Central Electricity Authority

Report on Increasing the PLF of Pithead Coal Based Power Plants

OPM Division

Contents

Report on Increasing the PLF of Pithead Coal based Power Plants

1.0 Introduction

1.1 Indian Power Sector is growing at a fast pace post Covid recovery. This has resulted in huge growth in generation requirement for meeting increased requirement of electricity. Due to various factors the dependency on coal based generation is around 75% in spite of the paradigm shift with increasing share of generation from renewable sources of energy.

The Country is producing enough coal, however due to the high growth of electricity demand in the country, there are some bottlenecks in some pockets in the country for transport of coal to the power plants resulting in shortages in meeting coal requirements at some of the coal based power plants. Accordingly, Ministry of Power on the advise of the Prime Minister's Office has been emphasizing on the need to maximise generation from the pit head coal based power plants (PMO ID Note dated 14.11.2023 enclosed at **Annexure-I**). As per this Note, there is need to ensure improvement of Plant Load Factor of pithead power plants to operate at the maximum possible **Plant Load Factor (PLF)** as per Global Standards.

1.2 To encourage coal based thermal power plants, incentives have been provided to run these plants with Plant Load Factor (PLF) greater than 85%. However, it has been observed that some pithead power plants were running at PLF lower than 85% due to various reasons which have been analysed in this report.

1.3 CEA has carried out the analysis of Plant Availability Factor (PAF) or Operational availability and PLF of Pithead Power Plants. Operation Performance Monitoring Division of CEA has conducted two meetings on 22.06.2023 and 07.07.2023 with various stakeholders to analyse the issue of improving PLF of Pithead power plants vis-à-vis PLF in developed countries.

2.0 Deliberations in the Meeting conducted by CEA held on 22.06.2023

2.1 A meeting was held under the Chairmanship of Member (GO&D), CEA on 22.06.2023 to review and discuss improvement of the PLF of Pit-head power plants. The minutes of the meeting is attached at **Annexure-II**.

2.2 In the meeting, it was seen from the analysis of data for F.Y. 2021-22 and F.Y. 2022-23 that the following Pithead Power Plants are not able to maintain their PLF greater than 85%:

Sl.no.	Name of Pithead Power Plants	PLF(%) 2021-22	PLF(%) 2022-23
1.	Anpara TPS	75.65	79.64
2.	Korba-West TPS	74.78	82.52
3.	Amarkantak Ext TPS	81.97	77.95
4.	IB Valley TPS	66.91	76.92
5.	Lara TPP	81.09	83.37
6.	Sipat STPS	81.29	81.09
7.	Ramagundem STPS	76.62	70.51
8.	North Karanpura TPP*	0	53.43
9.	Darlipali STPS	80.50	80.75
10.	Farakka STPS	67.52	67.42
11.	Anpara C TPS	78.68	77.33
12.	Kahalgaon TPS	78.19	76.08

*North Karanpura TPP commissioned in January, 2023.

2.3 From the outage analysis, it was seen that when the power plants carry out planned maintenance then the forced outages are reduced and vice-versa. Therefore, it was emphasized that the power plants should adhere to the best utility practices for carrying out schedule maintenance and take steps to reduce forced outages which comprises mainly of Boiler tube leakages.

2.4 It was deliberated that 8% Planned outage is optimum considering the annual variations in Planned outage depending on the outage plan prepared by the power plants. Similarly, based on analysis, the forced outage can be taken as 4%. Due to high penetration of RE into the Grid, the coal based thermal power plants are required to be ramped up and down which is causing stress in various components leading to unexpected and pre-mature failures. Considering the above situation, 85% Operational Availability seems to be achievable target and further reduction due to flexible operation needs to be examined further.

2.5 It was also observed that taking account of 2% loss due to Automatic Generation Control, 1% loss due to backing down during high frequency and 10% loss due to forced outages, the effective PLF which can be maintained is around 87% only.

Further, few of the pithead power plants are getting less schedules due to comparably higher **Energy Charge Rate (ECR)**. This is mainly happening on account of non-availability of coal from linked mines for coal consumption required for higher PLF. The same is forcing these power plants to opt for imported coal blending along with domestic coal from different sources which is increasing ECR resulting in backing down and lower PLFs.

2.6 Grid Management Division carried out the exercise is to find out the States/ UTs which are giving schedule to their own costlier coal based generating station and is backing down the cheaper pithead Central Sector coal based generating stations. The following States were selected for analysis such as Odisha, Madhya Pradesh, Rajasthan, Punjab, Tamil Nadu, Karnataka and Uttar Pradesh.

For the study following assumptions has been taken:

(i) Those States were considered for the analysis which are having **substantial allocation from pithead central sector generating stations and have their own coal based generating stations.**

(ii) The analysis is done for the month April, 2023 as the data for the month of May, 2023 would be available only after 10th of June. The block wise data is critically analyzed for those days of the month where the demand is minimum/ less. These were the days, where States has an option to back down the generations from few of the stations as the demand for that day is less (worst case scenario in the month). In these scenarios, there may be few instances where the respective State might have backed down pithead CGS and have given schedule to their own costlier coal based stations.

(iii) The block-wise parameters such as entitlement, schedule drawl, loading factor and variable cost of generating stations are analysed to figure out whether the States are following merit order or not**. Loading Factor means the percentage of scheduled drawl from the station to the entitlement in that station.**

It has been concluded by the study that The drawl schedule of States of Odisha, Madhya Pradesh, Rajasthan, Punjab, Tamil Nadu, Karnataka and Uttar Pradesh were examined from the angle of backing down of cheaper pithead generating stations as compared to their costlier coal based generating stations. It may be seen that the States have followed the merit order despatch when the demand was in the medium range. This means that they might have followed the same merit order while scheduling pithead plants when the demand was high. However, the States of Tamil Nadu, Karnataka, Uttar Pradesh, Rajasthan and Madhya Pradesh have not followed the exact merit order when the demand was low during the month. The reasons thereof needs further investigation in consultation with RLDCs and SLDCs. Further, the States of Odisha and Punjab have followed the merit order scheduling even during the low demand as their own pithead plants are cheaper.

