Over-riding Constraints Report for 3rd Quarter of 2024

26 June to 25 September 2024

December 2024

This Report is prepared by the
Philippine Electricity Market Corporation –
Market Assessment Group
and approved by the
Market Surveillance Committee

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

This report provides the results of the monitoring of over-riding constraints imposed by the System Operator (SO) on generators during the third quarter of 2024. The findings highlight trends and significant changes in the impositions across different regions and plant types in comparison with 2023.

Overall, there was an observed minimal increase in the total number of over-riding constraints. Similar to the previous quarters, impositions were dominated by incidents related to non-security limits, mostly attributable to the conduct of commissioning tests. However, impositions related to the conduct of commissioning tests dropped towards the end of the quarter mainly due to issuance of Final Certificate of Approval to Connect (FCATC) following the successful completion of commissioning test of various Solar plants, as well as plants which did not conduct tests towards the end of the period in review. Year-on-year comparison revealed that a significant increase in commissioning tests was prevalent with a surge in the number of plants / facilities being imposed with over-riding constraints. Meanwhile, a decrease in impositions related to Must Run Units (MRUs) was observed indicating the decline in the need for oil-based plants to address any system voltage requirements.

Overall, renewable energy plants (such as Solar and Wind) continue to accumulate the greatest number of impositions due to the conduct of commissioning tests. There was an observed increasing trend across all plant types except for solar, coal, battery, and oil-based plants which showed an opposite trend with a decreasing trend towards the end of the quarter, with the completion of commissioning test by several plants.

Looking at the profile of plants under commissioning test for the past six (6) months, it may be observed that while solar plants are dominating the shares of impositions related to the commissioning tests, it was gradually decreasing towards the end of the quarter. On the contrary, the share of wind plants increased during the period. In view of the observed several extensions of commissioning test which is contrary to the allowable period under the DOE DC2021-06-0013, the Committee wrote to the involved power plants and inquired about the reasons for such. In its coordination with both the REM Governance Committee and the participants, the following were the common reasons for extensions:

1) Failed Testing: Common in all resource types are failed test results and not meeting required standards (e.g., SCADA, Power Quality, and internal tests);
2) Technical or Mechanical Issues: Across all resource types inquired, projects are delayed due to various technical problems (e.g., leaks in hydro plants, inverter/cable issues in solar);
3) Resource Constraints: Insufficient natural resources (e.g., brine supply for geothermal or wind speed for wind power); and
4) External factors: force majeure, weather disturbance, and issues with contractor.

1. OVER-RIDING CONSTRAINTS MONITORING

In accordance with Section 1.6.2 of the WESM Rules and Sections 3.1 and 5.5 of the Market Surveillance Manual, the Market Surveillance Committee (MSC) shall undertake an assessment and analysis on the results of the monitoring of over-riding constraints[1] imposed by the System Operator (SO) on generators. Hence, this report is prepared covering the period of the 3rd quarter of 2024 (26 June to 25 September 2024).

1.1. Over-riding Constraints by Category

For the quarter in review, there was an observed minimal increase of 0.9 percent (or an additional 3,141) in the total number of over-riding constraints by the System Operator as compared to the previous period. Similar to the previous quarterly and monthly reports, over-riding constraints[2] impositions (see Table 1) were dominated by non-security limits, comprising of 97 percent of the total impositions for the period. The remaining impositions were categorized as security limits, all related to Must Run Units (MRUs) of oil-based plants to address the system voltage requirements which experienced a significant decline of 56 percent. Generally, quarter-on-quarter, the trend (see Figure 1) showed a continuing decrease in the impositions towards the end of the 3rd quarter of the year which can be attributed to several reasons (details of which are in Section 1.2 of the report).

Table 1. Summary of Over-riding Constraints by Category

By Category	Q2				Q3				Change (Q-on-Q)	
	April	May	June	Total	July	August	September	Total	Diff	% Change
Non-Security Limit	98,259	108,999	114,912	322,170	121,190	116,534	101,643	339,367	▲ 17,197	▲ 5.34%
Security Limit	7,855	10,789	6,415	25,059	3,466	4,196	3,341	11,003	▼ - 14,056	▼ -56.09%
Total	**106,114**	**119,788**	**121,327**	**347,229**	**124,656**	**120,730**	**104,984**	**350,370**	**3,141**	**0.90%**

