INITIAL RESPONSE ON NEPRA REPORT BY PITC

DECEMBER 12, 2023

1. Preamble:

NEPRA, on dated December 4, 2023, issued an inquiry report regarding the matter of excessive billing by Distribution Companies (DISCOs). In order to evaluate the findings of the NEPRA's inquiry report and processes adopted thereunder, the Ministry of Energy (Power Division) devised a two-pronged strategy:

i) All the DISCOs were directed to evaluate and provide detailed analysis on the assumptions, process and findings of the inquiry report:
ii) An independent and impartial committee was constituted vide office order **No. 12(35)/2018-DISCO-II dated 6th December, 2023** to review the basis/assumptions, methodology and findings of the NEPR's inquiry report and submit recommendations for the consideration of the competent authority. The committee comprised of the following members:
    a. Mr. Irfan Ali, Former Federal Secretary
    b. Mr. Zargham Ishaq Khan, MD, NESPAK
    c. Mr. Abid Lodhi, Industry Expert/Consultant USAID
    d. Dr. Fiaz Chaudhry, Director Energy Institute, LUMS

This report is the initial response to the NEPRA's inquiry report which is preliminary based on the analysis and findings that were received from various DISCOs and Power Information Technology Company (PITC). The Ministry of Energy (Power Division) will not take the final verdict prior to the submission of the detailed findings by the independent committee, as discussed above.

2. Background & Introduction:

NEPRA, in its inquiry report on the matter of excessive billing, highlighted that the Authority received several complaints from consumers across the entire country, on account of charging excessive and incorrect bills by the DISCOs, during the months of July-23 and Aug-23. Subsequently, a public hearing was also conducted by the Authority dated 10^{th} September 2023 having representation of all the DISCOs, where-in other billing related issues were also highlighted including mismatch of snaps-based meter reading & on-bill reading, invisible/missing meter reading snaps, shifting of categories/slabs on account of extension of billing cycles beyond 30 days, etc.

In this regard, the Authority constituted an inquiry committee under the convenorship of Mr. Ubaid ullah Memon, Director (CAD) to carry out a detailed analysis on the subject matter. The committee conducted the analysis through acquiring relevant data sets from respective organizations and held consultations with PITC and DISCOs representatives including site visits to DISCOs' Regional Offices (RO) as well. The series of analysis conducted by the committee includes the assessments related to charging of excessive billing to consumers, assessment of consumers with charged reading period of more than 30 days, aging of defective meters, analysis of sample bills checked along with all type of discrepancies and analysis of recovery ratio for detection billing.

Pursuant to the direction of the Ministry of Energy (Power Division), the DISCOs and PITC probed the matter with the objective to comprehensively review & examine the analysis put forward by NEPRA. In this regard, the detailed assumptions set that were utilized for carrying out various analysis were reviewed along with critical assessment of analytical methodology used. The data sets, that were previously utilized by NEPRA's professionals, were also reviewed to validate the results/findings of this report. The summary of the findings is divided into two distinct parts, as discussed below:

3. The only part of the NEPRA's inquiry report which is correct:

a. The overall action taken by NEPRA is rationalized based on its role as the regulator, as NEPRA is mandated to safeguard consumer's interests. Accordingly, carrying out the initial regulatory proceedings followed by the formulation of inquiry committee (to carry out analysis of excessive complaints and addressing the consumer grievances) and visiting regional offices of DISCOs is the appropriate approach for ensuring a thorough investigation.

b. The recovery ratio of the total volume of the detection bills charged by the DISCOs to the consumers, as provided in table 4.1 of NEPRA's inquiry report, appears correct (provided the correct sampling approach has been utilized).

4. The parts of NEPRA's inquiry report which are not correct:

In this section, the parts of the NEPRA's inquiry report have been discussed that bear serious flaws pertaining to the data accuracy, methodologies employed and inconsistencies with the applicable processes and ground realities.

