator is required to use scheduling and dispatch software based on security-constrained unit commitment (the "SCUC") and security-constrained economic dispatch (the "SCED") principles pursuant to Scheduling & Dispatch Code (SDC) and other enabling provisions of the Grid Code. This ensures the National Grid is operated safely, economically, securely, and reliably with all users and participants following the common instructions and procedures for scheduling, dispatch, and operations as stipulated in the Grid Code and other applicable documents.

(ix). The Authority is of the view that role of the system operator is to be assigned to a single entity, currently the SO, for efficient, effective and transparent system operations of the interconnected transmission system including that of KE and its generation facilities, in line with Section 23G and 23H of the NEPRA Act. The current arrangement, where the KE and the NPCC, as two independent system operators, operate two separate zones, is suboptimal, inefficient and complicates the optimization of generation dispatch between the two network zones, which are constrained by network congestion and have separate scheduling, dispatch and system operations. A single system operator with comprehensive oversight of both network zones will enable a more integrated approach for economic, reliable, and stable system operations, facilitating effective and coordinated decision-making and enhancing overall consumer benefits, system reliability and financial viability of the two interconnected systems.

(x). Moreover, as most of the installed generation capacity in the KE's system is owned by the KE itself, and since the tariff structure for the KE plants has been revised to a two-part structure (energy and capacity-based) similar to that of IPPs in the CPPA-G system, it is essential that the operations of the KE's power plants be managed by an independent system operator i.e., the SO, as Centrally Dispatched Generating Units (the "CDGUs"), in accordance with the Grid Code. This would ensure an independent and transparent mechanism for verifying availability, outages and other operational metrics of the KE plants by the SO at par with the IPPs in the NTDC/CPPA-G system. Additionally, the Annual Dependable Capacity (the "ADC") test of plants in KE's system should be conducted, through an Independent Engineer, at par with IPPs in the CPPA-G system (with the SO allocating demonstration periods, approving test date and time, consent on test procedures etc.,). In this regard, the Authority directs the SO and the KE to finalize the necessary codal formalities to perform these roles initially through the SOP and later on through an appropriate legal framework at par with the CPPA-G system. These measures will promote efficiency, independence, transparency, protection of consumer interests, reliability and consistency in system operations, while also addressing any potential conflict of interest related to the KE owned power plants.

(xi). The said view is also reinforced from the combined reading of Section 23G and Section 14B of the NEPRA Act which obligates and mandates the SCED by a single

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system operator. In this regard, sub-section 4 of Section 14B stipulates, *"In the case of a generation facility connecting directly or indirectly to the transmission facilities of the national grid company, the licensee shall make the generation facility available to the national grid company for the safe, reliable, non-discriminatory, economic dispatch and operation of the national transmission grid and connected facilities, subject to the compensation fixed by the Authority for voltage support and uneconomic dispatch directed by the national grid company."* Further, provisio to sub-section 1 of Section 23G of the NERPA Act states, *"Provided that only one such licence shall be granted at any one time."* From the quoted provisions, it is clear that a single licensed entity will undertake the economic dispatch of the national grid and connected generation facilities implying thereby that the service territory of the KE will also be included in the central dispatch to be carried out by a single SO in the country. In addition, section 5.8.6 of the NE Policy also envisages progressive integration of the KE into the centralized system as per the roadmap given in the NE Plan. The said section stipulates, *"Generation & transmission expansion planning and system operations for the K-Electric shall be progressively integrated in the system to meet the policy goals. The roadmap shall be stipulated in the National Electricity Plan, or through a design or instrument developed / approved in pursuance of this National Electricity Policy".* Whereas, the NE Plan provides that the KE shall be integrated into the Indicative Generation Capacity Expansion Plan (the "IGCEP"), the Transmission System Expansion Plan (the "TSEP"), and System Operations. The Strategic Directive 38 of the NE Plan states, *"Detailed implementation plan shall be developed by System Operator and approved by the Regulator in accordance with the approved CTBCM Evaluation & Integration Plan of K-Electric, to integrate system operations of NGC and K-Electric regions. The approved implementation plan shall provide necessary operating procedures to perform central system operation & dispatch functions latest by November 2023."*

(xii). Further to the above, the NEPRA Act, the System Operator Regulations and the Grid Code define the system operator as *"a person licensed under Section 23G of the Act to administer system operations, dispatch, and power system planning."* This definition specifically refers to Section 23G of the Act, which, as previously mentioned, permits the grant of only one system operator licence at a time in the country. Since, in terms of the NEPRA Act and the System Operator Regulations, the Grid Code as a whole is applicable to KE especially with regards to operational and system planning, system operations, network control, operational liaison, operational communication, operational testing, metering, protection, monitoring, investigation, system recovery and work safety etc, therefore, it is essential to align the KE's system operations with the provisions of the Grid Code and other applicable documents. Accordingly, to ensure compliance with the provisions of the NEPRA Act, the NE Policy, the NE Plan and the Grid Code, the Authority has decided that the system operator's role currently allowed under KE's transmission licences shall be removed and KE's system operations shall be placed under the single system operator licensed in accordance with Section 23G of the NEPRA Act i.e., the SO. In this regard, KE is directed to submit a Licensee Proposed Modification (the "LPM") in its existing transmission licence within one (01) month of the approval of the Integration Plan. The Authority has also decided that in case KE fails

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to submit the LPM within the required timeframe, the Authority may initiate an Authority Proposed Modification (the "APM") in the matter in accordance with the provisions of the applicable documents.

(xiii). Notwithstanding the removal of the system operator's role from the KE's transmission licence, the Authority considers that to ensure smooth integration of KE under the central dispatch by the SO, a transition period of two (02) years is being allowed wherein the KE and the SO shall agree the SOP for system operations of KE's system. The said SOP shall be developed in consistency with the Grid Code and other applicable documents. The transition period of two (02) years will start from the date of approval of the Integration Plan. During the said transition period, the SO will operate KE's system in accordance with the agreed SOP, and after the lapse of the said period, the SO shall operate KE's system similar to that of the NTDC network users and the CDGUs connected therewith. This transition arrangement would allow the SO to enhance its operational capability and understand the KE's system utilizing the local expertise and operational capacity of KE as agreed under the SOP.

(xiv). It is important to highlight that the KE and the SO are already in the process of preparing an SOP for system operations including scheduling and dispatch coordination. Therefore, the Authority directs that the said SOP be finalized at the earliest but not later than one (01) months of approval of the Plan, which should be in accordance with the Grid Code and other applicable documents. The SOP shall cover, at a minimum, the following areas: preparation of a single Economic Merit Order (the "EMO") for the entire country; real-time coordination and communication between the SO and the KE to ensure safe, adequate, secure, and efficient operation of generation facilities, interconnections, and the transmission system; management of short-term operational planning; handling normal and contingency situations during system operations; managing network congestion on the KE's system side; integration of generators connected to the KE system into the SDXP; integration of the KE into marginal price application; protection scheme; coordination regarding power exchange through the KE and the NTDC interconnections; providing the SO with real-time visibility of generation facilities and tie-line flows; and integration of SCADA systems between the KE and the SO.

(xv). In addition, the SOP to be agreed upon between the KE and the SO shall include a comprehensive process for the KE to provide the SO with necessary data and visibility of its generation facilities and transmission network, ensuring that the KE's generation plants are incorporated into the SO's unit commitment and operational planning process. Additionally, the SOP shall outline the requirement for KE to share key information, such as generation plants availability, variable cost etc. through the SDXP portal, in line with protocols for other IPPs in the CPPA-G system. The SOP shall also address the integration of KE's network constraints and technical parameters into the dispatch model, to maintain smooth coordination between the KE and the SO. To facilitate automated communication and ensure efficient operation under Automatic Generation Control (the "AGC"), the SOP shall cover the mechanism for the integration of the KE and SO's SCADA systems, especially considering the anticipated increase in

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the KE's variable renewable energy (the "VRE") share. This integration will support both the VRE balancing and reserve requirements. In the long term, KE's generators shall be connected to the SO's SCADA system including vendor support, adaptation & integration works and data provision, with the cost to be borne by the KE as per the Grid Code. These coordinated steps within the SOP will foster safe, reliable, and efficient operations between the KE and the NPCC.

(xvi). In addition, the Authority also directs the KE to ensure that any necessary amendments required in the power procurement agency agreement (the "PPAA") and the interconnection agreement (the "ICA") signed by the KE, arising out of the compliance and implementation of system operations under the single SO pursuant to legal, policy and regulatory framework, be submitted for approval of the Authority following the due regulatory process.

(b). **Whether it is prudent to have a single marginal price for the whole country or otherwise?**

(i). **NTDC** proposed that there should be single marginal price for the whole system as the system dispatch will be carried out by the single system operator.

(ii). **CPPA-G** submitted that single marginal price for the entire power system is supported because of its simplicity and adoptability during initial phases of the market. As the information and communication technology (the "ICT") infrastructure develops, the evolution to zonal or nodal prices may also be considered.

(iii). **EEL** commented that to the extent of central dispatch, single marginal price should be applicable to ensure central operations and efficiency.

(iv). **PHMEA** and **FPCCI** recommended that single marginal price should prevail.

(v). **MoPD&SI** stated that it depends on the market design. Initially the copper plate model with single price can be used. Further, NEPRA should study transition to nodal prices at an appropriate time.

(vi). **KE** submitted that having a single marginal price for the entire system will provide better visibility and avoid complexities which may otherwise arise especially in the settlement of imbalances, and therefore it agrees to the same.

Observations/Findings of the Authority:

(vii). The Authority observes that in the initial phase of the market it is prudent to have a single marginal price for the whole system as also stipulated in the Market Commercial Code. It is important to mention here that although zonal or nodal pricing methods are applicable in the developed markets, the application of the same requires sophisticated information and communication technology (ICT), operational technology (OT), metering infrastructure, detailed calculation models, as well as human resource capacity building, which are currently not available in the Pakistan's power sector. Therefore, at the start of the market and till the development of the required ICT and OT infrastructure and other capabilities, single marginal pricing methodology is to be adopted as per the Market Commercial Code and other applicable documents. The

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decision to transition towards zonal or nodal pricing models will be taken based on future market assessments in the Market Commercial Code and other applicable documents.

(c). **Whether the amended Grid Code should be applicable on KE or otherwise?**

(i). **NTDC** submitted that the Grid Code should be applicable to KE.

(ii). **CPPA-G** suggested that Grid Code should be applicable to KE.

(iii). **EEL** submitted that the Grid Code should be applicable to KE, as the company has, in principle, complied with it in the past.

(iv). **PHMEA** and **FPCCI** commented that the Grid Code should be applicable to all market participants.

(v). **MoPD&SI** stated that amended Grid code should be applicable to the KE otherwise full integration would not be completed.

(vi). **KE** submitted that it has principally no issues in adopting the Grid Code, if it is reviewed in context of the operational requirements of the KE.

Observations/Findings of the Authority:

(vii). The Authority observes that since the SO performs its functions in accordance with the provisions of the Grid Code, the same shall also apply to KE for its integration into central system operations. In addition, compliance with the Grid Code is also a requirement stipulated in Article 16 of the KE's transmission licence.

(d). **Whether KE should be part of integrated central long-term generation planning through IGCEP in order to achieve the goal of overall resource optimization and implementation of least cost principles?**

(i). **NTDC** submitted that in terms of clause 5.8.2 of the NE Policy, the KE should participate in the IGCEP. In this regard, planning for long term capacity expansion is the sole responsibility of the system operator, the function currently being performed by the National Grid Company (NGC) i.e. NTDC.

(ii). **CPPA-G** submitted that in order to optimize resource utilization in the country, KE should be part of central planning for generation expansion as also envisaged in the NE Policy.

(iii). **MoPD&SI** stated that KE's generation planning should be based on central least cost model, and it should be part of the IGCEP.

(iv). **KE** submitted that Article 2 of its transmission licence obliges it to be the system operator for its transmission system. Further, as per section 23G of the NEPRA Act, the functions of the planner are to be performed by the licensed system operator. Therefore, KE should be allowed to plan, procure and execute power projects as per applicable rules to cater demand for its service territory. It was further submitted that to facilitate integrated planning at national level and for smooth implementation of central dispatch, KE is open to collaboration with NTDC for provision of required information including projected demand growth, planned capacity additions etc., in the interest of

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overall resource optimization and least cost principle. However, KE will continue to perform the role of planner for its service area and will plan for its future generation needs on its own in accordance with relevant rules and regulations as issued from time to time.

Observations/Findings of the Authority:

(v). The Authority observes that although KE has agreed to be included in the IGCEP, it has proposed to remain planner for its service territory in its role as the system operator.

(vi). In consideration thereof, the Authority observes that in terms of Section 23G of the NEPRA Act, system planning for long-term capacity is to be performed by the SO. As noted in issue no. 4(B)(a) above, the transmission licence of KE is to be modified to exclude the function of system operator therefrom. Therefore, to ensure overall resource optimization on least-cost principles of procurement, KE will be integrated into the ISP to be performed by the SO as stipulated in Section 23G of the NEPRA Act. For this purpose, KE is directed to coordinate with the SO for provision of required information and data including projected demand growth, planned capacity additions, capacity obligations, etc., for the preparation of the IGCEP and other related plans pursuant to the current practice in vogue and applicable documents.

(e). **Whether it may be prudent and efficient approach that future procurement of KE should be done through the Independent Auction Administrator (IAA) or by KE itself or under some other arrangement?**

(i). **NTDC** proposed that it will be prudent and efficient that all of the future procurement of the KE is carried out through the IAA.

(ii). **CPPA-G** proposed that it should be optional for the KE; however, the process should be aligned to the IGCEP and competitive bidding.

(iii). **SHAI** submitted that IAA is being created under CTBCM which will be responsible for planning and procurement of generation capacity against future power procurement of DISCOs. KE has been making significant investment in enhancing its generation capacity to support industrial growth and therefore creating dependency on the IAA may take away this ability, which would prevent the utility from sustaining the appetite for demand in its growing consumer base. Accordingly, KE should be allowed to plan, procure, and execute power projects for its consumers on its own. However, collaboration should be encouraged with NTDC to ensure that the government's vision of cost and resource optimization is achieved.

(iv). **MoPD&SI** remarked that KE should be treated as other DISCOs and its power procurement be done through the IAA.

(v). **KE** submitted that it should be allowed to procure power itself as dependency on the IAA will essentially negate the essence of privatization.

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Observations/Findings of the Authority:

(vi). The Authority observes that Regulation 9 of the NEPRA (Electric Power Procurement) Regulations, 2022 (the "Procurement Regulations") and its other enabling provisions address the issue under discussion and shall be applicable on KE as the supplier of last resort (the "SOLR") with regards to electric power procurement under the approved power acquisition program (the "PAP").

(f). **Whether CTBCM can be operationalized within KE service territory during the validity of MYT control period or after its expiry in year 2023?**

(i). **NTDC** commented that CTBCM can be operationalized during the validity of KE's MYT control period.

(ii). **EEL** submitted that under the Authority Proposed Modification of KE's distribution licence No. NEPRA/R/LAD-01/20439-44 dated 21 April 2021, it was expressly provided that KE's exclusivity will be strictly in terms of Article 7 of its distribution licence which permits bulk power consumers (the "BPCs") to obtain supply from generation companies and that KE will be obligated to allow use of its system to any third party for supplying/wheeling of electric power to any BPC in terms of Article 9 of its distribution licence. The thrust of the determination therefore is to open the market for bilateral sales of power to BPCs. The same should be permitted even prior to 2023.