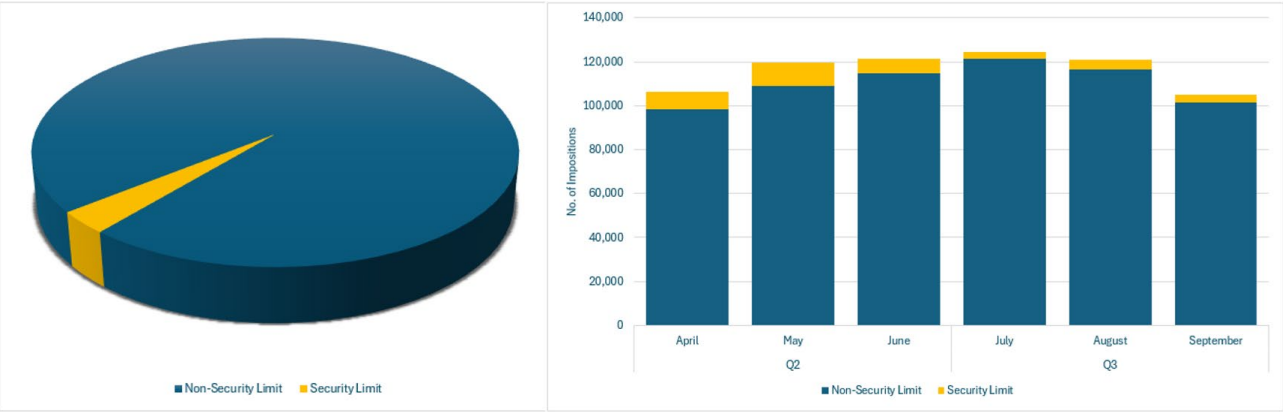

Figure 1. Monthly Comparison of Over-riding Constraints, by Category

[1] WESM Rules Clause 3.5.13.1 states that the SO may require the Market Operator (MO) to impose constraints on the power flow, energy generation of a specific facility in the grid to address system security threat, to mitigate the effects of a system emergency, or to address the need to dispatch generating units to comply with systems, regulatory and commercial tests requirements.

[2] The monitoring of the over-riding constraints on generators is done on a per generator trading node per trading interval. A constraint imposed on a generator trading node on a particular trading interval is considered as one **over-riding constraints**. The monitoring of the over-riding constraints is based on the data and information provided by MO (i.e., real time market results and MMS-input files on security limits) and SO (i.e., SO Data for Market Monitoring).

Compared with 2023[3] impositions and as illustrated in Figure 2, the significant rise of over-riding constraints impositions observed was related to the increase in the number of power plants subjected to these constraints, specifically due to the conduct of commissioning tests. While 2023 noted a total of 39 facilities under commissioning test, 2024 recorded a 64 percent increase (a total of 70) in the number of plants conducting these tests.

Further, the continuous growth at the start of the quarter in review in 2024 of over-riding constraints was related to the extended Provisional Certificate of Approval to Connect (PCATC) issued to power plants to continue their respective commissioning tests. While June 2024[4] recorded a total of 14 extensions, July 2024[5] had 18 extended PCATCs. Reasons for the extensions of PCATCs are discussed in Section 1.4 of the report.

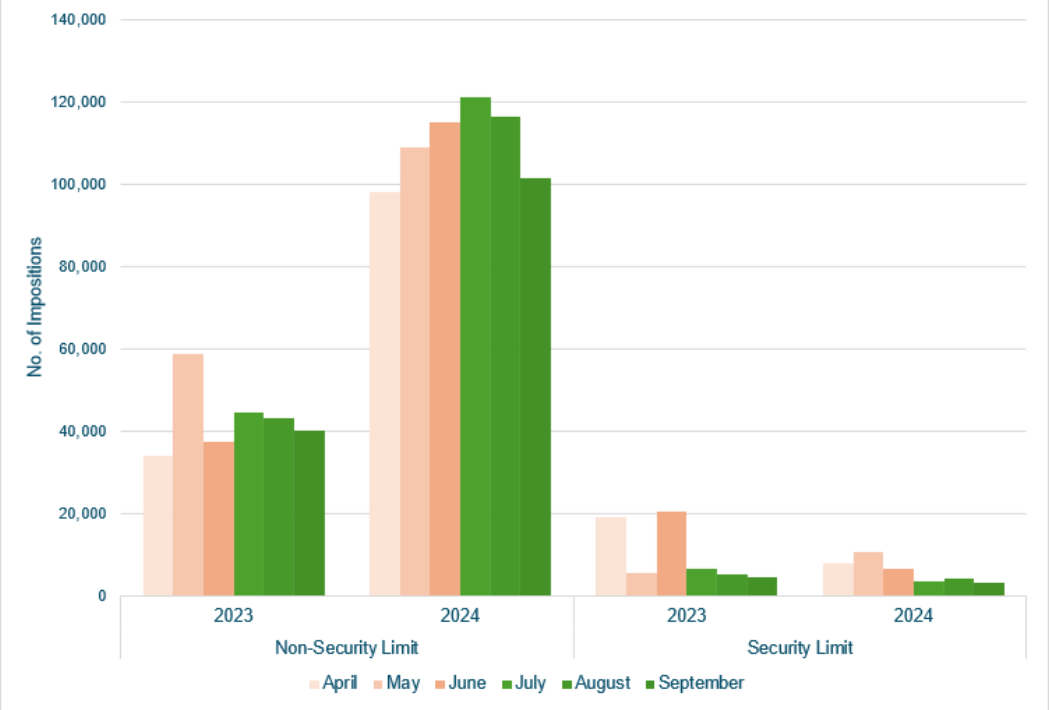

Figure 2. Comparison of Over-riding Constraints by Category, 2023 vs 2024

Most over-riding constraints were imposed in Luzon, accounting for about 76 percent of the total impositions. Meanwhile, the constraints related to Visayas plants came in second with 13 percent, while Mindanao had the smallest share at 11 percent. The impositions in Mindanao were mostly due to the need to address system voltage requirements by scheduling oil-based plants as MRUs. Compared with the previous quarter, Luzon showed a decline in the number of impositions. Meanwhile, an increase of about 16 to 18 percent was observed for both the Visayas and Mindanao regions, attributable to MRU-related impositions and commissioning tests. Generally, there was a minimal rise in the total impositions during the 3rd quarter of 2024.