4.1. Issue of Excessive Billing:

The detailed assessment of the analysis captured under table 3.1 and table 3.2 on pg#2 & 5 of NEPRA's inquiry report has been carried out along with the identification of issues/discrepancies in the processes/methodologies and datasets utilized by NEPRA's professionals. At the outset, probing into the matter requires basic understanding of the existing billing methodology being practiced by DISCOs, which is explained below:

Existing Billing Design

As per the existing billing design being practiced by the DISCOs across the entire country, the monthly billing cycle for all the DISCOs is uniform and is distributed in around 15-29 batches per month. This varies among DISCOs, such that in each batch, the meter reading is taken on the same day each month unless there is weekend or any other gazette holiday or such other instance. In such cases, the meter reading is carried out on the succeeding working day accordingly.

A. Inaccuracy of datasets:

- Based on the statistics provided by NEPRA, for the month of Jul-23 & Aug-23, approximately 76% and 81% of consumers were billed within the due date. Further, pursuant to the same report, approximately 3.2 & 0.8 million consumers were affected in the month of jul-23 & Aug-23 respectively, on account of slab changes, status change from protected to non-protected and status change from life-line to non-life line.

- The statistics quoted by NEPRA are not correct. The comparative analysis of the NEPRA's inferences versus the actual statistics is provided below:

	Jul-23				Aug-23			
	NEPRA Report		Actual Numbers		NEPRA Report		Actual	
Meter Reads	Consumers Nos	%	Consumers Nos	%	Consumers Nos	%	Consumers Nos	%
Within Due Date	26,069,815	76%	29,690,458	86%	28,077,632	81%	28,350,057	82%
Within 32 to 34 Days	1,698,632	5%	3,991,751	12%	4,752,274	14%	4,611,477	13%
After 34 Days	6,342,288	18%	551,966	2%	968,344	3%	962,798	3%
Invalid Snapshot	245,079	1%	121,639	0%	689,038	2%	562,956	2%
	34,355,814	100%	34,355,814	100%	34,487,288	100%	34,487,288	100%
Consumers Affected total	3,254,323	9%	846,468	2.5%	851,995	2%	825,562	2.4%
Slab Changes	2,481,620	7.2%	637,026	1.9%	730,495	2.1%	705,466	2.0%
Protected to Non-Protected	727,626	2.1%	198,166	0.6%	113,777	0.3%	113,879	0.3%
Life-Line to Non-Life Line	45,077	0.1%	11,276	0.0%	7,723	0.0%	6,217	0.0%

Note:-
1- Weekly holidays do not fall on the same date each month
2- two Ashura holidays falls in July 2023 further Ashura Jaloos and Majalis also affected meter reading.
3- 14 August holiday and 4 day strike in MEPCO effected meter reading schedule

Table 1: Comparative Analysis of NEPRA's inferences vs Actual statistics

The major reasons attributed to the discrepancy, as provided in table above, is on account of the erroneous datasets used by the NEPRA professionals. It is pertinent to mention here that based on the specific requirement of NEPRA's professionals, the specific datasets were provided to the NEPRA's professionals by PITC dated **2nd October, 2023**. Subsequently, PITC provided the revised datasets dated **4th October, 2023** which was duly acknowledged by NEPRA's professionals. However, to the irony of the fact, the correct datasets as provided by the PITC professionals were not utilized for the purpose of analysis. This eventually led to the following:

- For the month of Jul-23, in actual, approximately, **86%** of consumers were billed within the due date whereas NEPRA quoted the same to be around **76%**. Provided further, with the inclusion of the effect of holidays in the billing cycle (which has not been captured in NEPRA's analysis and has been explained above in the "Existing Billing Design"), **the actual figure comes to the tune of around 98%** (the detailed explanation of the effect of holidays is provided in subsequent sub-sections).
- Pursuant to NEPRA's statistics, approximately, **3.2 million** consumers were affected in the month of jul-23 on account of slab changes, status change from protected to non-protected and status change from life-line to non-life line. However, the actualized data indicates that only **approx. 0.8 million consumers** were affected under the same categories, resulting in the erroneous exaggeration of said statistics by **approximately 300%.** Pursuant to the preliminary analysis, it was revealed that the **cumulative impact** of slab change/category change is around **0.3 %** of the total billing carried out for the two months (July-23 and Aug-23).