(iii). **SHAI** commented that MYT of KE is valid until 2023, while KE's territorial exclusivity is also valid till 2023. The utility has been making significant investments against committed plans within MYT. However, CTBCM does not account for BPCs leaving the regulated system and its impact on the investment plans of KE. Therefore, the SHAI requested that the implementation of CTBCM should respect the validity of KE's territorial exclusivity so that KE is able to fulfil its obligations under the approved MYT to avoid any legal implications which will affect KE consumers.

(iv). **CPPA-G** submitted that BPCs should have the right to enter into bilateral contracts with any competitive supplier irrespective of territory after submission of advance notice as required under the Act. There is no reference to any control period in this regard.

(v). **PHMEA** and **FPCCI**, stated that the BPCs should have option to procure power through bilateral contracts before 2023 as exclusivity of KE pertains to distribution system and not generation.

(vi). **MoPD&SI** stated that exclusivity may be dealt with according to the provisions of the NEPRA Act. Otherwise, wheeling and CTBCM will have to be enabled after 2023. CTBCM should be operationalized as early as possible even during the validity of MYT control period.

(vii). **KE** submitted that its MYT is premised upon certain assumptions such as sent-out growth, T&D losses etc., and the impact of BPCs moving into bilateral contracts is not accounted for in the said assumptions. Further, the distribution licence and the MYT are valid till mid-2023, which are also premised on its exclusivity in the distribution

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business. Accordingly, KE requested that BPCs in the service territory of KE be allowed to enter into bilateral contracts after the expiry of the distribution licence and the MYT i.e. in 2023.

Observations/Findings of the Authority:

(viii). The Authority in its MYT determination dated March 20, 2017, and subsequent decision dated July 05, 2018, regarding Reconsideration Request filed by the Federal Government on the same matter, has stipulated a use of system charges mechanism for wheeling electric power in the territory of the KE. Further, the Authority in its decision dated April 21, 2021, on the APM in the distribution licence of the KE, has obligated it to allow use of its system to any third party for supplying/wheeling of electric power to BPCs. In view thereof, it is considered that the applicability of the MYT period does not in any manner prohibit opening of competition. Rather, the aforesaid determinations and decision of the Authority obligate KE to facilitate wheeling/open access to market participants for efficient and liquid competitive market development in the service territory of the KE. Notwithstanding the said, it is also important to note that the MYT period referred by KE has already lapsed. Therefore, CTBCM shall commence in the KE's territory on the same date as in the rest of the country i.e., upon declaration of the Commercial Market Operations Date (the "CMOD") by the Authority.

(g). **What modifications may be required (if any) in KE's licenses being a vertically integrated entity to ensure its integration into the CTBCM in light of the Act, and other applicable documents?**

(i). **NTDC** commented that modifications will be required in transmission licence of KE to shift the responsibilities of system operations and planning to NTDC/system operator in light of section 23G of the Act and clause 5.2.2 of the NE Policy.

(ii). **EEL** submitted that globally there is not even a single example of vertically integrated utility (VIU) in a liberalized market, hence KE needs to be unbundled.

(iii). **SAI, LCCI, KCCI, PALSP, NKATI, APTMA,** and **PCMA** submitted that KE should be unbundled and treated like any other licensee which is undertaking a regulated function. KE should not be permitted to use its role as a VIU to derail the market reforms. Given its failure to provide any proper rationale, the Authority should reject the Plan and instead proceed with implementing the original approved plan and treat KE's distribution system as any other distribution licensee and its generation plants as any other IPP.

(iv). **MoPD&SI** stated that unbundling of KE as envisaged in original tariff of 2002 should be pursued.

(v). **KE** pointed out that as per section 23E of the Act it is a deemed supplier till the expiry of its distribution licence i.e. July 2023, and it will apply for separate licenses for distribution and supply after the said date. Further, no modifications are required in its generation and transmission licenses.

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Observations/Findings of the Authority:

(vi). As observed under paragraphs 4(B)(a)(viii) till (xii), KE is directed to submit LPM in its existing transmission licence for removal of the SO functions within one (01) month of the approval of the Integration Plan. In case KE fails to submit the LPM within the required timeframe, the Authority may initiate the APM in the matter in accordance with the provisions of the applicable documents.

(vii). Regarding obtaining separate electric power supply and distribution licences, it is noted that the KE has been already granted separate distribution licence (No. DL/09/2024 dated January 19, 2024) and Electric Power Supply licence (No. SOLR10912024 dated January 19, 2024). Therefore, the issue stands addressed.

(h). **Whether it is prudent to allow KE to act as a metering service provider in its service territory?**

(i). **NTDC** suggested that it is not prudent for KE to act as MSP in its service territory because it will create conflict of interest with its role as supplier of electric power. Currently, the role of MSP has been assigned to NTDC; however, keeping in view the future growth of the BPCs and lowering of threshold of 1 MW for participation in the market, the Authority should reconsider the role of NTDC as MSP and a "meter clearing entity" can be envisaged to act as a common platform to ensure all metering parameters such as metering class, telecom protocols, formats, etc.

(ii). **CPPA-G** submitted that KE could act as MSP in its service territory in accordance with the Grid Code and the Market Commercial Code.

(iii). **EEL** commented that given the competing interest between market participants, it would not be prudent or advisable for KE to act as the SOLR and also as the MSP. These roles should be bifurcated with no overlapping interests. If KE is unbundled, its transmission unit may be allowed metering service role like NTDC.

(iv). **PHMEA** and **FPCCI** submitted that the role of MSP may be granted to an independent entity. However, after unbundling, the transmission side of KE may perform this role.

(v). **MOPD&SI** opined that metering service can be provided by KE on an arm's length basis.

(vi). **KE** submitted that it has the required infrastructure/capability to act as the MSP for its area under the CTBCM. Further, the T&D losses obligation pertaining to the services of MSP in its service territory will remain with KE which cannot be ensured without KE's control over metering. Therefore, KE may be allowed to act as MSP. Further, KE is working with CPPA-G for formulation of a joint SOP detailing modalities including exchange/verification of data required to carry out the market settlement functions, which is targeted to be finalized by February 2022.

Observations/Findings of the Authority:

(vii). The Authority observes that at the time of approval of the Detailed Design, CPPA-G had submitted that the NTDC be made the sole MSP for the entire country,

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including for the territory served by the KE. However, the Authority did not approve that proposal of the CPPA-G and directed KE to submit the Integration Plan as detailed above. The KE in the Integration Pan has submitted that it has the required infrastructure to perform the MSP role.

(viii). It is important to highlight that under the wholesale competitive market regime of the CTBCM, the primary role of the MSP is to ensure the secure and seamless provision of metering data pursuant to the Grid Code, Market Commercial Code and other applicable documents. This data is critical for various functions, including marginal price calculation by the system operator and the subsequent settlement of imbalances by the market operator (the "MO"). In developed electricity markets, this role is carried out by multiple entities. The same approach is envisioned under CTBCM, where, with the future liberalization of the market, the MSP function may be performed by several independent entities, equipped with the necessary infrastructure and institutional capacity and capability.

(ix). In light of the above, the Authority is of the considered view that since KE has the requisite expertise and infrastructure to perform the MSP role, it is allowed to act as the MSP in its service territory at the CMOD of the CTBCM, in line with the provisions of the Grid Code, Market Commercial Code and other applicable documents. Further, it shall coordinate and provide all the relevant metering data and interfaces to the NTDC, and the Independent System and Market Operator of Pakistan (Guarantee) Limited (the "ISMO") in accordance with the Grid Code and the Market Commercial Code. As market competition grows and liberalization progresses, the Authority may revisit this arrangement and consider allowing other qualified entities to perform the MSP function.

(i). **Whether the requirement of escrow account security provision for imbalances settlement should apply to KE or otherwise?**

(i). **NTDC** commented that KE has significant interconnection and power purchase agreements therefore the requirement of escrow account provision should apply to it.

(ii). **CPPA-G** submitted that security covers must be provided by all market participants including KE as per the Detailed Design.

(iii). **EEL** commented that this would be an arrangement between the market operator and the DISCOs and not a security requirement being imposed on any other market participant.

(iv). **MoPD&SI** agreed that KE should be treated as all other DISCOs after central dispatch. This will also help in eventual unbundling of KE.

(v). **KE** submitted that separate security mechanisms are being included in bilateral contract for off-take of supply from National Grid. Accordingly, the requirement of escrow account will not apply to KE.

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Observations/Findings of the Authority:

(vi). The Authority observes that a detailed mechanism for the provision of security cover for the settlement of Imbalances by the market participants has been approved in the Market Commercial Code and the same shall also be applicable to KE as the SOLR.

(j). **Whether the implementation roadmap given under the proposed KE Plan is comprehensive or otherwise?**

(i). **CPPA-G** commented that the Integration Plan lacks clarity in almost all parts as no details have been provided on (i). determination of segregated transmission and distribution losses, (ii). modification required in KE licenses, and (iii). installation of revenue meters on common delivery points (CDPs).

(ii). **EEL** commented that the Integration Plan is not comprehensive and does not provide any concrete timelines for implementation. Rather it proposes that all the issues which may or may not be relevant to CTBCM be settled prior to transition to the power market. Such a proposal would delay market reforms; therefore, more realistic timelines should be provided. Furthermore, several issues highlighted by KE should have been raised at the time of the approval of Detailed Design. This proceeding should not be used as a review of the market model itself.

(iii). **SAI, LCCI, KCCI, PALSP, NKATI, APTMA**, and **PCMA** commented that the Integration Plan appears to be a review of the entire CTBCM model rather than a plan of KE's integration in the market. After approval of Detailed Design in November 2020, KE took full one year to chalk out how it would be integrated into single system/market operator model. It was submitted that KE has challenged or questioned the viability of CTBCM and proposed that the implementation of the same be delayed until the questions raised by it are settled. While some issues raised by KE may be technical in nature and considered, most of the issues appear to have been raised with an aim to indefinitely delay the market implementation. Therefore, it is requested to reject KE's submissions to the extent they challenge, question, or pose roadblocks to the implementation of the CTBCM.

(iv). **MoPD&SI** stated the implementation roadmap proposed by KE seems comprehensive

(v). **KE** submitted that it has evaluated and submitted a comprehensive implementation roadmap with identified action items. It has highlighted various areas pending finalization including, (i). alignment with key policy guidelines and considerations such as stranded costs, cross-subsidy etc. (ii). firming up of some areas of the market design and regulatory framework, (iii). completion of action items as part of the Plan, and (iv). dry run to evaluate possible implications and any revisions that may be required to the market design.

Observations/Findings of the Authority:

(vi). The Authority considers that the Integration Plan has mainly focused on overview of the existing market structure, evaluation of the Detailed Design and proposals on policy and regulatory matters pertaining to the competitive electricity

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market. In only Chapter 5 and Chapter 6 of the Plan, KE has proposed its integration mechanism into the CTBCM and the relevant implementation roadmap. Therefore, the Authority is only considering the Chapter 5 and Chapter 6 of the Integration Plan for approval with modifications, and the other issues raised by KE which are not related to integration of KE in the CTBCM, are to be considered as per the applicable policy and regulatory framework.

(k). **Whether it is prudent and in the interest of competition to allow Supplier of Last Resort (SOLR) to incorporate a wholly owned subsidiary company and seek licence as competitive supplier in its service territory or otherwise?**

(i). **CPPA-G** submitted that allowing SOLR to operate as a competitive supplier is neither prudent nor in the interest of competition. It explained that electric power service providers are usually natural monopolies like wire companies that are not supposed to participate in the market to avoid conflict of interest and ensure provision of non-discriminatory services to all the market participants. CPPA-G highlighted that separation of wire business from the supply business is also desirable because there is a risk that the incumbent distribution companies may exercise their market power and create difficulties for consumers to choose other suppliers.

(ii). CPPA-G further submitted that KE as a holder of distribution licence is a service provider, and as SOLR, it is a market participant. Therefore, the grant of a competitive supplier licence to a subsidiary of KE will result in non-level playing field for other competitive suppliers as KE will have excessive market power in its service territory. CPPA-G referred that the 1992 strategic plan for restructuring of the power sector also envisaged unbundling of the service providers and market participants in the long run.

(iii). In addition, CPPA-G explained that no successful example is found in the global electricity markets to allow such conflicting businesses in the competitive market. Few cases, including that of the Turkish electricity market, proved to be strong impediment for entry of other competitive suppliers in the market. A 2019 report on anti-competitive practices in the Turkish electricity market included the cases where the incumbent distribution and retail supply companies incorporated new companies for competitive supply business and gained unjust advantage over other independent electricity sales companies (IESs) by exercising their market power and abuse of their dominant position to decrease the competition through: (a) increasing the switching costs of the consumers, (b) sharing of sensitive information with their competitive supply subsidiaries, (iii). manipulation in meter readings, and (iv). creating hurdles for processing applications for IESs. The Turkish Competition Authority acted against such anti-competitive practices and imposed fines to the tune of forty million US dollars on these companies.

(iv). CPPA-G further submitted that SOLR is fully regulated for power system planning, procurement and tariffs charged to the consumers while the competitive suppliers are free to manage their plans and procurement portfolio, and charge bilaterally agreed rates to their consumers. Further, SOLR only gets regulated margins as all

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contractual risks are passed on to the consumers, while on the other hand, almost all risks are borne by the competitive suppliers themselves, implying that their profit margins are unregulated. If both the businesses are managed by same owners, there is a risk that the SOLR may burden its regulated consumers by passing all the risks and inefficiencies to them and make profits from its competitive supply business. For example, the owners may park less favorable power purchase contracts with the SOLR and assign most favorable contracts to their competitive supplier subsidiary and enjoy the arbitrage profits at the cost of regulated consumers. As a result, the costs of regulated consumers will increase, and the competitive supplier may pocket excessive arbitrage profits without adding any value to the market.

(v). CPPA-G also submitted that such an arrangement may result in circumstances which will be against the principles of the NE Policy including, *inter alia*, (a) providing open access to all market participants on a non-discriminatory basis, (b) promoting competitive arrangements in the market, and (c) fair allocation of risks amongst market participants.

(vi). CPPA-G also submitted that a VIU having dominant position in its service territory will not feel competitive pressure. It will not only favor the switching and defection of its consumers to its competitive supplier subsidiary but will also create an environment that prevents the entry of other competitive suppliers as explained above. Similarly, the VIU may favor its subsidiary competitive supplier over others by (i) deliberately delaying the open access applications related to other competitive suppliers; (ii) discriminatory sharing of information about consumers; (iii) discouraging switching of consumers to other competitive suppliers using the physical presence of its large workforce in its service territory; and (iv) practicing inaccurate and false meter reading for the consumers of other competitive suppliers.

(vii). In view of the above, CPPA-G strongly recommended not allowing KE or its affiliates to engage in the competitive supplier business to avoid anti-competitive practices in the market.

(viii). **EEL** submitted that it is a clear conflict of interest if the SOLR is allowed to hold a competitive supplier licence. Allowing this provides undue market power which may be abused, leading to anti-competitive practices. Ideally the network and supplier business should be separated to ensure non-discriminatory network access to SOLR and competitive suppliers.

(ix). **EDGoS** stated that while introduction of competition is a step in the right direction, the Authority may ensure that there is no compromise on the security of power supply without enhancing any cost burden on remaining consumers. Further, EDGoS supported the participation of KE in the CTBCM as competitive supplier subject to this being allowed under the law.

(x). **FBATI** commented that in order to encourage efficiency and fair competition, if allowed under the law, existing DISCOs be allowed to participate in the competitive market as a competitive supplier (new separate company) in the spirit of fair competition.