[3] The 2023 Annual Over-riding Constraints Monitoring Report contains the details on the results of 2023 monitoring of over-riding constraints and documents the start of the MSC's monitoring of the same following the commencement of WESM in Mindanao.
[4] https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzI1Ng==
[5] https://www.wesm.ph/downloads/download/TWFya2V0IFJlcG9ydHM=/MzMwNw==

Table 2. Summary of Over-riding Constraints by Category per Region

By Category	Q2				Q3				Change (Q-on-Q)	
	April	May	June	Total	July	August	September	Total	Diff	% Change
Luzon	90,085	90,178	95,154	275,417	101,961	90,550	73,491	266,002	▼- 9,415	▼ -3.42%
Visayas	7,326	18,191	12,638	38,155	10,670	15,311	19,283	45,264	▲ 7,109	▲ 18.63%
Mindanao	8,703	11,419	13,535	33,657	12,025	14,869	12,210	39,104	▲ 5,447	▲ 16.18%
Total	**106,114**	**119,788**	**121,327**	**347,229**	**124,656**	**120,730**	**104,984**	**350,370**	**3,141**	**0.90%**

The historical trend from the 2nd to the 3rd quarters of 2024 showed that there was a consistent decrease in the number of impositions in the Luzon region while a 16 to 18 percent rise for the Visayas and Mindanao regions (See Figure 3). This indicates a surge in the number of imposed constraints on power plants, where energy generation was needed to address system security threats, mitigate the effects of a system emergency, or comply with systems, regulatory, and commercial tests requirements.

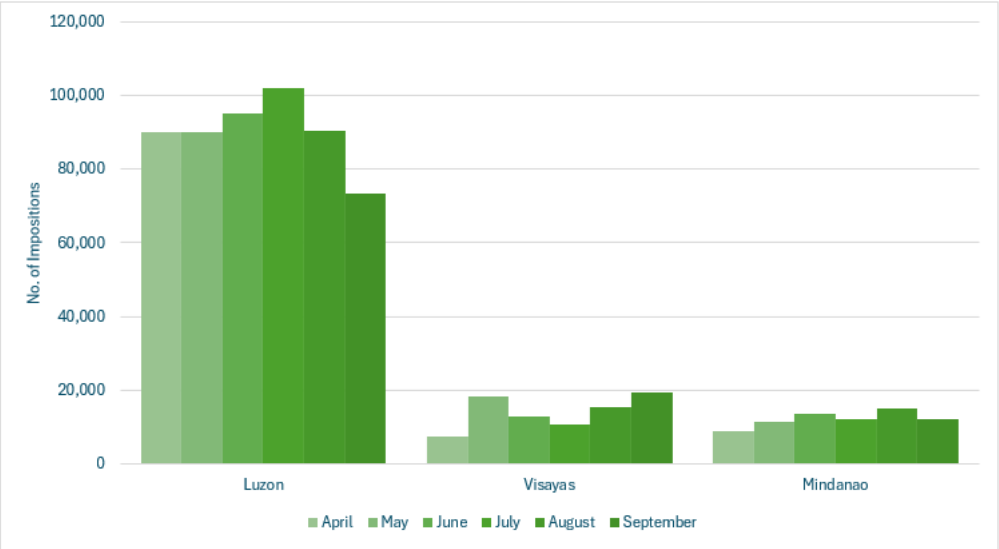

Figure 3. Monthly Comparison of Over-riding Constraints, by Region

1.2. Over-riding Constraints by Incidents

Further examining the classification of the impositions in Table 3, it can be observed that for the 3rd quarter of the year, security limit incidents are all imposed on oil-based plants as MRUs, similar to the observations for the 1st half of the year. For non-security limits, the conduct of commissioning tests remained the major reason for over-riding constraints on plants, either related to the entry of new plants to the market or those with extended commissioning tests. This was followed by several tests related to the commercial and regulatory requirements of plants.

Table 3. Summary of Over-riding Constraints by Incidents

	Q2				Q3			
Incidents	**April**	**May**	**June**	**Total**	**July**	**August**	**September**	**Total**
Per Security Limit								
Must Run Units	7,855	10,789	6,415	25,059	3,466	4,196	3,341	11,003
Emergency De-Rating/ Outage of Specific Transmission	-	-	-	-	-		-	-
Other Types	-	-	-	-	-		-	-
Total	***7,855***	***10,789***	***6,415***	**25,059**	***3,466***	***4,196***	***3,341***	**11,003**
Per Non-security Limit								
Testing and Commissioning	88,327	85,705	110,642	284,674	111,829	109,256	94,999	316,084
Commercial and Regulatory Requirements	9,932	23,294	4,270	37,496	9,361	7,278	6,644	23,283
Generating Unit Limitations	-	-	-	-	-	-		-
Total	***98,259***	***108,999***	***114,912***	**322,170**	***121,190***	***116,534***	***101,643***	**339,367**

Impositions related to the conduct of commissioning tests were noted to have dropped towards the end of the billing quarter mainly due to the issuance of Final Certificate of Approval to Connect (FCATC) following the successful completion of commissioning tests of various Solar plants and caused by plants which did not conduct tests towards the end of the period in review, as shown in Figure 4. Meanwhile, over-riding constraints caused by the commercial and regulatory requirements recorded a slight decline towards the end of the quarter following the completion of the necessary testing during the plants' commercial operations.

