National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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Registrar

No. NEPRA/R/Advisor (CTBCM)/LAD/CPAP/ 7640-54 May 20, 2024

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9.	Chief Executive Officer, Sukkur Electric Power Company Ltd. (SEPCO), Administration Block, Thermal Power Station, Old Sukkur	10.	Chief Executive Officer, Tribal Areas Electricity Supply Company Ltd. (TESCO), Room No. 213, 1st Floor, WAPDA House, Shami Road, Sakhi Chashma, Peshawar

Subject: **Determination of the Authority in the matter of Combined Power Acquisition Programme for FY 2022-23 to FY 2026-27 Submitted by the XWDISCOs**

Enclosed please find herewith the Subject Determination of the Authority along with **Annex-I** (total 123 pages) in the matter of Combined Power Acquisition Programme for FY 2022-23 to FY 2026-27 Submitted by the XWDISCOs.

Enclosure: **As above**

(Engr. Mazhar Iqbal Ranjha)

Copy to:

1. Secretary, Ministry of Energy (Power Division), 'A' Block, Pak Secretariat, Islamabad
2. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad
3. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad.
4. Chief Executive Officer, Central Power Purchasing Agency Guarantee Limited (CPPA-G), Shaheen Plaza, 73-West, Fazl-e-Haq Road, Islamabad.
5. Managing Director, National Transmission & Despatch Co. Ltd. (NTDC), 414 WAPDA House, Shaharah-e-Qauid-e-Azam, Lahore

National Electric Power Regulatory Authority

Determination of the Authority in the matter of Combined Power Acquisition Programme for FY 2022-23 – FY 2026-27 Submitted by the XW-DISCOs

May 20th, 2024

(A). Background

In compliance with section 32 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997) (the "NEPRA Act") read with regulation 12 of the NEPRA (Electric Power Supplier) Regulations, 2022 (the "Supplier Regulations"), and regulation 6 & 7(3) of the NEPRA (Electric Power Procurement) Regulations, 2022, (the "Procurement Regulations"), the XW-DISCOs in their role as Suppliers of Last Resort (SoLRs) submitted an application on March 22, 2023 for the approval of their combined Power Acquisition Programme (PAP) for the period FY 2022-23 - FY 2026-27 before the Authority.

(B). Admission by the Authority

The Authority considered the PAP in its regulatory meeting and admitted the same on April 26, 2023, and further decided to seek comments from the general public and stakeholders. In this regard, notices were published in one (01) English and one (01) Urdu newspapers on May 18, 2023. Further, individual letters were also sent to relevant stakeholders seeking comments on the matter for the assistance of the Authority.

(C). Comments of Stakeholders

In this regard, comments were received from eight (08) stakeholders i.e., Uch Power (Private) Limited (UPPL), Uch-II Power (Private) Limited (UPPL-II), Revenue Division, Federal Board of Revenue (FBR), JDW Sugar Mills Ltd., Unit-II (JDW-II), JDW Sugar Mills Ltd., Unit-III (JDW-III), Private Power Infrastructure Board (PPIB), Ministry of Planning, Development & Special Initiatives (MoPD&SI) and Pakhtunkhwa Energy Development Organization (PEDO).

(2). The comments of the said stakeholders are summarized below:

(i). **UPPL and UPPL-II** submitted that the Authority has consistently maintained that implementation of the CTBCM shall not affect any rights, liabilities, terms and conditions set forth in existing (or legacy) Power Purchase Agreements (PPAs) and Implementation Agreements (IAs). Therefore, PAP should be approved keeping intact the said protections afforded to existing (or legacy) power producers. Further, since they currently supply power to WAPDA/Central Power Purchasing Agency (Guarantee) Limited (CPPA-G) under a power purchase agreement and have no agreements with any XW-

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY ★ NEPRA AUTHORITY

1/123

DISCOs, the PAP, which focuses on power acquisition by DISCOs, is irrelevant to their operations. It was highlighted in the comments that the Market Commercial Code (MCC) exempts "Legacy Contract" holders from being Market Participants, and this exemption should extend to the PAP provisions until the expiration of such contracts. The companies also raised concerns about implementation of the "commercial allocation" concept in the PAP and suggested that it should only be applied to the demand side (between CPPA-G/National Transmission & Despatch Company Limited (NTDC) and XW-DISCOs) rather than the supply side (between generators and CPPA-G/NTDC). They proposed maintaining the current framework for payments under legacy PPAs, while reforming the collection, recovery, and disbursement framework between XW-DISCOs and CPPA-G. It was pointed out that any assignment or amendment to a PPA requires the written consent of the generation company and that the "Change in Law" protections safeguard PPAs from such changes. Thus, the government is restricted from making any assignments, novation, or amendments through the MCC or the PAP. Additionally, UPPL & UPPL-II proposed that PAP should prioritize optimal utilization of indigenous low BTU gas in line with the National Electricity Policy 2021 (NE Policy 2021).

(ii). **FBR** commented that since no issue of taxation has been discussed in the PAP, therefore, its comments may be considered as nil.

(iii). **JDW-II** submitted that it has reviewed the PAP and agrees to the installed capacity of its power plant. It further stated that internal consumption of sugar mills is currently estimated to be 5.8 MW during the season and 1.0 MW during the off-season. The net capacity after taking the internal consumption is estimated to be 17.5 MW during the season and 23.35 MW during the off-season depending on bagasse availability. It was submitted that the said figures are estimated and may vary depending on the crushing and power requirements of its sugar mills.

(iv). **JDW-III** submitted that it has reviewed the PAP and agrees to the installed capacity of its power plant. It further stated that the internal consumption of sugar mills is currently estimated to be 1.5 MW during the season and 1.0 MW during the off-season. The net capacity after taking the internal consumption is estimated to be 21.8 MW during the season and 23.35 MW during the off-season depending on bagasse availability. Furthermore, the said figures are estimated and may vary depending on the crushing and power requirements of sugar mills.

(v). **PPIB** submitted that the PAP has been prepared considering upcoming requirements of SoLRs and to harmonize them with the IGCEP. As no specific format has been specified, it is suggested that the same may be devised in due time. PPIB commented that to ensure an effective procurement process, clear project identification and a framework with specific parameters such as site,

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

2/123

size, technology, and timeline should be established, rather than block identification of capacity requirements. The PAP should include project details in consultation with the System Operator and set timelines for project processing, including competitive bidding, project awards, licensing and tariff approval, issuance of Letters of Acceptance (LOA), and contract signing. PPIB highlighted that considering the time required for project initiation, development, and other activities, it is important to factor in the duration of 18-24 months for renewable energy projects and 7-10 years for hydropower projects during the planning phase. Additionally, PPIB suggested that the assessment for capacity obligations in the PAP for years 4 and 5 should be carried out at 90% or even 100%, rather than 80% and 60% respectively to ensure prudence in the process.

(vi). In addition to the above, PPIB commented that the PAP should provide a clearer picture of future projections to facilitate the Independent Auction Administrator (IAA) in conducting bidding. In case of delays in the commissioning of committed projects, an analysis or contingency plan should be included to meet the capacity obligations outlined in the PAP. Furthermore, the PAP should consider variable factors such as electricity supply variations from renewable and hydropower projects, as well as seasonal and monthly fluctuations in electricity demand/consumption. Additionally, the impact of factors like Distributed Generation (DG) and net metering should be considered in load forecasting and planning. PPIB stated that power procurement planning should rationalize the capacity in the system taking into account idle capacity to avoid excessive procurement. Further, the allocation of future generation capacity among XW-DISCOs should be based on forecasted projections rather than historic commercial allocation factors. PPIB submitted that clarity is needed regarding the future status of KAPCO, as it is retained at 500 MW in the PAP to address transmission constraints but is considered retired in the Capacity Obligations Report. Moreover, in order to maintain compliance with the combined capacity obligations of all DISCOs, re-allocation of commercial allocation factors of non-compliant DISCOs by the Market Operator may be considered.

(vii). Furthermore, PPIB submitted that the PAP should clarify whether demand-side management is considered in load forecasting by SoLRs. Factors such as lower growth rates and higher electricity tariffs should also be considered for their impact on demand projections. Sensitivity analysis regarding tariff impact on load projections may be conducted. PPIB highlighted that it is unclear whether projects such as Captive and Small Power Plants and upcoming initiatives like Solar PV systems on 11 kV feeders are included in the PAP. The PAP should clarify whether it considers projects for which procurement processes have not been initiated and includes Strategic Projects such as large hydro and nuclear projects. A framework should be developed to address such projects within the PAP. In addition, the PAP should consider

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

3/123

synchronizing the transmission system for newly inducted projects with their implementation timelines to avoid delays in evacuation arrangements that could impact power procurement. PPIB submitted that the mechanism for compiling, ensuring compliance with the Capacity Obligations Report, and submitting a combined PAP to NEPRA should be clarified, considering the involvement of ten (10) XW-DISCOs and K-Electric Limited (KEL) and it is expected that the SoLRs will involve the IAA in the finalization of the PAP.

(viii). **MoPD&SI** commented that IAA holds a pivotal role in the CTBCM because it will carry out competitive auctions for new electric power procurement. Therefore, the current status of IAA registration needs to be apprised as without its legal existence, the PAP does not hold significance. Further, in terms of the Procurement Regulations, the expansion in generation capacity is through competitive and least-cost basis. However, except for the year 2023-24, no new procurement is based on competitive bidding which reflects the preparedness of DISCOs for the CTBCM. MoPD&SI further stated that the PAP is not aligned with the IGCEP 2022-31 from the year 2026. It is crucial that PAP is in line with the guidelines set forth in IGCEP 2022-31. In addition, the proposed PAP spans from 2024 to 2027, while IGCEP 2023 will be in place within a few months. This misalignment between PAP and IGCEP creates inconsistency and therefore it is necessary to synchronize the timing of the said two documents. MoPD&SI also highlighted that the projection of capacity obligations for year 3 and year 4 at 80% and 60% needs to be reviewed considering the gestation time at supply side ranges up to 10 years. It was further commented that as per IGCEP 2022-31, a sensitivity analysis will be carried out to assess the requirement of KAPCO beyond its expiry in 2022-23 in the Transmission System Expansion Plan (TSEP). Therefore, XW-DISCOs may apprise if they have a fallback plan for 500 MW capacity procurement, if KAPCO is considered retired in TSEP. In addition to the said, MoPD&SI commented that during the planning cycle FESCO, LESCO, GEPCO, MEPCO and TESCO are facing non-compliance while other five DISCOs are drastically above their capacity obligations. However, the system as a whole is compliant with the capacity obligations. Therefore, the regulator may treat all DISCOs as one system in light of the CTBCM regime. Lastly, the timelines for generation, transmission, and distribution plans are generally disjointed which can lead to confusion, therefore, consistency needs to be ensured in overall planning timelines from generation to distribution.

(ix). **PEDO** submitted that the PAP has been prepared by the XW-DISCOs in compliance with the requirements of the Procurement Regulations which mandate the said entities to present their capacity procurement plans to NEPRA in order to ensure least-cost generation mix in the country. In addition, PEDO submitted the revised CODs for consideration in the PAP for six of its projects namely Lawi, Karora, Koto, Gorkin Matiltan, Chapri Charkhel, Daral Khawar-II which range between six to eight months. Further, PEDO submitted

4/123

that as per Table 3-8 of PAP, the total expected installed capacity is 2,558 MW, and PESCO's contracted capacity allocation is 280 MW based on a 12.89% allocation factor. PEDO opined that more hydel projects should be considered in the capacity obligations instead of local or imported coal. Although various PEDO projects, such as Karora HPP (11.8 MW) and Koto HPP (40.8 MW), which are scheduled for completion in 2023, are already included in future procurement, they should be shifted to the Capacity Obligations Report in the said PAP. The expected Commercial Operation Date (COD) for Karora is September 2023, and for Koto, it is August 2023.

(D). Rejoinder of XW-DISCOs on the Stakeholders Comments

The above comments were examined, and it was considered appropriate seeking perspective of XW-DISCOs on the same. Accordingly, the consolidated rejoinder submitted by the XW-DISCOs is summarized in the following paragraphs:

(i). **In response to the comments of UPPL and UPPL-II**, it was submitted that the PAP has been developed in line with the regulatory framework and CTBCM. Since the PAP, from the available capacity point of view, is based on the approved IGCEP, therefore, the protections available to the existing (legacy) generator through their respective PPAs and IAs are maintained intact. Further, the power procurement arrangements with legacy power generators, including UPPL and UPPL-II are already covered and protected as per their PPAs with CPPA-G (the designated Special Purpose Agent - SPA) as buying agency of XW-DISCOs. The PAP under review considers the legacy arrangements on a business-as-usual basis. In addition, the understanding of UPPL and UPPL-II regarding exemption of legacy contracts from enrollment as market participant was agreed with. Regarding comment on commercial allocation, the XW-DISCOs submitted that the referred commercial allocation is an arrangement between the CPPA-G (the SPA) and the XW-DISCOs. The PPAs with generators shall have no change or impact on account of capacity obligations, commercial allocations and/or PAP, as the case may be. On the observations pertaining to "change in law", the XW-DISCOs agreed with the understanding of the UPPL and UPPL-II. With regards to comment on optimization and utilization of indigenous gas, XW-DISCOs replied that the optimization of projects under IGCEP is already based on a least-cost basis. Further the security constrained economic dispatch is also based on the optimization of short run marginal cost.

(ii). **On the comments of JDW-II and JDW-III**, XW-DISCOs responded that the firm capacity adopted by the Market Operator is after due consideration of the facts / agreements available with CPPA-G (the SPA). Any different capacity figures (MW) would require an update in the Capacity Obligations Report of the Market Operator.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

5/123

(iii). **In response to the comments of PPIB,** XW-DISCOs agreed with the suggestion that a uniform/standardized format for the PAP should be prepared in consultation of CPPA-G, PPIB and DISCOs duly approved by NEPRA. On comment suggesting ensuring an effective procurement process, it was replied that the rationale and resultant recommendations are agreed in principle. However, the PAP, being predominantly influenced by the approved IGCEP can include the projects in the given details only to the extent of "committed" projects. The SoLRs being new in the process chain require support from the IAA. It was further responded that optimized project blocks of IGCEP can be expanded into the details of size, location, technology, timelines, and COD etc. upon approval of the PAP and due consultation with the IAA in its overall advisory role. On the comment of PPIB regarding considering gestation period required for various projects, it was submitted that the observation is valid and agreed in principle. It may, however, be noted that pursuant to the Procurement Regulations the PAP is prepared for a period of five (5) years, of which the first three (3) years are definitive and the remaining two (2) years are indicative. Considering the instant observations, the control period (or time horizon coverage) for the PAP will have to be suitably expanded through appropriate amendments in the governing regulations. Regarding the assessment of capacity obligations at 90% or 100% for years 4 and 5, it was responded that the suggestion is agreed with and the submitted PAP also recommends the same.

(iv). On the comment of PPIB pertaining to the provision of a clear picture to the IAA for conducting competitive auctions and inclusion of contingency plan in case of delay in commissioning of projects, it was responded that the observation and resultant recommendation are logical and, therefore, agreed in principle, to add value to the whole of PAP process. Although regulation 4(2)(b) of the Procurement Regulations do implicitly provide for risk mitigation through adopting efficient and effective power procurement strategy and risk mitigation mechanisms, however, such strategy and/or mechanism has to be kept in view of the approved IGCEP, TSEP, network expansion plan(s) etc. However, as already discussed above, enhanced time horizon for PAP and increased assessment percentage vis-à-vis the capacity obligation, may provide enabling space for carrying out the mentioned sensitivity analysis without compromising the compliance to the capacity obligations determined as per the MCC. In response to the comment that the PAP should also consider variable factors such as variation in electricity supply from renewable / hydropower projects, seasonal / monthly variations in electricity demand, and impact of factors such as DG, net metering etc., it was submitted that the mentioned factors are already covered through optimization of the approved IGCEP, achieved through latest digital solutions. Further the impact of disruptive technological advancements (DG, net-metering, Variable Renewable Energy (VRE), Electric Vehicle, etc.) is also broadly covered

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

6/123

through realistic load/demand forecasting by the SoLRs. On comments related to considering the idle capacity during the planning process, it was submitted that the conclusion portion of the PAP already includes recommendations so as to avoid excessive capacity situation. Regarding allocation of capacity based on forecasted projections, it was submitted that the allocation of future generation capacity among XW-DISCOs has been made, at the first level, to mitigate individual non-compliance vis-à-vis the capacity obligations of relevant XW-DISCOs, however, after mitigation of non-compliance the allocation has been made on the commercial allocation factors. Regulation 6(4) of the Procurement Regulations, however, requires that the project selected to meet SOLRs' combined capacity obligations shall be allocated on pro rata basis keeping in view their respective capacity obligations. The suggestion of PPIB with respect to clarity on future status of KAPCO and re-allocation of commercial allocation factors among non-compliant XW-DISCOs was agreed with.

(v). In response to comments pertaining to demand side management and sensitivity analysis of tariff impact on load projections, it was submitted that being regulated entities, the SoLRs have very limited options to make a strategy on Demand Side Management, the variability of the tariff offering on a situational basis, being the major DSM tool. So far, the demand side management efforts of XW-DISCOs are limited to the ATC loss-based load management. However, with maturity of market and regulatory flexibility by allowing limit based situational tariff offering, such assessments shall surely enhance accuracy of planning documents, including the PAP. On comment requiring clarity with regards to inclusion of captive and small power projects in the PAP, it was replied that small hydel and renewable power plants are already included in the PAP Further the projects titled "cost reduction projects" include envisaged solarization of 11 kV feeders project, with a total expected installed capacity of 1,224 MWp (with initial firm capacity of 269 MWp). Regarding clarification sought with respect to procurement from strategic projects such as large hydro, and nuclear projects, etc., and suggestion to devise a framework in this regard, it was responded that IGCEP is overarching document for procurement of capacity needed in future. The need for the framework to deal with the mentioned categories of projects is, however, agreed. On comment regarding synchronization with transmission projects to avoid delays in evacuation arrangement, it was responded that the observations are agreed in principle. The power evacuation to the extent falling with the territory of host Distribution Network Operator of the relevant SoLR has to be ensured by the said network operator. However, such interconnection readiness should be assessed at the time of preparation and approval of IGCEP.

(vi). On suggestion regarding mechanism for compiling, ensuring compliance with capacity obligations report and submitting a combined PAP, it was responded that conclusion portion of PAP has already made suitable recommendations to

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

7/123

the Authority. Regarding keeping the IAA on board with respect to preparation of PAP, it was submitted that the XW-DISCOs duly made an attempt to engage with PPIB, as designated IAA, for coordination, support and advice on the preparation of the PAP. However, through a belated response vide No. C(C02)/PPIB/2023/Law/ 5476/ O-58651 dated April 03, 2023, it was responded that, being not registered as IAA with NEPRA till that date, the PPIB was not legally competent to perform / exercise any function allocated to the IAA pursuant to the Procurement Regulations or otherwise. Notwithstanding the above response, it is assured that once the PPIB is legally competent to perform / exercise any function allocated to the IAA pursuant to the Procurement Regulations or other applicable documents, XW-DISCOs as SoLRs shall surely keep the IAA on-board during finalization of next iterations of PAP and/or after approval of the current PAP.

(vii). **In response to the comments of MoPD&SI**, it was submitted that the comments are aligned with the Procurement Regulations. The registration of the IAA and its role in the preparation and effective implementation of a sound PAP are critical, as per the approved design of the CTBCM and its implementation roadmap. The present form of the PAP considers committed, optimized, and system constraint removal projects. The solarization of 11 kV feeders is included as an optimized project, subject to competitive bidding. Since the other projects are either committed or aimed at constraint removal, the procurement method is predetermined. Future iterations of the PAP will include necessary procurements based on the ground situation. It was responded that the current PAP has already considered committed, optimized, and constraint removal projects during the control period to ensure compliance with the capacity obligations determined by the Market Operator. The solarization of 11 kV feeder lines represents VRE projects. However, projects not required to meet the capacity obligations have not been included in the PAP. The PAP for the period from 2022-23 to 2026-27 has been prepared and submitted in accordance with regulation 6 of the Procurement Regulations, which mandates annual submission of a rolling five-year PAP. The most recently approved IGCEP has been considered for the current PAP. However, the next iteration of the PAP will use the most recently approved IGCEP available. The initial inconsistency arose due to the obligation to submit the first PAP within three months of the notification of the Procurement Regulations. In the future, the most recently approved IGCEP will serve as the guiding document for the relevant PAP iteration. Regarding review of capacity obligations requirements for year 4 and year 5 at 80% and 60% respectively, the XW-DISCOs responded that the comment is agreed; however, proposed review will require amendments to the MCC and the governing Electric Power Procurement Regulations. The Capacity Obligations Report issued by the Market Operator and the existing PAP also provide suggestions and recommendations in line with these comments. The consideration of 500 MW

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

8/23

firm capacity for KAPCO aligns with the base case of the approved IGCEP. If the sensitivity analysis for the TSEP results in the complete retirement of KAPCO before 2025-26, the TSEP will need to propose an alternate mitigation plan, such as constructing Grid Stations in the area by the NTDC, to address relevant transmission constraints. Since the overall system is already compliant with the capacity obligations even without extended KAPCO, no fallback plan is necessary in this case. Regarding the comment on non-coincidental peak, it was responded that the same is agreed with. The comments related to considering all XW-DISCOs as one system to address capacity obligation non-compliance have been detailed in the PAP. While treating all DISCOs as one system is recommended, the compliance with capacity obligations for all DISCOs should be assessed as a whole until the submission of the PAP continues. In case of overall compliance, a judicious adjustment in inter-DISCO capacity allocation factors should be considered. Regarding ensuring consistency in integrated planning for the entire sector, the suggestions were agreed upon.

(viii). **In response to the comments of PEDO**, it was submitted the procurement year as proposed in PAP is aligned with the submissions of PEDO except Lawi for which best estimate is made in PAP being it a legacy contract. Regarding the timeline of Daral Khawar-II, it was responded that the IGCEP optimized projects, which are not mentioned in Capacity Obligations Report, are not taken in PAP. Further, it was commented that it appears PEDO is suggesting the inclusion of PEDO projects located in the vicinity of PESCO as a part of PESCO's Procurement Plan. Regarding this matter, it needs to be clarified that during the five-year planning period of the PAP, a factor-based capacity allocation process must be formulated. However, if the Authority so desires and determines the necessity for individual XW-DISCOs to develop purely bilateral contracts-based PAP, the same can only be accomplished through individual PAPs for each respective DISCO.

(2). The Authority has reviewed the above comments of the stakeholders and the rejoinder of XW-DISCOs in the matter. In this regard, it is considered that XW-DISCOs have addressed the observations/comments of the stakeholders, and no further debate is required on the individual comments of the stakeholders. However, on specific issues pertaining to PAP as also highlighted in stakeholders' comments and rejoinder of the DISCOs, the analysis of the Authority is in the following paragraphs.