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(xi). **PHMEA** and **FPCCI** submitted that SOLR should not be allowed competitive supplier licence. Rather, KE should be unbundled, and its generation units be allowed competitive supplier licence as more competition will enable BPCs to procure at competitive rates.

(xii). **MoPD&SI** opined that the role of SOLR should be defined as per international practice. SOLR should not be allowed to have subsidiaries for market supply.

(xiii). **KE** submitted that allowing SOLR to participate as a competitive supplier would be in the spirit of competition and fair play. It was explained that KE was privatized in 2005 with exclusive territory of Karachi and its adjoining areas and, therefore, it has the right to participate and compete in the market in its service territory. In this regard, having experience of the business, it would be able to offer competitive terms to consumers which will be in the interest of competition. To ensure greater transparency, KE submitted that it shall participate as competitive supplier through a separate legal entity. KE further argued that allowing competitive supplier licence would enable fair competition as other IPPs/generators may also form separate entities to participate in the competitive market.

(xiv). KE explained that experience from international markets, especially the European Union energy markets, also suggests that a group can be allowed to have subsidiaries engaged in both distribution and supply businesses via separate legal entities.

(xv). It is important to mention here that during the proceedings of the Public Hearing, KE and CPPA-G were directed to share the international examples to support their respective positions in this matter. Accordingly, KE shared examples from international markets where certain groups are allowed to operate as competitive suppliers while also performing the role of SOLR as well as of network companies. In this regard, examples of E.ON Group (Czech Republic), EDF Energy (France and UK) and Scottish Power (UK) were submitted. Further to the said, KE during further consultations on the matter also shared various examples/reference cases from international markets including Macedonia and Greece to support its claim that competitive supplier and supplier of last resort licence may be granted under one common ownership.

Response of CPPA-G on KE's Submissions:

(xvi). The comments of the KE were shared with the CPPA-G as the MO for response. In this regard, CPPA-G submitted that taking the international examples or best international practices in isolation, without the consideration of the relevant regulatory environment and institutional arrangements may not be suitable. Several countries have established competition in the electricity market, and in each case, the regulatory environment has been adapted to the particular conditions of such country or region.

(xvii). Currently, there are many electricity markets around the world which have more than twenty (20) years of history and, therefore, have evolved from quite simple

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arrangements to extremely complex ones. Analyzing the current situation of such markets, without considering their evolution, may lead to misleading conclusions as not all developed arrangements have produced the results that were intended when particular decisions were taken in relation to the regulatory environment. Therefore, saying that a practice is good because it has been implemented in few jurisdictions is simply incorrect.

(xviii). CPPA-G further commented that in the public hearing KE showed some international examples wherein the same companies are allowed the roles of SoLR and competitive suppliers. However, in such case, the situation was different than is in Pakistan.

(xix). In the case of Turkey, where such practice was allowed, it proved to be a strong impediment for the entry of any other competitive supplier in the market. As explained in above comments, the Turkish Competition Authority (TCA) took actions against such anti-competitive practices and imposed fines to the tune of 40 million US dollars.

(xx). Regarding role of E.ON Energie in Czech Republic, CPPA-G submitted that KE is only matching the term of SoLR without considering the difference in functions between the SOLR of the two countries. The SoLR in Pakistan will perform its function, (i) as incumbent supplier to supply non-eligible (regulated) as well as those eligible consumers who have not opted for competitive supplier and (ii). as supplier of last resort to supply electric power to such eligible consumers whose competitive supplier defaults. However, in the case of Czech Republic the E.ON is performing only the function no. (ii), therefore comparing this example is misleading.

(xxi). Further, in the case of Czech Republic the whole supply business is liberalized. It may happen that, from time to time, a supplier gets bankrupt (or abandon the business) and its consumers would suddenly be left with no one to supply; then for such cases, the regulator in the Czech Republic has selected a bunch of companies, called last resort suppliers, which are obliged to offer regulated price to such consumers for a pre-specified period (six (06) months). The consumers of the competitive supplier, which has abandoned the business, are obliged to sign new contract with one of the available suppliers. In short, this example is not relevant with respect to Pakistan's market.

(xxii). Regarding Scottish Power (UK) and EDF in the UK, it was submitted that the practice in UK is similar with the case of Czech Republic which has been explained above.

(xxiii). In the case of EDF in France, it was submitted that EDF is performing similar functions as envisaged for SoLR in Pakistan. However, allowing the EDF to also act as competitive supplier has resulted in anti-competitive practices. As a result, only few insignificant other competitive suppliers exist, and France is considered the least competitive electricity market in Europe. It is important to point out here that French Competition Authority (FCA) imposed penalties on EDF for anti-competitive practices as EDF unfairly favored its subsidiary. In particular, EDF made various resources available to its subsidiaries that could not be replicated by its competitors.

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(xxiv). In the light of the submissions made above, it was concluded that most of the examples presented by KE are not relevant in the context of Pakistan. Further, in many such examples, the new competitive suppliers faced difficulties developing supply businesses due to the hurdles created by incumbent suppliers by favoring their competitive supplier subsidiaries.

Observations/Findings of the Authority:

(xxv). The Authority observes that review and analysis of competitive electricity markets around the world reveals that a pre-requisite for any successful competitive electricity market is the creation of a level playing field where market participants can compete to supply electric power to eligible consumers, i.e. the BPCs, independent of who owns the wire and pole/network business. The distribution licensee should provide the same quality of distribution services to all eligible consumers on a non-discriminatory basis, independent of the suppliers supplying electric power to those consumers. However, ensuring level-playing field has been a major challenge for the regulators around the world, as it is difficult to monitor day to day operation and the details on open access service provision on non-discriminatory basis by a distribution licensee. Therefore, to ensure that the distribution licensee does not provide preferential services or facilitates activities of its supplier business, the regulators generally obligate legal separation/unbundling of distribution business from the supplier activities/business. For example, this is a requirement in most power sectors in Europe, and also in Colombia i.e. Latin America.

(xxvi). Further to the above, international experience shows that the distribution companies, that also act as the SOLR, try to retain as large share of sales to eligible consumers as possible through offering preferential treatment in distribution and other services. In such case, if the SOLR being the holder of the distribution licence is additionally allowed to act as the competitive supplier, it will have unintended advantage to offer competitive rates as well as preferential distribution system services to the BPCs to retain them and that too at the expense of regulated consumers. For example, in Guatemala, the distribution licensee (which was also the SOLR) was allowed to create a separate competitive supplier entity that contracted with its eligible consumers. As a result, its SOLR was left with more expensive pre-existing power purchase agreements (the "PPAs") and fewer consumers. The unintentional result was an increase in the tariffs of the regulated consumers whereas the owner of the distribution company made larger profits through its separate competitive supplier company.

(xxvii). In view of the aforesaid, it is considered that KE, in VIU structure (having generation, transmission, distribution and supplier of last resort businesses), has a competitive advantage compared to other potential competitive suppliers. International experience shows that it will be difficult to monitor KE and ensure that it, being the distribution licensee, provides transparent and non-discriminatory open access services to other competitive suppliers. Further being the SOLR, KE's incentives will be to attract most of the BPCs and discourage new entrants, which may result in higher tariffs for the regulated consumers. The example of Guatemala shows a non-desired potential

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outcome, contrary with the intended objective of supplier competition and protecting consumers. Most importantly, the prospective competitive suppliers may perceive this as a significant barrier and prefer not to operate in the service territory of KE.

(xxviii). It is pertinent to note here that KE provided supporting material to corroborate its point of view that it can act as a competitive supplier to offer better and competitive services to eligible consumers by incorporation of a separate legal entity. KE has also shared examples from international markets where a group entity having presence in network also performs the functions of SOLR as well as that of a competitive supplier. As mentioned in the preceding paragraphs, examples of EON group (Czech Republic), EDF energy (France and UK), and Scottish Power (UK) were submitted. The Authority is of the opinion that although such cases exist in international markets, they are not relevant in the context and peculiarities of the power sector of Pakistan.

(xxix). Regarding EON group, it is noted that EON is one of the three private regional distribution system operators in Czech Republic. There are no regulated supply tariffs or special "competitive suppliers" as all consumers are eligible, meaning thereby that there is full retail competition. Although there are significant number of small suppliers, the supplier market is dominated by the incumbent unbundled i.e. legally separated suppliers of the said three distribution companies (totaling around 70% of market share in 2016). The SOLR is designated for those consumers who do not choose a supplier or whose supplier defaults. This is completely different and therefore lack relevance to the structure, design and scheme of the market design in Pakistan. Further, it is relevant to mention that European Commission in its report pertaining to barriers in retail competition identified the dominance of the said large players as critical barrier to competition.

(xxx). With regards to the example of EDF Energy (a state-owned entity), it is noted that in France there is a mandatory legal separation of generation, transmission and distribution companies, which is not the case for the KE as it maintains VIU structure. Further, European Commission in its report pertaining to barriers in retail competition, has highlighted that market participants consider that the market environment is protective of the state-owned companies, which is evident from the fact the EDF has approx. 70% share in the supply function.

(xxxi). In addition to the said, the example of UK is also not relevant in the context of Pakistan as there is full retail competition in UK whereas only wholesale competition is being introduced in Pakistan. Furthermore, there is a requirement for legal separation of different power sector activities/businesses in UK, and a company with a distribution licence cannot have a licence for other activities which is not the case with the KE having VIU structure.

(xxxii). Regarding additional reference cases of Macedonia and Greece, the Authority has observed that the examples provided by KE are not relevant to the power sector of Pakistan. As noted above, a VIU that owns and operates generation, transmission, distribution, and supply verticals within the same legal company is not permitted in the European Union or countries preparing to join the EU. This contrast makes any

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comparison invalid, as KE is already participating in all activities as a VIU within its licensed service territory.

(xxxiii). Moreover, in Europe, the regulations require legal separation between network activities (transmission and distribution network services) and the supply business, except for small distribution companies, which does not apply to KE. It is important to highlight that KE is a VIU with generation, transmission, distribution and supply businesses, owning and operating under regulated tariffs. Therefore, examples from Europe, where the same company owning networks and supply would be disallowed, regardless of its status as an SOLR, are not relevant in the context of the KE.

(xxxiv). It may be noted that while it is common in Europe for the same owner to have separate distribution and supply companies, this differs significantly from the KE's situation, as outlined above. The fundamental principle guiding the structure and regulations in European power sectors, as well as in other countries that have implemented electricity sector reforms with supply activity separation from distribution, is to enable effective competition in the supply market for the benefit of all consumers. In line with this principle, network companies should not engage in the commercial activities of buying and selling electricity. These principles also apply to the rationale behind not allowing integrated utilities like KE, which own generation, provide access and connections, develop and operate networks, to participate in the supply business. Merely creating a separate competitive supplier company shall not suffice. KE would need to legally separate all its supply activities into a dedicated supply-only company while maintaining separate networks and generation companies.

(xxxv). It is important to note that all the examples provided by the KE are from Europe. However, none of these examples involve a company that integrates all the activities like KE does, including supply. As mentioned earlier, the examples are not applicable to Pakistan, where the KE operates under the VIU structure. Therefore, if the VIU business is separated into distinct legal entities, namely separate network company, a separate generation company, and a separate supply company, then grant of competitive supplier licence could have been considered.

(xxxvi). Notwithstanding the above views of the Authority, it is pertinent to highlight that the NE Plan and the Supplier Rules have expressly prohibited the grant of competitive supplier and electric power trader licences to SOLRs or their affiliates. In this regard, Strategic Directive 48 of the NE Plan stipulates, "*Suppliers of Last Resort, including their affiliates and associated companies, shall not be eligible to obtain the competitive supplier license or electric power trader license.*" In addition, Rule 4(3) of the Supplier Rules prescribes, "*Where any person is holding a distribution as well as a supplier of last resort licence, neither such person nor its affiliate or associated company shall be eligible to obtain any other supply licence or electric power trader licence.*" Given the express prohibition w.r.t grant of the competitive supplier licence in the NE Plan and the Supplier Rules, the competitive supplier licence to the KE shall not be granted.

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(l). **Whether it is prudent to allow the SOLR to obtain the Trader Licence to act as generation aggregator and trade in the market through bilateral contracts?**

(i). **CPPA-G** submitted that for the reasons submitted for competitive supplier, the SOLR or any of its affiliates may not be allowed to engage in the trading business to discourage arbitrage opportunities.

(ii). **EEL** commented that allowing trader licence to KE would be a clear conflict of interest and SOLR should be restricted to supply business only.

(iii). **PHMEA** and **FPCCI** suggested that SOLR should not be allowed trader licence.

(iv). **MoPD&SI** submitted that SOLR should have a cost reflective tariff and no role in the trading /competitive market supply.

(v). **KE** submitted that the grant of trader licence does not pose any potential conflict as the trader can source power from generators to competitive suppliers similar to other IPPs and generators. Hence, it should also be allowed to obtain a trader licence since SOLR is a regulated side with no conflict with the role of trader. If KE as a SOLR can source power to mitigate the higher risk of demand uncertainty and at a lower cost by obtaining a trader licence, then it should be allowed to obtain a trader licence. Experience from international markets also suggest that SOLR is allowed to source power in a competitive and flexible way to manage its risk and reduce the cost of its SOLR service.

Observations/Findings of the Authority:

(vi). The viewpoint of the Authority regarding grant of competitive supplier licence to KE as detailed in the paragraphs 4(B)(k)(xxv) till 4(B)(k)(xxxv) is reiterated. Further, Strategic Directive 48 of the NE Plan and Rule 4(3) of the Supplier Rules expressly prohibit the grant of electric power trader licence to the SOLRs or their affiliates, therefore, the electric power trader licence cannot be granted to KE.

(m). **Whether it is prudent to allow the SOLR to charge under a separate category a higher tariff to bulk power consumers (BPCs), whose Competitive Supplier defaults?**

(i). **NTDC** submitted that there may be multiple options to handle the issue pertaining to allowing SOLR to charge a separate and higher tariff to BPCs whose competitive supplier defaults. There could be a higher tariff, or the consumers of defaulting suppliers may be charged the approved tariff of relevant consumer category. However, it is suggested to start with a simple approach in the initial phases of the market.

(ii). **CPPA-G** commented that this may be allowed in a time barred manner i.e. if the competitive supplier defaults and BPC reverts to the SOLR, the higher tariff may be applicable for one year or a shorter period after which the normal applicable tariff should apply. If the higher tariff is made applicable in perpetuity, this would dissuade BPCs

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from moving to bilateral markets and may be contrary to the intention of the policy makers and legislators to open and liberalize the market.

(iii). **SHAI** submitted that it understands BPCs will have option to leave their respective DISCO and procure power from competitive suppliers of their choice. However, in case the competitive supplier defaults, KE and DISCOs will be required to provide power to BPCs as SOLR. In this regard, a mechanism should be clarified by NEPRA which restricts such practices in ordinary course of business. SSHAI suggested that a one-time restoration charge be applied to BPCs each time they return to regulated mechanism instead of increase in tariff for such BPCs which could otherwise be detrimental to their productivity and competitiveness.

(iv). **PHMEA** and **FPCCI** commented that this will discourage consumers from moving to bilateral contracts. However, if it is allowed, it should be restricted to under six (6) months.

(v). **MoPD&SI** supported the proposition of charging higher tariffs stating that as the SOLR has to keep extra capacity available all the time to serve uncertain consumers. There should be a cost-reflective exit fee for BPCs and similarly a fixed re-entering fee based on cost of service of the SOLR.