B. Lack of Data validations:

- As evident from the comparative analysis captured in **Table-1**, the datasets acquired by NEPRA professionals were neither validated nor comprehensively analysed i.e. the number of affected consumers on account of slabs shifting, change of categories (Protected-Non Protected & Lifeline – Non-Lifeline), as captured under NEPRA's inquiry report is **3.2 million approx. and 0.8 million approx.** for the months of Jul-23 and Aug-23 respectively, depicting a **discrepancy of 300% on month-on-month** basis. This indicates the negligence of NEPRA professionals to even cross-validate the extreme variations in the statistics provided in their report and defies the basic principles of data analysis and validations. This is further substantiated by the fact that the summary statistics of data shared by PITC were not shared with DISCOs for cross-verification who are in fact the actual owners of the data sets.

C. <u>Difference of opinion on Issues on Excessive days:</u>

- At the outset, the NEPRA in its report has assumed the **billing cycle of 30 days** for the month of Jul-23 and Aug-23 whereas in actual, the total number of days for the respective months are **31 each**.
- Pursuant to NEPRA's analysis, approximately **8 million consumers** were affected on account of extended **billing beyond 30 days** for the month of **July-23**. However, the actualized dataset indicates that approximately **4.5 million consumers** witnessed the extended **billing period beyond 31 days**, out of which 4 million consumers were billed within the period of 32-34 days. It is pertinent to mention here that NEPRA's analysis did not capture the billing process and ground realities, inter-alia, weekends, gazette holidays and other factors i.e. as already explained in the billing methodology's section, meter readings are taken only on weekdays. For example, the month of **July-23** witnessed **five (5) weekends** and **a gazette holiday.** This resulted in the spillover of the billing cycle to the subsequent working days for certain consumers whose billing date falls in the said holidays.
- It is worth mentioning here that any extension of the billing period in a month or two is **subsequently compensated** in the following months such that the **total number of bills issued in a given year remains twelve (12) on an individual consumer level**. The existing billing system implemented in all DISCOs is an extensively large human agency-based system and assurance of exact 30/31 days billing period for each month, even with the inclusion of redundancy in resource planning, might not always be possible on account of practical ground realities (for example, feeders and sub-divisions bifurcations). The DISCOs maintain such information and provide inputs to PITC on a case-to-case basis for respective adjustments accordingly. Moreover, the billing system ensures that any such temporary discrepancies are duly taken care of in the current/subsequent month such that the total number of bills issued in the given year never exceeds/falls the standard of twelve (12) bills.

4.2. <u>Analysis of age-wise Defective Meters in DISCOs Impacting Higher Bills</u>

- Pursuant to the NEPRA's report, the total overaged defective meters are 381,510 out of which **MEPCO** and **LESCO** accounted for the highest share of approx. **62%** and **20%** respectively (**cumulatively 82**%).
- This is primarily attributed to the fact that both DISCOs faced barriers to procure meters on account of the non-participation of vendors in tenders, and delays in opening of Letter of Credits due to the overall country wide economic crisis. Nevertheless, the alleviation of the economic crisis coupled with efforts of respective DISCOs will assist in the clearance of the previous backlog of overaged defective meters.