(E). Consultative Session on the PAP with XW-DISCOs

The Authority examined the PAP in detail and identified several issues that required discussion/deliberation. In this regard, a professional level discussion session was arranged with the XW-DISCOs, PPIB as IAA, CPPA-G as Market Operator and NTDC as System Operator on May 22 – 23, 2023 to deliberate the forty (40) plus discussion issues covering all major aspects of the proposed PAP. The discussion issues included compliance of the PAP with the Procurement Regulations and the MCC, alignment of the PAP's output with the

9/123

approved IGCEP 2022-31, energy requirements considering seasonal variations and intermittency, consideration of demand-side management measures, impact of projects such as 11kV feeder solarization on the overall basket price, extension of projects with expired PPAs versus proposing new replacements, evaluation of transmission and evacuation arrangements, and the need to incorporate long-gestation projects like large hydro and nuclear in the PAP. Additionally, the issues pertaining to the evaluation of project costs, tariff impact, and the need for revisions or approval of the PAP by the Authority were discussed. Based on the said consultative session and in view of the comments received from stakeholders, the Issues of Public Hearing were framed.

(F). Proceedings of Public Hearing:

The notice of Public Hearing was published in the press on October 12, 2023, as well as on the official website of NEPRA. Further, letters were also sent to various government ministries, attached departments and other relevant stakeholders soliciting their comments on the Issues of the Public Hearing.

(2). The Public Hearing in the matter was held on October 24, 2023, at the head office of NEPRA in Islamabad as well as through video link wherein representatives of XW-DISCOs, CPPA-G, National Power Control Centre (NPCC) of NTDC, Private Power Infrastructure Board (PPIB), interested stakeholders, and the general public participated and presented their point of view in the matter.

(3). The following paragraphs contain the issue-wise discussions covering the response of XW-DISCOs, comments of stakeholders, followed by an analysis thereon by the Authority.

(i) Whether the PAP has been prepared in accordance with the NEPRA (Electric Power Procurement) Regulations, 2022 (the "Procurement Regulations") and market commercial code (the MCC)?

XW-DISCOs submitted that the PAP has been prepared as required under section 32 of the NEPRA Act, regulation 12 of the Supplier Regulations and in line with regulation 6 and 7 (3) of the Procurement Regulations. The IGCEP 2022-31 is also considered as major input for PAP. Further, the Capacity Obligations Report issued by the Market Operator as part of the test run plan is another major input of this PAP and the same is prepared as per procedure laid down in the MCC. The demand forecasts provided by XW-DISCOs to the Market Operator are also in line with the MCC and Distribution Code.

CPPA-G as Market Operator submitted that the PAP has to be prepared as required under section 32 of the Act and regulation 12 of the Supplier Regulations and in line with regulation 6 of the Procurement Regulations which stipulate that the PAP shall be prepared by the SOLR in line with the IGCEP, TSEP, network expansion plan(s) and approved investment programme of the concerned distribution licensee, demonstrating compliance with its capacity obligations determined in accordance with the MCC.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

10/123

In addition, it was commented that the current PAP has been submitted in the absence of the TSEP and investment plans of the XW-DISCOs. The evacuation of power from upcoming generation projects is of paramount importance. It is considered that prior to approval of any future generation project, its power evacuation should be guaranteed, and system constraints should be removed so that the existing generation fleet is economically dispatched. Furthermore, clause 5.8.4 of the NE Policy 2021 states that "*Future procurement of electricity will be in accordance with the IGCEP and TSEP, pursuant to applicable policy / framework and regulatory stipulations*". Furthermore, in the overall scheme PAP is primarily prepared for 3 reasons: (i). fulfillment of capacity obligations under MCC, (ii). cost reduction through induction of lower variable cost plants, and (iii). to ensure system stability and reliability. Therefore, it is understood that PAP can procure over and above the requirements of CO. However, DISCOs PAP has not been prepared in accordance with IGCEP as required by the NE Policy 2021, as they have only taken committed projects and not considered projects required for cost reduction, stability and reliability of the overall system as given in approved IGCEP 2022-31.

Observations/Findings of the Authority:

The PAP is a rolling five year plan which is to be prepared and submitted by an SoLR for approval of the Authority and includes, *inter-alia*, (a) its energy and peak demand requirements for the previous year and projections for the next five years, (b) existing contracted capacity and energy, (c) capacity obligations determined by the market operator, (d) plans for new and firm power procurement over the next three years, with indicative procurement for the following two years, (e) procurement mode and timelines for each project, (f) details of contracted energy and capacity expected to become available within the next five years, including potential delays. Further, in terms of regulation 6(2) of the Procurement Regulations, "*the power acquisition programme shall be prepared by the supplier of last resort in line with the IGCEP, TSEP, network expansion plan(s) and approved investment programme of the concerned distribution licensee, demonstrating compliance with its capacity obligations determined in accordance with the Market Commercial Code.*". In addition, for the initial five years a combined PAP is to be submitted by the SoLRs and accordingly this combined PAP was submitted for approval of the Authority.

The Authority has observed that the PAP submitted by XW-DISCOs is not in line with the approved IGCEP 2022-31 and a significant difference to the tune of 8411 MW as explained in detail in issue no. (ii) below has been observed. Further, as stated during the Public Hearing by the NTDC, there is no confirmation with respect to the timely evacuation of the proposed projects to be connected at the transmission voltage level due to non-availability of the TSEP that can be firmed up through upcoming TSEP. Further to the said, the Authority has observed that since the PAP has been prepared based on the capacity obligations calculated during the test-run period, therefore, variance is expected based on the proposed amendments in the

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

11/23

MCC and methodology for calculation of COs as also confirmed by the Market Operator in its submission. In addition, it has also been observed that the demand forecast of XW-DISCOs submitted in the PAP differs from that submitted in their investment plans. Given the said, the Authority is of the considered opinion that largely the PAP does not meet the requirements of the Procurement Regulations.

(ii) **Whether the output of the PAP i.e., the firm and indicative procurement for the control period (FYs 2022-27) is in line with the generation capacity addition in the latest approved Indicative Generation Capacity Expansion Plan (IGCEP 2022-31) on year-on-year basis? In case of any deviations, what are the justifications and which document should take precedence to ensure least-cost procurement by the SOLRs?**

XW-DISCOs submitted that output of the PAP is in line with IGCEP 2022-31 except following deviations, (i). Solar DG (11 kV feeder line solarization project) is planned to be procured during the FY 2023-24 as per policy guidelines of the government as opposed to the three (03) years span taken in the IGCEP 2022-31. Further, the total quantum of Solar DG procurement (1224 MWp) is less than that optimized in the IGCEP 2022-31 i.e., 2000 MWp. In addition, optimized hydel, utility solar and wind projects are not part of PAP due to compliance with the capacity obligations of the XW-DISCOs as a whole. In addition, it was submitted that assurance of the least-cost procurement should take place at the IGCEP level. However, the final selection of optimized projects should be based on PAP. Once a capacity approved in the PAP reaches contract stage, the next IGCEP should take the same as committed.

NTDC as System Operator submitted that the PAP presented by the XW-DISCOs for FY 2022-23 to FY 2026-27 is not synchronized with IGCEP 2022-31 for two reasons. Firstly, the IGCEP was developed in the summer of 2022 when international fuel prices were very high. On the demand side an optimistic growth rate was considered based on higher GDP forecasts than was actually realized in the base year of 2022/23. The PAP was developed later and independently using bottom-up demand growth estimates from Power Market Surveys (PMS). The upcoming IGCEP 2024-33 will be submitted by the System Operator after Board approval by January 2024. The demand forecast for the first five years would be the recently updated PMS forecast, same as the PAP. Therefore, for the first five years of the IGCEP, there will be no difference in demand forecasts for IGCEP and PAP.

Market Operator submitted that clause 5.8.4 of the NE Policy 2021 states that "Future procurement of electricity will be in accordance with the IGCEP and TSEP, pursuant to applicable policy / framework and regulatory stipulations." However, DISCOs PAP is not prepared in accordance with IGCEP as required by the NE Policy 2021, as they have only taken committed projects and not considered projects required for cost reduction, stability and reliability of the overall system as given in approved IGCEP.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

12/23

Observations/Findings of the Authority

The Authority has observed that there is a significant difference between the proposed PAP and the generation capacity additions as approved in IGCEP 2022-31. It is important to note that the PAP only proposes procurement from committed projects of the IGCEP with a minor share of procurement from the optimized projects i.e., through 11 kV feeder solarization project. However, in comparison with the base case scenario approved in the IGCEP, it has been observed that around 8440 MW of optimized projects in the base case scenario of IGCEP 2022-31 have not been included in the PAP (please refer below image) which is expected to have significant impact on the overall basket price as well as least-cost addition of generation capacity in the system. The Authority is of the opinion that the pivotal document for planning least-cost generation mix for the country is IGCEP and accordingly PAP must be prepared in line with the IGCEP as also required in clause 5.8.4 of the NE Policy 2021 and Regulation 6(2) of the Procurement Regulations, such deviation should have been objectively and quantitively substantiated by the DISCOs. Therefore, it is concluded that the submitted PAP is not in line with the IGCEP.

IGCEP 2022-31			PAP FY 2023 – 2027		Difference	
FY	Committed (MW)	Optimized (MW)	Committed (MW)	Optimized (MW)	Committed (I-P)	Optimized (I-P)
2022-23	4640	0	4659	0	(19)	0
2023-24	1094	500	1094	1224	0	(724)
2024-25	3757	4380	3767	0	(10)	4380
2025-26	1311	2713	1311	13		2700
2026-27	2928	2084	2928	0		2084
Total	13730	9677	13759	1237	(29)	8440
	23407		14996		8411	

(iii) Whether the demand forecast used in the combined PAP is aligned with the demand forecast used in the IGCEP 2022-31 as well as network investment programmes of XW-DISCOs? Also explain the basis for choosing the base case scenario of the IGCEP 2022-31 for preparation of PAP.

XW-DISCOs submitted that the IGCEP 2022-31 forming basis for the submitted PAP is based on the global demand forecast aligned with MTLF for base year 2020-21 of the XW-DISCOs. The Capacity Obligations Report for the purposes of the submitted PAP is based on MTLF for base year 2021-22 of XW-DISCOs. In view of the fact that there was no major difference in the demand forecasts used for IGCEP 2022-31 and the submitted PAP, the base case scenario of IGCEP 2022-31 was adopted being the normal case scenario. Further, subject to the timelines of existing Investment Plans, the projects considered in PAP have been taken into account.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

13/23

Those projects falling after the period of existing investment plans will be appropriately included in the investment plans of XW-DISCOs.

System Operator submitted that the PAP is not synchronized with IGCEP 2022-31 as an optimistic growth rate was considered in the said IGCEP based on higher GDP forecasts than was actually realized in the base year of 2022-23. The PAP was developed later and independently using bottom-up demand growth estimates from Power Market Surveys (PMS).

Punjab Power Development Board (PPDB) submitted that the electricity consumption for the FY 2023-24 is envisaged at 143,820 GWh as indicated by the XW-DISCOs in the PAP, whereas NEPRA has forecasted the consumption to the tune of 124, 861 GWh in the determined Power Purchase Price (PPP) projections for the said fiscal year. Since, the numbers estimated by the XW-DISCOs are on the higher side as compared to those determined by NEPRA, therefore, the resultant decrease in tariff may be timely passed on to the consumers.

Observations/Findings of the Authority

The Authority has observed that the demand forecast of the IGCEP and PAP are almost similar as shown below:

Demand Forecast DISCOs (MW) vs IGCEP						
	2021-22	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**
IESCO	2481	2508	2616	2765	2908	3071
PESCO	2369	2526	2672	2800	2929	3024
FESCO	3292	3512	3761	3944	4126	4342
LESCO	5205	5578	5844	6067	6329	6589
GEPCO	2695	2749	2863	3003	3142	3290
MEPCO	4501	4808	5110	5410	5709	6739
HESCO	1136	1180	1223	1267	1312	1358
QESCO	1070	1129	1166	1206	1247	1299
TESCO	508	522	544	569	596	625
SEPCO	961	1003	1018	1033	1048	1063
DISCOs Total	**24218**	**25515**	**26817**	**28064**	**29346**	**31400**
IGCEP	**23544**	**24755**	**26202**	**27625**	**29177**	**30703**
DISCO/IGCEP	**97%**	**97%**	**98%**	**98%**	**99%**	**98%**

However, the Authority observes that the demand forecasts used for preparation of the approved IGCEP 2022-31 and the submitted PAP respectively were prepared using FY 2021-22 as a base year. Recent observations indicate a substantial reduction in demand and energy consumption (*10.25 % YoY decrease in electricity generation in the CPPA-G system from 143,316.6 GWh in FY 2021-22 to 128,623.87*

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

14/23

GWh in FY 2022-23) during the preceding fiscal year i.e., FY 2022-23, a fact also corroborated by XW-DISCOs and NTDC during the Public Hearing. Given this notable decline, it is imperative to align the PAP and IGCEP with the most current demand forecasts, significantly lower than the previous projections, is evident. The Authority deems it prudent that PAP and IGCEP are realigned with the updated demand forecasts, ensuring reflection of recent developments and considering the decreasing trend of the demand forecast.

The Authority has further observed that the demand forecasts submitted in the XW-DISCOs' investment programs differ from those considered in the PAP. Therefore, alignment of these forecasts is also considered necessary in the next PAP.

Regarding the comments raised by the PPDB, the Authority considers that the short term demand forecast is primarily used for PPP forecast for determination of reference/base tariff .Any change in generation mix based on DISCOs actual demand and available generation resources and its associated financial impact on the end consumer tariff which occurs as a result of actual increase/decrease in the consumption from the projected/determined numbers are duly passed and adjusted through the monthly fuel charge and quarterly adjustments through separate regulatory proceedings. However, the observation is worth considering and DISCOs are directed to ensure minimal difference between the short to medium terms forecasts for the predicable tariff, optimal investment and capacity procurements.

(iv) Whether the capacity obligations prepared by the CPPAG as market operator during the test-run period should be considered for approval of the PAP or otherwise?

XW-DISCOs submitted that Regulation 6(2) of the Procurement Regulations, 2022 inter-alia, requires the PAP to demonstrate compliance with the capacity obligations determined in accordance with the MCC. Further, the Capacity Obligations Report prepared by the Market Operator during the test-run period may be considered for approval of this PAP. This shall help in a smooth and expeditious transition to the market environment.

Market Operator submitted that keeping in view that CTBCM is under trial run and the decision of Authority is awaited on the recommendations in the final test run report which proposes some changes in the MCC which will affect the determination of capacity obligations. Further, the comment of the Market Operator in issue no.1 above regarding the quantum to be included in PAP may also be considered here.

PPDB commented that projected allocation factors among XW-DISCOs for the fiscal years till FY 2026-27 have been envisaged with 1.74% for TESCO being lowest and 21.10% for LESCO being highest. Accordingly, NEPRA may propose a mechanism to address any variance during the horizon of the PAP due to enhanced load of any DISCO or otherwise.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

15/23

Observations/Findings of the Authority

The Authority observed that the Market Operator has identified, during the test-run period, a number of amendments in the MCC including in the mechanism for the preparation of Capacity Obligations Report as well as allocation factors for allocation of legacy and new generation amongst the XW-DISCOs, which are two of the main inputs of the proposed PAP. Therefore, the proposed amendments in the MCC as submitted by the Market Operator with the final test-run report of the CTBCM, if approved by the Authority, may have an impact on the proposed PAP. Therefore, the Authority is considering the capacity obligations prepared during the test-run period as an indicative input for approval of this PAP.

Regarding the comments of the PPDB, it is considered that since the PAP is a rolling document therefore any increase/decrease in the demand of XW-DISCOs shall be duly taken care of in the upcoming iterations of the PAP as stipulated in the Procurement Regulations.

(v) **Whether it is prudent to allow the extension in contracts of legacy projects due to constraints in the NTDC system as indicated in IGCEP 2022-31? Has there been any system technical assessment study conducted to justify the same?**

XW-DISCOs commented that in particular case of the PAP in hand, only one project has been considered with extension as same has been considered in approved IGCEP 2022-31. The extended project has been taken only at a minimum level of 500 MW to avoid local constraints for a limited period of time, until such constraints are removed. Replacement of KAPCO with a new project for the purpose of constraint removal is subject to detailed study in TSEP as stated in the IGCEP 2022-31.

Market Operator submitted that as per regulation 33 (2) of the Procurement Regulations, any extension of legacy contracts/PPAs is subject to optimization under IGCEP. Therefore, if IGCEP includes extension of a particular power plant on a least-cost basis, then extension may be granted.

Observations/Findings of the Authority

The Authority considers that the only procurement proposed in the PAP due to constraints in the NTDC system is the extension in the power purchase agreement of KAPCO (to the tune of 500 MW only). In this regard, in the IGCEP 2022-31 a minimum dispatch of 500 MW from existing KAPCO CCPP (Block-I and Block-II) in the months of May to September until year 2025 has been considered and approved, beyond its PPA expiry i.e., October 2022, owing to network requirements/constraints, whereas the remaining capacity (Block-III) has been retired as per PPA expiry. It is pertinent to mention that in the IGCEP 2022-31, NTDC had submitted that the requirement of KAPCO beyond its PPA expiry will be assessed in the TSEP, after which competent forum will be approached, with consensus among concerned stakeholders i.e., NTDC, CPPA-G and KAPCO, for PPA extension or otherwise and the same will be considered in the next iteration of

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

16/23

the IGCEP. Although there is no approved TSEP at this point of time, the Authority has reviewed the draft TSEP submitted by the NTDC for approval of the Authority on November 30, 2022, and it has been observed that 500 MW from KAPCO will be required till FY 2025-26 after which it may not be required owning to, *inter-alia*, upgradation of Vehari 220/132 kV Substation to 500kV and availability of Nagshah 220/132 kV Substation in FY 2025-26.

In view of this, the Authority is of the considered opinion that the inclusion of KAPCO due to transmission constraints is justified and the extension in the existing power purchase agreement of KAPCO as proposed in the PAP is allowed.

(vi) Whether the availability of transmission/evacuation arrangements for the firm projects have been considered during preparation of PAP?

XW-DISCOs submitted that the localized solarization of 11 kV projects are based on ensured evacuation arrangements. However, for the projects specifically approved in the IGCEP 2022-31, it is understood that the System Operator and Transmission Network Operator shall decide for timely evacuation subject to the COD of respective power projects. It was further submitted that subject to the timelines of existing investment plans, the projects considered in PAP have been taken care of. The projects falling after the period of existing investment plans will be appropriately included in the investment plans of XW-DISCOs. In future, evacuation arrangements planned for committed projects will be made part of the PAP, especially for those projects, where evacuation is the responsibility of XW-DISCOs.

Market Operator submitted that the evacuation of power from upcoming generation projects is of paramount importance and prior to the approval of any future generation project, its power evacuation should be guaranteed. Further, system constraints should be removed so that the existing generation fleet is economically dispatched, and no negative impact is transferred because of such plants of ex-WAPDA DISCOs. In addition, Clause 5.8.4 of the NE Policy 2021 states that "*Future procurement of electricity will be in accordance with the IGCEP and TSEP, pursuant to applicable policy / framework and regulatory stipulations*". Therefore, CPPA-G is of view that PAP cannot be developed in absence of TSEP.

Observations/Findings of the Authority

The Authority has observed that evacuation arrangements have been considered for the 11kV feeder solarization project as also confirmed by the XW-DISCOs. However, for the projects approved in the IGCEP 2022-31 and to be connected at the transmission voltage, NTDC was not consulted to ensure/confirm evacuation of projects as per the proposed timelines of the PAP and therefore the PAP is incomplete to this extent.

To avoid this lack of consultation in the future iterations of PAP and to ensure evacuation arrangements for upcoming projects, a performa for submission of

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

17/123

evacuation arrangements for proposed projects in the future iterations of the PAP is being attached with this Determination and the XW-DISCOs shall submit the completely filled performa along with submission of the PAP in the future.

(vii) Whether the PPIB as Independent Auction Administrator (IAA) is on-board and shall have ensured the readiness as per the proposed timelines of competitive auctions given that it is responsible for the conduct of regular competitive auctions through timely published annual power procurement plan based on the approved PAP?

XW-DISCOs submitted that as already detailed in the PAP, in the absence of any registered IAA, the consultation indicated in the proviso to regulation 6(2) of the Procurement Regulations was dispensed with. This was also later confirmed by CEO PPIB through letter No. C(C02)/PPIB/2023/Law/5476/O-58651 dated April 3, 2023.

Observations/Findings of the Authority

The Authority is of the opinion that at the time of submission of PAP, registration as IAA was not granted to any entity, therefore, the XW-DISCOs could not comply with the said requirement. It is important to highlight that the XW-DISCOs have informed that they approached PPIB for consultation on the PAP, however, the latter showed its inability to involve in consultations in the capacity of IAA due to pending status of its registration application. In this regard, the Authority observes that consultation with the IAA is important for timely conduct of competitive auctions through preparation of Power Procurement Plan (PPP) for the proposed generation capacity addition in the PAP. Since, the PPIB has been granted registration as IAA, therefore, the Authority directs the same to ensure participation in consultations with the XW-DISCOs during the next iterations of PAP so that future competitive auctions are planned and conducted in accordance with the scope and timelines of the PAP.

(viii) Whether any project committed or optimized in the IGCEP has not been considered in the PAP? If yes, explain the details and the justification?

XW-DISCOs reiterated their position as submitted in response to issues no. (ii) above i.e., output of the PAP is in line with IGCEP 2022-31 except following deviations, (i). Solar DG (11 kV feeder line solarization project) is planned to be procured during the year 2023-24 as per policy guidelines of the government as opposed to the three (03) years span considered in the IGCEP 2022-31. Further, the total quantum of Solar DG procurement (1224 MWp) is less than that optimized in the IGCEP 2022-31 i.e., 2000 MWp. In addition, optimized hydro, utility solar and wind projects are not part of PAP due to compliance with the capacity obligations of the XW-DISCOs as a whole.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

18/23

Observations/Findings of the Authority

The opinion of the Authority has been explained in detail in issue (ii) above and may be referred. Succinctly put, the PAP does not take into account around 8440 MW of IGCEP optimized generation capacity and therefore there is a major difference between the IGCEP optimized generation mix and PAP proposed generation capacity. Therefore, the Authority directs XW-DISCOs to ensure alignment of the upcoming PAP with the latest approved IGCEP and in case of any difference necessary justifications with financial implications including impact on consumer-end tariff and power purchase price must be submitted for consideration of the Authority.