(vi). **KE** stated that the role of SOLR is defined by the regulatory framework. It requires DISCOs and KE, in their role as SOLR, to provide electricity to BPCs who either choose not to participate in the CTBCM or whose competitive supplier fails to meet their contractual obligations. In this regard, charging higher tariffs to such BPCs which have not opted for competitive supplier is not prudent in the current scenario where surplus capacity exists in the grid, however, as the market dynamics change, charging of higher tariff may be used as a tool by the regulator to encourage BPCs to participate in CTBCM. However, to discourage the use of competitive suppliers on ordinary basis, SOLR charges a higher tariff to BPCs who opt for competitive market and whose competitive supplier defaults as also found in international markets. e.g. as per Market Monitoring Report of 2018 by ACER, in most member states in the European Union, prices of SOLR tend on average to be higher for consumers served by competitive suppliers. In this regard, imposing higher tariff as a market tool on consumers who have opted for competitive suppliers but returned to SOLR to incentivize them to shift to competitive supplier will enable better discipline and limit the use of SOLR on ordinary basis. Otherwise, it can have material implications from planning perspective for DISCOs/KE, consequentially burdening regulated consumers with higher costs.

Observations/Findings of the Authority:

(vii). The Authority observes that the issue under discussion has been addressed in Regulation 11 of the NEPRA Licensing (Electric Power Suppliers) Regulations, 2022 and Regulation 7 of the NEPRA Consumer Eligibility Criteria (Electric Power Suppliers) Regulations, 2022.

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(n). **Whether any time period should be set during which the SOLR will supply electric power to BPCs and after which the BPCs should shift to competitive supplier to encourage competition in the market or otherwise?**

(i). **CPPA-G** explained that the NEPRA Act already provides for a one (1) year notice period by the BPCs when they intend to stop purchasing electric power from the respective DISCO i.e. SOLR. The proposal made in the Plan would be anti-competitive and delay the market reforms. The process of BPCs moving to bilateral market should be made easier rather than creating further hurdles.

(ii). **EEL** pointed out that section 22 of the Act makes it clear that where BPCs intend to stop procuring power from DISCO, they may do so by providing a one (1) year notice, therefore the proposal should not be entertained.

(iii). **PHMEA** and **FPCC** submitted that the time period for BPCs to switch to competitive suppliers should be as little as three to six months.

(iv). **KATI** maintained that eligible consumers require clarity if they are required to provide notice of switching to DISCOs to avoid capacity charges and help DISCOs plan their future generation accordingly.

(v). **MoPD&SI** remarked that the decision should be based on market mechanisms, allowing whichever supplier offers better services and tariffs to serve the BPCs. The choice should be left to the BPCs, they can decide whether to continue with SOLR or not. There should be no fixed time limit for BPCs to exit SOLR service. However, BPCs should give a reasonable notice period before leaving the SOLR.

(vi). **KE** submitted that keeping in view the current surplus capacity which is expected to prevail till 2030 as per IGCEP, moving of BPCs/eligible consumers into bilateral contracts, may lead to further surplus capacity, thus exacerbating the issue of underutilization and stranded costs in the form of idle capacity. Therefore, SOLR should continue to supply electric power to BPCs at least for a certain time period – to be prescribed by the Authority after consultation with all relevant stakeholders. Later, the regulator in view of market conditions may implement different tools to eventually shift BPCs to competitive suppliers in line with best international practices, i.e. imposing higher last resort supplier tariffs compared to those of competitive suppliers and setting time limits for BPCs to shift to the competitive market.

Observations/Findings of the Authority:

(vii). The Authority observes that under Section 22 of the NEPRA Act, a BPC is required to convey its intention by writing one year in advance, if it intends to stop purchase of electric power from a distribution company (as SOLR). It is important to mention here that the SOLR is not allowed to require any BPC to shift to the CS rather in terms of Section 22 of the NEPRA Act, it is the discretion of the BPC whether it intends to continue supply from the SOLR or shift to the CS. Therefore, there is no need to set a time period in this regard.

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(o). **Whether it is prudent for NEPRA to determine tariff for the generators supplying electric power through bilateral contracts for the purpose of merit order and other relevant scenarios?**

(i). **NTDC** suggested that the Authority may not determine generation tariff of companies selling electric power through bilateral arrangements.

(ii). **EEL** commented that determining tariff for companies selling through bilateral contracts would add unnecessary delays and uncertainty in the market and would defeat the purpose of CTBCM. The objective of liberalization of power sector is to reduce regulation and allow the market to create the required efficiencies. The success of this approach is abundantly clear from existing market that has been developed whereby generation companies have been supplying power to BPCs. Therefore, competitive suppliers and the consumers should have freedom to negotiate the tariff rates, terms and conditions bilaterally. Globally, it has been observed that liberalized markets are efficient, and investors are rational. Hence the regulatory oversight is stringent on the licensing regime but deregulated and liberalized on the tariff part. Thus, in order to promote efficient liberalized market, the tariff part should be kept unregulated, while the Authority should maintain regulatory oversight on the licensing regime. Generators supplying power through bilateral contracts should be permitted to negotiate and determine the cost of supply bilaterally with the respective market participants. Inclusion of regulator in this process would add additional time and bureaucratic costs which are antithetical to the open/competitive market.

(iii). **EDGoS** reasoned that there should be highest considerations for the end of exclusivity/monopoly and complete free environment for the market players to create the required efficiencies and bilateral participation at their own investment rewards and risks. Therefore, all consumers should have freedom to negotiate the tariff rates, terms and conditions bilaterally as globally adopted in developed markets through choice of suppliers to all consumers at negotiated prices. Thus, in order to promote market efficiency and participation, the tariff should be kept unregulated while the Authority should maintain stringent regulatory oversight on the licensing regime, performance standards, and monitoring role of market to avoid any market power. Further, strict surveillance be ensured for the successful implementation of the CTBCM by the planned date in the larger interest of the consumers, resolving sector issues, and helping in socio-economic development and prosperity of the country.

(iv). **PHMEA** and **FPCCI** commented that this will increase time to negotiate the contract and defeat the purpose of choice to BPCs.

(v). **MoPD&SI** suggested that NEPRA and SO should have knowledge and access to the bilateral PPAs. No determination of tariff is required for competitive market.

(vi). **KE** submitted that under CTBCM, the demand (both regulated and non-regulated) is proposed to be met through central dispatch executed on the basis of operating cost of generators. Further, imbalances for DISCOs/KE in their role as suppliers for regulated consumers will be settled in the market at the prevailing marginal prices. While the bilateral contract price should in KE's opinion be unregulated, the operating costs for the purpose of central dispatch be subject to NEPRA's determination, considering possible implications for regulated consumers.

Observations/Findings of the Authority:

(vii). The Authority observes that the tariff of generation companies selling electric power through bilateral arrangements needs not to be determined by the Authority to encourage competition and to move towards the deregulated market. Regulatory oversight will be exercised through license/concurrence/ performance standards tools and other applicable documents. Further, the mechanism for declaration of variable generation cost by generators that participate in the CTBCM is already covered in the SDC of the Grid Code and other applicable documents and shall be applicable accordingly.

(p). **Whether the uniform tariff policy should continue, or end consumer tariffs be charged based on cost of service to do away with cross-subsidies, in order to promote the efficient, competitive and liquid power market development under CTBCM?**

(i). **NTDC** commented that the uniform tariff policy may be dealt with in accordance with the NEPRA Act and the applicable policies.

(ii). **EEL** submitted that this was addressed in the CTBCM determination and should not be reconsidered, keeping in view that the market commencement is months away. Concerning imposition of stranded costs and cross-subsidy and adjustment of T&D losses on BPCs, EEL stated that this is not relevant in relation to KE's Integration Plan and should not be considered. Imposition of any cost on BPCs for directly procuring power from generator/supplier or trader would defeat the purpose of liberalizing the market. BPCs should bear the cost of procuring power bilaterally which comes with its own risks. Currently BPCs have the right to switch to captive generation or procuring power from generation companies directly without imposition of such cross-subsidies. KE's analysis paints a rather bleak scenario i.e., all BPCs moving to bilateral contracts as the foregone conclusion which is incorrect. By imposing stranded costs, T&D losses, and cross subsidies, the bilateral market appears unviable/unattractive even before it is implemented. Therefore, it was requested to dismiss such proposals in the long-term interest of the market especially when BPCs are procuring power directly from generation companies or traders.

(iii). **FBATI** commented that promoting and enhancing competition in the power sector is a step in the right direction, however, the required investments for improvement in distribution network should continue without any additional cost burden on remaining regulated consumers.

(iv). **KATI** commented that when BPCs shift to competitive suppliers, it will increase the burden on regulated consumers who are cross subsidized by larger consumers including BPCs eligible to move into bilateral contracts as per the CTBCM design. Even in the KATI territory, many smaller industries may also face this challenge. At this important moment, policies/mechanisms should be prepared in a manner which

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prevents any increase in tariff while ensuring that KE and DISCOs remain sustainable to continue to execute their investment plans for the provision of safe and reliable power supply.

(v). **MoPD&SI** stated that there is no nexus between cross subsidies and uniform tariff. Cross subsidies should be eliminated in a phased manner over 10-15 years' time.

(vi). **KE** submitted that DISCOs/KE are obligated to charge lower tariffs to protected class of consumers whereas higher slab consumers are charged higher tariffs as it includes cross-subsidy which has no nexus with efficiency/costs of distribution companies. Currently, the cross-subsidy element is not separately determined/reflected in the tariff. Therefore, it is recommended that: (i). end-consumer tariff be determined on cost of service basis, (ii). cross subsidy surcharge and uniform tariff is government's prerogative and shall continue in line with socio-economic policy objectives of the government and subsidy phase out plan. Further, it was proposed that cross subsidy surcharge be transparently determined and reflected separately for each category and to ensure that no undue advantage is allowed to consumers opting for bilateral contracts/open markets, the same shall also be uniformly applied to consumers opting for bilateral contracts/open markets.

Observations/Findings of the Authority:

(vii). The Authority observes that provisions of sub-section 4 of Section 31 of the NEPRA Act and clause 5.6.3 of the NE Policy and other applicable documents regarding the applicability of uniform tariff, as amended from time to time, shall prevail and be applicable in this regard.

(q). **Whether the existing Power Purchase Agreements (PPAs)/ Energy Purchase Agreements (EPAs) should be converted into a separate contract design whereby KE will not be exposed to the risk of imbalances to the extent of their contracted /allocated legacy PPAs / EPAs capacity?**

(i). **NTDC** suggested that as there will be a single basket price, therefore KE shall be exposed to the risk of imbalances to the extent of its contracted/allocated legacy PPAs/EPAs capacity. In case of imbalances from KE end, the whole system will be exposed to its consequences.

(ii). **CPPA-G** submitted that after consultation and deliberations with KE and other stakeholders, the mechanism for treatment of legacy contracts in the CTBCM is designed in such a manner that there will be no imbalance from the legacy contracts if DISCOs/KE draw power within their contracted limits.

(iii). **MoPD&SI** agreed that the existing PPAs / EPAs should be converted into a separate contract design whereby KE will not be exposed to the risk of imbalances to the extent of its contracted / allocated legacy PPAs / EPAs capacity.

(iv). **KE** submitted that conversion of legacy contracts to generation following supply contracts expose DISCOs/KE to the risk of imbalances despite being within their contracted capacity. It emphasized that DISCOS and KE should not be exposed to risk of imbalances to the extent of their contracted capacity since power purchase cost is a

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pass-through item in tariff and imbalances may result in implications for regulated consumers. KE stated that it has been agreed with CPPA-G that a separate contract design will be proposed for legacy contracts to ensure that DISCOs/KE are not exposed to the risk of imbalance as long as they are within the allocated/ contracted capacity.

Observations/Findings of the Authority:

(v). The Authority observes that the matter has been addressed in the approved Market Commercial Code and the same shall be applicable.

(r). **Whether the cost of out-of-merit dispatch for system security purposes be a part of the marginal cost or otherwise?**

(i). **NTDC** commented that the mechanism for the allocation of congestion, ancillary services, start-up costs and any other costs will be covered in the Market Commercial Code.

(ii). **CPPA-G** submitted that out of merit dispatched plants will not be considered for calculating marginal price because they do not reflect cost variations with the demand supply balance.

(iii). **EEL** commented that, in CTBCM, marginal price will be the reference cost for buying and selling power.

(iv). **MOPD&SI** remarked that it should be part of the marginal price. However, a proper mechanism may be developed for determination of cost arising from out of merit dispatch.

(v). **KE** submitted that as per the detailed design, cost of out-of-merit dispatch for system security purposes will be separately determined and allocated to total demand of the respective zone. However, clarity is required with regard to mechanism for determination of such cost which should be designed in consultation with all stakeholders.

Observations/Findings of the Authority:

(vi). The Authority observes that as per the Detailed Design, the cost of out of merit dispatch shall not form part of the marginal price calculation. Further, a detailed methodology for the calculation of marginal prices has been provided in the approved Market Commercial Code and shall be applicable.

5. **<u>Consultative Session with the Stakeholders:</u>**

(A). The Authority considering the latest developments in the policy and regulatory framework of the power sector especially with regards to notification of CTBCM related rules and regulations under the NEPRA Act, the NE Plan, and signing of the PPAA and the ICA by KE with CPPA-G and NTDC respectively, decided to convene a consultative session with the stakeholders including KE, NTDC as the TNO and the SO, and CPPA-G as the agent of DISCOs and the MO to deliberate the open issues.

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(B). The consultative session was held on August 22, 2024, wherein the framed Issues were deliberated. The following paragraphs present the issues discussed during the consultative session, comments/input from the aforementioned stakeholders, and analysis by the Authority on the same.

(a). **How the compliance of the amended NEPRA Act 2018, National Electricity Policy 2021, Grid Code 2023 and other applicable documents regarding the single System Operator (the "SO") shall be achieved?**

(i). **KE** commented that as per its Transmission Licence, which is valid till 2030, it is the transmission network operator and system operator for its service territory. Accordingly, KE owns and manages the transmission network and performs the functions of the system operator through its Load Dispatch Centre (LDC). Further, Section 25 of the NEPRA Act provides that the Authority may grant licenses to one or more licensees for the territory served by KE. The existing transmission licence of KE was also granted under the said Section. In addition, KE submitted that the amended NEPRA Act of 2018 is to operate prospectively and as per savings provided in Section 50 of the same, all actions taken including licenses issued prior to commencement of the 2018 amendments are protected. Hence, KE is compliant with the NEPRA Act and other applicable documents. It was submitted that KE has agreed in principle to central dispatch for cost optimization and tariff considerations. KE's generators will be included in the single EMO and dispatched by the single SO based on technical considerations of the power plants. For execution of central dispatch, SO shall communicate its dispatch instructions to the LDC as per the SOP, which will coordinate with KE's power plants/IPPs. Furthermore, KE will provide access of its generation fleet to the SO from its communication channel via SCADA at LDC.

(ii). Further to the above, KE submitted that pursuant to Strategic Directive 38 of the NE Plan, integration of the system operations of both the NTDC and the KE systems is to be carried out as per the agreed upon SOP. In this regard, KE has prepared a draft SOP which is under deliberation with the NTDC/SO, and the parties are engaged in this matter.

(iii). **SO** commented that compliance of central dispatch by a single SO will be made in accordance with the Integration Plan. Currently, the SO is carrying out the dispatch of generation fleet connected to the National Grid, with KE system being operated as "Interconnector (Tie-Line)" as per the ICA and the PPAA signed with the KE, under the provisions of the Grid Code. NTDC is obligated to provide a firm power supply of 1000 MW to KE from the National Grid.