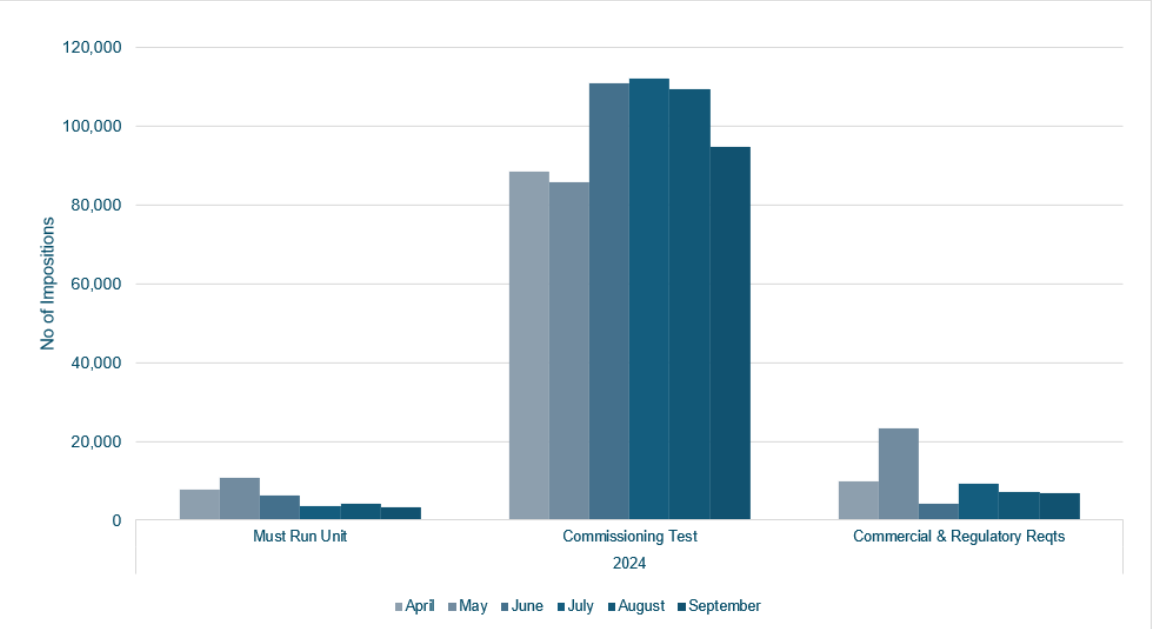

Figure 4. Monthly Comparison of Over-riding Constraints, by Incidents

Examining the number of impositions implemented using the same period last year, it can be seen in Figure 5 that a significant increase in the impositions related to the conduct of commissioning tests were prevalent, reaching a 187 percent increase from the same period from last year. It is likewise notable that there was an increase in the number of plants / facilities being imposed with over-riding constraints.

Another notable observation was the decrease of about 32 percent in the impositions related to MRUs from last year, indicating the decline in the need for oil-based plants to address any system voltage requirements. A similar trend was observed in the previous quarters. Meanwhile, the

number of impositions related to commercial and regulatory requirements increased by 31 percent from last year.

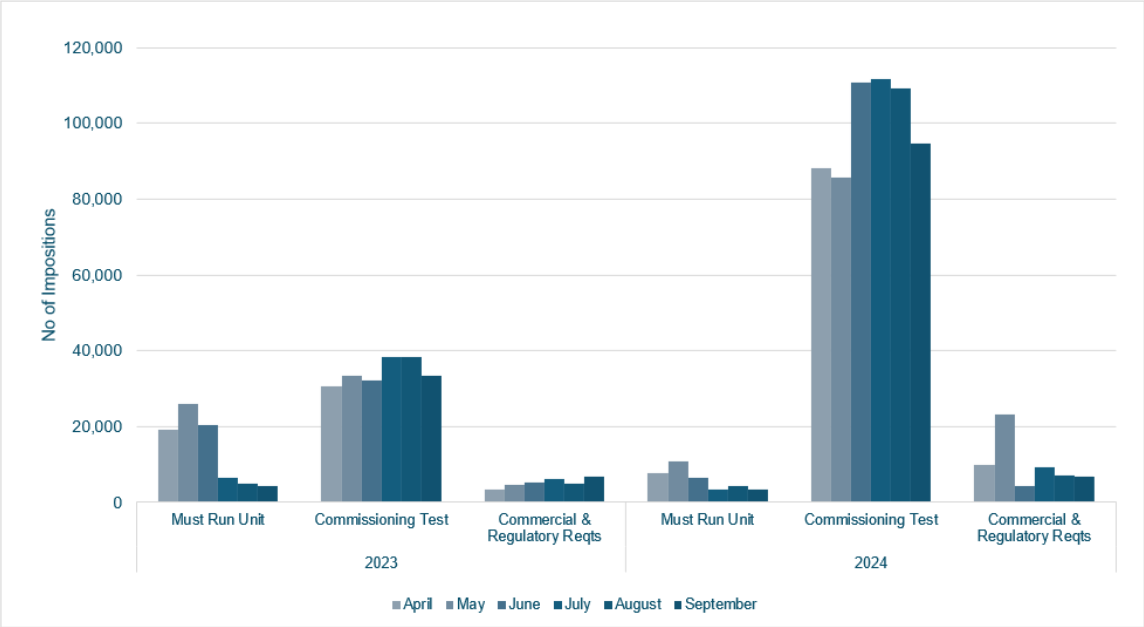

Figure 5. Comparison of Over-riding Constraints by Incidents, 2023 vs 2024

Table 4. Year-on-Year Comparison of Over-riding Constraints per Incidents

Incidents	Year-on-Year Comparison		
	Must Run Unit	Commissioning Test	Commercial & Regulatory Reqts
January	▲	▲	▲
February	▼	▲	▲
March	▼	▲	▲
April	▼	▲	▲
May	▼	▲	▲
June	▼	▲	▼
July	▼	▲	▲
August	▼	▲	▲
September	▼	▲	▲