4.3. Analysis of Sample Bills Checked along with all types of Discrepancies

- In table 3.4 of NEPRA's inquiry report, the data set utilized by NEPRA is based on a sampling approach wherein the total samples drawn for analysis were in fact the complaints received in particular areas of DISCOs, and the same sample space was utilized to highlight the discrepancies in overall billing system.
- The approach utilized by the NEPRA's professionals for the purpose of **"random sampling"** is not aligned even with the very fundamental concepts and practices being adopted to draw the samples from the overall population space. The sampling approach as opted by NEPRA suffers from, inter-alia, the following issues:

  a. Non-representative samples
  b. Sampling bias
  c. Limited sample size
  d. Erroneous extrapolation assumptions for the entire population

- For the purpose of clarity, the sampling approach as adopted by the NEPRA versus the practical random sampling approach (that needed to be adopted) has been pictorially depicted below:

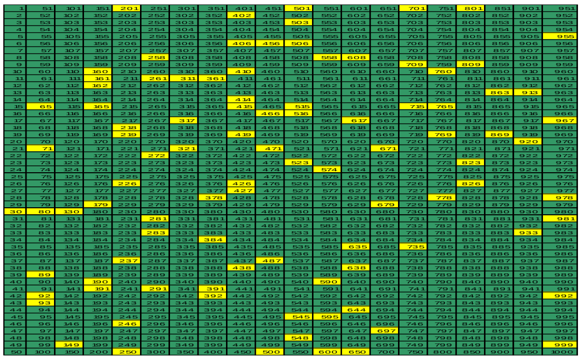

Figure 1: Random Sampling Approach

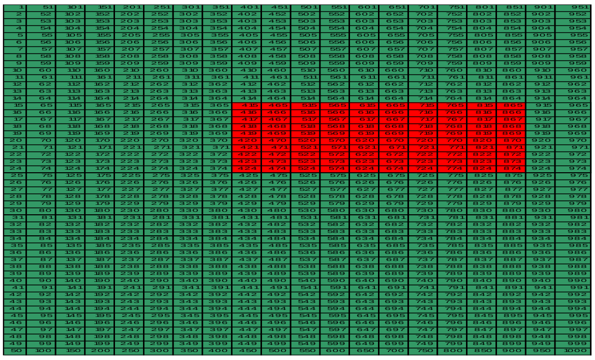

Figure 2: Sampling Approach of NEPRA

The results inferred from the **biased & non-representative sample** space with subsequent extrapolation to the entire population space mislead the focus of the public to the accuracy of the billing process and yielded sensationalism.

4.4. General Issues in the report

Apart from some specific issues, the inquiry report of NEPRA suffers from general issues. Some of them are highlighted as under:

- In **table 3.2 on Pg#5** of report, the number of consumers who were charged with reading period more than 30 days have been computed by adding the number of consumers for the month of Jul-23 and Aug-23 without **excluding the common consumers base** in the said data set. Even otherwise, the summation carried out at the bottom is not correct and suffers from the basic arithmetic error.
- In **Table 3.2,** the report suggests that **no consumer of K-Electric and TESCO** was billed beyond the **reading period of 30 days**. On the contrary, the total number of days in the

month of **July-23 and Aug-23 are 31 each**. By going through this premises, it may be wrongly concluded that the K-Electric and TESCO underbilled the consumers in these two months, which is not true .

- The **data provided by LESCO** was not accurately utilized to carry out the analysis under table 3.1 and 3.2 of the report.

5. Conclusions

Based on detailed analysis of the inquiry report published by NEPRA, the following are the key conclusions that may be drawn and shall require due consideration in the future process of issuance of sectoral reports:

1. Most of the data sets employed by NEPRA's professionals in their respective analyses were **inaccurate/invalid** resulting in exaggerated and false statistics of the relevant indicators.
2. The report suffers from **issues of quality control and arithmetic & data processing errors,** as indicated in section 2.2 of this report.
3. An **unrepresentative and biased random sampling approach** was utilized by the professionals of NEPRA which is in contravention to the fundamental concept and practices adopted for the purpose of random sampling.
4. The consideration of the **ground realities and operational constraints** of the distribution business, inter-alia, weekends & gazette holidays, feeder bifurcations, etc. were not incorporated in the due process of analysis.
5. Lack of robust **exploratory data analysis** and **absence of cross-validation** mechanism in the inquiry report mislead the focus to the applicable billing process and resulted in sensationalism.