(iv). In addition, SO pointed out the lack of clarity on the future implementation of ICA and PPAA after KE's integration into central dispatch, in terms of the maximum and minimum flow limits on the tie-lines (500 kV and 220 kV). In this regard, during the discussion session, NTDC as TNO clarified and confirmed that the ICA does not have any restrictive provisions with regards to single SO and EMO implementation. Further, the ICA acknowledges central dispatch to the extent of interconnection capacity. The ICA may be amended, if required, to achieve the goal of KE Integration into CTBCM.

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(v). Furthermore, SO commented that the core objective is to have a single EMO which reflects the entire generation fleet including CPPA-G and KE contracted legacy power plants, merchant plants and bilaterally contracted power plants under the CTBCM. The SO, under its licence shall take dispatch decisions for all plants, as per the SDC of the Grid Code. To ensure that all generation plants in the KE zone act as CDGUs as per the Grid Code, regulatory directions in the KE Integration Plan would ascertain the guidelines for power plants of KE to be integrated into central dispatch.

(vi). In addition, since KE has a legacy of being the SO by virtue of its licence and has tacit operational knowledge of its system, the dispatch instructions to KE generation plants will be passed through LDC for a certain period. KE will monitor its own system constraints and will provide generation requirements and availability of its network after incorporation of its own system's constraints. However, for smooth system operations and unity of command, it must be ensured that all parties remain bound within the confines of the Grid Code and SO instructions be implemented immediately and prudently.

(vii). Lastly, the SO commented that KE plants have a legacy PPA with KE by virtue of its respective licenses. The applicability of the Grid Code w.r.t central dispatch and subsequent jurisdiction of SO being central dispatcher may be embedded in the KE's legacy PPAs.

(viii). **CPPA-G** commented that KE submitted its Integration Plan in 2021 covering mainly the current market structure of the KE area, evaluation of the CTBCM and need for sustainable framework, evaluation and implementation of the SCED, mechanism for allocation of existing PPAs, supply from National Grid and the Implementation Roadmap. Under the approved test run plan for the CTBCM, actions approved for KE included deployment of SMS, integration in Marginal Price Application, integration in SDXP and determination of Capacity Obligations. As KE Integration Plan was not approved, KE related transactions were not tested. Once the KE Integration Plan is approved by Authority and its related tasks are completed, then at least six (06) months test run will be required to integrate KE in CTBCM.

(ix). Further, CPPA-G submitted that to achieve the objectives of single EMO, the plants in the territory of KE shall be registered and updated in the merit order. The data of the plants owned by KE would be updated by it, while the other plants would provide data like other IPPs do today.

(x). In the long term, generators owned or contracted by KE will be integrated with SCADA-III project and in the short-term desktop tool of SO will be used to prepare the IOS. KE generators and its IPPs should provide all necessary data, duly verified, for preparation of the IOS. In the real-time operations, the SO would instruct the power plants either owned or contracted by KE just as any other generator.

Observations/Findings of the Authority:

(xi). The observations/findings of the Authority as detailed in paragraphs 4(B)(a)(viii) till 4(B)(a)(xvi) are reiterated here.

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(b). **What will be the impact on the consumer-end tariff and power system as whole with KE's integration into central economic dispatch through the SO?**

(i). **KE** submitted that based on the discussions, potential benefit from cost optimization subject to tariff considerations, and considering the overall market design, it in principle agrees to central dispatch. KE further commented that having a single marginal price for the system will provide better visibility and avoid complexities which may otherwise arise, especially in settlement of imbalances. Annual savings, if any, due to central economic dispatch can be determined by CPPA-G only having overall visibility of the system, however, KE estimated that integrated operations of the two system under a centralized economic dispatch model is expected to result in cost optimization and annual savings in EPP cost of around PKR one (1) billion for KE system. Further, at the time of formulation of the Integration Plan, a study was conducted by CPPA-G in 2021 to evaluate the benefits of KE's integration into central dispatch, according to which integrated operations were expected to result in a benefit of around PKR nine hundred (900) million at national level.

(ii). **SO** commented that the impact on power system with KE's integration into centralized economic dispatch through SO shall be: (i). single EMO including all generators of KE's system; (ii). active real-time coordination/communication between SO and KE for generator dispatch instructions; (iii). KE to act as regional control center for control of its network, in coordination with SO; (iv). import/export of power through KE tie-lines to be dependent on the combined EMO instead of a firm supply quantum. The impact on consumer-end tariff and its rationalization as well as Marginal Pricing mechanism needs to be assessed.

(iii). **CPPA-G** commented that a study was conducted in 2021 with the following conclusions: (i). the results of the study depicted that centralized dispatch of both systems will reduce the total operation cost of power generation in the country; (ii). single dispatch will also open possibilities of making improvements in other areas such as reliability, long term planning, renewables integration and reserves optimization etc.

Observations/Findings of the Authority:

(iv). The Authority observes that the integration of the KE into central economic dispatch is expected to yield significant benefits, including cost optimization, improved visibility, and enhanced renewables integration, particularly in terms of reliability and stability enhancing grid resilience for a more robust, adaptable, and efficient grid, better equipped to handle disturbances and evolving energy demands. The study quoted above estimated annual savings of around PKR nine hundred (900) million as a result of centralized economic dispatch of the two systems. The integration will ensure compliance with a single EMO, enable real-time coordination between the SO and the KE, and optimize import/export through the KE tie-lines. However, it needs to be pointed out that the aforementioned study was carried out in year 2021. A lot of dynamics have changed, and interconnection capacity is also augmented with recent commissioning of 500kV KKI grid station for an additional 1000 MW power export to the KE from the national grid. Accordingly, the assessment of potential benefits from

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the integration of two systems is not up to date. Accordingly, NTDC, ISMO, KE and CPPA-G are directed to update the study upto the determined net transfer capacity between the two systems including unconstrained scenario dispatch analysis and submit to the Authority within three (03) months for information and necessary directions in the matter.

(v). Notwithstanding the above, since generation on the KE's end is expensive as compared to the CPPA-G system, therefore, integration of two systems in central economic dispatch based on the single SCED and the SCUC criteria will potentially be beneficial for the power sector as well as aligned with the provisions of the NEPRA Act, the NE Policy, the NE Plan, Grid Code and other applicable documents.

(c). **What will be the coordination mechanism/SOP between the SO and KE for scheduling and dispatching of power plants connected in KE system?**

(i). **KE** commented that central dispatch in KE's service area shall be implemented as per the agreed upon SOP between KE and NTDC/SO as also stated in the Strategic Directive 38 of the NE Plan. In this regard, a joint Cross Functional Team (CFT) of KE and SO has been formed to work out the modalities of the central dispatch through an agreed upon SOP. The draft SOP has been prepared and shared with NTDC/SO by KE. As per the draft SOP, SO shall communicate its dispatch instructions to KE's LDC which will coordinate with KE's power plants/IPPs for execution of central dispatch.

(ii). **SO** commented that the coordination mechanism between the SO and KE shall be governed through an SOP. A joint team of SO and KE has been formed, and multiple rounds of consultation have been conducted to develop the SOP. The SOP shall be finalized in accordance with the Authority's determination regarding KE Integration Plan.

(iii). The SOP shall detail the mechanism for: (i). communication of dispatch instructions to KE generators through LDC; (ii). provision of real-time visibility of KE generation and tie-line flow through web portal, and subsequently through SCADA integration; (iii). coordination for network/stability constraints, emergencies, operational planning, marginal price calculation etc.; and (iv). allocation of Ancillary Services/Congestion Management.

(iv). For operational planning, SO will prepare the Day-Ahead IOS either through NCP or SCADA's HTS tool (when available) as per the plant availability communicated by KE. Unlike self-dispatched markets where actual generation schedules are finalized in the Day-Ahead Market (DAM) and scope of SO is only upto balancing, the purpose of the above-mentioned day-ahead operational plan i.e., IOS is to provide an overview of the expected generation profile of the next day for information and to maintain operational readiness of SO, KE and the Generators.

(v). In real-time, any deviation observed in the dispatch (Unit Commitment, Load Following, and Frequency Control) shall be managed by the SO as per the provisions of SEC-2 of SDC of the Grid Code. After commissioning of SCADA, tools such as AGC, ED & UC shall further enhance the efficiency of the dispatch. The dispatch instruction

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(vi). **CPPA-G** commented that mechanism for scheduling and dispatch will be exactly as given in the SDC of the Grid Code. Further, just like any other generator today, the instructions for sync/desync/dispatch will be given to generators either owned or contracted by KE. The dispatch instructions will be documented in SDXP and through telephonic communication.

Observations/Findings of the Authority:

(vii). As observed in the issue 4(B)(a) above, the SOP for coordination between KE and SO is currently being prepared which will cover the detailed modalities for coordination. Accordingly, KE and SO are directed to finalize the SOP within one (01) month of the approval of the Integration Plan and submit for information of the Authority, covering the minimum aspects as given in the observations and decision part of this determination.

(d). **How generation companies contracted with KE but connected with NTDC transmission network be considered in unified economic merit order (EMO) and dispatched by the SO?**

(i). **KE** commented that its contracted generators connected with NTDC system shall form part of a unified EMO and shall be dispatched on the basis of EPP in the same manner as any other Legacy Generator in the National Pool. Any settlement / cost variation shall be passed through in tariff as per NEPRA's approved mechanism.

(ii). **SO** commented that the NEPRA Act and regulations provide clear guidelines for any such arrangements and also added that Jamshoro Coal Power Plant has been synchronized with the National Grid for testing. Its PPA is expected to be signed with KE instead of CPPA-G. Inclusion of KE generators in central dispatch will address the issue of dispatch of generation companies contracted with KE but connected with NTDC transmission network. The commercial settlement may be carried out through Market Commercial Code and if any amendments in PPAA are required same can be made.

(iii). **CPPA-G** commented that KE would provide the variable cost and availability of plants and the same would be dispatched on the principles of SCED.

Observations/Findings of the Authority:

(iv). The Authority observes that since there will be single EMO of the entire country after the integration of KE in the central dispatch, the power plants shall be dispatched by the SO in accordance with the principles of SCED under the Grid Code irrespective of whether they are contracted with KE, CPPA-G, DISCO or any bulk power consumer under the CTBCM.

(e). **What shall be the settlement mechanism of the energy and capacity/PPA, when the KE imports electric power through generation companies (e.g., Uzghor etc.) connected to NTDC system but contracted with KE?**

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(i). **KE** pointed out that its contracted generators connected with NTDC system shall form part of unified EMO and shall be dispatched on the basis of the EPP in the same manner as any other legacy generator in the national pool. KE commented that settlement or any cost variation shall be passed through in tariff as per NEPRA's approved mechanism.

(ii). **CPPA-G** maintained that this matter is related to the ICA between KE and NTDC. The modalities of this arrangement will be finalized through the ICA which will be duly approved by the Authority. CPPA-G commented that any such arrangement should be in conformity with the CTBCM design as approved by the Authority. Also, the imbalances are not considered as uneconomical as in the centrally dispatched markets, the most economical generators are dispatched subject to security constraints. Therefore, the dispatch is always on the least cost basis irrespective of bilateral contracts. Lastly, if any generator is installed behind a transmission constraint, then such generator shall not be granted a connection as per prudent practice and applicable framework.

(iii). **SO** commented that the settlement mechanism for any such dispatch is stipulated in the Market Commercial Code. Accordingly, SO will apply post-dispatch Operational Labels as per the dispatch decisions carried out. However, it may be noted that since KE is an import constrained zone, the majority of Generators might qualify for the "Must Stop" or "Must Run" flag. The effects of these constrained related flags on Marginal Price need to be assessed and Marginal Price methodology should be adjusted, implemented and tested accordingly, along with integration with SDXP, MSP and MMS.

Observations/Findings of the Authority:

(iv). The Authority is of the considered opinion that in terms of the PPAA and the ICA signed between the KE, CPPA-G and NTDC respectively, as amended from time to time, the latter are obliged to supply power to the former up to the KE's interconnections capacity with NTDC, wherein, supply up to 1,000 MW will be on a firm basis which shall not be curtailed due to any reason other than force majeure events and emergencies, while supply over and above the firm 1,000 MW will be on a pro-rata basis at par with XW-DISCOs. However, the PPAA and ICA are silent with respect to the settlement of energy and capacity contracted by the KE but connected with the NTDC system.

(v). In this regard, a discussion was held with the NTDC, the SO and the CPPA-G on September 09, 2024, wherein they were of the understanding that the energy contracted by the KE under a bilateral agreement with a generation company connected to the NTDC system would be settled first, followed by the energy supplied by the NTDC and CPPA-G under the PPAA and ICA. This settlement is explained with a scenario-based example as follows:

If the total interconnection capacity is 2050 MW and KE has a bilateral contract with a 600 MW power plant connected to the NTDC network, then if KE draws

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up to the full interconnection capacity of 2050 MW and the bilaterally contracted 600 MW plant is fully loaded as per the SCED, it will be treated as follows:

NTDC will be considered to have supplied 1450 MW to KE, which will be settled under the terms of the PPAA/ICA. The remaining 600 MW will be settled separately under the bilateral agreement between KE and the generation company.

(vi). Notwithstanding the above understanding, the Authority is of the opinion that settlement of energy supplied through the interconnection between the KE and the NTDC is a subject of the PPAA and the ICA; therefore, the said agreements need to be amended to cover the settlement arrangement in case the KE contracts with generators connected with the NTDC system. Accordingly, the KE, the NTDC and the CPPA-G are directed to revise the PPAA and the ICA to cover the arrangement under discussion and submit the same for approval of the Authority within three (03) months of the approval of the Integration Plan.

(f). **What is the status of KE readiness with respect to infrastructure and technological interventions such as load dispatch centre (LDC), network interconnections, SCADA and metering system etc. for effective integration of two systems i.e. KE and NTDC?**

(i). **KE** commented that its system is equipped with SCADA. Further, the commissioning of two new interconnections is in final phase: (i). Dhabeji grid was energized in February 2024 and its interconnection with NTDC Transmission line is expected by the end of September 2024, and (ii). KKI grid is also ready and its interim interconnection with NTDC Transmission line is planned from 5th September 2024. Final arrangement shall be made after commissioning of 500kV K2K3 / PQEPCL circuit by NTDC.

(ii). It was submitted that all primary meters installed at Common Delivery Points (CDPs) in KE system are SMS enabled. Further, with respect to installation of backup meters at CDPs pertaining to KE power plants, assessment is being done and in case of any additional investment required for installation of these backup meters, KE will approach NEPRA accordingly.

(iii). **SO** commented that major data requirements of SO are: (i). real-time visibility of plant-wise generation and tie-line flow; (ii). integration with SO Data Exchange Portal (SDXP)(iii). integration with SCADA-III after completion of project, in accordance with clause 9.5.3 of OC-9 (Operational Communication and Data Retention) of the Grid Code.

(iv). **CPPA-G** commented that KE submitted its Integration Plan in 2021 covering mainly the current market structure of the KE area, evaluation of the CTBCM and need for sustainable framework, evaluation and implementation of the SCED, mechanism for allocation of existing PPAs, supply from National Grid and the Implementation Roadmap. Under the approved test run plan for the CTBCM, actions approved for KE included deployment of SMS, integration in Marginal Price Application, integration in SDXP and determination of Capacity Obligations. As KE Integration Plan was not

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approved, KE related transactions were not tested. Once the KE Integration Plan is approved by Authority and its related tasks are completed, then at least six months test run will be required to integrate KE in CTBCM.