(ix) **Whether the impact of rooftop solar and captive generation has been considered during preparation of the PAP and what is the expected impact of the same on the proposed PAP?**

XW-DISCOs submitted that the forecasted demand as already submitted to the Authority and Market Operator is based on due consideration of DG net-metering and related impact. Although the forecasted demands of XW-DISCOs already consider the impact of DG, it may be noted that IGCEP also includes net-metering as source of generation. Impact of captive generation and off-grid solarization has not been considered during preparation of demand forecasts due to non-availability of data. XW-DISCOs agreed they will devise a mechanism to collect data of captive power plants and behind the meter solarization projects to include their impact on the demand forecast.

Market Operator submitted that for different approaches have been adopted by K-Electric and DISCOs while considering the impact of net metering. For K-Electric, Net-metering/roof-top quantum has been subtracted from overall demand forecast and the rest of generation is planned on the residual demand. Therefore, no net metering generation has been selected for K-Electric in IGCEP. The IGCEP for XW-DISCOs, however, picks net metering generation differently. The demand forecast of XW-DISCOs is taken as it is, and net metering quantum is added as generation. This is why we see net metering being selected separately for XW-DISCOs in IGCEP 2022-31. It is considered that the same technique be used for K-Electric and preferably use the method as adopted for XW-DISCOs in IGCEP. This is because modelling met metering generation in the IGCEP would capture its generation behavior more accurately and would improve the overall process.

Observations/Findings of the Authority

As confirmed by the XW-DISCOs, the impact of rooftop solar and captive generation has not been considered in the PAP due to non-availability of data. However, net metering has been considered on the generation side as provided in the IGCEP 2022-31. The Authority hereby directs XW-DISCOs to comply with the applicable documents and take into account the impact of rooftop solar as well as captive generation plants into their demand forecasts after collection of the relevant

19/123

data so that optimal procurement is made based on the true reflection of the capacity obligations of the respective DISCOs. Further, XW-DISCOs are directed to initiate necessary data collection exercises immediately so that the relevant forecasts/numbers are considered at the time of preparation of the forthcoming PAP.

(x) **Whether it is prudent to procure over and above the capacity obligations compliance rate as calculated by the market operator to ensure security of supply and alignment with the IGCEP for least-cost addition of electric power in the system?**

XW-DISCOs submitted that the prime objective of the power sector reforms is to ensure least-cost procurement. Alignment with the IGCEP is desirable as a guiding indicative document. However, the main drive for procurement should be compliance to the determined capacity obligations. Accordingly, procurement of power within reasonable range can be considered, however, any procurement without demonstration in the capacity obligations will not be effective. In this regard, attention is drawn to regulation 4(2)(a) of the Procurement Regulations. XW-DISCOs pointed out that they are under the capacity traps due to legacy contracts as well as committed projects and are under obligation for procurement of this capacity irrespective of capacity obligations requirements or least-cost principle. However, once the legacy contracts expire, the demand supply gap of DISCOs will be narrowed, and the least-cost criteria will be gradually followed.

Market Operator submitted that in overall scheme, PAP is primarily prepared for three (03) reasons: (i). fulfillment of capacity obligations under MCC, (ii). cost reduction through induction of lower variable cost plants, and (iii). to ensure system stability and reliability. Therefore, it is understood that PAP can procure over and above the requirements of capacity obligations. However, DISCOs PAP was not prepared in accordance with the IGCEP as required by the NE Policy 2021, as they have only taken committed projects and not considered projects required for cost reduction, stability and reliability of the overall system as given in the approved IGCEP 2022-31.

Observations/Findings of the Authority

The Authority considers IGCEP to be the sole applicable document within the current regulatory framework for planning the least-cost generation mix. It is developed based on various optimization criterion, including dispatch scenarios focused on fuel displacement. IGCEP proposes a generation mix capable of meeting real-time system energy demands while adhering to the least-cost principle, as outlined in Strategic Directive 9 of the National Electricity Plan, Clause 5.8.4 of the NE Policy 2021, and Regulation 6(2) of the Procurement Regulations. Therefore, it is crucial that PAP is aligned with the output of the IGCEP as any deviations between the two may have significant implications with respect to ensuring the least-cost generation mix for the system. Therefore, the Authority is of the considered opinion that even if compliance with capacity obligations is ensured, additional procurement,

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

20/123

if approved in the IGCEP, is required to meet the least-cost criteria unless it is established and justified by the XW-DISCOs in the PAP that procurement based on IGCEP will result in a higher a power purchase price than that of the mix proposed in the PAP.

(xi) **If the PAP approved as proposed, what is the forecasted financial analysis and impact of the proposed PAP on the end-consumer tariff as well as basket price of the respective XW-DISCO? Please share graphical illustrations in this regard.**

XW-DISCOs submitted that no forecasting of potential impact of the proposed combined PAP on the end-consumer tariff or on the basket price of XW-DISCOs has been made. Further, XW-DISCOs do not have such a tool to come up with an analysis of impact on consumer end tariff. CPPA-G has such capacity and tool available with them and may extend their cooperation in this regard.

Market Operator submitted that System Operator being the central planner, may be directed to work with XW-DISCOs to evaluate the cost of such generation capacity. It might not be possible to segregate projects selected by tools such as PLEXOS in the categories of projects selected for cost reduction, system stability, security, or maintaining the power balance. However, the System Operator will be in a better position to respond to this direction by the Authority. Moreover, CPPA will assist XW-DISCOs in evaluating the basket price and consumer end tariff based on the final output of IGCEP.

Observations/Findings of the Authority

The Authority has observed that no financial impact whatsoever of the proposed generation capacity additions on the overall basket price or consumer end tariff has been provided in the PAP. In this regard, it is important to highlight that major chunk of the proposed generation capacity additions in the PAP are from committed projects in the IGCEP 2022-31 which are not necessarily optimized based on least-cost principle rather have been included as committed in light of the assumptions approved by the Council of Common Interests (CCI) through its decision No. 2(48)/2021-CCI(48) dated September 13, 2021. Furthermore, the PAP does not include around 8440 MW of solar and wind projects optimized based on least-cost principle in the IGCEP 2022-31 as highlighted in above paragraphs. Therefore, it is concluded that PAP may not have any positive impact on the consumer-end tariff unless it is aligned with the output of the IGCEP or a detailed financial impact analysis of the proposed PAP on basket price/consumer-end tariff vis à vis IGCEP is provided to prove otherwise. Therefore, the Authority directs DISCOs to provide financial impact of the proposed generation additions in the future iterations of the PAP in accordance with the Procurement Regulations.

(4). In view of the aforementioned observations, the Authority is of the opinion that the submitted PAP is not in full compliance with the Procurement Regulations and other applicable documents and does not reflect a complete picture of the procurement needs based on the

criteria of least-cost. Further, the Capacity Obligations Report issued by the Market Operator as part of the test run plan may require revision if the amendments in the MCC by the Market Operator are approved and therefore the same cannot be considered as firm input of the current PAP. Moreover, as highlighted above, the uncertainty w.r.t transmission/evacuation of proposed projects, expected amendments in the commercial allocation methodology of legacy contracts, non-inclusion of the impact of captive generation in the demand forecast, non-submission of financial impact of the proposed procurement on consumer-end tariff are some of the important issues that necessitate revision of the PAP for alignment with the upcoming IGCEP, TSEP and provisions of the Procurement Regulations.

(5). Notwithstanding the above, the Authority is also cognizant of the fact that while PAP is an important procurement document to ensure procurement discipline for efficient and optimal investment in the generation capacity based on systematic demand forecasts and capacity obligations; however, returning the same may have an adverse impact and risk the timely procurement of committed projects and extension of 500 MW KAPCO project resulting in regulatory inconsistency and gap. It is also important to mention that since this PAP is the first initiative under the recently evolved policy and regulatory framework, therefore, certain issues as highlighted in the findings need to be improved/addressed in the subsequent iterations of the PAP.

(G). Decision of the Authority

In consideration of the above, the Authority approves the PAP to the extent of committed projects and 500 MW KAPCO which is required in lieu of the system constraints with the following directions:

a) The tariff for the approved projects/procurements, if not already determined, shall be subject to separate tariff proceedings in accordance with the regulatory framework and subsequent proceedings.

b) XW-DISCOs to ensure compliance of the next iteration of the PAP with the NEPRA (Electric Power Procurement) Regulations, 2022 including, but not limited to, alignment with the approved IGCEP, TSEP, Investment Plans, and Capacity Obligations Report.

c) XW-DISCOs to submit financial analysis/impact of the projects proposed in the PAP on consumer end tariff including the power purchase price, capacity purchase price and energy purchase price within next iteration of the PAP.

d) XW-DISCOs to submit status of evacuation arrangements for the projects proposed in the PAP on the performa attached (Annex-I) with the determination and clearly identify the mode of procurement for firm as well as indicative projects along with justifications thereof.

e) XW-DISCOs to consider the impact of rooftop solar and captive generation in the next iteration of the PAP.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY ★ NEPRA AUTHORITY

f) XW-DISCOs to ensure consultation with the IAA prior to submission of the PAP to the Authority especially with respect to timelines for conducting competitive auctions, where applicable, for proposed project in the PAP.

g) XW-DISCOs to coordinate with KEL for reflection of the capacity quantum to be supplied to KEL from National Grid in the PAP so that no misalignment with respect to the quantum of supply is observed between the two PAPs.

Engr. Maqsood Anwar
Member

Rafique Ahmed Shaikh
Member

Mathar Niaz Rana (nsc)
Member

Amina Ahmed
Member

Waseem Mukhtar
Chairman

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

20/05/24

2023

COMBINED POWER ACQUISITION PROGRAMME

Of XW-DISCOs (Suppliers of Last Resort)

2022-23 to 2026-27

- Islamabad Electric Supply Company (IESCO)
- Peshawar Electric Supply Company (PESCO)
- Faisalabad Electric Supply Company (FESCO)
- Lahore Electric Supply Company (LESCO)
- Gujranwala Electric Power Company (GEPCO)
- Multan Electric Power Company (MEPCO)
- Hyderabad Electric Supply Company (HESCO)
- Quetta Electric Supply Company (QESCO)
- Tribal Areas Electric Supply Company (TESCO)
- Sukkur Electric Power Company (SEPCO)

Pursuant to the Proviso to Regulations 7(3), 6(1), 6(2) including proviso thereof of NEPRA (Electric Power Procurement) Regulations, 2022 read with Regulation 12(1) and 12(3) of NEPRA Licensing (Electric Power Supplier) Regulations, 2022 and Section 32 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

24/123

EXECUTIVE SUMMARY

As per Section-32 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the Act), as amended through Generation, Transmission and Distribution of Electric Power (Amendment) Act, 2018, the Authority was required to specify procedures and standards for the Authority's prior approval of the transmission companies' and distribution companies' investment and power acquisition programmes within eighteen (18) months of the commencement of the Act. The required regulations were promulgated by the Authority as NEPRA (Electric Power Procurement) Regulations, 2022 (Procurement Regulations) notified vide SRO No. 2136(I)/2022 dated December 06, 2022. In line with the amended Act, NEPRA Licensing (Electric Power Supplier) Regulations, 2022 (Licensing Regulations) were also issued by the Authority vide SRO No. 446(I)/2022 dated March 28, 2022.

While the XW-DISCOs, currently carrying out electric power supply business as "deemed licensee" in terms of the amended Act, Regulation 12 of the Licensing Regulations an electric power supplier is required to submit its power acquisition programme (PAP) to the Authority on annual basis. While the competitive supplier does not require approval of the Authority to the submitted PAP, the PAP submitted by the suppliers of the last resort (SOLRs), i.e., the XW-DISCOs, is subjected to the approval of the Authority.

The regulations 6 and 7 of the Procurement Regulations, including the provisos to sub-regulations 6(2) and 7(3), provide high level guidance towards development, submission of and timelines for the "combined power acquisition programme" of all SOLRs. In the absence of clarity on responsibility for combining / compiling and submission of said combined power acquisition programme and the existence of a Independent Auction Administrator for consultation required as per mentioned proviso to sub-regulation 6(2) of the Procurement Regulations; this combined power acquisition programme of the XW-DISCOs, i.e. SOLRs except KE, is developed through a joint collaborative effort of MIRADs of the XW-DISCOs (the SOLRs). The clarifications and disclaimers provided at Section 1.3 of the document form integral part of the combined power acquisition programme.

Besides requirements of the Act, the Licensing Regulations, and the Procurement Regulations, this document is based on Medium Term Load Forecasts (MTLFs) of each SOLR as already submitted with the Authority, the IGCEP-2022 as approved by the Authority and the Report on Compliance with Capacity Obligations 2022-23 ("Capacity Obligation Report 2022-23") prepared by the CPPA-G (as designate Market Operator) under the provisions of the approved Market Commercial Code (MCC).

The above-mentioned Capacity Obligation Report 2022-23 provides systematic calculation of Capacity Obligation of each SOLR determined in accordance with the Market Commercial Code and valuation of existing and future contracted firm capacities of supply for assessment of compliance with the said Capacity Obligation. The document also provides details of contracted capacities and allocation thereof to each SOLR.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

25/123

The assessment of security of supply reveals that, without prejudice to the individual SOLR level (minor / serious) reported intermittent non-compliances, the SOLRs collectively have adequately sufficient supply for current as well next 4 years. It may be noted that the reported SOLR-wise compliance status for the Year-3 (FY 2025-26) and Year-4 (FY 2026-27) is based on 80% and 60% required compliance, respectively. The results of Capacity Obligation Report 2022-23, prepared by the Market Operator, in terms of the year-wise / SOLR-wise Capacity Obligation (MW), Credited Firm Capacity (MW), %age compliance to the Capacity Obligation and level of compliance, are summarized as below:

Capacity Obligation (MW):

DISCO	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
IESCO	2,256	2,834	2,956	3,124	2,628	2,082
PESCO	2,736	2,854	3,019	3,163	2,647	2,050
FESCO	2,969	3,968	4,249	4,456	3,729	2,943
LESCO	5,210	6,302	6,603	6,855	5,720	4,467
GEPCO	2,198	3,106	3,235	3,393	2,840	2,230
MEPCO	3,510	5,432	5,773	6,112	5,160	4,094
HESCO	848	1,333	1,382	1,431	1,186	921
QESCO	835	1,276	1,317	1,363	1,127	881
TESCO	0	590	615	643	539	424
SEPCO	690	1,133	1,150	1,167	947	721
TOTAL	**21,252**	**28,827**	**30,298**	**31,707**	**26,524**	**20,811**

Note: Capacity Obligation(s) for Year-3 and Year-4 are based 80% and 60%, respectively.

Credited Firm Capacity (MW):

DISCO	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
IESCO	2,579	3,261	3,092	3,390	3,471	3,690
PESCO	3,718	4,141	3,927	4,305	4,408	4,686
FESCO	3,326	4,205	3,988	4,372	4,477	4,759
LESCO	5,362	6,778	6,428	7,048	7,216	7,671
GEPCO	2,496	3,155	2,992	3,280	3,358	3,570
MEPCO	4,335	5,480	5,198	5,698	5,835	6,202
HESCO	1,217	1,539	1,459	1,600	1,638	1,741
QESCO	1,428	1,805	1,712	1,877	1,922	2,043
TESCO	0	559	530	581	595	633
SEPCO	948	1,198	1,136	1,246	1,276	1,356
TOTAL	**25,409**	**32,121**	**30,463**	**33,398**	**34,197**	**36,352**

As clarified in the Capacity Obligation Report 2022-23 prepared by the Market Operator, the projects planned to be procured in the future by the EX-WAPDA DISCOs have been considered as those committed projects in the approved IGCEP 2022 for

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

26/123

which procurement process have been initiated at CPPA-G. Those committed projects for which procurement process has not been initiated at CPPA-G and DISCOs have also not provided any information on their procurement on bilateral basis have been excluded from the planned projects.

Compliance Percentage:

The level of compliance, in terms of percentage above / (below), to the determined capacity obligation is as below:

DISCO	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
IESCO	14.3%	15.1%	4.6%	8.5%	32.1%	77.3%
PESCO	35.9%	45.1%	30.1%	36.1%	66.5%	128.6%
FESCO	12.0%	6.0%	-6.1%	-1.9%	20.0%	61.7%
LESCO	2.9%	7.6%	-2.6%	2.8%	26.1%	71.7%
GEPCO	13.6%	1.6%	-7.5%	-3.3%	18.3%	60.1%
MEPCO	23.5%	0.9%	-10.0%	-6.8%	13.1%	51.5%
HESCO	43.5%	15.4%	5.6%	11.8%	38.1%	89.2%
QESCO	71.0%	41.5%	30.0%	37.8%	70.5%	132.0%
TESCO	0.0%	-5.2%	-13.7%	-9.6%	10.5%	49.3%
SEPCO	37.4%	5.7%	-1.2%	6.8%	34.7%	88.2%
TOTAL	**19.6%**	**11.4%**	**0.5%**	**5.3%**	**28.9%**	**74.7%**

Compliance Status:

DISCO	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
IESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
PESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
FESCO	Compliance	Compliance	Serious Non-Compliance	Compliance	Compliance	Compliance
LESCO	Compliance	Compliance	Minor Non-Compliance	Compliance	Compliance	Compliance
GEPCO	Compliance	Compliance	Serious Non-Compliance	Minor Non-Compliance	Compliance	Compliance
MEPCO	Compliance	Compliance	Serious Non-Compliance	Serious Non-Compliance	Compliance	Compliance
HESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
QESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
TESCO	Compliance	Serious Non-Compliance	Serious Non-Compliance	Serious Non-Compliance	Compliance	Compliance
SEPCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
Total	**Compliance**	**Compliance**	**Compliance**	**Compliance**	**Compliance**	**Compliance**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

27/123

In view of the fundamental responsibility for ensuring adequate supply for their regulated customers the XW-DISCOs intend to tap in to the committed, not yet contracted, capacities indicated in the approved IGCEP 2022. Further, as per directions of the Government of Pakistan, the SOLRs have already embarked upon projects for solarization of 11 kV feeder through distribution generation solar parks. Additionally, the KAPCO considered as retired in the Capacity Obligation Report 2022-23, has been retained at 500 MW firm capacity (as per approved IGCEP 2022) in the procurement to meet with transmission constraints. Adjusting for the above additional capacities, the position on compliance with the Capacity Obligation is expected to further improve during the time horizon of this Power Acquisition Programme. The year-wise / SOLR-wise Expected Credited Firm Capacity (MW), %age compliance to the Capacity Obligation and level of compliance, based on the said additional capacities of power generation, are summarized as below:

Credited/Proposed Firm Capacity (MW):

DISCO	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
IESCO	2,579	3,317	3,101	3,465	3,556	3,724
PESCO	3,718	4,211	3,955	4,417	4,532	4,745
FESCO	3,326	4,277	4,193	4,567	4,684	4,900
LESCO	5,362	6,895	6,575	7,286	7,474	7,823
GEPCO	2,496	3,209	3,180	3,444	3,531	3,694
MEPCO	4,335	5,574	5,628	5,995	6,147	6,429
HESCO	1,217	1,565	1,479	1,650	1,693	1,772
QESCO	1,428	1,836	1,716	1,918	1,968	2,061
TESCO	0	600	600	638	653	682
SEPCO	948	1,219	1,150	1,285	1,318	1,379
TOTAL	**25,409**	**32,703**	**31,576**	**34,665**	**35,554**	**37,210**

Compliance Percentage:

DISCO	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
IESCO	14.3%	17.1%	4.9%	10.9%	35.3%	79.3%
PESCO	35.9%	47.6%	31.0%	39.6%	71.2%	132.0%
FESCO	12.0%	7.8%	-1.3%	2.5%	25.6%	66.8%
LESCO	2.9%	9.4%	-0.4%	6.3%	30.6%	75.5%
GEPCO	13.6%	3.3%	-1.7%	1.5%	24.3%	66.0%
MEPCO	23.5%	2.6%	-2.5%	-1.9%	19.1%	57.4%
HESCO	43.5%	17.4%	7.0%	15.3%	42.8%	92.9%
QESCO	71.0%	44.0%	30.3%	40.8%	74.6%	134.6%
TESCO	0.0%	1.7%	-2.4%	-0.8%	21.2%	61.3%
SEPCO	0.0%	7.6%	0.0%	10.1%	39.1%	91.9%
TOTAL	**0.0%**	**13.4%**	**4.2%**	**9.3%**	**34.0%**	**79.2%**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

28/12?

DISCO	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
IESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
PESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
FESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
LESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
GEPCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
MEPCO	Compliance	Compliance	Minor Non-Compliance	Compliance	Compliance	Compliance
HESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
QESCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
TESCO	Compliance	Compliance	Minor Non-Compliance	Compliance	Compliance	Compliance
SEPCO	Compliance	Compliance	Compliance	Compliance	Compliance	Compliance
Total	**Compliance**	**Compliance**	**Compliance**	**Compliance**	**Compliance**	**Compliance**

As a result of proposed procurements, as detailed in Section 5 of this document, and without prejudice to the intermittent individual deficiencies at some DISCOs, the combined position of all DISCOs, considering system a whole, stands compliant to the capacity obligation determined under the provisions of Market Commercial Code. With suitable adjustments in inter DISCO adjustment of allocation factors, the said intermittent individual deficiencies at some DISCOs can pragmatically be mitigated with least cost to the system.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

29/123

Table of Contents

30/12

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

31/123

List of Tables

List of Figures

1. INTRODUCTION

This Combined Power Acquisition Programme (PAP) of all XW-DISCOs is prepared pursuant to the requirements of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the Act), NEPRA Licensing (Electric Power Supplier) Regulations, 2022 (the Licensing Regulations) and NEPRA (Electric Power Procurement) Regulations, 2022 (the Procurement Regulations) covering the next 5-year time span from 2022-23 as current year and 2023-24 to 2026-27 as plan years. This PAP takes primary inputs from the Capacity Obligation Report 2022-23 prepared by the Market Operator and aims, at all times, demonstrating compliance with the capacity obligations determined in accordance with the Market Commercial Code. While the Capacity Obligation Report 2022-23 prepared by the Market Operator is annexed separately **(Annex-IV)**, however, for the purpose of continuity of this document and compliance to the requirements of relevant regulations, this document includes detailed workings with regard to the Capacity Obligation, Credited Firm Capacity and status of compliance to the said Capacity Obligation. In line with the regulations and said Capacity Obligation Report 2022-23, this document is based on Medium-Term Load Forecasts (MTLF) based upon Power Market Survey (PMS) Model, recently prepared and submitted by all XW-DISCOs, with 2021-22 as base year and forecast horizon covering 10 plan years from 2022-23 to 2031-32. First 5 years of the said latest MTLF of XW-DISCOs have been adopted for assessment of security of supply to their regulated customers over the said time horizon. As per guidance provided in regulation 6 of the Procurement Regulations, besides energy and peak demand requirements over the plan years, this document is aligned with the stipulations of approved Market Commercial Code and the IGCEP 2022 recently approved by NEPRA. In line with the said Capacity Obligation Report 2022-23, in addition to the existing contracted capacities, the projects planned to be procured in the future by the EX-WAPDA DISCOs have been considered as those committed projects in the approved IGCEP 2022 for which procurement process have been initiated at CPPA-G. Those committed projects for which procurement process has not been initiated at CPPA-G and DISCOs have also not provided any information on their procurement on bilateral basis have been excluded from the planned projects. For calculation of DISCOs' shares in total generation capacity, Commercial Allocation Factors as defined in Market Commercial Code (MCC) are used.