Overall, there was an observed increase in the total number of over-riding constraints impositions. However, looking closely at the actual incidents, commissioning tests remained the top reason for the recorded impositions since the start of the year. MRU and performance test interchangeably came second. The drop noted for the performance test was mainly attributable to one hydro plant, which recorded a reduction in the impositions related to performance tests. Upon further verification from SO, the said plant was provided with PCATC to continue its commissioning test following changes to its maximum capacity. Despite the dip observed during the 3rd quarter, impositions attributed to the Ancillary Service test remained in the top 5 reasons. Furthermore, there was a significant surge in the number of impositions caused by the Net Contracted Capacity (NCC) test, attributable to six (6) units of Sta. Rita Natural Gas Plants. The abovementioned tests were distantly followed by the conduct of capacity / capability, net dependable test and impositions related to ERC audit.

Table 5. Quarterly Comparison of Over-riding Constraints per Incidents

By Incidents	Q2				Q3				Q-on-Q Comparison
	April	May	June	Total	July	August	September	Total	
Ancillary Service Test	654	6,336	1,664	8,654	3,053	1,164	877	5,094	▼
Capacity Test	204	358	-	562	-	-	433	433	▼
NCC Test	-	23	-	23	1,726	-	-	1,726	▲
NDC Test	-	-	-	-	576	-	-	576	▲
Capability Test	24	335	-	359	191	-	329	520	▲
Commissioning Test	88,327	85,705	110,690	284,722	111,949	109,256	94,999	316,204	▲
Emission Test	2,423	809	1,108	4,340	1,030	3,036	1,191	5,257	▲
Grid Compliance Test	105	-	-	105	-	283	478	761	▲
MRU	7,855	10,789	6,415	25,059	3,466	4,196	3,341	11,003	▼
Performance Test	6,522	15,433	1,450	23,405	2,665	2,792	3,336	8,793	▼
ERC Audit	-	-	-	-	-	3	-	3	▲
Total	**106,114**	**119,788**	**121,327**	**347,229**	**124,656**	**120,730**	**104,984**	**350,370**	▲

Figure 6 illustrates the trend of over-riding constraints throughout the day during the covered period. It is evident that a notable increase in the over-riding constraints occur from early morning until early evening, specifically starting at 0500h and begins to decrease at 2000h. This was mainly on account of the conduct of commissioning tests of solar plants and most plants conducting their commercial and regulatory requirements test during the peak hours.

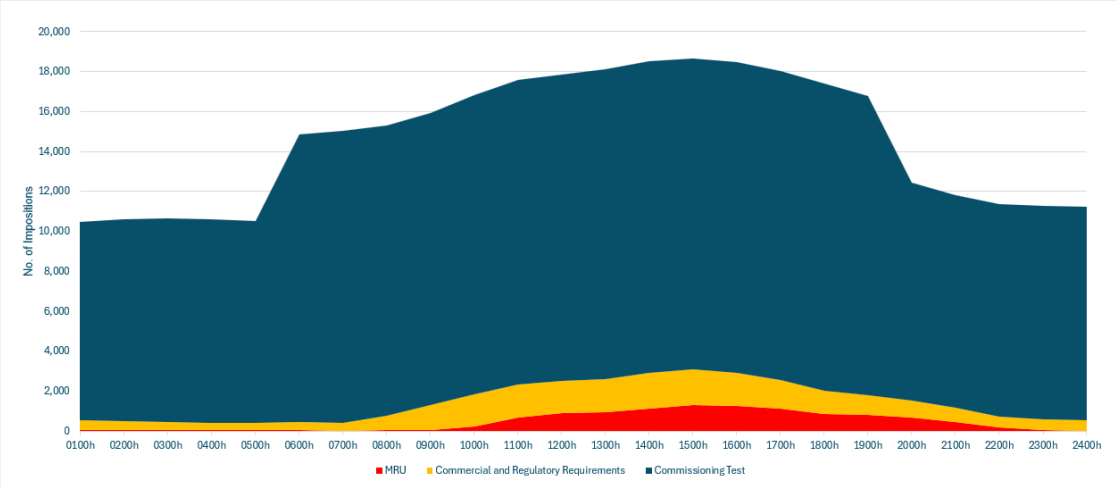

Figure 6. Hourly Profile of Over-riding Constraints Imposition per Incident

1.3. Over-riding Constraints by Plant Type

Overall, renewable energy plants continue to accumulate the greatest number of impositions during the covered period. Across the quarter, solar plants topped the list, accounting for 21 percent of the total impositions attributed to the extended commissioning tests observed during the period, followed by wind plants at 19 percent. Despite the dominance of impositions on Solar plants, there was a significant decline in the total number of over-riding constraints compared to the previous quarter due to issuance of FCATC following the successful completion of commissioning tests of various Solar plants.

The observed over-riding constraints imposed on Biomass were all related to the conduct of commissioning test of Biogas Power Plant (Phase 1). Similarly, the rise in the impositions related to hydro plants related to hydro was due to one (1) new plant in the Visayas region, which started its

commissioning test on 15 September 2024 and the extended PCATC issued and confirmed by SO. Meanwhile, commissioning tests were likewise the reason for impositions related to Battery Energy Storage System (BESS). In addition, the decline for coal-related impositions was due to the completion of commissioning tests, which led to the issuance of FCATC.