Observations/Findings of the Authority:

(v). The Authority observes that although KE has the necessary infrastructure in place; yet, the integration of the SCADA systems of the SO and the KE, the inclusion of power plants connected with the KE systems in the SDXP portal of the SO, as well as necessary integration of KE's Secured Metering System (the "SMS") with the Market Management System (MMS) of the MO are still pending which has already been highlighted by the CPPA-G. Accordingly, KE and ISMO are required to take necessary measures with respect to integration of the KE's system, and complete the entire exercise, including any test run, within a period of three (03) months from the approval of the Integration Plan with fortnightly progress reports submitted to the Authority. It is important to mention that the MO has requested to allow at-least six (06) months for the test run regarding integration of the KE. The Authority does not concur with the proposal. The main purpose of a test run is to evaluate the processes, methodologies, and formulas outlined in the Market Commercial Code, as well as to verify the integrity of the MMS and other systems. This testing has already been completed by the MO during the CTBCM approved test run plan. Accordingly, a period of three (03) months is deemed sufficient for the integration and testing of the KE's system. Furthermore, it is noted that in the event the CMOD is declared prior to the completion of the test run, the CMOD shall be applicable across the country on a uniform basis. However, the declaration of CMOD shall not preclude the continuation and completion of the test run. This is in view of the fact that the initiation of actual market transactions will not occur immediately upon the CMOD, as the BPCs are required to serve a one-year notice period before transitioning to competitive suppliers, thereby allowing for a gradual commencement of market operations.

(g). **What will be the impact on the tariff of KE's owned power plants after integration into central dispatch under unified EMO? Whether any decision pertaining to tariff should be made part of integration plan or the same should be dealt with separately in a tariff determination already under process?**

(i). **KE** conveyed that its plants would be integrated in central economic dispatch based on the tariff determined by the Authority which is in line with the practice followed for IPPs and GENCOs connected with the National Grid. The Integration of KE plants in central dispatch will not have any impact on tariff of KE's generation plants. However, consumers will benefit through optimization of EPP upon integration of KE's plant in the central dispatch.

(ii). **CPPA-G** reiterated its position as stated in paragraph 5(B)(b)(iii).

Observations/Findings of the Authority:

(iii). The Authority considers that there will be no impact on the determined tariff of the KE's power plants, as this process is transparent to the dispatch of power plants

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under the SCED pursuant to the Grid Code. It is pertinent to mention that the Integration Plan pertains to the KE's integration into the central economic dispatch, the ISP as well as in the MMS, which is distinct from tariff determination for the KE's owned power plants. The tariff related matters shall be considered in accordance with the relevant determination(s) of the Authority.

(h). **Whether there are any issues experienced during the integration of KE into IGCEP and TSEP in order to achieve the objectives of resource optimization for least cost procurement and optimal network expansion?**

(i). **KE** commented that as per its Transmission License, KE is the Planner for its service territory. It has faced significant challenges in the integration of KE into IGCEP and TSEP, including but not limited to: (i). submission of IGCEP by NTDC to NEPRA without incorporating the feedback / changes proposed and submitted by KE; (ii). non-consideration of the firm projects approved by the NEPRA in KE's PAP, specifically projects for which the bidding process has already been initiated. As an example, KE's 640 MW of renewable projects for which RFPs were approved after a rigorous regulatory process have not been considered in the draft IGCEP 2024-34. Fifteen bids have already been received for 150 MW of solar projects in Winder and Bela; (iii). non-consideration of contractual obligations for KE Plants; (iv). consideration of firm supply of 2,050 MW to KE from National Grid only till year 2034.

(ii). KE informed that it has submitted its detailed comments on the draft IGCEP 2024-34 to NEPRA for consideration. In addition, KE sought permission to prepare and implement its own least cost Generation and Transmission plan with the approval of the Regulator in line with criteria set for IGCEP and TSEP. KE shall share its approved least cost Generation and Transmission Plan with NTDC /SO for consolidation.

(iii). **SO** argued that no issues were faced during the integration of KE into IGCEP. In order to integrate KE into IGCEP, the export of 2,050 MW power from NTDC to KE has been modelled. Moreover, candidate technologies i.e., on local coal and blocks of wind and solar PV have also been considered for KE system. KE provided its available transmission network model for all the spot years to NTDC. No issues were faced during incorporation of the KE network model into NTDC network while preparing TSEP 2024.

Observations/Findings of the Authority:

(iv). The Authority observes that the issues raised by the KE, particularly regarding the firm supply of 2050 MW from the national grid, after which the KE will need to arrange its own supply, require careful consideration. Therefore, the ISP including the IGCEP and the TSEP must account for this and propose additional generation capacity optimization in plans, for subsequent procurement by the KE under its approved PAP, keeping in view the firm commitments of the Government of Pakistan (the "GoP") in the PPAA and the ICA. However, it is also important to note that separate proceedings for the approval of the ISP 2024 are currently underway, and any necessary directions regarding this matter will be deliberated and included in the relevant decision or determination on the ISP.

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(i). **What is understanding of KE with regards to its request for grant of Competitive Supplier and Trader licenses in its service territory, considering provisions of National Electricity Plan, Electric Power Supplier and Trader Eligibility Criteria Rules notified by the Federal Government?**

(i). **KE** contended that in the Integration Plan, it has requested to allow participation of KE as a competitive supplier through its wholly owned subsidiary. It was commented that the Supplier Rules and the NE Plan have been prepared under Section 23E and Section 14A of the NEPRA Act, and hence the same should be in line with the NEPRA Act – there is no such provision which restricts an SoLR from competing in the competitive market in the NEPRA Act. KE informed that it has written multiple letters to Power Division for reconsideration of this restriction and remains engaged with them. KE further added that it was privatized in 2005 as a VIU with exclusive territory of Karachi and its adjoining areas and, hence it is KE's right to participate and compete in the competitive market including in its own service territory which otherwise would be against the objectives of competition as well as KE's privatization. Allowing SoLR such as KE to participate as competitive supplier in its own service area through its subsidiary, will also be in the spirit of competition and level playing field, as it would allow KE (through its subsidiary) to compete with other market players serving the eligible consumers, in addition to serving as per its licensed obligation of SoLR for the regulated market. KE asserted that no intrinsic advantage over other competitors is anticipated as the Use of System Charges (UoSC) to be paid to a distribution licensee by a CS licensee will also be regulated. SoLRs have no control over setting of consumer end tariff and therefore, restricting SoLRs from competing through their subsidiaries will not only be against the spirit of competition but will also have adverse financial implications for SoLRs including: (i). SoLRs will lose their good consumers while being obligated to supply to challenging areas in their service territories ultimately resulting in further accumulation of circular debt; (ii). adverse financial implications for SoLRs will also jeopardize GoP's plan of privatisation of state-owned DISCOs. It was commented that stakeholders have also supported KE's request for participation as a competitive supplier across the country. Accordingly, KE sought NEPRA's agreement in principle on this matter and subsequently requested its support in pursuing GoP for necessary amendments in the NE Plan and the Supplier Rules.

(ii). **CPPA-G** commented that this arrangement has been specifically barred under Strategic Directive 48 of the NE Plan and the Supplier Rules, creates conflicts and limits competition. Furthermore, there are no best practice examples available globally. The examples that KE quotes are not best practices rather exhibit the monopolistic advantage of the SOLRs having CS licences resulting in a huge barrier for other private sector competitive suppliers.

Observations/Findings of the Authority:

(iii). The observations/findings of the Authority have been detailed in paragraphs 4(B)(k)(xxv) till 4(B)(k) (xxxvi) above are reproduced here by reference.

(j). **What are the KE timelines for the submission of Use of System Charge (UoSC) petition with the Authority and its correlation with commencement of the CTBCM in KE territory?**

(i). **KE** informed that it has submitted its petitions for determination of Transmission, Distribution and Supply tariff on December 28, 2023. KE requested the Authority for expeditious approval of its tariff petitions. It further added that Rule 5 (2)(c) of the Supplier Rules, notified by the Government of Pakistan and Strategic Directive 88 of the NE Plan recommends UoSC, which includes wheeling charges, cost of open access & cross subsidy, to be uniform across all DISCOs as the prevailing policy for applicable tariff is currently uniform across the country. Accordingly, KE submitted that UoSC for eligible consumers will be uniform across all DISCOs including KE and any tariff related adjustment arising due to the uniform application of UoSC shall be adjusted from regulated consumers' revenue requirement in supply business.

(ii). **CPPA-G** asserted that the Uniform UoSC determined by NEPRA for the Ex-WAPDA DISCOs should also apply to KE, as the same uniform tariff is currently in place for KE's consumers. Any tariff differentials arising from this should be handled in the same manner as they are today, ensuring consistent application of the uniform tariff across all consumers.

Observations/Findings of the Authority:

(iii). The Authority observes that the determination of UoSC should be based on supplier specific cost of service studies and approach, rather than a uniform, one-size-fits-all model. When comparing the global best practices in electricity markets, it becomes evident that applying open access charges uniformly across all suppliers, irrespective of their specific conditions, risks undermining both fairness and market efficiency. Instead, the UoSC should consider the particular challenges and costs faced by the relevant SOLR.

(iv). The stranded capacity caused by consumers shifting to open access is different for each SOLR, along with the particular transmission and distribution losses it incurs. Essentially, stranded costs are related to investments made under the monopoly that might not be recoverable in a competitive market. These costs can vary significantly from one supplier to another based on the nature of their infrastructure, procurement contracts and consumer base. By adopting a supplier-specific model, open access charges would more accurately represent the real costs associated with network usage, in turn promoting greater efficiency and transparency in the system.

(v). However, it is important to highlight that Rule 5 (2)(c) of the Supplier Rules and Strategic Directive 88 of the NE Plan stipulate that the UoSC shall be uniform across the country until the uniform tariff remains applicable and thereafter shall be applicable as per the tariff of each distribution company holding the supplier of last resort licence. Therefore, a uniform UoSC as determined for other XW-DISCOs may be considered for KE's service territory. However, due diligence and final decision in this regard will be made in the relevant UoSC determination of the Authority.

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6. **Decision of the Authority:**

(A). In view of the above, the Authority approves the Integration Plan of KE, attached as (**Annexure A**), and decides as follows:

(a). The CTBCM shall be operationalized in the service territory of KE upon declaration of the CMOD of the CTBCM by the Authority.

(b). KE shall be integrated into and participate in system operations by the SO in accordance with the provisions of the NEPRA Act, the NE Policy, the NE Plan, the Grid Code and other applicable documents. Further, the KE and the SO shall finalize the SOP for integration of system operations of the KE in accordance with the Grid Code and Strategic Directive 38 of the NE Plan and other applicable documents within one (01) month of the approval of the Plan. The SOP shall not be inconsistent with the Grid Code and other applicable documents and cover, including but not limited to, the following areas: preparation of a single EMO for the entire country; real-time coordination and communication between the SO and KE to ensure safe, adequate, secure, and efficient operation of generation facilities and the transmission system; management of short-term operational planning; handling normal and contingency situations during system operations; managing network congestion on KE's side; integration of generators connected to the KE system into the SDXP; integration of KE into marginal price application; protection; coordination regarding power exchange through KE-NTDC interconnections; providing SO with real-time visibility of generation plants and tie-line flow; and integration of SCADA systems of KE and the SO. In addition, the SOP to be agreed upon between the KE and the SO will include a comprehensive process for KE to provide SO with necessary data and visibility of its generation plants and transmission system, ensuring that KE's generation plants are incorporated into SO's unit commitment and operational planning process. Additionally, the SOP shall outline the requirement for KE to share key information, such as generation plants availability, variable cost etc. through the SDXP portal, in alignment with protocols for other IPPs. The SOP shall also address the integration of KE's network constraints and technical parameters into the dispatch model, to maintain smooth coordination between KE and the SO. To facilitate automated communication and ensure efficient operation through AGC, the SOP shall cover the mechanism for the integration of KE and SO's SCADA systems, especially considering the anticipated increase in KE's VRE share. This integration will support both VRE balancing and reserve requirements. In the long term, KE's generation plants will connect with the SCADA project including vendor support, adaptation, integration works and data provision, with the cost to be borne by KE as per the Grid Code. The SOP shall be applicable for a transition period of two (02) years commencing from the date of approval of the Integration Plan. During the transition period, the SO will operate KE's system according to the SOP. Once this transition period ends, the SO will operate the KE's system at par with the NTDC system.

(c). The KE, as Purchaser, shall be responsible for developing an independent and transparent mechanism for verifying availability, outages, etc., and other operational metrics of the KE's generation plants by the SO at par with IPPs in the CPPA-G system.

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Additionally, the ADC test of plants in the KE's system shall be conducted, through an Independent Engineer, at par with IPPs in the CPPA-G system (with the SO allocating demonstration periods, approving test date & time, consent on test procedures etc.,). The KE and the SO will finalize the necessary codal formalities to perform these roles initially in the SOP and later through an appropriate legal framework.

(d). KE, NTDC and CPPA-G shall revise the PPAA and the ICA to cover aspects related to the KE Integration in the CTBCM and submit for approval within three (03) months of the approval of the Integration Plan.

(e). The Market Commercial Code, as amended from time to time, shall be applicable to KE, including all the relevant methodologies approved as part of it. Furthermore, KE and the ISMO shall coordinate for integration of KE's system in the MMS and test run the entire exercise within three (03) months of the approval of the Integration Plan with fortnightly progress reports to the Authority. Since the Authority has already initiated proceedings for approval of the FTR Report submitted by the MO and the KE has been involved in the same through submission of its comments/views, the test run for integration of the KE shall not require any separate approval from the Authority. In case any issues arise during the test run for the integration of KE into the CTBCM, same shall be reported to the Authority. Notwithstanding the above, the CTBCM shall commence within KE's service territory subject to fulfilment of the precondition at paragraph 6(A)(a) above.

(f). KE shall be part of the long-term ISP (i.e. IGCEP, TSEP etc.) to be carried out by the SO in accordance with the NE Policy, the NE Plan, the Grid Code and other applicable documents.

(g). The IGCEP shall account for supply of electric power to the KE from the national grid in accordance with the commitments of the GoP in the PPAA and the ICA. However, since separate proceedings for the approval of the ISP are currently underway, any necessary directions regarding this matter shall be included in the relevant decision or determination on the ISP.

(h). KE shall submit an LPM within one (01) month of approval of the Integration Plan in its existing transmission license to exclude the function of system operator in accordance with the NEPRA Act and applicable documents. In case KE fails to submit the LPM within the stipulated time, the Authority may initiate APM in the matter.

(i). KE shall act as the MSP in its service territory as part of its transmission and distribution license. However, it shall coordinate and provide all the relevant metering data and interfaces to the NTDC and the ISMO in accordance with the Grid Code and the Market Commercial Code.

(j). KE shall not be allowed the license of the competitive supplier in accordance with the provisions of Strategic Directive 48 of the NE Plan and Rule 4 (3) of the Supplier Rules.

(k). KE shall not be allowed the license of the Electric Power Trader in accordance with the provisions of Strategic Directive 48 of the NE Plan and Rule 4 (3) of the Supplier Rules.

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(l). Regarding issues raised by the KE pertaining to the determination of cross-subsidy and stranded cost charges, the Authority shall decide the same in separate proceedings with regards to the UoSC.

(m). Other issues raised by the KE pertaining to the impact of the CTBCM on its MYT, the Authority has already considered the same in its relevant tariff determinations and the same shall remain applicable.

(n). KE, ISMO, NTDC and CPPA-G shall update the dispatch study for NTDC and KE network/systems, earlier conducted in year 2021, and submit the latest results for existing maximum power transfer capacity as well as unconstrained scenario to the Authority within three (03) months of the approval of this Integration Plan for consideration in the matter.

(o). A number of regulations pertaining to the CTBCM and codes including the Grid Code and the Market Commercial Code have been approved since the submission of the Integration Plan by KE. Accordingly, the issues raised by the KE in the Integration Plan not covered in the above decisions shall be addressed in the manner as specified and approved in the relevant regulations, codes and other applicable documents.