The Capacity Obligation calculated based on forecast peak demands of DISCOs are compared with contracted generation firm capacity for the next 5 years to assess the security of supply for their regulated consumers. Any shortfall in contracted capacity, is to be procured in the light of the said Procurement Regulations, 2022.

1.1. Regulatory Compliance:

Relevant provisions of the Act, the Licensing Regulations and the Procurement Regulations are provided below as a matter of record, source of guidance and touchstone to the compliance thereof.

1.1.1. NEPRA Act:

Section 1(3) of **The Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (Amended)** is reproduced below;

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

35/123

"[1(3) It shall come into force at once, except sections 23A, 23B, 23G and 23H which shall come into force within a period of five years of coming into force of the Regulation of Generation, Transmission and Distribution of Electric Power (Amendment) Act, 2018 or on such earlier date as the Federal Government may, by notification in the official Gazette, appoint.]"

Section 32 of **The Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (Amended)** is reproduced below;

"32. **Investment and power acquisition programmes.** — (1) The Authority shall, within eighteen months from the commencement of this Act, [specify] procedures and standards for the Authority's prior approval of the transmission companies' and distribution companies' investment and power acquisition programmes.

(2) Any procedures [specified] by the Authority under this section shall advance the goal of minimizing regulatory oversight of contracts entered into by the national grid company [, the provincial grid companies] and distribution companies.

(3) Any investment programme or power acquisition programme, approved by the Authority under this section shall take into account the national energy plans issued by the Federal Government.

(4) Upon the Authority's approval of an investment programmes or a power acquisition programme, the Authority shall, subject to such terms and conditions, including rates and charges of electric power, permit the distribution company to enter into long term contracts for power purchases."

1.1.2. NEPRA Licensing (Electric Power Supplier) Regulations, 2022:

The regulation 12 of **NEPRA Licensing (Electric Power Supplier) Regulations, 2022** is reproduced as below;

"12. Power acquisition programme. - (1) An electric power supplier shall submit to the Authority its power acquisition programme on annual basis in accordance with the Act, power procurement regulations and other applicable documents.

(2) The competitive supplier's power acquisition programme shall be submitted for information of the Authority and other licensees for relevant power systems planning and may not require approval of the Authority.

(3) The supplier of last resort's power acquisition programme shall require approval of the Authority.

(4) The supplier of last resort shall establish adequate communication and information sharing mechanism with the concerned distribution licensee to periodically obtain information about the prospective consumers who have submitted an application for installation of an electricity connection to develop its power acquisition programmes."

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

36/123

1.1.3. NEPRA Performance Standards (Electric Power Suppliers) Regulations, 2022:

Regulation 3(a) of **NEPRA Performance Standards (Electric Power Suppliers) Regulations, 2022** defines **PS 1** reproduced below;

"3(a) Performance Standard I — Capacity Obligations (PS 1)

(i) An electric power supplier shall ensure that it has adequate arrangements either from its own generation or through contracts with electric power traders or generation licensees or generation companies, as the case may be, to fully meet its capacity obligations associated with supply of electric power to its consumers, in accordance with the applicable documents:

Provided that capacity obligations of an electric power supplier supplying to consumers connected, directly or indirectly, with the National Grid shall be determined in accordance with the Market Commercial Code;

(ii) An electric power supplier shall be considered in compliance with PS 1, if it successfully met its 95% or above capacity obligations in the respective year;"

1.1.4. NEPRA (Electric Power Procurement) Regulations, 2022:

NEPRA (Electric Power Procurement) Regulations, 2022 obligates an electric power supplier to plan in advance and ensure security of supply for its consumers by planning power procurement in adequate quantity.

Regulation 2(1) of these Regulations defines following terms as;

"(h) "bidding documents" means the documents including templates of agreement(s), RFP(s), and any other supporting document prepared and submitted by the Independent Auction Administer or the supplier of last resort conducting the competitive auction, as the case may be, and approved by the Authority;"

"(i) "Commercial Code" or "Market Commercial Code" means the commercial code prepared and maintained by the market operator pursuant to sections 23A and 23B of the Act and approved by the Authority; "

"(j) "competitive auction" means a competitive process of prequalification, obtaining bids and auction award, organized and carried out by the Independent Auction Administrator or a supplier of last resort, as the case may be, in accordance with these regulations;"

"(s) "Independent Auction Administrator" or "IAA" means any entity registered with the Authority to provide the services of organization and administration of competitive auctions for electric power procurement by electric power suppliers;"

"(u) "market operator" means a person licensed under section 23A of the Act to perform the functions of the market operator;"

37/123

"(y) "power acquisition programme" means the electric power procurement needs and plan of an electric power supplier as specified in these regulations;"

Regulation 4(2) of the Procurement Regulations is reproduced below;

"4(2) An electric power supplier shall ensure that it:

(a) procures adequate electric power to meet its capacity obligations with prudent spatial load forecasts while using the best available information, to avoid under or over contracting:

Provided that the capacity obligations of an electric power supplier engaged in supply of electric power through the national grid shall be calculated in accordance with the Market Commercial Code;

(b) adopts efficient and effective power procurement strategy and risk mitigation mechanisms keeping in view the approved IGCEP, TSEP, network expansion plan(s) and power acquisition programme;"

Regulation 6 of these Regulations states;

"(6) Power acquisition programme for new electric power procurement. —

(1) A supplier of last resort shall prepare a rolling five-year power acquisition programme on an annual basis which shall include:

(a) its requirements in terms of energy and peak demands, in accordance with the Distribution Code and other applicable documents, during the preceding twelve months on actual basis and projections for the subsequent five years;

(b) existing contracted energy and capacity;

(c) its capacity obligations as determined by the market operator in accordance with the Market Commercial Code;

(d) proposed new and firm power procurement during the next three years and indicative procurement for the subsequent two years in accordance with these regulations;

(2) The power acquisition programme shall be prepared by the supplier of last resort in line with the IGCEP, TSEP, network expansion plan(s) and approved investment programme of the concerned distribution licensee, demonstrating compliance with its capacity obligations determined in accordance with the Market Commercial Code:

Provided that for a period of five years from the date of notification of these regulations or such earlier period as may be directed by the Authority, a combined power acquisition programme shall be developed and submitted by the suppliers of last resort, except KE, in consultation with the Independent Auction Administrator.

(4) The share of respective suppliers of last resort in a project selected to meet their combined capacity obligations shall be allocated on pro rata basis keeping in view their respective capacity obligations."

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

38/123

Regulation 7 of these Regulations stipulates;

"(7) (3) The power acquisition programme shall be submitted by 30th September of every year and approved by the Authority within ninety days from its submission in accordance with these regulations and other applicable documents:

Provided that a supplier of last resort shall submit its power acquisition programme to the Authority within three months from the notification of these regulations and thereafter the power acquisition programme shall be submitted to the Authority along with any proposed changes, on an annual basis i.e., 30th September of every year.

(4) The approved power acquisition programme shall be definitive for the initial three years and indicative for the subsequent two years for new electric power procurement.

(5) A supplier of last resort shall ensure that its tariff petition is prepared and submitted in accordance with the power acquisition programme approved by the Authority under these regulations."

1.2. Input Factors:

1.2.1. Commercial Allocation Factors:

The share of DISCOs in Legacy Generation is calculated based upon commercial allocation factors defined in **Market Commercial Code (MCC)** section 18.2.5.2. Table 8 of this section is reproduced below;

*Table 1-1 Supplier of Last Resort Allocation Factors**

Supplier	Allocation Factor
LESCO	21.10%
GEPCO	9.82%
FESCO	13.09%
IESCO	10.15%
MEPCO	17.06%
PESCO	12.89%
HESCO	4.79%
QESCO	5.62%
TESCO	1.74%
SEPCO	3.73%
KE	As per Bilateral Contract

* These factors may change in future due to surplus supply in national system and basis of these factors may also change to align with co-incidental demand of XW-DISCOs.

1.2.2. Capacity Obligation Percentage:

In line with Capacity Obligation Report 2022-23 prepared by Market Operator the Capacity Obligation Percentage used for preparation of this PAP is **100%** for Current

Year, Year-1 and Year-2, whereas the same for Year-3 and Year-4 is taken at **80%** and **60%**, respectively, to assess and ensure security of supply for next 5 years and comply with Authority directions to plan in advance the procurement of adequate quantity of electric supply for regulated consumers within the respective Service Territories. However, Procurement Programme for first three years is deterministic while indicative for subsequent two years.

1.2.3. Transmission Losses:

To calculate demand uplifted up to Generation Level, Transmission Losses of **2.639%** are used for next 5 years as per NEPRA's latest determination No. NEPRA/R/ADG(TRF)/TRF-533/NTDC-2020/17537-17539 dated September 16, 2022 of NTDCL tariff for the years 2019-20, 2020-21 and 2021-22.

1.2.4. Firm Capacity Calculation:

For calculation of initial firm capacity of upcoming generation projects, equivalent availability factors listed in Market Commercial Code (MCC) section 8.4.2.1 are used. Table 1 of the said section is reproduced below;

Table 1-2 Equivalent Availability Factors

Sr. No.	Generation Technology	Equivalent Availability Factor
1	**Dispatchable Technologies**	
1.1	Hydro with reservoir	0.92
1.2	Thermal (either liquid fuels, gas or coal fired)	0.92
1.3	Bagasse	0.92
1.4	Thermal Solar	0.87
1.5	Nuclear	0.87
2	**Non-Dispatchable Technologies**	
2.1	Hydro run of river	Based on the feasibility study
2.2	Wind	0.30
2.3	Solar PV	0.22

1.2.5. Reserve Margin:

A reserve margin of **10%** is used as provided in Market Commercial Code (MCC) section 9.2.4.3.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

40/123

1.3. CLARIFICATIONS/ DISCLAIMER:

1. This combined Power Acquisition Programme (PAP) has been prepared in compliance of the Regulations without prejudice to the legal status of various essential enablers, e.g., Market Operator, System Operator, Independent Auction Administrator, and final Market Commercial Code.

2. In the absence of any one designate entity responsible for combining of PAP of DISCOs, the combined PAP in hand has been prepared and finalized through coordinated efforts amongst XW-DISCOs.

3. Although this document is prepared with collective efforts of all XW-DISCOs, submission of the same to the Authority will be by each DISCO individually.

4. In the absence of any registered Independent Auction Administrator, the consultation indicated in the proviso to regulation 6(2) of the NEPRA (Electric Power Procurement) Regulations, 2022 was dispensed with.

5. Firm Capacities of Existing and Planned projects have been considered as per Capacity Obligation Report 2022-23 issued by CPPA-G in their role as designate Market Operation (MO).

6. The capacities (committed, candidate, retirement etc), subject to the contents of Capacity Obligation Report 2023, are based on IGCEP-2022 base case scenario.

7. Allocation of KAPCO (for Constraint Removal) is made each year on pro-rata basis as per capacity requirement of each DISCO in respective year. Whereas, for years where all DISCOs are compliant, allocation is based upon commercial allocation factors as provided in **1.2.1.** above.

8. Timelines of Planned generation projects, for this PAP, are adopted as per IGCEP-2022, and availability thereof, for the purpose of firm capacity, is considered in the year of commissioning.

9. Accuracy of Demand Forecast and, therefore, the Capacity Obligation is dependent upon economic stability of the country. Due to current economic situation in the country, the future demand may vary from demand forecast, with corresponding effect on the Capacity Obligation determined as per MCC.

10. In line with the Capacity Obligation Report 2022-23, the Commercial Allocation Factors of Legacy Generation are considered as per Market Commercial Code (MCC).

11. Reserve Margin is considered as per MCC.

12. In compliance of Ministry of Energy (Power Division)'s directions to undertake solarization of 11 KV feeders, DISCOs have identified a number of 11 KV feeders for solarization through 3rd party Solar Parks ranging from 1 to 4 MW each with an overall aggregate estimated capacity of 1224 MWp. Based on the methodology for calculation of initial firm capacity as per Market Commercial Code clause 8.4.2.1, the initial firm capacity is assessed at 269 MW. Subject to

realization of the timelines of the project, the said additional Solar PV Distributed Generation capacity will be available by end of September, 2023. Accordingly, the minor non-compliances are expected to be mitigated.

13. The approved IGCEP 2022, at page 57, takes Net-Metering (PV) distributed generation as part of Committed Projects (Table 5-4 of IGCEP 2022). Notwithstanding the position that the Net-Metering arrangements essentially impacts the energy demand, this document, in line with approved IGCEP 2022, takes the Net-Metering (PV) as source of supply in each of the relevant years.

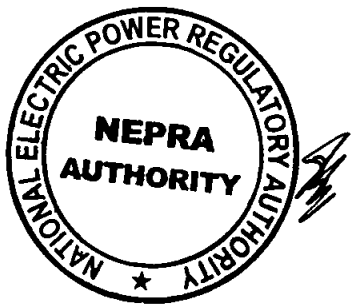
14. As a result of dry-run implementation of approved Market Commercial Code, a number of changes may be required in the said MCC. Major changes are suggested as below:

    a. The capacity allocation factors may be updated in accordance with co-incident demand of XW-DISCOs.

    b. The capacity obligation in this PAP is arrived at as per current methodology provided in the MCC; which adds Reserve Margin to arrive at capacity obligation of each XW-DISCO. Noting that demand forecast of each DISCO provides non-coincident peak load requirements thereof, therefore, the Reserve Margin may have to be dispensed with for the time beings.

15. The available capacity for future solar power generation projects is taken with factors of 0.22. Considering that the peak solar generation coincides with identified critical hours, the factor may have to be adjusted suitably.

16. This activity being exercised by XW-DISCOs for the first time, errors and omissions are expected.



42/123

2. DEMAND FORECAST RESULTS

As already mentioned, that this PAP is based on Medium Term Load Forecasts (MTLFs) for the period 2022-23 to 2031-32 recently prepared and submitted by DISCOs to the NEPRA. These forecasts are based upon Power Market Survey (PMS) model which utilized historical database of sale and demand for each grid station of a DISCO, input factors such as load factors, coincidence factors and loss reduction plan to calculate expected sale and demand for next ten (10) years. This forecast is performed for each grid station level as well as DISCO level. The demand forecasts (energy and capacity) for each XW-DISCO are provided in below:

2.1. Historical Demand and Future Forecasts:

2.1.1. IESCO:

Table 2-1 IESCO's Historical Demand and Forecast

IESCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	1,493	-	2,369	-
	Aug	1,499		2,481	
	Sep	1,344	-	2,165	-
	Oct	970	-	1,781	-
	Nov	738	-	1,333	-
	Dec	827	-	1,435	-
	Jan	857	-	1,468	-
	Feb	721	-	1,404	-
	Mar	841	-	1,410	-
	Apr	1,110	-	1,671	-
	May	1,309	-	2,124	-
	Jun	1,318	-	2,404	-
	Total	13,027	-	2,481	-
2022-23	-	-	13,027	-	2,508
2023-24	-	-	13,749	-	2,616
2024-25	-	-	14,556	-	2,765
2025-26	-	-	15,327	-	2,908
2026-27	-	-	16,199	-	3,071
Total			72,858		

43/123

2.1.2. PESCO:

Table 2-2 PESCO's Historical Demand and Forecast

PESCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	1,831	-	2,274	-
	Aug	1,766	-	2,211	-
	Sep	1,643	-	2,117	-
	Oct	1,217	-	1,918	-
	Nov	1,056	-	1,529	-
	Dec	1,236	-	1,936	-
	Jan	1,243	-	1,686	-
	Feb	1,080	-	1,707	-
	Mar	1,110	-	1,555	-
	Apr	1,357	-	2,002	-
	May	1,518	-	2,180	-
	Jun	1,505	-	2,369	-
	Total	16,560	-	2,369	-
2022-23	-	-	17,676	-	2,526
2023-24	-	-	18,808	-	2,672
2024-25	-	-	19,735	-	2,800
2025-26	-	-	20,645	-	2,929
2026-27	-	-	21,302	-	3,024
Total			98,166		

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NEPRA AUTHORITY

2.1.3. FESCO:

Table 2-3 FESCO's Historical Demand and Forecast

FESCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	1,890	-	3,292	-
	Aug	1,995		3,234	
	Sep	1,729	-	3,158	-
	Oct	1,421	-	2,734	-
	Nov	999	-	1,762	-
	Dec	1,009	-	1,794	-
	Jan	978	-	1,674	-
	Feb	934	-	1,881	-
	Mar	1,341	-	2,274	-
	Apr	1,640	-	2,553	-
	May	1,860	-	3,179	-
	Jun	1,716	-	3,136	-
	Total	17,512	-	3,292	-
2022-23	-	-	18,479	-	3,512
2023-24	-	-	19,597	-	3,761
2024-25	-	-	20,448	-	3,944
2025-26	-	-	21,343	-	4,126
2026-27	-	-	22,362	-	4,342
Total			102,229		

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

45/123

2.1.4. LESCO:

Table 2-4 LESCO's Historical Demand and Forecast

LESCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	3,012	-	4,499	-
	Aug	3,141		4,571	
	Sep	2,657	-	4,282	-
	Oct	2,238	-	3,758	-
	Nov	1,602	-	2,876	-
	Dec	1,716	-	3,245	-
	Jan	1,819	-	3,110	-
	Feb	1,554	-	2,974	-
	Mar	2,092	-	3,212	-
	Apr	2,618	-	4,497	-
	May	2,949	-	4,435	-
	Jun	2,937	-	5,205	-
	Total	28,334	-	5,205	-
2022-23	-	-	30,268	-	5,578
2023-24	-	-	31,709	-	5,844
2024-25	-	-	32,649	-	6,067
2025-26	-	-	33,994	-	6,329
2026-27	-	-	35,302	-	6,589
Total			163,922		

2.1.5. GEPCO:

Table 2-5 GEPCO's Historical Demand and Forecast

GEPCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	1,456	-	2,668	-
	Aug	1,602		2,695	
	Sep	1,328	-	2,523	-
	Oct	1,004	-	2,111	-
	Nov	678	-	1,335	-
	Dec	685	-	1,411	-
	Jan	663	-	1,357	-
	Feb	589	-	1,276	-
	Mar	882	-	1,707	-
	Apr	1,148	-	1,979	-
	May	1,332	-	2,117	-
	Jun	1,311	-	2,365	-
	Total	12,678	-	2,695	-
2022-23	-	-	12,951	-	2,749
2023-24	-	-	13,744	-	2,863
2024-25	-	-	14,460	-	3,003
2025-26	-	-	15,172	-	3,142
2026-27	-	-	15,935	-	3,290
Total			72,263		

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

2.1.6. MEPCO:

Table 2-6 MEPCO's Historical Demand and Forecast

MEPCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	2,710	-	4,501	-
	Aug	2,802		4,427	
	Sep	2,335	-	4,180	-
	Oct	1,788	-	3,456	-
	Nov	1,157	-	2,102	-
	Dec	1,133	-	2,080	-
	Jan	1,094	-	2,208	-
	Feb	1,113	-	2,323	-
	Mar	1,637	-	2,782	-
	Apr	2,214	-	3,408	-
	May	2,627	-	4,027	-
	Jun	2,123	-	4,313	-
	Total	22,734	-	4,501	-
2022-23	-	-	24,014	-	4,808
2023-24	-	-	25,436	-	5,110
2024-25	-	-	26,762	-	5,410
2025-26	-	-	28,122	-	5,709
2026-27	-	-	29,533	-	6,039
Total			133,867		

2.1.7. HESCO:

Table 2-7 HESCO's Historical Demand and Forecast

HESCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	621	-	1,034	-
	Aug	590	-	1,065	-
	Sep	572	-	1,084	-
	Oct	492	-	954	-
	Nov	336	-	659	-
	Dec	294	-	458	-
	Jan	295	-	479	-
	Feb	269	-	510	-
	Mar	406	-	772	-
	Apr	551	-	1,134	-
	May	618	-	1,136	-
	Jun	567	-	1,018	-
	Total	5,611	-	1,136	-
2022-23	-	-	5,828	-	1,180
2023-24	-	-	6,041	-	1,223
2024-25	-	-	6,277	-	1,267
2025-26	-	-	6,520	-	1,312
2026-27	-	-	6,758	-	1,358
Total			31,424		

2.1.8. QESCO:

Table 2-8 QESCO's Historical Demand and Forecast

QESCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	639	-	1,070	-
	Aug	643		1,049	
	Sep	579	-	1,020	-
	Oct	526	-	921	-
	Nov	513	-	996	-
	Dec	531	-	961	-
	Jan	461	-	940	-
	Feb	472	-	995	-
	Mar	549	-	966	-
	Apr	590	-	979	-
	May	627	-	999	-
	Jun	586	-	967	-
	Total	6,716	-	1,070	-
2022-23	-	-	6,934	-	1,129
2023-24	-	-	7,131	-	1,166
2024-25	-	-	7,327	-	1,206
2025-26	-	-	7,556	-	1,247
2026-27	-	-	7,861	-	1,299
Total			36,809		

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

50/123

2.1.9. TESCO:

Table 2-9 TESCO's Historical Demand and Forecast

TESCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	175	-	382	-
	Aug	187	-	373	-
	Sep	185	-	364	-
	Oct	192	-	403	-
	Nov	207	-	423	-
	Dec	206	-	508	-
	Jan	186	-	415	-
	Feb	195	-	420	-
	Mar	207	-	406	-
	Apr	188	-	476	-
	May	167	-	397	-
	Jun	189	-	429	-
	Total	2,284	-	508	-
2022-23	-	-	2,384	-	522
2023-24	-	-	2,488	-	544
2024-25	-	-	2,595	-	569
2025-26	-	-	2,735	-	596
2026-27	-	-	2,883	-	625
Total			13,085		

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

2.1.10. SEPCO:

Table 2-10 SEPCO's Historical Demand and Forecast

SEPCO					
Year		Energy (GWh)		Peak Demand (MW)	
	Months	Actual	Projected	Actual	Projected
2021-22	July	561	-	961	-
	Aug	559		942	
	Sep	505	-	778	-
	Oct	361	-	693	-
	Nov	226	-	391	-
	Dec	209	-	330	-
	Jan	195	-	312	-
	Feb	181	-	294	-
	Mar	268	-	390	-
	Apr	415	-	667	-
	May	527	-	811	-
	Jun	483	-	961	-
	Total	4,490	-	961	-
2022-23	-	-	5,058	-	1,003
2023-24	-	-	5,117	-	1,018
2024-25	-	-	5,282	-	1,033
2025-26	-	-	5,434	-	1,048
2026-27	-	-	5,708	-	1,063
Total			26,599		

2.2. Capacity Obligation of DISCOs:

The individual and combined Capacity Obligation (in terms of MW) of XW-DISCOs, in the light of approved MCC, is tabulated below;

Table 2-11 Capacity Obligation of XW-DISCOs

SoLR	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26 (80%)	Year-4 2026-27 (60%)
IESCO	2,256	2,834	2,956	3,124	2,629	2,082
PESCO	2,736	2,854	3,019	3,163	2,647	2,050
FESCO	2,969	3,968	4,249	4,456	3,730	2,944
LESCO	5,210	6,302	6,603	6,855	5,721	4,466
GEPCO	2,198	3,106	3,235	3,393	2,840	2,230
MEPCO	3,510	5,432	5,773	6,112	5,160	4,094
HESCO	848	1,333	1,382	1,431	1,186	920
QESCO	835	1,276	1,317	1,363	1,127	881
TESCO	0	590	615	643	538	424
SEPCO	690	1,133	1,150	1,167	947	721
Total	21,252	28,828	30,299	31,707	26,525	20,812

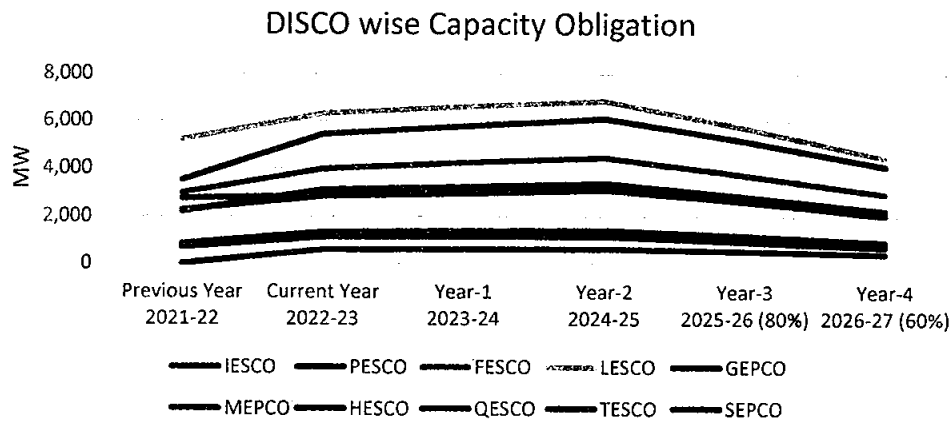

Figure 2-1 Capacity Obligations of XW-DISCOs for next 5 years

Detailed Medium-Term Load Forecast (MTLF) Reports forming basis for this Power Acquisition Programme have already been submitted by DISCOs for consideration of the Authority.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

53/123

3. CONTRACTED FIRM CAPACITY

DISCOs existing contracts for generation capacity consist entirely of Legacy Generation allocated to DISCOs as per commercial allocation factors already discussed in **1.2.1.** Apart from existing installed generation, several generation projects are planned/ committed for future years as provided in IGCEP 2022, approved by the Authority. Similarly, a few generation projects are retiring during next 5 years as provided in IGCEP 2022. Detail of firm capacities of existing/ planned generation has been communicated by CPPA-G (Market Operator) vide CPPA-G/2023/MOD/0126-0128 dated March 14, 2023 (Annex-IV).