Table 6. Quarterly Comparison of Over-riding Constraints by Plant Type

Plant type	Q2				Q3				Q-on-Q Comparison
	April	May	June	Total	July	August	September	Total	
Battery Energy Storage	890	5,384	6,153	12,427	10,494	8,906	6,222	25,622	▲
Biomass	88	4,594	-	4,682	1,788	7,636	8,248	17,672	▲
Coal	15,738	10,176	10,722	36,636	8,910	12,465	7,236	28,611	▼
Geothermal	13,921	16,968	19,655	50,544	23,651	14,420	17,126	55,197	▲
Hydro	13,306	13,958	16,917	44,181	19,380	16,994	18,443	54,817	▲
Natural Gas	486	888	5,849	7,223	3,511	4,804	3,823	12,138	▲
Oil-based	9,919	11,863	6,732	28,514	5,191	7,162	3,896	16,249	▼
Solar	33,411	36,007	37,134	106,552	33,053	25,234	15,362	73,649	▼
Wind	18,355	19,950	18,165	56,470	18,678	23,109	24,628	66,415	▲
Total	**106,114**	**119,788**	**121,327**	**347,229**	**124,656**	**120,730**	**104,984**	**350,370**	▲

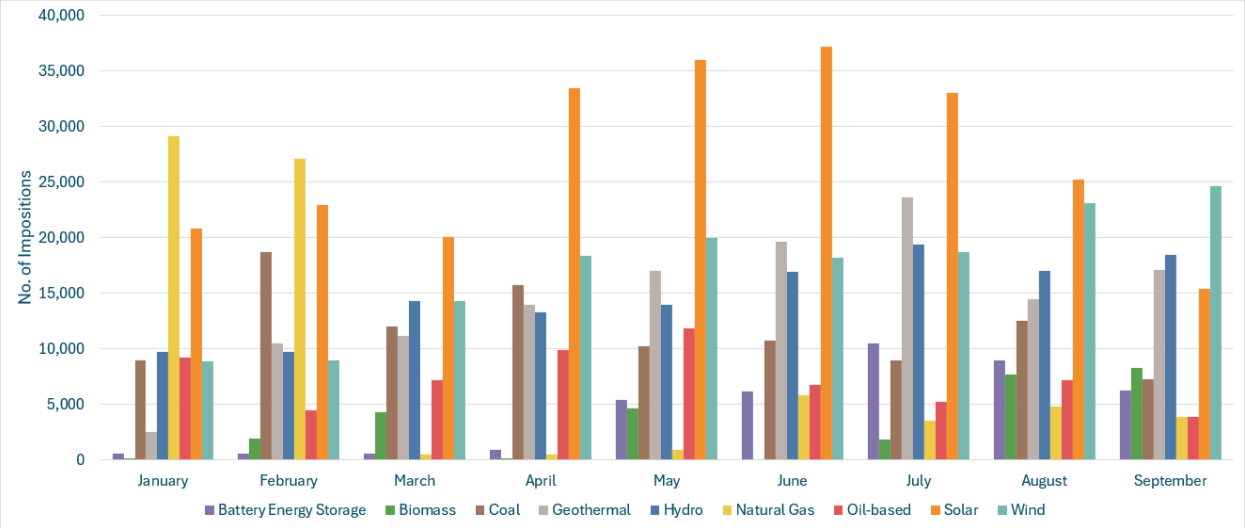

Figure 7. Over-riding Constraints by Plant Type for 2024

Looking at the impositions on a monthly basis from 2nd to 3rd quarter of 2024 (see Figure 8), there was an observed increasing trend across all plant types except for solar, coal, and oil-based plants which showed an opposite trend with a decreasing trend towards the end of the quarter, with the aforementioned completion of commissioning test by several plants.