(p). The remaining issues raised by the KE in its Integration Plan including charging of higher tariff to BPCs whose competitive supplier defaults, determination or otherwise of variable cost of generation plants participating in the CTBCM, and single marginal price for the entire country, shall be in accordance with the relevant regulations, the Market Commercial Code, the Grid Code and other applicable documents.

Authority

Engr. Maqsood Anwar
(Member)

Rafique Ahmed Shaikh
(Member)

Amina Ahmed
(Member)

Waseem Mukhtar
(Chairman)

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Annexure A

KE's Integration Plan for Competitive Trading Bilateral Contracts Market (CTBCM)

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Clarification Note of NEPRA:

The contents of Chapter 5 and Chapter 6 have been reproduced as submitted by KE in 2021 and during regulatory proceedings of the KE Integration Plan. It is to be noted that many of the recommendations/submissions of KE, which may appear out of date here, have already been addressed through various regulatory decisions/documents including notification of CTBCM related regulations, approval of the Grid Code & Market Commercial Code and approval of the Power Purchase Agency Agreement (PPAA)/Interconnection Agreement (ICA) between the KE and CPPA-G/NTDC. Therefore, only the decisions/directions which are relevant to the submissions of KE in these chapters are being referred in square boxes below. For detailed proceedings and decisions/directions of the Authority in the matter, please refer to the determination of the Authority in the matter.

Chapters 1 to 4 of the KE Integration Plan contained understanding of KE with respect to CTBCM design and other policy and regulatory matters and therefore are not being made part of this annexure.

5. KE's Integration into CTBCM

As part of the CTBCM Detailed Design, CPPA proposed KE's integration into the CTBCM based on central economic despatch with one System Operator for the entire country (NPCC). However, considering KE's uniqueness as a VIU having a tariff structure different from other entities operating in the sector, NEPRA, within its determination dated November 12, 2020 did not approve KE's integration as proposed by CPPA and directed KE, CPPA, NTDC / NPCC to deliberate upon and develop a plan for KE's integration into the CTBCM, evaluating financial, technical, legal, and market-related aspects.

Here, it is humbly submitted that KE's current distribution license which is valid till July 2023 provides for exclusive rights of distribution within its service area, and therefore, implementation of CTBCM in KE's service area shall be implemented post expiry of KE's exclusive Distribution license in 2023.

5.1 Evaluation of Centralized Economic Despatch

Based on the available documents and concepts within the Detailed Design which have been approved indicatively and are yet to be firmed up as also detailed in Section 3.2 of the Plan, KE in consultation with other stakeholders including CPPA, NTDC / NPCC conducted its evaluation of the proposed option for integration under centralized economic despatch.

Key considerations with regard to having a single country-wide centralized economic despatch as highlighted during the consultation process are summarized below:

- Interconnection Capacity of NTDC and KE network is planned to increase to 2,050 MW by 2023 and considering projected growth in peak power demand, in addition to drawl from the National Grid / central pool, to meet its demand, KE will have its own generation fleet as well as IPPs supplying power to KE.
- Currently, KE and NTDC systems are managed independently wherein KE as System Operator optimizes despatch for its service area based on EMO of KE plants, IPPs supplying power to KE and the National Grid, whereas, NTDC system is managed independently by NPCC. Accordingly, as both systems integrate under central despatch, opportunity exists where generators within KE's fleet (KE own & IPPs having bilateral arrangements with KE) may be despatched to meet demand in NTDC system for cost optimization at national level.

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- Further, under the existing autonomous despatch mechanism, despatch decision for off-take from National Grid is based on the average basket rate. As a result, supply from National Grid is high on KE's EMO and is despatched regardless of the marginal cost of NTDC system. Accordingly, opportunity exists that KE's generation or other IPPs may be despatched which would cost lower than off-take from the National Grid.

Keeping in view the above considerations, commercial and technical evaluation for KE's integration under centralized economic despatch was done in consultation with stakeholders as directed by NEPRA:

a) Commercial Evaluation through study carried out by CPPA with support from KE

b) Technical evaluation through joint consultation carried out by KE and NTDC / NPCC

a) Commercial Evaluation

To evaluate the benefit of central despatch as envisaged under CTBCM, a study was conducted by CPPA with support from KE. This study was DC based and primarily focused on cost optimization.

The study covered the following scenarios:

- **Autonomous Despatch Scenario:** KE's system is not part of country wide central despatch and KE is its own System Operator with interconnection capacity enhanced to 2,050 MW by 2023 as per KE's planned interconnection capacity enhancement projects.

  For despatch decision, supply from National Grid is considered on average basket rate as per the current practice. This was the base case scenario depicting the existing operations and used to compare the results of a central despatch scenario.

- **Central Despatch Scenario:** KE's generation and IPPs having contracts with KE become part of central despatch and interconnection capacity enhanced to 2,050 MW by 2023 as per KE's planned interconnection capacity enhancement projects, and both the systems (KE & NTDC System) are operated in an integrated manner.

The study was conducted by CPPA over a 5-year horizon through SDDP tool. Results of the study conducted are presented below:

PKR Billion

Year	Central Despatch			Autonomous Despatch			Savings
	KE	NTDC	Total	KE	NTDC	Total	
	(a)	(b)	(c = a + b)	(d)	(e)	(f = d + e)	(g = f − c)
2021	101.5	542.7	**644.2**	98.5	545.9	**644.4**	**0.2**
2022	78.5	394.2	**472.7**	78.2	394.4	**472.6**	**(0.1)**
2023	61.7	369.1	**430.8**	61.2	370.6	**431.7**	**0.9**
2024	59.0	355.6	**414.6**	55.8	359.7	**415.5**	**0.9**
2025	62.1	333.8	**395.9**	58.0	338.6	**396.7**	**0.8**

As summarized in the table above, with the addition of cheaper generation sources in the National Grid and KE and enhanced interconnection capacity between KE and National Grid, integrated operations of the two systems under a centralized economic despatch model is expected to result in cost optimization and annual savings of up to c. PKR 900 million at national level.

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Here, it is important to note that in certain cases, KE generation (i.e. KE own plants & IPPs having contracts with KE) is higher on the EMO and despatched to meet the demand in the NTDC system. As a result, generation in KE system under central despatch is higher as compared to autonomous despatch which would result in increased fuel and power purchase cost for consumers of KE. However, on overall national level, central despatch would result in cost optimization and savings of up to c. PKR 900 million on annual basis, which may increase as cheaper generation is added to the system.

Limitations of the Study

- Fuel constraints including gas supply and pressure issues have not been accounted for in the study and the same have an impact on the actual system operations. As an example, within the study, it is assumed that 100% gas will be available for gas-based power plants.
- No indexations on account of fuel prices or inflation for variable O&M have been accounted for.
- A 5% tolerance level is assigned to the simulation model, and therefore, actual operations may differ from the study results.
- Timelines for planned projects may differ from their actual COD which will have an impact on the least cost operations and accordingly the results of the study over the study period.
- Study is DC based and primarily focuses on cost optimization and therefore actual operations may differ due to technical and administrative considerations, thus impacting the results / projected savings at national level.

b) Technical Evaluation

Technical evaluation for KE's integration under central despatch was jointly conducted by KE and NTDC / NPCC. As mentioned above, the study conducted by CPPA was DC based and as part of technical evaluation, KE also held discussions with NTDC / NPCC on the requirement for an AC load flow study to assess system stability and reliability under central despatch scenario.

In this regard, a joint meeting was held on March 10, 2021, having representatives from KE, NTDC / NPCC and CPPA, wherein, it was agreed that the technical study for drawl of upto 2,050 MW by KE from the National Grid will suffice the requirement for AC load flow study for KE's integration into CTBCM under central despatch, and therefore a separate study for AC load flow analysis is not required at this stage.

5.1.1 Implementation of Central Economic Despatch

Keeping in view the above technical and commercial evaluation and KE's continuation as System Operator for its service area, the parties agreed on formulation of Standard Operating Procedures (**"SOP"**) between KE and NPCC to implement central economic despatch.

In addition to technical and commercial evaluation, a key consideration highlighted during evaluation of central despatch was the impact on KE's IPPs having 'Take and Pay' arrangements. Under the current autonomous despatch scenario, despatch from National Grid in KE area is on the basis of average basket rate which falls high on the EMO, and the generation cost in the National Grid is expected to further reduce as planned projects come online. Given that under central economic despatch, National Grid plants will be despatched based on marginal cost, therefore, there is a greater possibility for these 'Take and Pay' IPPs to get despatched which under the existing scenario fall lower on EMO due to consideration of National Grid on average basket rate for despatch purposes.

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Accordingly, in KE's view, post implementation of central economic despatch, all IPPs including those under 'Take and Pay' arrangement would also be despatched in accordance with central economic despatch. However, with regard to 'Take and Pay' Contracts and their functioning under central despatch, the CTBCM Detailed Design proposes that the capacity payments in case of despatch of such a 'Take and Pay' IPP will have to be made as per the bilateral contract. As an example, in case an IPP having 'Take and Pay' arrangement with KE is despatched to meet any non-KE demand, regulated consumers of KE would still have to bear the related capacity costs, thus burdening them for costs related to despatch even for such non-KE demand. During the consultation process, KE highlighted this concern to CPPA and requested for a review of treatment of 'Take and Pay' contracts and the recovery of capacity charges therein. However, in CPPA's view, this is a bilateral issue between the counterparties and needs to be settled contractually.

In view of the above, KE humbly requests NEPRA to review KE's submissions in the matter to develop a principle understanding for treatment of existing as well as future 'Take and Pay' contracts, and also issue necessary directions for consultation between the parties for revisions, if any, to the already executed 'Take and Pay' contracts to avoid any adverse implications or bottlenecks in roll out of CTBCM.

In addition, as the despatch decision under central despatch will be made on the basis of variable costs only, there is a possibility that while a particular 'Take and Pay' IPP may get despatched on the basis of lower variable cost, such a 'Take and Pay' IPP may have a high capacity component and thus the overall marginal cost including capacity component may be higher. Therefore, a holistic assessment should be made in this respect in line with international practices.

Formulation of SOP with NPCC for Central Despatch

With respect to formulation of SOP for central despatch, a joint meeting of KE and NPCC teams was held on April 01, 2021, wherein both KE and NPCC have agreed to formulate and finalize the protocols / SOP for centralized economic despatch with KE being the System Operator for its service area and the same will be submitted to NEPRA by January 2022, as further discussed in Section 6 of the Plan.

KE's Integration into CTBCM

- KE integrates into CTBCM under central economic despatch.
- For implementation of central economic despatch, KE and NPCC will agree upon SOP / protocols.

However, it is humbly submitted that KE's Plan for integration into CTBCM is subject to finalization of pending matters / areas to be firmed up and other design considerations, as highlighted in Section 3.2 of the Plan, tariff considerations as detailed in Section 5.3 of the Plan as well as policy and regulatory matters providing framework for a sustainable transition.

Decision of the Authority:

The Decision of the Authority on the above submissions is made at Para 6(A)(b), 6(A)(m) and 6(A)(n) of the Determination.

Evaluation of KE's Continuation as System Operator for its Service Area

As per Section 2 of KE's Transmission License, KE is the System Operator for its service area and the planning function for KE's service area is also mandated to KE. Further, as mentioned in Section 2.2.1 of the Plan, Section 25 of the NEPRA Amendment Act, 2018 also specifically allows for grant of licenses to one or more licensees within KE's service area.

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Considering KE's unique status as a VIU having ownership and managing its own Transmission Network as well as rights and obligations under KE's license, during joint discussions with CPPA and NTDC/NPCC, it was discussed that NTDC / NPCC as per its license is not obligated to manage operations within KE's network and neither does it have the required understanding of KE's owned system / network. Further, it was highlighted that to ensure implementation of central economic despatch, the parties agreed that the same can be done through an agreed upon SOP with NPCC which will include operational topology as well as mechanism for exchange of information / data between KE and NTDC / NPCC to enable both entities to plan for future generation additions in an integrated manner, as well as make fuel commitments, maintenance plan, etc.

Decision of the Authority:

The Decision of the Authority on the above submissions is made at Para 6(A)(b) and 6(A)(h) of the Determination.

5.2. Mechanism for allocation of Existing PPAs / EPAs and Capacity Invoicing for Supply from National Grid

With regard to KE's integration into CTBCM, a key consideration is the mechanism for commercial allocation of existing PPAs / EPAs and invoicing of energy and capacity charges for off-take from the National Grid / central pool.

In this respect, energy and capacity invoicing mechanism under the existing regime and as proposed under CTBCM are summarized below:

Current Mechanism	Proposed under CTBCM
• Energy charges for supply from National Gird are billed on average basket rate	• Within the Detailed Design, it is proposed that existing PPAs / EPAs will take the form of Generation Following Supply Contracts. However, as detailed in Section 4.2.1 of the Plan, the same exposed KE and DISCOs to the risk of imbalance between KE and DISCOs despite KE and DISCOs being within their contractual limits. As a result, DISCOs and KE for the energy drawn from the National Grid beyond the allocated energy were to be charged at marginal rate of the system. Accordingly, KE proposed that a separate contract design shall be applied for existing PPAs / EPAs (National Grid / central pool) whereby imbalances are only charged when drawl is beyond the contractual limits of DISCOs and KE. • Following detailed evaluation and deliberations during the consultation process, CPPA has agreed to propose separate contract design for legacy PPAs / EPAs, where imbalances will apply to DISCOs and KE only if their drawl is beyond their contracted capacity (i.e.

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Current Mechanism	Proposed under CTBCM
	energy drawn within the contractual limits will be billed on average basket rate).
• Capacity charges are billed on MDI basis to DISCOs and KE (to the extent of drawl from National Grid)	• Within the detailed design, it is proposed that KE be allocated a fixed share to the extent of contracted capacity out of the total generation capacity at national level and will be invoiced capacity charges based on its allocated share. • During the consultation process, CPPA proposed to revise the mechanism for allocation of capacity and invoicing of capacity charges. In this regard, following two options were under deliberation: i. Capacity be allocated to KE to the extent of its contracted capacity out of the total capacity in National Grid as proposed initially; or ii. Capacity be allocated to KE and DISCOs based on their share in system peak demand on coincidental basis • However, subsequently, during the consultation process, CPPA has proposed that KE shall be allocated a fixed a share based on its contracted capacity with CPPA / National Grid, whereas DISCOs will be allocated capacity from the existing PPAs / EPAs based on their share in the system peak on co-incidental basis. Further, CPPA has proposed that the capacity invoicing mechanism shall continue to remain as per the existing practice of monthly MDI basis for KE and DISCOs. Moreover, for any changes to capacity invoicing mechanism in the future, similar treatment shall be applied to KE and DISCOs and revisions to the mechanism, if any, shall be finalized in consultation with all stakeholders.

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Moreover, KE would also like to highlight that with continued generation capacity additions in the central pool resulting in increase in capacity charges, a cut-off date be agreed for addition of new capacity in the National pool with appropriate consultation after which any generation capacity addition shall be for the purpose of bilateral contracts of identified DISCOs only, and such capacity addition should be allocated to the identified DISCO and not form part of the central pool. Till the cut off date, the capacity allocated shall be subject to periodic review and on the cut-off date, each DISCO and KE will be allocated a firm capacity from the National Pool which should also take into account planned decommissioning of plants in the National Pool so that required visibility is provided for their future planning and capacity obligations.

Decision of the Authority:
The Decision of the Authority on the above submissions is made at Para 6(A)(o) of the Determination.