3.1. IGCEP 2022:

The Authority has recently approved IGCEP 2022 which enlists committed / contracted projects as well as candidate projects for next 10 years. The IGCEP forms, besides the mentioned MTLFs, another fundamental source for this Power Acquisition Programme (PAP) as, in line with the regulations, future procurement is to be made as per candidate projects enumerated in the IGCEP. Summary of Generation in next 10 years is tabulated below;

Table 3-1 Summary of Generation as per IGCEP

Fiscal Year	Local Coal	Imported Coal	IPP	Solar	Wind	Bagasse	Cross Border	RLNG	Nuclear	Committed Capacity Addition	Candidate Capacity Addition			Cumulative Capacity Addition
											Solar	Hydro	Wind	
2022-23	1,980	660	237	520	0	0	0	1,263	0	4,660	0	0	0	4,660
2023-24	0	0	342	653	100	0	0	0	0	1,095	500	0	0	1,595
2024-25	0	0	2,365	370	0	32	1,000	0	0	3,767	3,870	10	500	8,147
2025-26	300	0	654	370	0	0	0	0	0	1,324	750	13	500	2,587
2026-27	0	0	2,558	370	0	0	0	0	0	2,928	0	0	0	2,928
2027-28	0	0	545	370	0	0	0	0	0	915	0	0	2,403	3,318
Total	2,280	660	6,701	2,653	100	32	1,000	1,263	0	14,689	5,120	23	3,403	23,235

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
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54/123

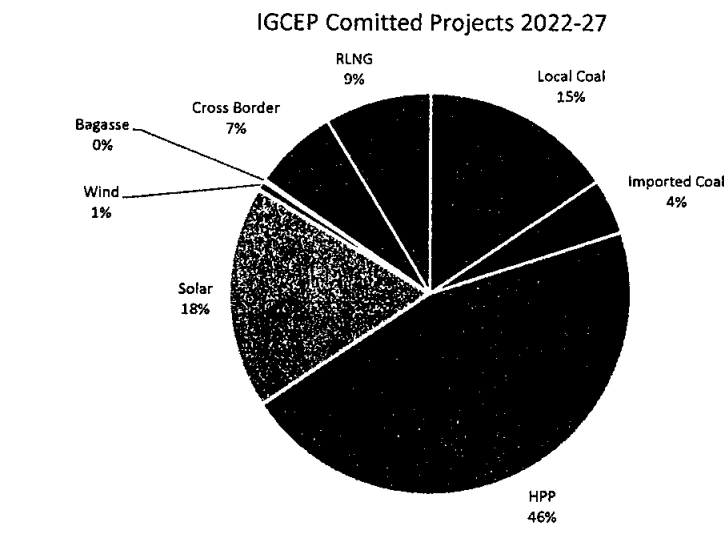

Figure 3-1 Technology Mix of Committed Generation

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NEPRA AUTHORITY

55/123

3.2. Existing Installed/ Commissioned Generation Plants:

Summary of Existing Generation Plants and DISCO-wise allocation thereof is tabulated below;

Table 3-2 Detail of Existing Generation and allocation to XW-DISCOs

Contracted Capacity under Legacy Contracts – Commissioned								
1	2	3	4	5	6	7	8	9
SoLR	No. of Total Legacy Contracts	Total Installed Capacity (MW)	Total Net Dependable Capacity (MW)	Total Firm Capacity (MW)	Firm Capacity (MW) for Capacity Obligation of KE	Firm Capacity (MW) for Capacity Obligation of DISCOs	Allocation Factor	Contracted Firm Capacity (MW) (7*8)
IESCO	151	38,010	22,430	31,040	1,200	29,840	10.15%	3,029
PESCO							12.89%	3,846
FESCO							13.09%	3,906
LESCO							21.10%	6,296
GEPCO							9.82%	2,930
MEPCO							17.06%	5,091
HESCO							4.79%	1,429
QESCO							5.62%	1,677
TESCO							1.74%	519
SEPCO							3.73%	1,113

Complete List of Existing Power Plants is provided at Annex-I.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

3.3. Projects to be Retired in Plan Period

Detail of Projects to be retired during plan period (2022-23 to 2026-27) as per IGCEP 2022 is tabulated below;

Table 3-3 Retirement of Projects as per IGCEP

Sr#	Projects	Technology	Installed Capacity (MW)	Initial Firm Capacity (MW)	Retirement
1	KAPCO 3	RLNG	300	273	2022
2	KAPCO 1	RLNG	400	365	2022
3	KAPCO 2	RLNG	900	820	2022
4	Guddu-II U (5-10)	Gas	620	379	2023
5	Jamshoro-I U1	RFO	250	163	2023
6	Jamshoro-II U4	RFO	200	131	2023
7	Muzaffargarh-I U1	RFO	210	94	2023
8	Muzaffargarh-I U2	RFO	210	94	2023
9	Muzaffargarh-I U3	RFO	210	94	2023
10	Muzaffargarh-II U4	RFO	320	143	2023
11	Anoond	SPP	10	10	2024
12	Omni	SPP	13	13	2025
13	Lucky cement	SPP	20	20	2025
14	Thatta Cement	SPP	19	19	2026

* KAPCO 1 &2 are to be retired in 2022-23, however, the relevant PPA is to be extended due to transmission constraints.

57/123

3.4. Summary of Committed Generation projects as per IGCEP:

Year wise total Legacy Generation as per IGCEP-2022 and DISCO-wise allocation thereof is tabulated below;

Table 3-4 Committed Generation for 2022-23 and allocation to DISCOs

Existing Contracted Capacity under Legacy Contracts – Approved/Committed (Not Commissioned) (FY 2022-23)						
1	2	4	5	6	7	8
SoLR Name	Expected Installed Capacity (MW)	Total Firm Capacity (MW)	Firm Capacity (MW) for Capacity Obligation of KE	Firm Capacity (MW) for Capacity Obligation of DISCOs	Allocation Factor	Contracted Firm Capacity (MW) (6*7)
IESCO	4,203	3,743	0	3,743	10.15%	380
PESCO					12.89%	482
FESCO					13.09%	490
LESCO					21.10%	790
GEPCO					9.82%	368
MEPCO					17.06%	639
HESCO					4.79%	179
QESCO					5.62%	210
TESCO					1.74%	65
SEPCO					3.73%	140

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

58/123

Table 3-5 Committed Generation for 2023-24 and allocation to DISCOs

Existing Contracted Capacity under Legacy Contracts – Approved/Committed (Not Commissioned) (FY 2023-24)						
1	2	4	5	6	7	8
SoLR Name	Expected Installed Capacity (MW)	Total Firm Capacity (MW)	Firm Capacity (MW) for Capacity Obligation of KE	Firm Capacity (MW) for Capacity Obligation of DISCOs	Allocation Factor	Contracted Firm Capacity (MW) (6*7)
IESCO	397	290	850	-560	10.15%	-57
PESCO					12.89%	-72
FESCO					13.09%	-73
LESCO					21.10%	-118
GEPCO					9.82%	-55
MEPCO					17.06%	-96
HESCO					4.79%	-27
QESCO					5.62%	-31
TESCO					1.74%	-10
SEPCO					3.73%	-21

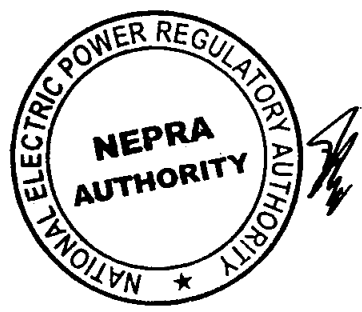

Table 3-6 Committed Generation for 2024-25 and allocation to DISCOs

Existing Contracted Capacity under Legacy Contracts – Approved/Conimitted (Not Commissioned) (FY 2024-25)						
1	2	4	5	6	7	8
SoLR Name	Expected Installed Capacity (MW)	Total Firm Capacity (MW)	Firm Capacity (MW) for Capacity Obligation of KE	Firm Capacity (MW) for Capacity Obligation of DISCOs	Allocation Factor	Contracted Firm Capacity (MW) (6*7)
IESCO	3,303	2,945	0	2,945	10.15%	299
PESCO					12.89%	380
FESCO					13.09%	386
LESCO					21.10%	621
GEPCO					9.82%	289
MEPCO					17.06%	502
HESCO					4.79%	141
QESCO					5.62%	166
TESCO					1.74%	51
SEPCO					3.73%	110

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NEPRA
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Table 3-7 Committed Generation for 2025-26 and allocation to DISCOs

Existing Contracted Capacity under Legacy Contracts – Approved/Committed (Not Commissioned) (FY 2025-26)						
1	2	4	5	6	7	8
SoLR Name	Expected Installed Capacity (MW)	Total Firm Capacity (MW)	Firm Capacity (MW) for Capacity Obligation of KE	Firm Capacity (MW) for Capacity Obligation of DISCOs	Allocation Factor	Contracted Firm Capacity (MW) (6*7)
IESCO	930	812	0	812	10.15%	82
PESCO					12.89%	105
FESCO					13.09%	106
LESCO					21.10%	171
GEPCO					9.82%	80
MEPCO					17.06%	138
HESCO					4.79%	39
QESCO					5.62%	46
TESCO					1.74%	14
SEPCO					3.73%	30

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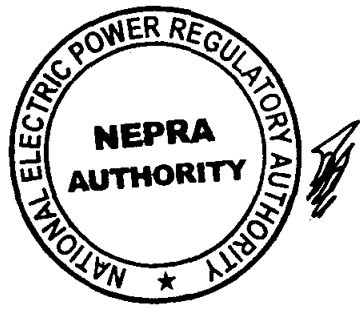
Table 3-8 Committed Generation for 2026-27 and allocation to DISCOs

Existing Contracted Capacity under Legacy Contracts – Approved/Committed (Not Commissioned) (FY 2026-27)						
1	2	4	5	6	7	8
SoLR Name	Expected Installed Capacity (MW)	Total Firm Capacity (MW)	Firm Capacity (MW) for Capacity Obligation of KE	Firm Capacity (MW) for Capacity Obligation of DISCOs	Allocation Factor	Contracted Firm Capacity (MW) (6*7)
IESCO	2,558	2,174	0	2,174	10.15%	221
PESCO					12.89%	280
FESCO					13.09%	285
LESCO					21.10%	459
GEPCO					9.82%	214
MEPCO					17.06%	371
HESCO					4.79%	104
QESCO					5.62%	122
TESCO					1.74%	38
SEPCO					3.73%	81

Complete List of Committed Projects considered for Capacity Obligation Report are given at Annex-II.



4. SECURITY OF SUPPLY

Security of Supply for regulated consumers of XW-DISCOs is assessed on the basis of total capacity obligation of DISCOs as per Section **2.2.** of this PAP and DISCOs allocated firm capacity as per Sections **3.1.** and **3.4.** hereof. This, however, does not include any future candidate project as per IGCEP-2022 or individual procurement initiatives of each XW-DISCO at their own or under directions from the Government of Pakistan. For clarity of understanding it may be mentioned that the positive (+) Uncontracted means the surplus capacity over the determined capacity obligation and that the negative (-) figures mean the deficiency against the determined capacity obligation.

4.1. Security of Supply Position:

DISCO-Wise security of supply position tabulated below through depicted below;

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63/123

4.1.1. IESCO:

Table 4-1 IESCO's security of supply position

	IESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,256	2,834	2,956	3,124	2,628	2,082
2	Contracted Commissioned (MW)	2,579	2,881	2,769	2,768	2,767	2,765
3	Committed/ Contracted (MW)	0	380	323	622	704	925
4	Total Credited Capacity (MW) (2+3)	2,579	3,261	3,092	3,390	3,471	3,690
5	Surplus/ (Shortage) of Supply (MW) (4-1)	323	427	137	266	843	1,608
6	CO Compliance (%) Surplus / (Shortage)	14%	15%	5%	9%	32%	77%

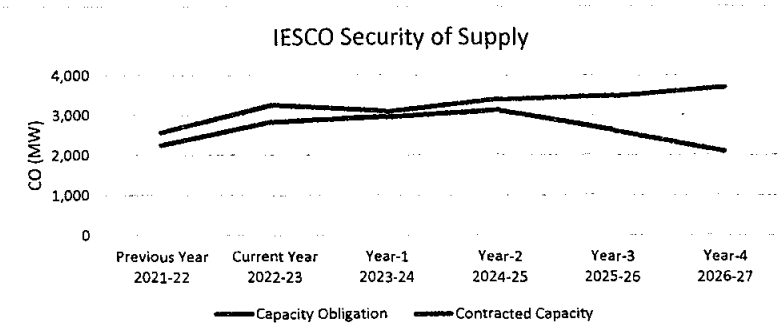

Figure 4-1 IESCO Security of Supply

64/123

4.1.2. PESCO:

Table 4-2 PESCO's security of supply position

	PESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,736	2,854	3,019	3,163	2,647	2,050
2	Contracted Commissioned (MW)	3,718	3,658	3,517	3,516	3,514	3,512
3	Committed/ Contracted (MW)	0	482	410	790	894	1,175
4	Total Credited Capacity (MW) (2+3)	3,718	4,141	3,927	4,305	4,408	4,686
5	Surplus/ (Shortage) of Supply (MW) (4-1)	982	1,287	908	1,142	1,761	2,636
6	CO Compliance (%) Surplus / (Shortage)	36%	45%	30%	36%	67%	129%

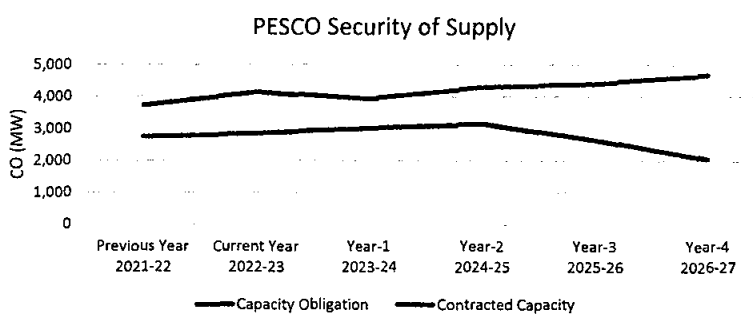

Figure 4-2 PESCO Security of Supply

4.1.3. FESCO:

Table 4-3 FESCO's security of supply position

	FESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,969	3,968	4,249	4,456	3,729	2,943
2	Contracted Commissioned (MW)	3,326	3,715	3,571	3,570	3,568	3,566
3	Committed/ Contracted (MW)	0	490	417	802	908	1,193
4	Total Credited Capacity (MW) (2+3)	3,326	4,205	3,988	4,372	4,477	4,759
5	Surplus/ (Shortage) of Supply (MW) (4-1)	357	237	-261	-84	748	1,816
6	CO Compliance (%) Surplus / (Shortage)	12%	6%	-6%	-2%	20%	62%

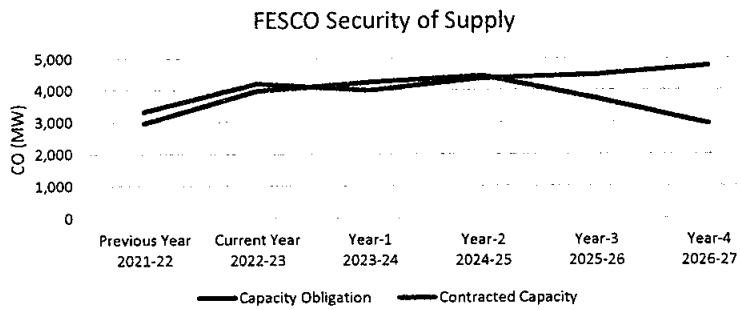

Figure 4-3 FESCO Security of Supply

4.1.4. LESCO:

Table 4-4 LESCO's security of supply position

	LESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	5,210	6,302	6,603	6,855	5,720	4,467
2	Contracted Commissioned (MW)	5,362	5,989	5,757	5,755	5,752	5,748
3	Committed/ Contracted (MW)	0	790	672	1,293	1,464	1,923
4	Total Credited Capacity (MW) (2+3)	5,362	6,778	6,428	7,048	7,216	7,671
5	Surplus/ (Shortage) of Supply (MW) (4-1)	152	476	-174	193	1,496	3,204
6	CO Compliance (%) Surplus / (Shortage)	3%	8%	-3%	3%	26%	72%

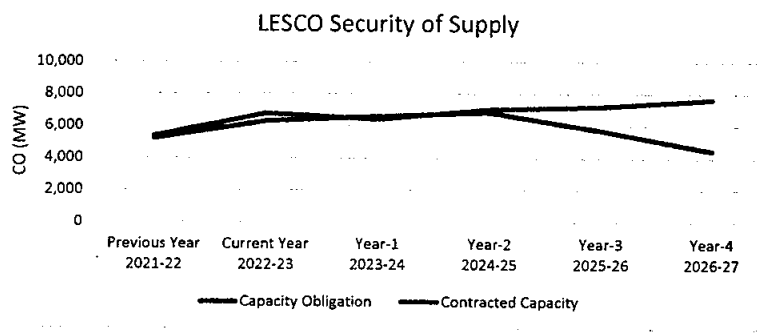

Figure 4-4 LESCO Security of Supply

4.1.5. GEPCO:

Table 4-5 GEPCO's security of supply position

	GEPCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,198	3,106	3,235	3,393	2,840	2,230
2	Contracted Commissioned (MW)	2,496	2,787	2,679	2,678	2,677	2,675
3	Committed/ Contracted (MW)	0	368	313	602	681	895
4	Total Credited Capacity (MW) (2+3)	2,496	3,155	2,992	3,280	3,358	3,570
5	Surplus/ (Shortage) of Supply (MW) (4-1)	298	49	-243	-113	519	1,340
6	CO Compliance (%) Surplus / (Shortage)	14%	2%	-8%	-3%	18%	60%

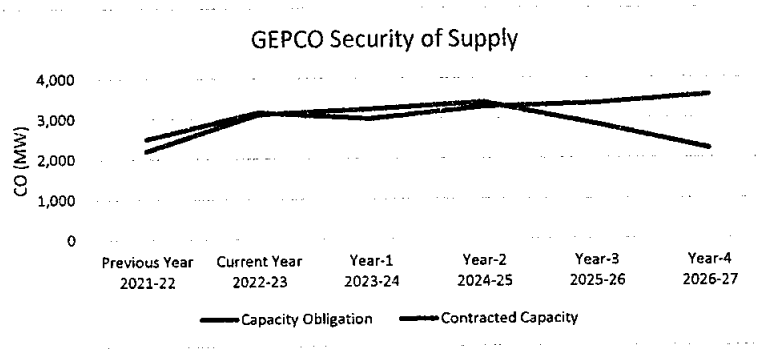

Figure 4-5 GEPCO Security of Supply

4.1.6. MEPCO:

Table 4-6 MEPCO's security of supply position

	MEPCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	3,510	5,432	5,773	6,112	5,160	4,094
2	Contracted Commissioned (MW)	4,335	4,842	4,655	4,653	4,651	4,648
3	Committed/ Contracted (MW)	0	639	543	1,045	1,184	1,555
4	Total Credited Capacity (MW) (2+3)	4,335	5,480	5,198	5,698	5,835	6,202
5	Surplus/ (Shortage) of Supply (MW) (4-1)	825	48	-576	-414	675	2,109
6	CO Compliance (%) Surplus / (Shortage)	24%	1%	-10%	-7%	13%	52%