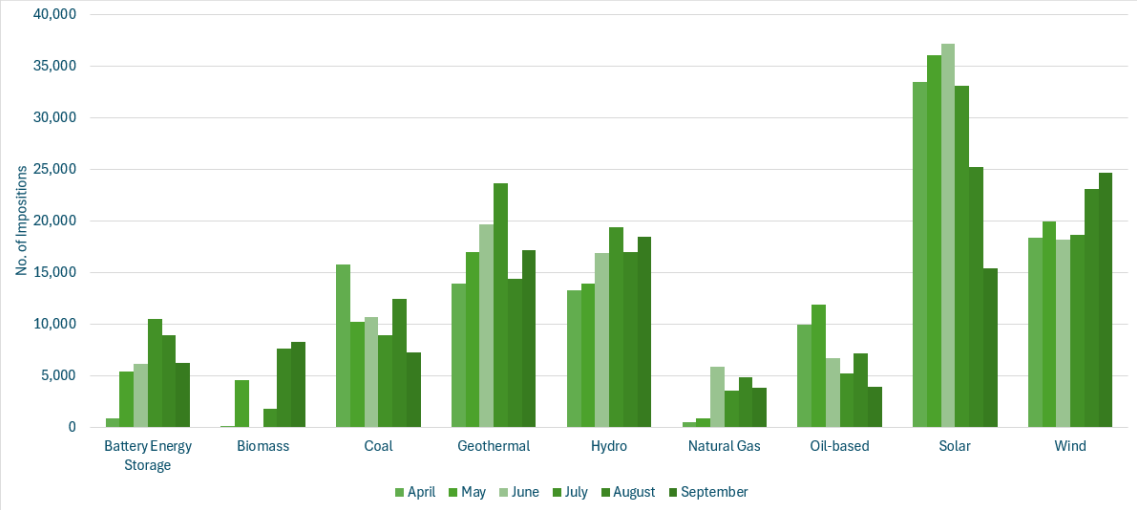

Figure 8. Monthly Comparison of Over-riding Constraints, by Plant Type

1.4. Plants under Commissioning Test

As part of its mandate under the Market Surveillance Manual to regularly monitor the participants' over-riding constraints impositions, especially those plants under commissioning tests, the MSC regularly coordinated with both Market and System Operators, as well as the power plants as to the reasons for the reported extended tests. The received responses were counter-checked if the same are aligned with the procedures set forth in the Market Rules and Manuals and other relevant issuances.

Section 4.7.1 of the Department Circular No. 2024-08-0022 provides that upon unsatisfactory Test and Commissioning results arising from technical issues internal to the Generation Facility, the Transmission network Provider (TNP) or the Distribution Utility (DU) may extend the validity of the PCATC for a period of not more than one (1) month from the evaluation of the results, subject to availability of a Test and Commissioning schedule, as confirmed by the TNP or DU.

Throughout the covered period in review, conduct of commissioning test remained the dominant reason of power plants for over-riding constraints impositions. As compared to the previous quarter, there was a 10 percent increase in the total number of impositions attributed to the abovementioned test.

While the Department Circular provides for the prescribed 2-month commissioning period with one-month allowable extension, the MSC has noted several plants with multiple extensions since the start of the year. In view of the said observations, during the first half of 2024, the Committee has sent formal letters of inquiry to all generator trading participants that exceeded the 2-month allowable period of commissioning test as well as the 1-month acceptable extensions, and the common reasons noted and discussed by the Committee as provided by the participants are as follows:

5) Failed Testing: Common in all resource types are failed test results and not meeting required standards (e.g., SCADA, Power Quality, and internal tests);

6) Technical or Mechanical Issues: Across all resource types inquired, projects are delayed due to various technical problems (e.g., leaks in hydro plants, inverter/cable issues in solar);
7) Resource Constraints: Insufficient natural resources (e.g., brine supply for geothermal or wind speed for wind power); and
8) External factors: force majeure, weather disturbance, and issues with contractor.

The Committee has likewise coordinated and requested the assistance of the REM Governance Committee to solicit the input and responses of the involved renewable energy generators. On the provided responses, the following recommendations were noted and adopted by the Committee:

1) Review the definition of Test and Commissioning to consider the size, technology, and resources needed by the facility, and the period of evaluation of the results of the test conducted until such time that the Final Certificate of Authority to Connect (FCATC) is issued by the TNP or DU.

   To ensure that facilities are given adequate period to conduct thorough commissioning activities, taking into account their size, technology, and resource requirements. This recommendation aims to provide a sufficient period for evaluating the results of the tests conducted.

2) Review the provisions in Section 4.3.3. of DOE DC 2021-06-0013 to allow the continuous operation of the generation facility so long as it will not pose any threat to the grid pending the issuance of the FCATC and the Provisional Authority to Operate (PAO) or Certificate of Compliance (COC).

Similar with its recommendations in its letters to the Energy Regulatory Commission (ERC) and the Grid Management Committee (GMC) as early as 2016, the MSC notes that the duration of testing and commissioning depends on the type of generation facility. The MSC duly recommends revisiting the allowable period for conducting testing and commissioning under the and setting the allowable timeframe depending on the type of facility.

As early as 2015, the MSC continuously coordinated with the NGCP-SO as well as the concerned power plants in relation to the observations of the Committee in over-riding constraints impositions particularly due to commissioning tests.

Figure 9 shows the profile of plants under commissioning test for the past six (6) months wherein it can be observed that while solar plants are dominating the shares of impositions related to the abovementioned test, it is gradually decreasing towards the end of the quarter. On the contrary, the share of wind plants is increasing.