Keeping in view the material implications of commercial allocation of existing PPAs / EPAs, it is humbly submitted that **Plan for KE's integration is subject to finalization of commercial allocation of existing PPAs/ EPAs and mechanism for capacity invoicing for supply from National Grid, at the time of commencement of CTBCM,** as well as other areas which need to be firmed up as part of CTBCM implementation phase, detailed in Section 3.2 of the Plan.

5.3 Tariff Structure

KE operates under an integrated MYT regime. The following key features of KE's tariff along with their evaluation with respect to CTBCM are given below:

KE's Current MYT	KE's MYT Post 2023
• Based on KE's distribution exclusivity and having certain KPIs such as sent-out growth and T&D losses locked for the tariff control period	• For a shift towards open market, sent-out as a KPI under KE's MYT for the period post 2023 would need to be reviewed. • Similar to current tariff structure, recovery of capacity payment of KE plants i.e. depreciation and return on asset base should not be linked with despatch of KE plants • As detailed in Section 4.2.4, if BPCs are allowed to move into bilateral contracts as envisaged under CTBCM, this will have an adverse mix impact on T&D losses by around 2.0% points. Accordingly, tariff framework needs to be on cost reflective tariff setting basis, as illustrated in Section 4.3 of the Plan.
• No separate tariff component of variable O&M for Generation	• Instead of variable O&M currently allowed based on an assumed generation mix, separate variable O&M component be determined for each of KE's generation plants to be allowed on actual basis.
• No separate tariff for Distribution (Network) and Distribution (Supply) business	• For the period post 2023, separate tariff component for Distribution (Network) and Distribution (Supply) business should be determined and allowed on Cost of Service basis along with an appropriate retail margin given the asset light nature of supply business

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KE's Current MYT	KE's MYT Post 2023
• Tariff based on Cross-subsidy model	• Tariff setting should be on cost reflective basis and any cross-subsidy provided should be separately identified for each consumer category • Per unit cross-subsidy charged for each consumer category that cross-subsidizes shall be uniform whether the consumer is served by DISCOs, KE or any competitive supplier
• Uniform Tariff Policy adjusted for GoP socio-economic policy objectives	• Currently, DISCOs and KE are obligated to charge consumers in accordance with GoP's Uniform Tariff Policy, whereas Generators / Competitive Suppliers will be able to benefit by avoiding cross-subsidy surcharges imposed by GoP as per GoP's Uniform Tariff Policy. Therefore, for consumers who are eligible to participate in open market / enter into bilateral contracts, Uniform Tariff Policy should not be applied so that DISCOs and KE can also compete based on their Cost of Service.

It is imperative that the above issues are addressed completely to ensure viability and sustainability of DISCOs and KE while providing for a level playing field. In addition, wheeling charges for KE will have to be determined along with an escalation / adjustment mechanism to ensure full recovery of costs. KE as part of the implementation action items for CTBCM will evaluate the appropriate tariff structure including separate tariff components for each business segment, incorporating key considerations for tariff post 2023 as highlighted above, and will accordingly file its tariff petition for the period post June 2023 with NEPRA.

Decision of the Authority:

The Decision of the Authority on the above submissions is made at Para 6(A)(m) of the Determination.

5.4 Company Structure

As detailed above, KE currently operates as an integrated utility which provides the following advantages:

- Natural hedge between KE's different business units which improves KE's ability to raise and service debt considering that being a private entity, KE does not benefit from any sovereign guarantees – a critical component of delivering the necessary investment in all parts of the business and to maintain and enhance service to customers.
- Holistic investment approach supports KE's ability to optimize investments and operation of the end-to-end energy system.

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Further, under a legally separated scenario, the following will remain key considerations for KE:

- Raising finance in the absence of cross-business security structures and with limited assets, especially for its Distribution business. The current integrated structure provides for a natural hedge, and therefore, debts that have been secured on one part of KE's business are used to underwrite risks in another part of its business.
- Allocation of centralized support services, contractual obligations etc.
- Management of transmission and distribution as two stand-alone businesses given their high operational dependency (for example, transmission business needs to undertake operational actions to implement distribution business operation decisions)
- Reassessment of tariff, allocation of assets / facilities, financial and legal considerations

Keeping in view global trends and evolving market / service dynamics, KE will separately evaluate the feasibility of legal separation of different business segments and will submit its evaluation to NEPRA. However, with regard to company structure under CTBCM, it is submitted that with virtual separation through separate tariff components for each business segment and its financial reporting, KE would provide the necessary transparency for participation in CTBCM.

Here, it is pertinent to mention that under the proposed option for KE's integration into the CTBCM, CPPA in Section 18 of the Detailed Design also proposed that KE may remain as an integrated utility, and therefore the current integrated structure of KE may not have any bearing with respect to KE's participation in CTBCM.

Accordingly, subject to other considerations as detailed in earlier sections, KE may participate / integrate in CTBCM as an integrated utility and the evaluation of legal separation will be a separate exercise wherein any actions required will be separately submitted to NEPRA.

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6. Implementation Roadmap

For a smooth transition and KE's integration into CTBCM as well as a sustainable roll out of the CTBCM model for a resilient future power sector, decision on key policy and regulatory matters along with a firm up CTBCM design will remain critical. Action items for a sustainable roll out of CTBCM and for KE's integration into CTBCM are detailed below:

i. Firming up of CTBCM Design and Key Policy & Regulatory Matters

As detailed in Section 4.1 and 4.2 of the Plan, the CTBCM model presents opportunities for transformation of Pakistan power sector into a resilient and efficient sector. In addition to detailed implication analysis, there are various aspects within the proposed CTBCM model as well as key policy and regulatory matters which need to be firmed up / finalized, as also identified within the Detailed Design. Therefore, prior to implementation of CTBCM, it is imperative that a firm CTBCM model along with an appropriate transition framework is provided to ensure a sustainable roll out.

In this regard, it is humbly submitted that KE understands that the National Electricity Policy 2021 will be the governing document for transition towards competitive markets as also identified in Section 14 of the NEPRA Amendment Act, 2018 and therefore, policy guidelines as provided within the recently approved National Electricity Policy 2021 including mechanism to ensure recovery of stranded costs, lost cross-subsidy surcharge arising as a result of transition towards competitive markets as well as a holistic review of the tariff regime needs to be undertaken prior to implementation of the CTBCM. Further, for a sustainable roll out of CTBCM based on a holistic assessment, it is requested that the National Electricity Plan should also be finalized in consultation with all stakeholders.

In addition, as detailed in Section 3.2 of the Plan, within the current CTBCM Detailed Design, there are various aspects which have been approved on an indicative basis by NEPRA, and the same are to be finalized during the implementation phase of CTBCM. Given the material implications of these issues for a sustainable roll out of CTBCM as well as KE's evaluation and Plan for integration into CTBCM, it is requested that the same be finalized at the earliest after thorough consultation.

Key areas include:

- Alignment of the regulatory framework with the National Electricity Policy 2021, National Electricity Plan and CCoE approved principles for establishing competitive wholesale power market, including mechanism for treatment / recovery of stranded costs due to advent of open access and cross-subsidy as detailed in Section 4.3 of the Plan.
- Review of tariff framework with a shift towards Cost of Service based tariff setting as well as revision in tariff adjustment mechanism as recommended in Section 4.3 and 5.2 of the Plan.
- Mechanism for Commercial Allocation of existing PPAs / EPAs on firm basis and capacity invoicing for supply from National Grid as detailed in Section 4.3 and 5.2 of the Plan.

In addition, as detailed in Section 3.2 of the Plan, following areas are to be firmed up:

- Types of contract designs including detailed review and implication analysis for each type
- Methodology for determination of Firm Capacity of Generators
- Pricing methodology in Balancing Mechanism including a detailed analysis for optimal economic consequences
- Mechanism for allocation of Transmission Losses

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- Determination and allocation of costs related to Ancillary Services
- Changes to regulatory framework including revisions in codes, finalization of Regulations, etc.

Here, it is humbly submitted that KE's evaluation and Plan for integration into CTBCM is also subject to any revisions which may be required, once the policy and regulatory matters are finalized along with a firmed up CTBCM design.

Moreover, as recommended in Section 4.3 of the Plan, once a firmed-up design along with required interventions have been made to enable a sustainable transition towards open markets pursuant to CTBCM, a dry run for a period of at least 12 months be done to assess the possible implications and any subsequent revisions that may be required to the market design or any other reforms to ensure a sustainable and efficient competitive power market.

After having completed the dry run for at least 12 months and detailed implication analysis along with revisions required, if any, to the market design in consultation with all stakeholders, formal integration into the CTBCM framework may be considered.

In view of the above, KE humbly submits that a careful assessment should be made in consultation with all stakeholders, and a mechanism for an orderly transition taking the above factors into consideration should be provided.

Decision of the Authority:
The Decision of the Authority on the above submissions is made at Para 6(A)(e), 6(A)(o) of the Determination.

In addition to the above pre-requisites for a sustainable transition, action items relevant to KE for integration into / participation in CTBCM are summarized below:

ii. Formulation of Standard Operating Procedures (SOP) between KE and NPCC for Central Despatch

As detailed in Section 3.1 and 5.1 of the Plan, to benefit from cost optimization at national level, it is proposed that KE may integrate into CTBCM on the basis of centralized economic despatch. However, as concluded in discussions with CPPA and NTDC / NPCC, evaluation of SCED will be done centrally by NPCC for despatch purposes, whereas KE shall continue to perform the functions of System Operator for its service area in coordination with NPCC.

For efficient execution of central despatch, KE and NPCC have agreed to formulate a joint SOP, wherein modalities for central despatch, including despatch instructions, outage schedules, exchange of data for future planning as well as calculation of hourly marginal rates, etc. will be agreed upon, and the agreed upon SOP for centralized economic despatch will be submitted to NEPRA as part of the implementation phase.

In this regard, KE and NPCC teams are in deliberations and an initial draft of the SOP is targeted to be developed by November 2021, following detailed consultation / discussions between KE and NPCC teams to finalize the required modalities and SOP for central despatch including KE area and the same is targeted to be submitted to NEPRA for approval by January 2022.

Decision of the Authority:
The Decision of the Authority on the above submissions is made at Para 6(A)(b) of the Determination.

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iii. Formulation of Standard Operating Procedures (SOP) between KE and CPPA for Metering Service Provider

As detailed in Section 3.1 of the Plan, KE will perform the role of Metering Service Provider in its service area and is in discussions with CPPA for formulation of a joint SOP detailing modalities including exchange and verification of data required by the Market Operator to carry out the market settlement functions. Based on initial discussions between KE and CPPA teams, KE's system is equipped with the basic technical requirements to fulfill the role of Metering Service Provider in KE's service area.

In addition, as part of the exercise, KE shall also evaluate any requirements for revisions / additions to the existing metering infrastructure or any other technological intervention required in this respect in consultation with NTDC and CPPA.

For formulation of a joint SOP for KE's participation as Metering Service Provider, CPPA and KE teams are in deliberations to assess the requirements including technical and data related and it is targeted that an initial draft of the SOP is developed by October 2021, and the same is finalized by December 2021 based on detailed deliberations between KE and CPPA teams, which will then be submitted to NEPRA for approval.

Decision of the Authority:
The Decision of the Authority on the above submissions is made at Para 6(A)(i) of the Determination.

iv. KE's Participation in Revision in Grid Code

As part of the implementation items for roll out of CTBCM, revisions in Grid Code are being made. In this regard, KE has representation on the working group for revision in Grid Code. As deliberated during the consultation process, the initial draft of Grid Code was not in alignment with the open market regime pursuant to CTBCM and a revised draft of Grid Code was shared with KE in July 2021.

KE is in discussions with CPPA and NTDC with respect to the revised draft of Grid Code and the amendments required for alignment with an open market regime, and targets to submit its comments to the working group / Grid Code Review Panel by October 2021.

With regard to adoption of Grid Code, it is submitted that, KE shall be responsible for planning and undertaking required investments, subject to NEPRA's approval, to ensure reliability of its network, and therefore KE shall continue to function as Planner for its service area. Further, as directed by NEPRA, KE shall also collaborate with NTDC / NPCC and provide all relevant information to enable development of a long-term least cost based IGCEP and a least cost-based TSEP, subject to NEPRA's approval.

Moreover, with regard to Scheduling, Despatch and Metering, relevant details and modalities shall be included within the SOPs for KE's participation as System Operator and Metering Service Provider for its service area as detailed above, which will be submitted to NEPRA for approval.

Decision of the Authority:
The Decision of the Authority on the above submissions is made at Para 6(A)(b), 6(A)(f), 6(A)(g) of the Determination.

v. KE's Participation in Revision in Distribution Code

Similar to revision in Grid Code, as part of the CTBCM implementation roadmap, revisions are also being made to the Distribution Code to align the same with CTBCM. With respect to revision in

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Distribution Code, KE has representations on the working group and remains in continuous engagement with all stakeholders including CPPA.

KE targets to share its comments for revision in Distribution Code by October 2021.

Decision of the Authority:
Since separate proceedings are underway for the approval of the Distribution Code, submitted by DISCOs and KE jointly, therefore, no specific decision is required at this stage.

vi. Connection Agreements

KE is engaged with all relevant stakeholders and has participation on working groups for preparing standardized templates for Connection Agreements. In this regard, it is submitted that for Connection Agreement with NTDC, KE is already engaged in its finalization with NTDC as part of discussions for contractual arrangements for off-take of additional supply from National Grid, and based on discussions, KE understands that the same shall be adopted as the standard template for Connection Agreement with NTDC.

Further, for template of Connection Agreement with BPCs *(eligible consumers under CTBCM)* and Generators, it is submitted that the initial draft was not aligned with the open market regime pursuant to CTBCM, and KE's working group is working in close coordination with other DISCOs and CPPA in this respect.

Here, it is submitted that after the initial review, a revised draft of template for Connection Agreement between Generators and DISCOs was shared in July 2021 for stakeholder comments, whereas template for Connection Agreement between BPC and DISCOs is awaited. As submitted above, KE remains in continuous engagement with relevant stakeholders with regard to preparation of standardized templates for Connection Agreements.

Based on discussions with stakeholders including CPPA, draft standardized templates for Connection Agreements are targeted to be submitted to NEPRA for approval by October 2021.

Decision of the Authority:
Since separate proceedings are underway for the approval of the Distribution Code, submitted by DISCOs and KE jointly, therefore, no specific decision is required at this stage.

vii. Formation of DISCOs Association

KE is in continuous engagement with relevant stakeholders on formation of DISCOs Association and will provide input on defining the role, responsibilities and obligations, incorporation requirements, Board composition & criteria for Board members, and other key considerations / aspects relevant to formation and functionality of DISCOs' Association. In this regard, KE through letter dated August 09, 2021, has also nominated its representative for promotors for DISCOs Association.

Upon incorporation of DISCOs' Association, KE will become a member of the same which based on discussions, KE understands is expected by September / October 2021.

KE to file for membership of Association of DISCOs upon incorporation of the Association.

Tariff Structure post 2023

As detailed in Section 2.2.2 of the Plan, KE's Current MYT is for a 7-year tariff control period, expiring on June 30, 2023.

As per the CTBCM Detailed Design and also detailed in Plan, KE shall participate in CTBCM in various capacities of Service Provider as well as Market Participants. In order to align with the

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CTBCM framework which proposes central despatch, KE, as part of the implementation phase shall evaluate appropriate tariff structure, agree on key principles with NEPRA and will accordingly file its tariff petition with NEPRA by July 2022.

Decision of the Authority:
The Decision of the Authority on the above submission is made at Para 6(A)(m) of the Determination.

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