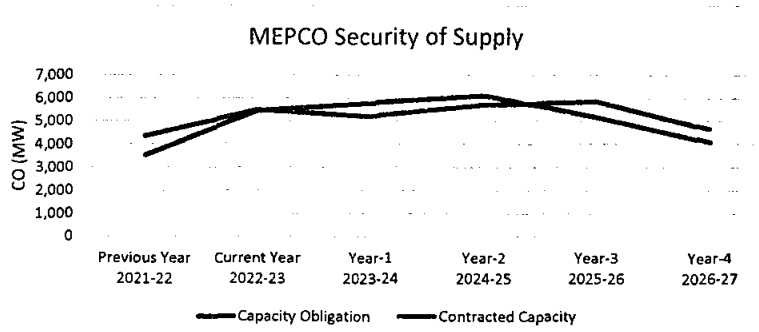

Figure 4-6 MEPCO Security of Supply

4.1.7. HESCO:

Table 4-7 HESCO's security of supply position

HESCO							
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	848	1,333	1,382	1,431	1,186	921
2	Contracted Commissioned (MW)	1,217	1,359	1,307	1,306	1,306	1,305
3	Committed/ Contracted (MW)	0	179	152	294	332	437
4	Total Credited Capacity (MW) (2+3)	1,217	1,539	1,459	1,600	1,638	1,741
5	Surplus/ (Shortage) of Supply (MW) (4-1)	369	206	78	168	452	821
6	CO Compliance (%) Surplus / (Shortage)	44%	15%	6%	12%	38%	89%

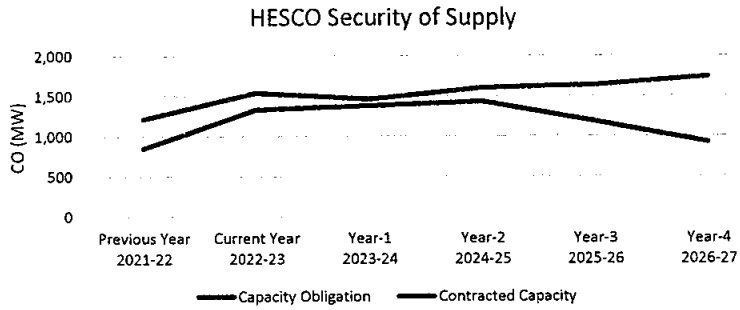

Figure 4-7 HESCO Security of Supply

4.1.8. QESCO:

Table 4-8 QESCO's security of supply position

	Supply Demand	QESCO					
		Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	835	1,276	1,317	1,363	1,127	881
2	Contracted Commissioned (MW)	1,428	1,595	1,533	1,533	1,532	1,531
3	Committed/ Contracted (MW)	0	210	179	344	390	512
4	Total Credited Capacity (MW) (2+3)	1,428	1,805	1,712	1,877	1,922	2,043
5	Surplus/ (Shortage) of Supply (MW) (4-1)	593	530	395	515	795	1,163
6	CO Compliance (%) Surplus / (Shortage)	71%	42%	30%	38%	71%	132%

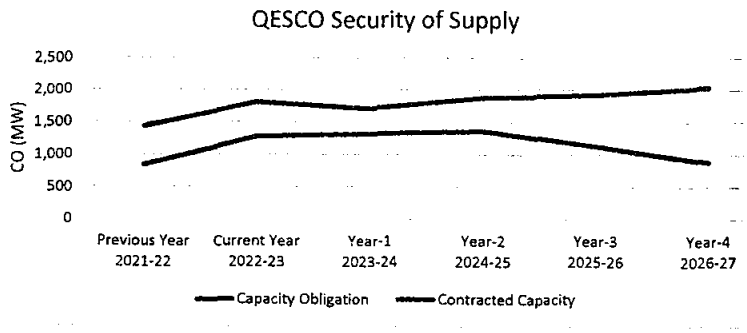

Figure 4-8 QESCO Security of Supply

4.1.9. TESCO:

Table 4-9 TESCO's security of supply position

TESCO							
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	0	590	615	643	539	424
2	Contracted Commissioned (MW)	0	494	475	475	474	474
3	Committed/ Contracted (MW)	0	65	55	107	121	159
4	Total Credited Capacity (MW) (2+3)	0	559	530	581	595	633
5	Surplus/ (Shortage) of Supply (MW) (4-1)	0	-31	-85	-62	56	209
6	CO Compliance (%) Surplus / (Shortage)	0%	-5%	-14%	-10%	10%	49%

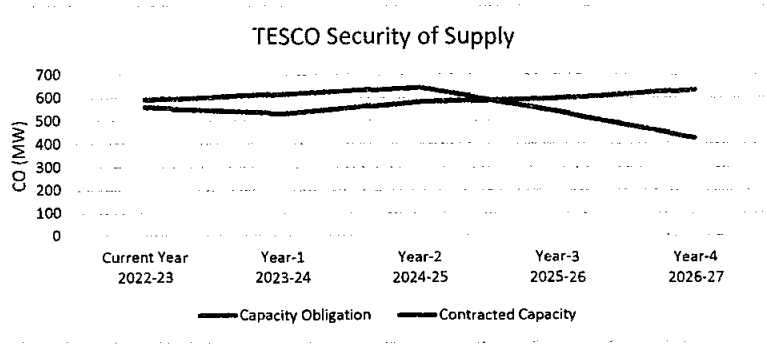

Figure 4-9 TESCO Security of Supply

4.1.10. SEPCO:

Table 4-10 SESPO's security of supply position

	Supply Demand	SEPCO					
		Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	690	1,133	1,150	1,167	947	721
2	Contracted Commissioned (MW)	948	1,059	1,018	1,017	1,017	1,016
3	Committed/ Contracted (MW)	0	140	119	229	259	340
4	Total Credited Capacity (MW) (2+3)	948	1,198	1,136	1,246	1,276	1,356
5	Surplus/ (Shortage) of Supply (MW) (4-1)	258	65	-14	79	328	635
6	CO Compliance (%) Surplus / (Shortage)	37%	6%	-1%	7%	35%	88%

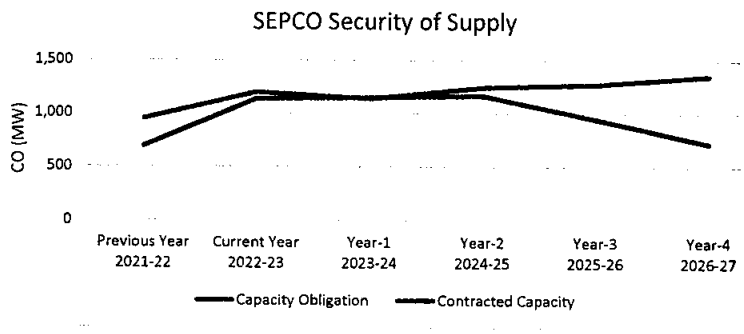

Figure 4-10 SEPCO Security of Supply

4.1.11. **Total:**

Table 4-11 XW-DISCOs cumulative security of supply position

	Total						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	21,252	28,827	30,298	31,707	26,524	20,811
2	Contracted Commissioned (MW)	25,409	28,379	27,281	27,271	27,258	27,240
3	Committed/ Contracted (MW)	0	3,742	3,182	6,127	6,939	9,113
4	Total Credited Capacity (MW) (2+3)	25,409	32,121	30,463	33,398	34,197	36,352
5	Surplus/ (Shortage) of Supply (MW) (4-1)	4,157	3,294	165	1,691	7,673	15,541
6	CO Compliance (%) Surplus / (Shortage)	20%	11%	1%	5%	29%	75%

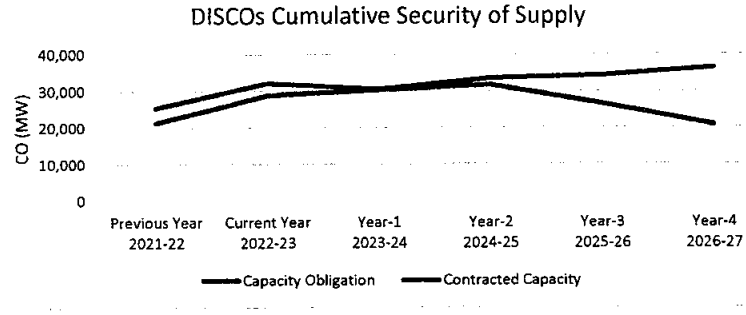

Figure 4-11 XW-DISCOs cumulative Security of Supply

5. POWER PROCUREMENT

DISCOs, in the role of Supplier of Last Resort (SOLR), are required to ensure security of supply for their regulated consumers by planning in advance and securing adequately sufficient capacity to meet the demand of their consumers. Any future power procurement is strictly planned in accordance with consumer demand and any difference between supply and demand, to ensure economical investment in the best interest of consumers.

5.1. Power Procurement Requirement:

Allocation of Future Capacity Procurement is made on pro-rata basis as per capacity requirements of all DISCOs, whereas, in years where all DISCOs are compliant, committed projects are allocated based on commercial allocation factors as provided in 1.2.1. above. Each XW-DISCO has forecasted occurrence and growth of Net-Metering capacity in respective Service Territories during planned future years, however, the approved IGCEP 2022 takes the net-metering arrangement as committed source of supply at 370 MW during each year. Accordingly, the said 370 MW Net-Metering capacity provided in IGCEP is considered as Solar DGs.

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5.1.1. Power Procurement to meet Capacity Obligation:

Table 5-1 DISCO's power procurement requirement for 2022-23

Year 2022-2023							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar	Committed/ Direct Contracting	370	81	81	IESCO	5
						PESCO	7
						FESCO	7
						LESCO	11
						GEPCO	5
						MEPCO	9
						HESCO	2
						QESCO	3
						TESCO	32
						SEPCO	2

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
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76/123

Table 5-2 DISCO's power procurement requirement for 2023-24

		Year 2023-2024					
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Hydro	Committed/ Direct Contracting	116	98	259	IESCO	0
						PESCO	0
						FESCO	49
2	Solar	Committed/ Direct Contracting	620	136		LESCO	24
						GEPCO	46
						MEPCO	127
3	Wind	Committed/ Direct Contracting	50	15		HESCO	0
						QESCO	0
4	SPP	Committed/ Direct Contracting	10	9		TESCO	13
						SEPCO	0

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

77/23

Table 5-3 DISCO's power procurement requirement for 2024-25

Year 2024-2025							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Hydel	Committed/ Direct Contracting	84	71	153	IESCO	16
						PESCO	20
						FESCO	20
2	Solar	Committed/ Direct Contracting	370	81		LESCO	32
						GEPCO	15
						MEPCO	26
						HESCO	7
						QESCO	9
						TESCO	3
						SEPCO	6

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

78/123

Table 5-4 DISCO's power procurement requirement for 2025-26

		Year 2025-2026					
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Hydel	Committed/ Direct Contracting	11	9	90	IESCO	9
						PESCO	12
						FESCO	12
2	Solar	Committed/ Direct Contracting	370	81		LESCO	19
						GEPCO	9
						MEPCO	15
						HESCO	4
						QESCO	5
						TESCO	2
						SEPCO	3

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NEPRA AUTHORITY

79/123

Table 5-5 DISCO's power procurement requirement for 2026-27

Year 2026-2027							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar	Committed/ Direct Contracting	370	81	81	IESCO	8
						PESCO	10
						FESCO	11
						LESCO	17
						GEPCO	8
						MEPCO	14
						HESCO	4
						QESCO	5
						TESCO	1
						SEPCO	3

Complete list of Committed Projects for future Procurement is provided at Annex-III.

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80/123

5.1.2. Power Procurement for Cost Reduction:

Under directions from the Government of Pakistan, Ministry of Energy, the XW-DISCOs have undertaken initiative for Solarization of selected 11 kV feeders. This initiative is aimed at displacement of costly imported fuel-based power generation with the cheap and environment friendly electricity generation based on solar parks of different (1-4 MW) capacities. For this purpose, the XW-DISCOs have already submitted requests for approval of RFP and determination of benchmark tariff with NEPRA.

Table 5-6 DISCO's power procurement requirement (cost reduction) for 2022-23

		Year 2022-2023					
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar DG	Competitive Bidding	0	0	0	IESCO	0
						PESCO	0
						FESCO	0
2	Solar Utility	Competitive Bidding	0	0		LESCO	0
						GEPCO	0
						MEPCO	0
3	Wind	Competitive Bidding	0	0		HESCO	0
						QESCO	0
						TESCO	0
						SEPCO	0

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

81/123

Table 5-7 DISCO's power procurement requirement (cost reduction) for 2023-24

Year 2023-2024							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar DG	Competitive Bidding	1,224	269	275	IESCO	3
						PESCO	21
						FESCO	54
						LESCO	66
						GEPCO	49
						MEPCO	50
2	Bagasse	Committed/ Direct Contracting [HESCO]	6.5	6		HESCO	19
						QESCO	1
						TESCO	0
						SEPCO	12

The additional capacities mentioned against each DISCO are based on the projects at individual XW-DISCO.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

82/123

Table 5-8 DISCO's power procurement requirement (cost reduction) for 2024-25

Sr No.	Generation Technology	Year 2024-2025 Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar DG	Competitive Bidding	0	0	0	IESCO	0
						PESCO	0
						FESCO	0
2	Solar Utility	Competitive Bidding	0	0		LESCO	0
						GEPCO	0
						MEPCO	0
3	Wind	Competitive Bidding	0	0		HESCO	0
						QESCO	0
						TESCO	0
						SEPCO	0

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

83/123

Table 5-9 DISCO's power procurement requirement (cost reduction) for 2025-26

Year 2025-2026							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar DG	Competitive Bidding	0	0	0	IESCO	0
						PESCO	0
						FESCO	0
2	Solar Utility	Competitive Bidding	0	0		LESCO	0
						GEPCO	0
						MEPCO	0
3	Wind	Competitive Bidding	0	0		HESCO	0
						QESCO	0
						TESCO	0
						SEPCO	0

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
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84/123

Table 5-10 DISCO's power procurement requirement (cost reduction) for 2026-27

Year 2026-2027							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar DG	Competitive Bidding	0	0	0	IESCO	0
						PESCO	0
						FESCO	0
2	Solar Utility	Competitive Bidding	0	0		LESCO	0
						GEPCO	0
						MEPCO	0
3	Wind	Competitive Bidding	0	0		HESCO	0
						QESCO	0
						TESCO	0
						SEPCO	0

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5.1.3. Power Procurement for Removal of Constraints:

Table 5-11 DISCO's power procurement requirement (Constraint Removal) for 2022-23

Year 2022-2023							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	RLNG (KAPCO)	Contract Extension	1,300	500	500	IESCO	51
						PESCO	64
						FESCO	65
						LESCO	106
						GEPCO	49
						MEPCO	85
						HESCO	24
						QESCO	28
						TESCO	9
						SEPCO	19

DISCO-wise allocation of firm capacity is based on prorated allocation against the shortage of supply vis-à-vis the determined capacity obligation during the year 2022-23.

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86/123

Table 5-12 DISCO's power procurement requirement (Constraint Removal) for 2023-24

Year 2023-2024							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	RLNG (KAPCO)	Contract Extension	1,300	500	500	IESCO	0
						PESCO	0
						FESCO	95
						LESCO	46
						GEPCO	89
						MEPCO	245
						HESCO	0
						QESCO	0
						TESCO	25
						SEPCO	0

DISCO-wise allocation of firm capacity is based on prorated allocation against the shortage of supply vis-à-vis the determined capacity obligation during the year 2023-24.

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87/123

Table 5-13 DISCO's power procurement requirement (Constraint Removal) for 2024-25

Year 2024-2025							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	RLNG (KAPCO)	Contract Extension	1,300	500	500	IESCO	51
						PESCO	64
						FESCO	65
						LESCO	106
						GEPCO	49
						MEPCO	85
						HESCO	24
						QESCO	28
						TESCO	9
						SEPCO	19

DISCO-wise allocation of firm capacity is based on Commercial Allocation Factors as per MCC during the year 2024-25.

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88/123

Table 5-14 DISCO's power procurement requirement (Constraint Removal) for 2025-26

		Year 2025-2026					
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	RLNG (KAPCO)	Contract Extension	1,300	500	500	IESCO	51
						PESCO	64
						FESCO	65
						LESCO	106
						GEPCO	49
						MEPCO	85
						HESCO	24
						QESCO	28
						TESCO	9
						SEPCO	19

DISCO-wise allocation of firm capacity is based on Commercial Allocation Factors as per MCC during the year 2025-26.

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89/123

Table 5-15 DISCO's power procurement requirement (Constraint Removal) for 2026-27

Year 2026-2027							
Sr No.	Generation Technology	Mode of Procurement	Installed Capacity (MW)	Firm Capacity (MW)	Cumulative Firm Capacity (MW)	Allocation to SoLR wrt to Additional Capacity Requirements	
1	Solar DG	Competitive Bidding	0	0	0	IESCO	0
						PESCO	0
						FESCO	0
2	Solar Utility	Competitive Bidding	0	0		LESCO	0
						GEPCO	0
						MEPCO	0
3	RLNG (KAPCO)	Contract Extension	0	0		HESCO	0
						QESCO	0
						TESCO	0
						SEPCO	0

Allocation of KAPCO (for Constraint Removal) is made each year on pro-rata basis as per capacity requirement of each DISCO in respective year. Whereas, for years where all DISCOs are compliant, allocation is based upon commercial allocation factors as provided in **1.2.1.** above.

5.2. Capacity Obligation Compliance Including Proposed Procurements:

5.2.1. IESCO:

Table 5-16 IESCO's compliance with CO including proposed procurement

	IESCO						
		Actual		Forecasted			
	Supply Demand	Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,256	2,834	2,956	3,124	2,628	2,082
2	Contracted Commissioned (MW)	2,579	2,881	2,769	2,768	2,767	2,765
3	Committed/ Contracted (MW)	0	380	323	622	704	925
4	Uncontracted (MW) ((2+3)-1)	323	427	137	266	843	1,608
5	Future Procurement (MW)	0	5	5	21	30	39
6	Cost Reduction Projects (MW)	0	0	3	3	3	3
7	Constraints Removal (MW)	0	51	0	51	51	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	2,579	3,317	3,101	3,465	3,556	3,724
9	Surplus/ (Shortage) of Supply (MW) (8-1)	323	483	145	342	927	1,650
10	CO Compliance (%) – Surplus / (Shortage)	14%	17%	5%	11%	35%	79%

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91/123

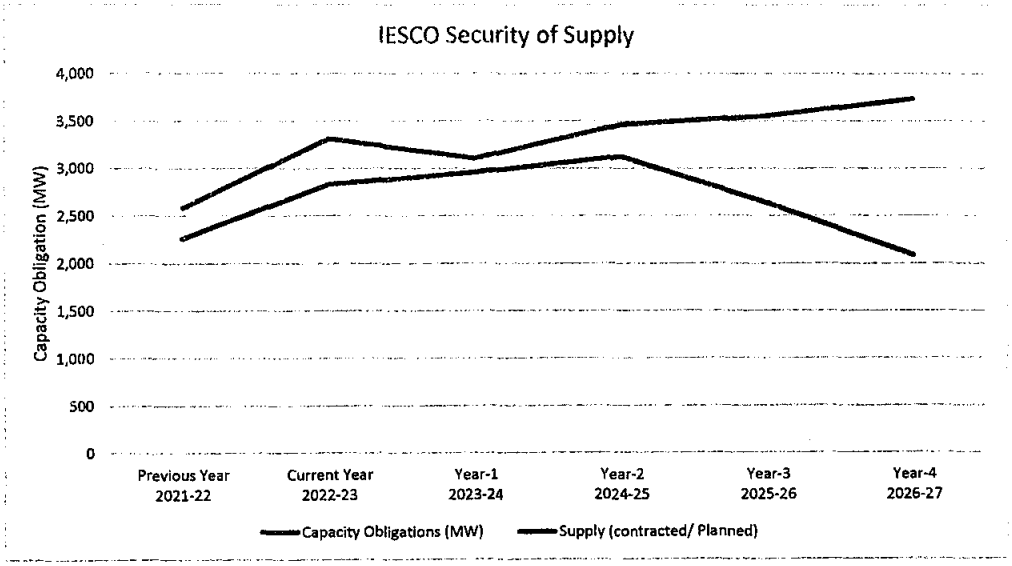

Figure 5-1 IESCOs Security of Supply including Proposed Procurement

5.2.2. PESCO:

Table 5-17 PESCO's compliance with CO including proposed procurement

	PESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,736	2,854	3,019	3,163	2,647	2,050
2	Contracted Commissioned (MW)	3,718	3,658	3,517	3,516	3,514	3,512
3	Committed/ Contracted (MW)	0	482	410	790	894	1,175
4	Uncontracted (MW) ((2+3)-1)	982	1,287	908	1,142	1,761	2,636
5	Future Procurement (MW)	0	7	7	27	38	49
6	Cost Reduction Projects (MW)	0	0	21	21	21	21
7	Constraints Removal (MW)	0	64	0	64	64	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	3,718	4,211	3,955	4,417	4,532	4,745
9	Surplus/ (Shortage) of Supply (MW) (8-1)	982	1,357	936	1,254	1,885	2,706
10	CO Compliance (%) – Surplus / (Shortage)	36%	48%	31%	40%	71%	132%

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93/23

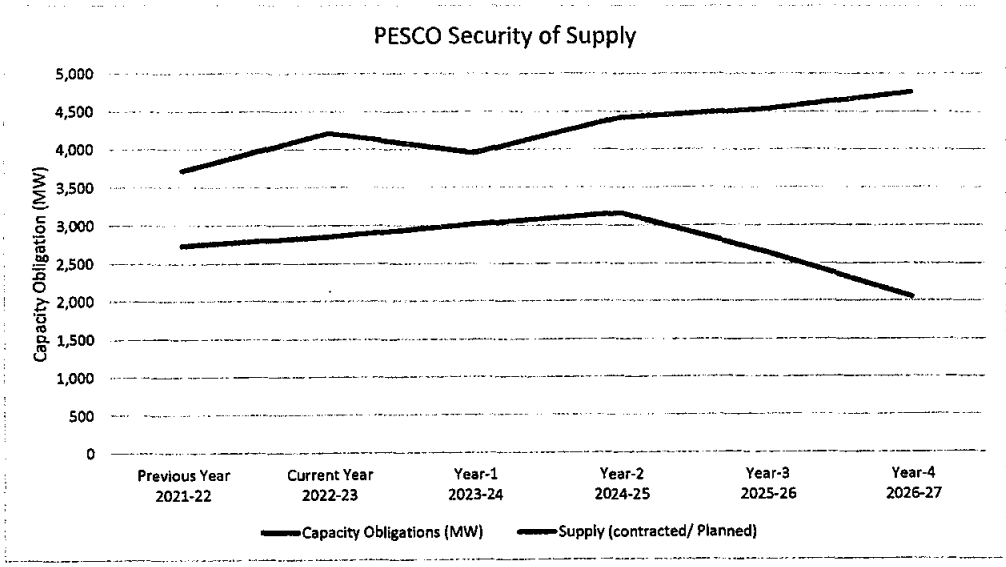

Figure 5-2 PESCOs Security of Supply including Proposed Procurement

5.2.3. FESCO:

Table 5-18 FESCO's compliance with CO including proposed procurement

	FESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,969	3,968	4,249	4,456	3,729	2,943
2	Contracted Commissioned (MW)	3,326	3,715	3,571	3,570	3,568	3,566
3	Committed/ Contracted (MW)	0	490	417	802	908	1,193
4	Uncontracted (MW) ((2+3)-1)	357	237	-261	-84	748	1,816
5	Future Procurement (MW)	0	7	56	76	87	98
6	Cost Reduction Projects (MW)	0	0	54	54	54	54
7	Constraints Removal (MW)	0	65	95	65	65	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	3,326	4,277	4,193	4,567	4,684	4,900
9	Surplus/ (Shortage) of Supply (MW) (8-1)	357	309	-57	111	954	1,968
10	CO Compliance (%) – Surplus / (Shortage)	12%	8%	-1%	2%	26%	67%