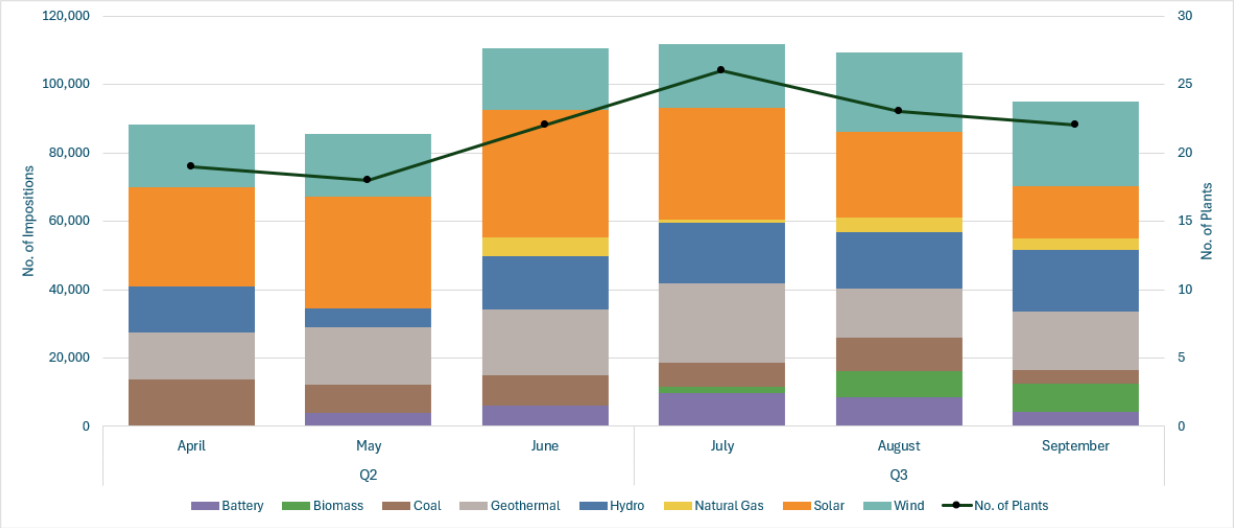

Figure 9. Monthly Comparison of Over-riding Constraints due to Commissioning Test and the Corresponding Number of Power Plants

ANNEX A. List of Plants with Impositions due to Commissioning Test

Participant Name	Resource ID	Plant Type	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sept 2024
SMGP BESS Power Inc.	01LIMAY_BAT	BAT							✓	✓	
SMGP BESS Power Inc.	01CNCEP_BAT	BAT	✓								
Mariveles Power Generation Corporation	01MPGC_U02	COAL	✓	✓	✓	✓					
Angat Hydropower Corporation	01ANGAT_A	HYD						✓			✓
BEHMC Lower Labayat Hydropower Corp.	03LWERLAB_G01	HYD	✓	✓	✓	✓	✓				
Prime Meridian PowerGen Corporation	03AVION_U01	NATG									✓
Solar Philippines Tarlac Corporation	01CONSOL_G01	SOLR						✓	✓	✓	✓
PH Renewables, Inc.	02PNGYSOL_G01	SOLR									✓
PV Sinag Power Inc.	01CAYBSOL_G01	SOLR	✓	✓	✓	✓	✓	✓		✓	
Trustpower Corporation	01TRUSTSOL_G01	SOLR	✓	✓							
Natures Renewable Energy Devt. (NAREDCO) Corporation	01CAGYSOL_G01	SOLR	✓	✓	✓	✓	✓	✓	✓		
Pavi Green Bataan Renewable Energy, Inc.	01PAVGSOL_G01	SOLR	✓	✓	✓	✓	✓	✓	✓	✓	
Santa Cruz Solar Energy Inc.	01SNMARSOL_G01	SOLR	✓	✓	✓	✓	✓				
Bayog Wind Power Corp.	01BALWIND_G01	WIND	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bac-Man Geothermal Inc.	03PALAYAN_G01	GEO	✓	✓	✓	✓	✓	✓	✓		✓
Cotabato Sugar Central Company, Inc.	14COTSUGR_G01	BIO			✓						
Mariveles Power Generation Corporation	01MPGC_U03	COAL		✓	✓	✓	✓	✓	✓		
Biliran Geothermal Incorporated	04BILGPP_G01	GEO		✓	✓	✓	✓	✓	✓		
BOHECO I Sevilla Mini Hydro Corp.	07SEVILL_G01	HYD		✓	✓						
Matuno River Development Corporation	01MATUNO_G01	HYD			✓	✓	✓	✓	✓	✓	✓
Jobin-SQM Inc.	01SUPSOL_G01	SOLR			✓	✓	✓	✓	✓	✓	✓
Amihan Renewable Energy Corp.	01CAPRIS_G02	WIND			✓	✓	✓	✓	✓	✓	✓
SMGP BESS Power Inc.	01GAMU_BAT	BAT				✓	✓	✓	✓	✓	✓
Central Azucarera de San Antonio	08CASA_G02	BIO				✓					
Hydrocore Corp.	01IBULAO_G01	HYD				✓	✓	✓	✓	✓	
PV Sinag Power Inc.	01LAOSOL_G01	SOLR				✓	✓	✓	✓	✓	✓
Calabanga Renewable Energy (CARE), Inc.	03CLABSOL_G01	SOLR				✓	✓	✓	✓	✓	
PetroWind Energy Inc.	08PWIND_G02	WIND				✓	✓	✓	✓	✓	✓
AP Renewables Inc.	03TGPP_G01	GEO					✓	✓	✓	✓	✓
SMGP BESS Power Inc.	03LUMBAN_BAT	BAT						✓	✓	✓	✓
Siguil Hydro Power Corporation	14SIGHYDRO_G01	HYD						✓	✓	✓	
Excellent Energy Resources Inc.	03EERI_G01	NATG						✓	✓	✓	✓
PH Renewables, Inc.	02PNGYSOL_G01	SOLR						✓	✓	✓	
Trustpower Corporation	01TRUSTBIO_G01	BIO							✓	✓	✓
Mariveles Power Generation Corporation	01MPGC_U04	COAL							✓	✓	✓
Bac-Man Geothermal Inc.	03BACMAN_U01	GEO							✓		
Energy Development Corporation (additional facility)	06BBGPP_G01	GEO							✓	✓	✓
Liangan Power Corporation	10LIAN_G01	HYD							✓	✓	✓
PetroWind Energy Inc.	08PWIND_G01	WIND							✓		
Palm Concepcion Power Corporation	08PALM_G01	COAL								✓	
Excellent Energy Resources Inc.	03EERI_G03	NATG									✓
Iraya Ventures, Inc.	04UTH_G01	HYD									✓
First Gas Power Corporation (Sta Rita)	03STA-RI_G02	NATG									✓