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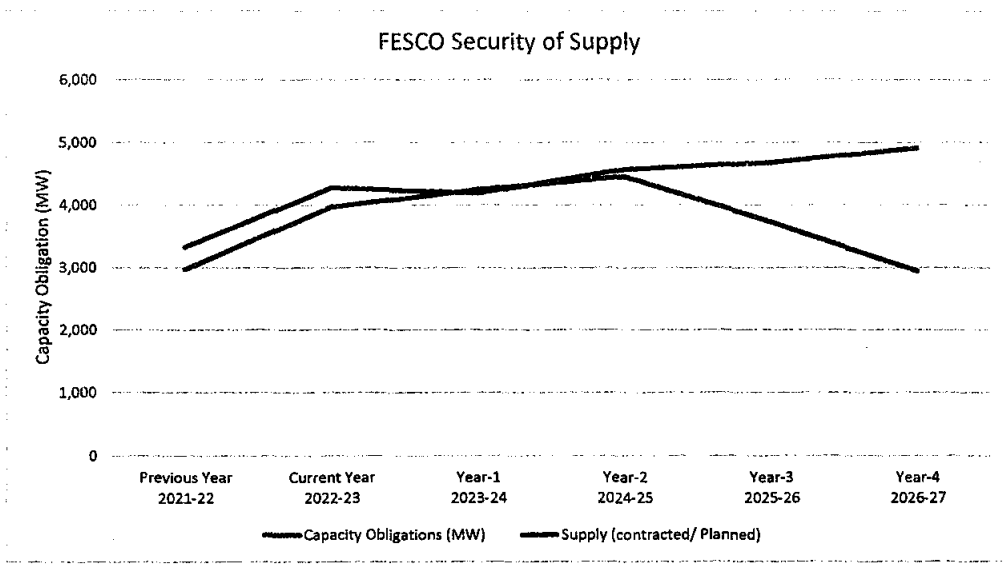

Figure 5-3 FESCOs Security of Supply including Proposed Procurement

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96/123

5.2.4. LESCO:

Table 5-19 LESCO's compliance with CO including proposed procurement

	LESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	5,210	6,302	6,603	6,855	5,720	4,467
2	Contracted Commissioned (MW)	5,362	5,989	5,757	5,755	5,752	5,748
3	Committed/ Contracted (MW)	0	790	672	1,293	1,464	1,923
4	Uncontracted (MW) ((2+3)-1)	152	476	-174	193	1,496	3,204
5	Future Procurement (MW)	0	11	35	67	86	103
6	Cost Reduction Projects (MW)	0	0	66	66	66	66
7	Constraints Removal (MW)	0	106	46	106	106	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	5,362	6,895	6,575	7,286	7,474	7,823
9	Surplus/ (Shortage) of Supply (MW) (8-1)	152	593	-28	431	1,753	3,373
10	CO Compliance (%) – Surplus / (Shortage)	3%	9%	0%	6%	31%	76%

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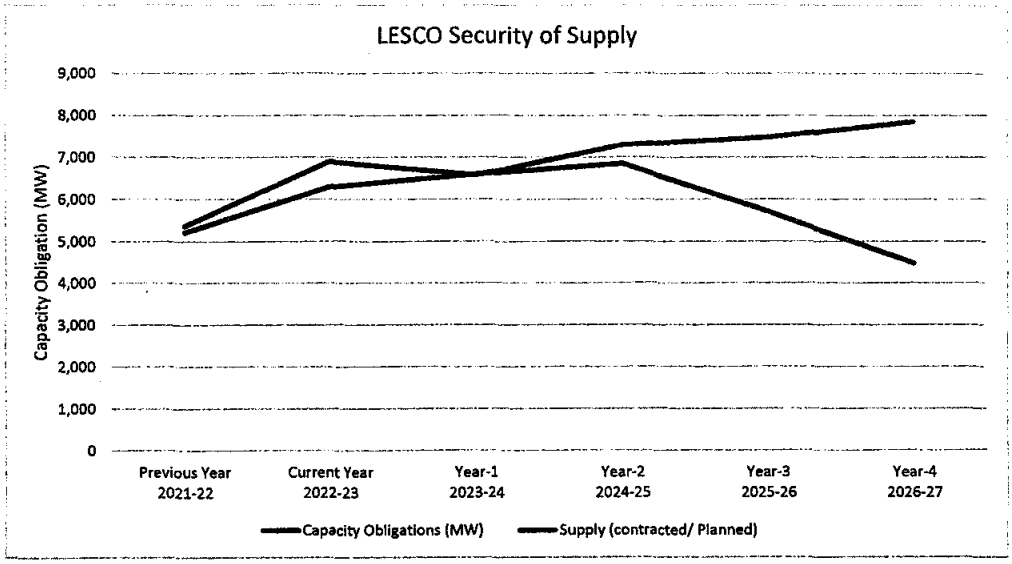

Figure 5-4 LESCOs Security of Supply including Proposed Procurement

5.2.5. GEPCO:

Table 5-20 GEPCO's compliance with CO including proposed procurement

	GEPCO					
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	2,198	3,106	3,235	3,393	2,840	2,230
2	Contracted Commissioned (MW)	2,496	2,787	2,679	2,678	2,677	2,675
3	Committed/ Contracted (MW)	0	368	313	602	681	895
4	Uncontracted (MW) ((2+3)-1)	298	49	-243	-113	519	1,340
5	Future Procurement (MW)	0	5	51	66	75	83
6	Cost Reduction Projects (MW)	0	0	49	49	49	49
7	Constraints Removal (MW)	0	49	89	49	49	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	2,496	3,209	3,180	3,444	3,531	3,694
9	Surplus/ (Shortage) of Supply (MW) (8-1)	298	103	-54	51	691	1,463
10	CO Compliance (%) – Surplus / (Shortage)	14%	3%	-2%	2%	24%	66%

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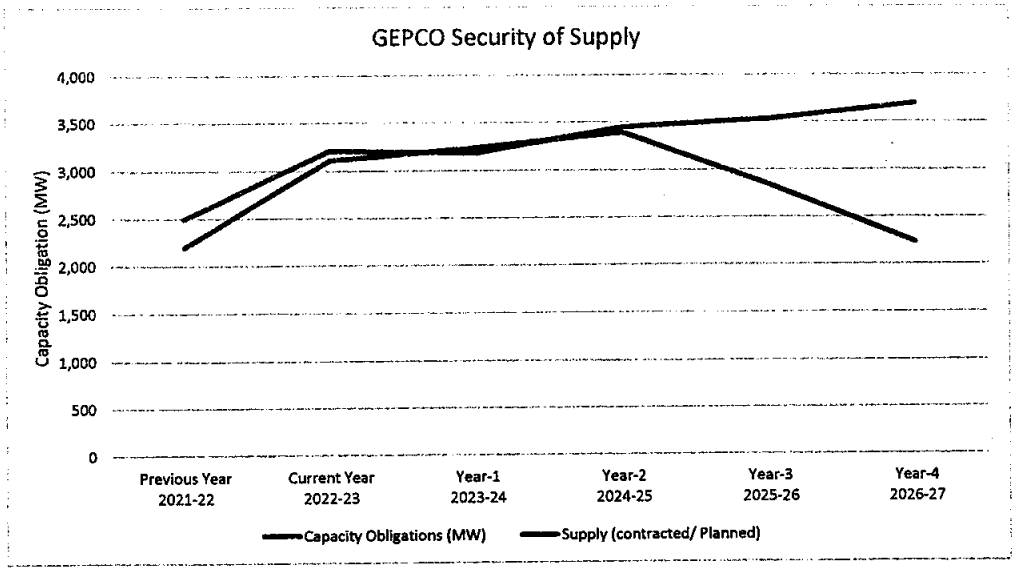

Figure 5-5 GEPCOs Security of Supply including Proposed Procurement

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5.2.6. MEPCO:

Table 5-21 MEPCO's compliance with CO including proposed procurement

	MEPCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	3,510	5,432	5,773	6,112	5,160	4,094
2	Contracted Commissioned (MW)	4,335	4,842	4,655	4,653	4,651	4,648
3	Committed/ Contracted (MW)	0	639	543	1,045	1,184	1,555
4	Uncontracted (MW) ((2+3)-1)	825	48	-576	-414	675	2,109
5	Future Procurement (MW)	0	9	136	162	177	191
6	Cost Reduction Projects (MW)	0	0	50	50	50	50
7	Constraints Removal (MW)	0	85	245	85	85	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	4,335	5,574	5,628	5,995	6,147	6,429
9	Surplus/ (Shortage) of Supply (MW) (8-1)	825	142	-145	-117	987	2,349
10	CO Compliance (%) – Surplus / (Shortage)	24%	3%	-3%	-2%	19%	57%

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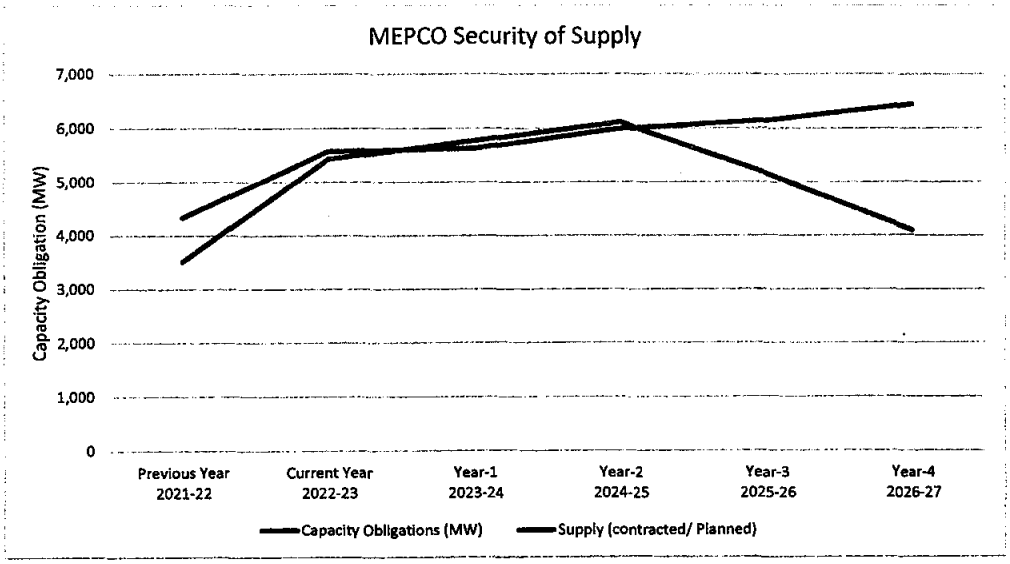

Figure 5-6 MEPCOs Security of Supply including Proposed Procurement

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5.2.7. HESCO:

Table 5-22 HESCO's compliance with CO including proposed procurement

	HESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	848	1,333	1,382	1,431	1,186	921
2	Contracted Commissioned (MW)	1,217	1,359	1,307	1,306	1,306	1,305
3	Committed/ Contracted (MW)	0	179	152	294	332	437
4	Uncontracted (MW) ((2+3)-1)	369	206	78	168	452	821
5	Future Procurement (MW)	0	2	0	7	11	15
6	Cost Reduction Projects (MW)	0	0	19	19	19	19
7	Constraints Removal (MW)	0	24	0	24	24	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	1,217	1,565	1,479	1,650	1,693	1,772
9	Surplus/ (Shortage) of Supply (MW) (8-1)	369	232	97	219	507	856
10	CO Compliance (%) -- Surplus / (Shortage)	44%	17%	7%	15%	43%	93%

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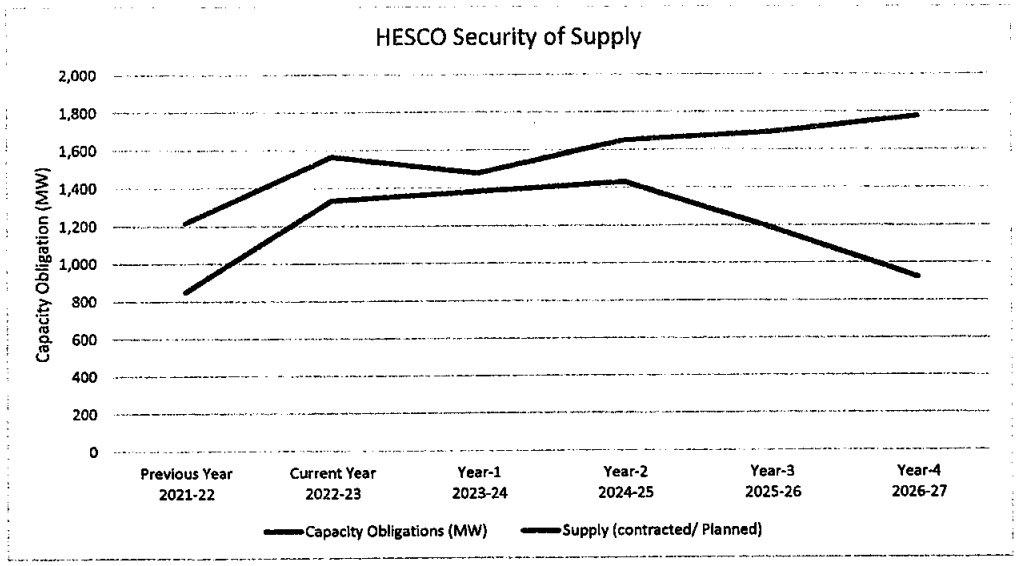

Figure 5-7 HESCOs Security of Supply including Proposed Procurement

5.2.8. QESCO:

Table 5-23 QESCO's compliance with CO including proposed procurement

	QESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	835	1,276	1,317	1,363	1,127	881
2	Contracted Commissioned (MW)	1,428	1,595	1,533	1,533	1,532	1,531
3	Committed/ Contracted (MW)	0	210	179	344	390	512
4	Uncontracted (MW) ((2+3)-1)	593	530	395	515	795	1,163
5	Future Procurement (MW)	0	3	3	12	17	21
6	Cost Reduction Projects (MW)	0	0	1	1	1	1
7	Constraints Removal (MW)	0	28	0	28	28	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	1,428	1,836	1,716	1,918	1,968	2,061
9	Surplus/ (Shortage) of Supply (MW) (8-1)	593	561	399	556	841	1,185
10	CO Compliance (%) – Surplus / (Shortage)	71%	44%	30%	41%	75%	135%

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105/123

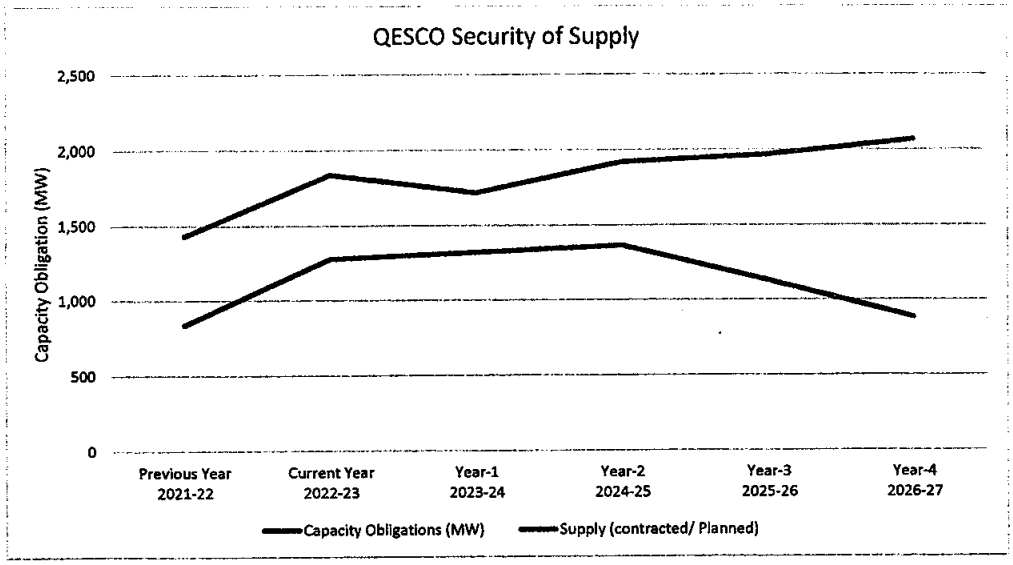

Figure 5-8 QESCOs Security of Supply including Proposed Procurement

5.2.9. TESCO:

Table 5-24 TESCO's compliance with CO including proposed procurement

	TESCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	0	590	615	643	539	424
2	Contracted Commissioned (MW)	0	494	475	475	474	474
3	Committed/ Contracted (MW)	0	65	55	107	121	159
4	Uncontracted (MW) ((2+3)-1)	0	-31	-85	-62	56	209
5	Future Procurement (MW)	0	32	45	48	49	51
6	Cost Reduction Projects (MW)	0	0	0	0	0	0
7	Constraints Removal (MW)	0	9	25	9	9	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	0	600	600	638	653	682
9	Surplus/ (Shortage) of Supply (MW) (8-1)	0	10	-15	-5	114	260
10	CO Compliance (%) – Surplus / (Shortage)	0%	2%	-2%	-1%	21%	61%

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107/123

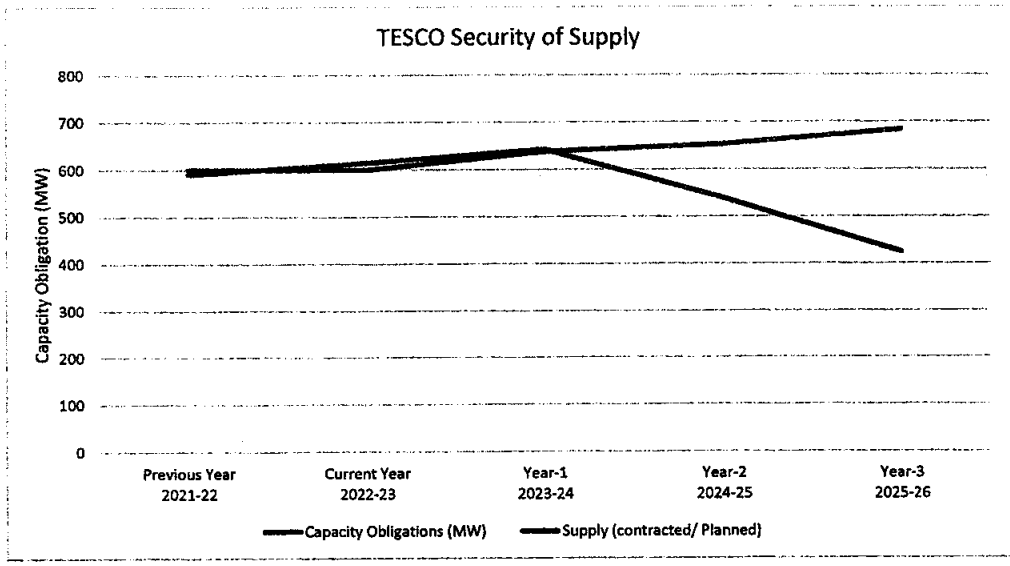

Figure 5-9 TESCOs Security of Supply including Proposed Procurement

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5.2.10. SEPCO:

Table 5-25 SEPCO's compliance with CO including proposed procurement

	SEPCO						
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	690	1,133	1,150	1,167	947	721
2	Contracted Commissioned (MW)	948	1,059	1,018	1,017	1,017	1,016
3	Committed/ Contracted (MW)	0	140	119	229	259	340
4	Uncontracted (MW) ((2+3)-1)	258	65	-14	79	328	635
5	Future Procurement (MW)	0	2	2	8	11	14
6	Cost Reduction Projects (MW)	0	0	12	12	12	12
7	Constraints Removal (MW)	0	19	0	19	19	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	948	1,219	1,150	1,285	1,318	1,379
9	Surplus/ (Shortage) of Supply (MW) (8-1)	258	86	0	117	370	662
10	CO Compliance (%) – Surplus / (Shortage)	0%	8%	0%	10%	39%	92%

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109/123

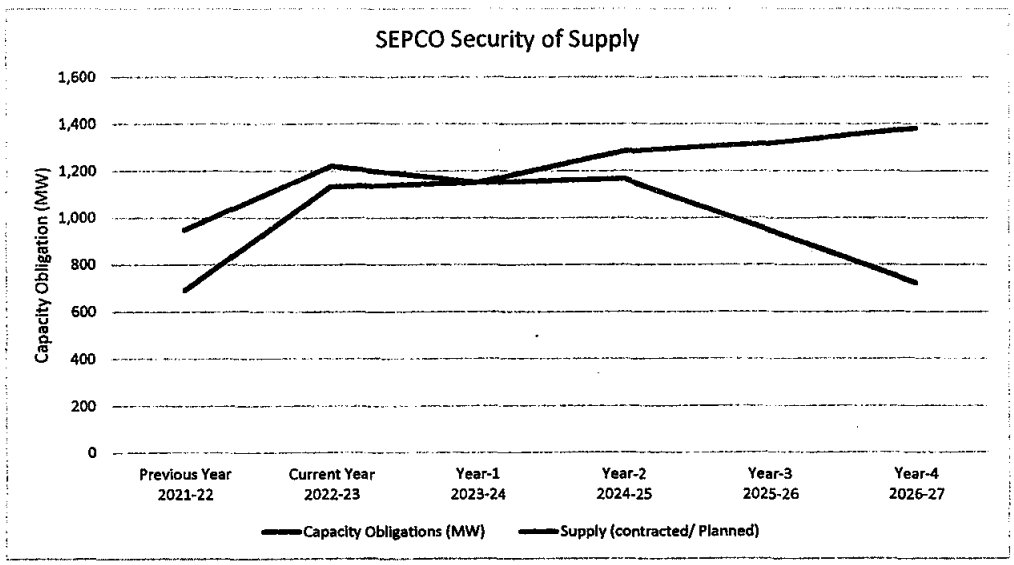

Figure 5-10 SEPCOs Security of Supply including Proposed Procurement

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5.2.11. **Total:**

Table 5-26 XW-DISCOs' cumulative compliance with CO including proposed procurement

	Total					
	Supply Demand	Actual		Forecasted			
		Previous Year 2021-22	Current Year 2022-23	Year-1 2023-24	Year-2 2024-25	Year-3 2025-26	Year-4 2026-27
1	Capacity Obligations (MW)	21,252	28,827	30,298	31,707	26,524	20,811
2	Contracted Commissioned (MW)	25,409	28,379	27,281	27,271	27,258	27,240
3	Committed/ Contracted (MW)	0	3,742	3,182	6,127	6,939	9,113
4	Uncontracted (MW) ((2+3)-1)	4,157	3,294	165	1,691	7,673	15,541
5	Future Procurement (MW)	0	81	338	492	582	664
6	Cost Reduction Projects (MW)	0	0	275	275	275	275
7	Constraints Removal (MW)	0	500	500	500	500	0
8	Total Credited Capacity (MW) (2+3+5+6+7)	25,409	32,703	31,576	34,665	35,554	37,210
9	Surplus/ (Shortage) of Supply (MW) (8-1)	4,157	3,875	1,278	2,958	9,030	16,480
10	CO Compliance (%) – Surplus / (Shortage)	0%	13%	4%	9%	34%	79%

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111/133

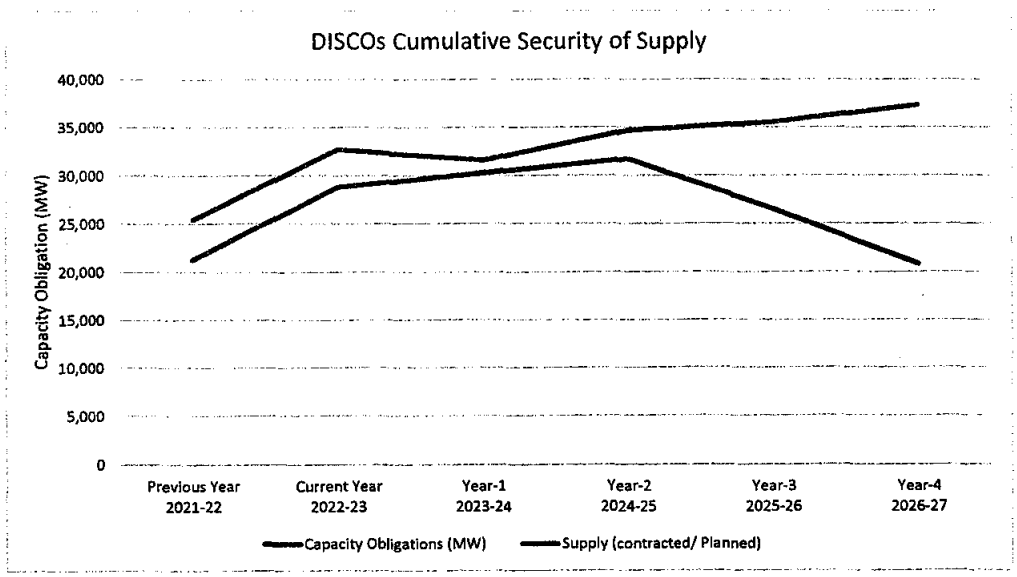

Figure 5-11 XW-DISCOs Cumulative Security of Supply including Proposed Procurement

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CONCLUSIONS

1. As per Capacity Obligation Report 2023 issued by Market Operator, 5 DISCOs (Namely; FESCO, LESCO, GEPCO, MEPCO and TESCO) are faced with non-compliances, ranging from minor to serious, to the respective capacity obligations over the programme horizon (FY 2022-23 to FY 2026-27). The other 5 DISCOs (Namely; IESCO, PESCO, HESCO, QESCO and SEPCO) are sufficiently, in some cases exorbitantly, above in compliance to the respective capacity obligations.

2. Without prejudice to the above individual assessment, the system as a whole is expected to remain compliant to the combined capacity obligation during the programme horizon.

3. The envisaged power procurement plans of DISCOs, comprising of procurement from IGCEP committed uncontracted capacities, localized solarization of 11 kV feeders, and continuation of retiring plants in view of transmission constraints, provides reasonable relief with regard to compliance with respective capacity obligations of individual DISCOs besides improvising system level compliance to the combined capacity obligation of the system.

4. The overall system-based compliance to the combined capacity obligation expected through power procurement envisaged during the programme period can be balanced down to mitigate individual non-compliances expected at relevant DISCOs by suitably adjusting the inter-DISCO commercial allocation factors provided at Section 18.2.5.2 of the Market Commercial Code. This allows best utilization of capacities within system on least-cost basis.

5. Considering that the capacity obligation is a derivative of non-coincident peak-demands of individual DISCOs, applying Reserve Margin of 10% over and above the said non-coincident peaks; compared with firm capacity estimations based on equivalent availability factors, is an apparent mismatch between the two parameters (i.e., the capacity obligation vs. the firm capacity) of the desired equilibrium. Accordingly, till the commercial allocation factors are changed on the basis of coincident demands of DISCOs, it would be pragmatic, for the time beings, to dispense with the application of the Reserve Margin or at-least lowering the %age of Reserve Margin. This will reduce undue pressure on capacity obligation requirements and compliance thereof.

6. While assessing compliance to the determined Capacity Obligation, the Capacity Obligation Report and, therefore, this Power Acquisition Programme is based on 80% an 60% of Capacity Obligation as success / compliance criteria for Year-3 and Year-4, respectively. For an aligned planning of security of supply, it would be prudent to carryout assessment at 100% of Capacity Obligation for all years, however, for years 3 and 4, the compliance criteria could be relaxed, e.g., current 80% and 60% or at an enhanced level of 90% and 80%, as proposed in the Capacity Obligation Report 2022-23 of the Market Operator.

7. While arriving at the firm capacities vis-à-vis the compliance to the capacity obligation(s), a sizeable quantum (2050 MW) pertaining to KE is subtracted from the available capacities thus correspondingly compromising the compliance to the capacity obligation of XW-DISCOs. This needs attention.

8. The proviso to the sub-regulation 6(2) of Procurement Regulations provides that for a period of five years from the date of notification of these regulations or such earlier period as may be directed by the Authority, a combined power acquisition programme shall be developed and submitted by suppliers of last resort (except KE). Clarity on responsible entity for combining of the programme shall provide alignment of actions and compliance to the timelines.

9. The proviso to the sub-regulation 6(2) further stipulates for consultation with Independent Auction Administrator (IAA), in the absence of legal existence of IAA, the said consultation was dispensed with for the purposes of this document. Further, as per provisions of the Procurement Regulations, the very success of any Power Acquisition Programme highly depends on legal existence of IAA. An expeditious registration of IAA, in line with the Act, the Rules, the Regulations and approved CTBCM design is of high priority.

10. The regulatory requirements stipulate submission timelines for multiple documents (MTLF, PAP, DIIPs, IGCEP, TSEP & MYTs etc.). There is need to consider rearrangement and realignment of timelines and time horizons (i.e., the Control Periods) for each related document for a comprehensive and cohesive processing of power sector as a whole.

11. This combined power acquisition programme provides a balanced approach for meeting the demonstrated and expected demand of regulated consumers of XW-DISCOs, therefore, merits consideration and approval of the Authority.

PRAYER

1. The combined Power Acquisition Programme for the period from FY 2022-23 to FY 2026-27, representing the joint and collaborative efforts and collective wisdom of all XW-DISCO, i.e., Suppliers of Last Resort, provides a balanced approach for meeting the demonstrated and expected demand of regulated consumer adequately demonstrating the compliance with the combined capacity obligation of XW-DISCO (as SOLRs); may kindly be considered and approved by the honorable Authority.

2. The processing of other multiple requests of XW-DISCOs, pertaining to Multi-Year Tariffs (MYTs), integrated investment plans, approval of RFPs and benchmark tariffs for solarization of 11 kV feeders, licensing as electric power supplier(s), Use of System Charges and draft Use of System Agreement(s) as per NEPRA Open Access (Interconnection and Wheeling of Electric Power) Regulations, 2022, may kindly be continued or, as applicable, reconvened.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

ANNEX-I: EXISTING GENERATION PLANTS

Generators under Legacy Contracts – Commissioned till date				
Sr No	Generator Name	Installed Capacity (MW)	Firm Capacity (MW)	Fuel Type
1	Atlas (APL)	219	200	RFO
2	AGL	163	150	RFO
3	China HUBCO (CPH)	1,320	1,038	Imp. Coal
4	Engro (EPQL)	217	194	Gas
5	Engro Thar (EPTL)	660	527	Local Coal
6	Foundation (FPCDL)	184	158	Gas
7	Halmore (HPGCL)	225	162	RLNG
8	Sahiwal Coal (HSR)	1,320	1,158	Imp. Coal
9	Liberty Tech (LPTL)	202	184	RFO
10	HuB N (NEL)	225	197	RFO
11	Balloki	1,223	1,001	RLNG
12	Haveli (HBS)	1,230	1,076	RLNG
13	Nishat C (NCPL)	209	171	RFO
14	Nishat P (NPL)	202	177	RFO
15	Orient (OPCL)	225	188	RLNG
16	Port Qasim (PQEPC)	1,320	1,225	Imp. Coal
17	Bhikki (QATPL)	1,180	1,033	RLNG
18	Saif (SPL)	225	189	RLNG
19	Sapphire (SECL)	225	186	RLNG
20	UCH-II	393	336	Gas
21	KAPCO 1	400	365	RLNG
22	KAPCO 2	900	820	RLNG
23	KAPCO 3	300	273	RLNG
24	Altern (AEL)	0	0	Gas
25	SABA	136	102	RFO
26	HUBCO	1,291	1,158	RFO
27	LIBERTY	225	201	Gas
28	FKPCL	172	114	RLNG
29	ROUSCH	450	411	RLNG
30	Kohinoor (KEL)	131	118	RFO
31	AES Lalpir	362	302	RFO
32	AES Pakgen	365	304	RFO
33	HCPC	0	0	Gas
34	GTPS Block#4	0	0	Gas
35	UCH	586	577	Gas
36	Guddu-I U(11-13)	415	129	Gas
37	Guddu-II U(5-10)	620	379	Gas
38	Guddu 747	747	559	Gas
39	Jamshoro-I U1	250	163	RFO
40	Jamshoro-II U4	200	131	RFO
41	Jamshoro-II U2	0	0	RFO
42	Jamshoro-II U3	0	0	RFO

Generators under Legacy Contracts – Commissioned till date				
Sr No	Generator Name	Installed Capacity (MW)	Firm Capacity (MW)	Fuel Type
43	Nandipur	525	446	RLNG
44	Muzaffargarh-I U1	210	94	RFO
45	Muzaffargarh-I U2	210	94	RFO
46	Muzaffargarh-I U3	210	94	RFO
47	Muzaffargarh-II U4	320	143	RFO
48	Muzaffargarh-II U5	-	0	RFO
49	Muzaffargarh-II U6	-	0	RFO
50	Davis	14	0	RLNG
51	Lucky Coal	660	607	Local Coal
52	Punjab Thermal	0	0	RLNG
53	Agar textile	12	12	SPP
54	Lucky cement	20	20	SPP
55	Thatta Cement	19	19	SPP
56	Al-noor sugar mill	36	36	SPP
57	Anoond	10	10	SPP
58	Omni	13	13	SPP
59	kumhariwala	3	3	SPP
60	Noon Sugar	14	14	SPP
61	Tarbela 1-14	3,478	3,478	Hydel
62	Tarbela Ext 4	1,410	1,410	Hydel
63	Mangla	1,140	1,000	Hydel
64	Ghazi Brotha	1,450	1,081	Hydel
65	Warsak	243	180	Hydel
66	Chashma	184	98	Hydel
67	Jinnah	96	19	Hydel
68	Allai khwar	121	80	Hydel
69	Khan khwar	130	31	Hydel
70	Dubair Khwar	72	112	Hydel
71	Neelam jehlam	969	802	Hydel
72	Golen Gole	108	14	Hydel
73	Gomal Zam	17	8	Hydel
74	Rasul	22	8	Hydel
75	Dargai	20	15	Hydel
76	Nandipur	14	6	Hydel
77	Shadiwal	14	3	Hydel
78	Chichoki	13	4	Hydel
79	Kuram Garhi	4	3	Hydel
80	Renala	1	1	Hydel
81	Chitral	1	1	Hydel
82	Shishi	2	2	Hydel
83	Jabban	22	20	Hydel
84	Ranolia	18	14	Hydel
85	Jagran-1	30	27	Hydel
86	Malakand III	81	75	Hydel

Generators under Legacy Contracts – Commissioned till date				
Sr No	Generator Name	Installed Capacity (MW)	Firm Capacity (MW)	Fuel Type
87	New Bong Escape	84	68	Hydel
88	Patrind	150	129	Hydel
89	Daral khwar	37	2	Hydel
90	Gul pur	103	93	Hydel
91	Karot	720	612	Hydel
92	Jhing	14	12	Hydel
93	Marala HPP	8	6	Hydel
94	Pakpatan HPP	3	2	Hydel
95	ACT/Tapal Wind	30	15	Wind
96	Artistic_Wind	50	25	Wind
97	Artistic_Wind-2	50	15	Wind
98	Din Wind Energy	50	15	Wind
99	FFC(EL)	50	19	Wind
100	FWEL-1	50	20	Wind
101	FWEL-2	50	22	Wind
102	Gul Ahmad	50	18	Wind
103	Gul Ahmad-II	50	15	Wind
104	Hawa	50	26	Wind
105	Indus	50	15	Wind
106	Jhimpir	50	27	Wind
107	Lakeside Wind	50	15	Wind
108	Liberty Wind-I	50	15	Wind
109	Master	50	23	Wind
110	Metro	50	18	Wind
111	Metro Wind-II	60	18	Wind
112	NASDA Green Wind	50	15	Wind
113	Sachal	50	20	Wind
114	Sapphire	50	22	Wind
115	Three Gorges First (TGF)	50	21	Wind
116	Three Gorges Second (TGS)	50	23	Wind
117	Three Gorges Third (TGT)	50	22	Wind
118	Tricon-A	50	28	Wind
119	Tricon-B	50	27	Wind
120	Tricon-C	50	27	Wind
121	UEP	99	41	Wind
122	Yunus	50	21	Wind
123	ZEPL	56	22	Wind
124	Tenaga	50	27	Wind
125	Dawood	50	27	Wind
126	Zephyr	50	27	Wind
127	Tricom	50	15	Wind
128	Master Green	50	15	Wind
129	Liberty Wind-II	50	15	Wind
130	Tapal Wind-II (ACT-2)	50	15	Wind

Generators under Legacy Contracts – Commissioned till date				
Sr No	Generator Name	Installed Capacity (MW)	Firm Capacity (MW)	Fuel Type
131	JDW-II	26	26	Bagasse
132	JDW-III	27	27	Bagasse
133	RYKML	30	30	Bagasse
134	Chiniot Power	63	63	Bagasse
135	Hamza Sugar	15	15	Bagasse
136	Thall Power Layyah	25	25	Bagasse
137	Almoiz Industries	36	36	Bagasse
138	Chanar Energy	22	22	Bagasse
139	Chashnupp-I	325	312	Nuclear
140	Chashnupp-II	325	303	Nuclear
141	Chashnupp-III	340	311	Nuclear
142	Chashnupp-IV	340	305	Nuclear
143	K-2	1,145	996	Nuclear
144	K-3	1,145	996	Nuclear
145	Harappa	18	4	Solar
146	Quaid e Azam	100	29	Solar
147	AJ Power	12	3	Solar
148	Apollo	100	29	Solar
149	Best Green	100	28	Solar
150	Crest Energy	100	29	Solar
151	Zhenfa	100	22	Solar
Total		38,010	31,040	

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

119/123

ANNEX-II: COMMITTED GENERATION PLANTS CONSIDERED IN CAPACITY OBLIGATION REPORT

Generators under Legacy Contracts – Not Commissioned					
Sr No	Generator Name	Expected COD	Installed Capacity (MW)	Firm Capacity (MW)	Fuel Type
1	Jabori	Jun-2023	10	9	Hydro
2	Thar TEL	Jul-2022	330	304	Local Coal
3	Trimmu	Jul-2022	1,263	1,162	CCGT_RLNG
4	Mangla (U #5-6)	Sep-2022	70	60	Hydro
5	Thar-I (SSRL)	Dec-2022	1,320	1,214	Local Coal
6	Thal Nova	Dec-2022	330	304	Local Coal
7	Jamshoro Coal (Unit I)	Dec-2022	660	607	Imported Coal
8	Helios	Apr-2023	50	11	Solar
9	HNDS	Apr-2023	50	11	Solar
10	Meridian	Apr-2023	50	11	Solar
11	Mangla (U #3-4)	May-2023	70	60	Hydro
2022-23			4,203	3,743	
12	Access_Electric	Sep-2023	10	2	Solar
13	Access_Solar	Sep-2023	12	3	Solar
14	Kurram Tangi	Oct-2023	18	15	Hydro
15	Riali-II	Dec-2023	7	6	Hydro
16	Lawi	Apr-2024	69	59	Hydro
17	Suki Kinari (U #1)	May-2024	221	188	Hydro
18	Safe	Jun-2024	10	2	Solar
19	Western	Jun-2024	50	15	Wind
2023-24			397	290	
20	Suki Kinari (U #2)	Jul-2024	221	188	Hydro
21	Tarbela_Ext_5 (U #1)	Jul-2024	510	434	Hydro
22	Mangla (U #1-2)	Jul-2024	70	60	Hydro
23	Tarbela_Ext_5 (U #2)	Aug-2024	510	434	Hydro
24	CASA	Aug-2024	1,000	1,000	Cross Border Interconnection
25	Suki Kinari (U #3)	Sep-2024	221	188	Hydro
26	Tarbela_Ext_5 (U #3)	Sep-2024	510	434	Hydro
27	Suki Kinari (U #4)	Nov-2024	221	188	Hydro
28	Kathai-II	Dec-2024	8	7	Hydro
29	Shahtaj	Aug-2024	32	15.0	Bagasse
2024-25			3,303	2,945	
30	Gwadar	Aug-2025	300	276	Local Coal
31	Mangla (U #9-10)	Sep-2025	70	60	Hydro
32	Dasu_1 (U #1)	May-2026	360	306	Hydro
33	Mohmand (U #1)	May-2026	200	170	Hydro
2025-26			930	812	
34	Dasu_1 (U #2)	Jul-2026	360	306	Hydro
35	Mohmand (U #2)	Jul-2026	200	170	Hydro
36	Dasu_1 (U #3)	Aug-2026	360	306	Hydro
37	Mohmand (U #3)	Sep-2026	200	170	Hydro

120/123

Generators under Legacy Contracts – Not Commissioned					
Sr No	Generator Name	Expected COD	Installed Capacity (MW)	Firm Capacity (MW)	Fuel Type
38	Mangla (U #7-8)	Nov-2026	30	26	Hydro
39	Mohmand (U #4)	Nov-2026	200	170	Hydro
40	Dasu (U #4)	Nov-2026	360	306	Hydro
41	Dasu (U #5)	Feb-2027	360	306	Hydro
42	Keyal Khwar (U #1)	Feb-2027	64	54	Hydro
43	Dasu (U #6)	May-2027	360	306	Hydro
44	Keyal Khwar (U #2)	May-2027	64	54	Hydro
2026-27			2,558	2,174	
Grand Total			11,391	9,964	

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

ANNEX-III: COMMITTED GENERATION PLANTS CONSIDERED FOR FUTURE PROCUREMENT

Generators under Legacy Contracts – Not Commissioned						
Sr No	Generator Name	Expected COD	Installed Capacity (MW)	Firm Capacity (MW)	Fuel Type	Procurement Year
1	Chianwali HPP	Jun-2023	5	5	Hydro	2023-24
2	Deg Outfall	Jun-2023	4	3	Hydro	2023-24
3	Karora	Aug-2022	12	10	Hydro	2023-24
4	Koto	Sep-2022	41	35	Hydro	2023-24
5	Jagran-II (U #1)	Apr-2023	12	10	Hydro	2023-24
6	Jagran-II (U #2)	May-2023	12	10	Hydro	2023-24
7	Machai (PESCO)	Jun-2023	3	2	Hydro	2023-24
8	Faran Sugar Mills (HESCO)	Mar-2023	3	3	SPP	2023-24
9	Bandhi Sugar Mills (HESCO)	Mar-2023	4	4	SPP	2023-24
10	Habib Sugar Mills (HESCO)	Mar-2023	3	3	SPP	2023-24
11	Net-Metering	-	370	81	Solar	2022-23
2022-23			469	166		
12	Jagran-II (U #3-4)	Jul-2023	24	20	Hydro	2023-24
13	Chamfall	Aug-2023	3	3	Hydro	2023-24
14	Trans_Atlantic	Jun-2024	50	15	Wind	2023-24
15	Siachen	Sep-2023	100	22	Solar	2023-24
16	Manjhand	Sep-2023	50	11	Solar	2023-24
17	Zorlu	Dec-2023	100	22	Solar	2023-24
18	Net-Metering	-	370	81	Solar	2023-24
2023-24			697	175		
19	Gorkin Matiltan	Jul-2024	84	71	Hydro	2024-25
20	Daral Khwar-II	Jul-2024	10	9	Hydro	-
21	Kot Addu/ Muzafargarh	2024-25	600	132	Solar	-
22	Net-Metering	-	370	81	Solar	2024-25
2024-25			1,064	293		
23	Chapari Charkhel	Sep-2025	11	9	Hydro	2025-26
24	Balkani	Jul-2025	8	7	Hydro	-
25	Batdara	Jul-2025	5	4	Hydro	-
26	Net-Metering	-	370	81	Solar	2025-26
2025-26			394	101		
27	Net-Metering	-	370	81	Solar	2026-27
2026-27			370	81		
Grand Total			2,993	817		

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

122/123

PAP's PROPOSED PROJECTS & EVACUATIONS INFORMATION PERFORMA (ANNEXURE-I)

(1) Generation Type		(2) Generation related information										(2) Transmission related information									(3) Other Comments / Remarks
		Capacity MW	Technology	Fuel	Is part of IGCEP (Committed/Optimized)		Rationale of procurement	Firm Capacity MW	Year of Commissioning as per IGCEP/ Original COD	Year of Commissioning if delayed/ Actual COD	Location	Is GIS Conducted and Aproved	Proposed Grid for Interconnection	Augmentation required in Grid	Augmentation required in Transmission Network	Is Grid & Transmission Network Augmention included in investment plans?	Responsible entity or entities for grid and transmission expansion	Year of Commissioning of Grid & Transmission Network	Year of Commissioning if Grid & Transmission Network is Delayed	Procurment entities concluding remarks on Evacutation	
(a) Firm Project	Generator 1						Capacity needs / Constraint removal / legacy commitment / Fuel displacement														
	Generator 2																				
	.....																				
	Generator n																				
(b) Indicative Project	Generator 1																				
	Generator 2																				
	::::																				
	Generator n																				

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NEPRA
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123/123