3.0 Deliberations in the Meeting conducted by CEA held on 07.07.2023

3.1 The second meeting was taken under the Chairmanship of Chief Engineer (OPM), CEA on 07.07.2023 with SRPC, SRLDCs, SLDCs, Gencos, Utilities etc., to review and discuss improvement of the PLF of Pit-head power plants. (The minutes of this meeting is attached at **Annexure-III**)

3.2 In the meeting, it was agreed that with increasing share of renewable energy generation in the grid, the share of thermal power is getting reduced thus lowering the PLF. With more and more solar coming to meet daytime peak, more units have to be kept on bar that means during solar hours thermal generation will be backed down. From the data received from Southern States, it was observed that many State sector power plants have not backed down to the technical minimum (TM) of 55% due to various issues such as older plants etc.

3.3 However, it was observed that Inter State Generating Stations (ISGS) generally follow 55 % technical minimum while older units of States still follow higher Technical Minimum (70%) and still it will take time to come to 55% and 40%. Therefore, in absolute terms the scheduling of State generators will be higher even if its variable charges (VC) is higher due to the factor mentioned above.

3.4 The Southern Region States follow a combined merit order list of all PPAs (Central/State/IPPs). The States are mandated to keep reserves and reserves have to be distributed among generators due to ramp restrictions and load requirements.

4.0 Global Norms and Benchmarks

4.1 As per Global Energy Monitor 2023 (January, 2023), the share of coal plants participation of top 10 countries is as following:

Sl. No	Name of Country	Coal Fire Plants IC in GW	% Share of Coal plants contribution
1	China	1092	62
2	India	203	74
3	USA	64	15
4	Japan	50	65
5	South Africa	43	80
6	Indonesia	40	64
7	South Korea	36	34
8	Russia	30	55
9	Vietnam	25	40
10	Australia	16	51

Note: Figures are approximated

4.2 In order to compare the PLF of other countries with our country, the data was sought from International Energy Agency (IEA) and IEA have informed that other countries do not follow the classification of pithead and non-pithead. The detailed Installed capacity and PLF coal based power plants in countries such as USA, Japan, South Korea, Germany and Australia are given at **Annexure – IV**.

4.3 It can be seen that the average PLF of coal fired based stations in USA, Australia, Japan, South Korea and Germany is in the range of 42% - 67.3%. The main reason of low PLF of coal fired stations in these countries is that they are less dependent on coal in terms of meeting their generation requirements. It can also be seen that the PLF of coal fired stations are in a declining trend while the PLF of other sources like Natural Gas, Solar etc., exhibiting increasing Year on Year trend in these countries.

4.4 The average PLF of coal fired stations in India during the FY 2023-24 (April-November 2023) is 68.44% which is on the higher side comparing to PLFs of coal based power plants in above mentioned countries.

5.0 Study On Pithead Power Plants In The Country

5.1 OPM Division has carried out the studies on Operational Availability and PLF of pithead power plants in the country for the year 2021-2022, 2022-2023 and 2023-2024 (April to November 2023) respectively and the same is at **Annexure – V (A, B, C & D)**. As per the data, it can be seen that almost all the pithead thermal power plants in the country have Operational Availability (OA) of more than 85%. It was found that the following plants have shown decline in PLFs even with increase in Operating Availability from 2021-22 to 2023-24 (April to November 2023**) (Annexure-V(D))**:

a) Anpara C TPS

b) Korba-West TPS

c) Amarkantak Ext TPS

d) Singrauli STPS

e) Sipat STPS

f) Talcher STPS

g) Sasan TPP

h) Darlipali STPS

i) Farakka STPS

j) Rihand STPS

5.2 Further the average PLF of coal fired stations in India during the FY 2023-24 (April-April to November 2023) is 68.44% and the average PLF of Pit head stations during this period is 83.67% which is still on the higher side comparing to PLFs of coal based power plants in other countries.

5.3 Observations:

(a) The two-shift operation can help to increase the plant load factor by reducing the time the plant is idle and increasing the time it is in operation. However, Two-shift operation is a costly mode of operation because of lower PLF and accelerated equipment life consumption due to daily start stop and increased forced outages. More study regarding start-up optimization, minimization of equipment damage is required for two shift operation of thermal power plants.

(b) For optimum performance, the upkeep of all components and equipment should be strictly in compliance with the operations and maintenance (O&M) manuals and guidelines provided by the original equipment manufacturer (OEM). This will prevent forced outages and thereby increase the operating availability (OA). With high OA, higher Declared Capacity will be available resulting in higher PLF.

(c) The scheduling may be done by the Discoms/beneficiaries as per the declared capacity of the pithead coal based power plants. Due to large penetration of renewable resources (which are must run) many times, it has been observed that coal based thermal power plants including pithead thermal power plants are backed down to accommodate the renewable generation this in turns reduces the PLF.

(d) As per Fuel Management Division, following Pithead plants are taking coal through other sources apart from pithead: Kahalgaon TPS, Farakka STPS, Rihand STPS, Singrauli STPS, Vindhyachal STPS, Talcher STPS, Anpara C TPS. Some Pithead plants are facing coal supply linkage issues: NTPC - Kahalgaon TPS and Farakka TPS (taking coal through Rail mode also), Anpara C TPS (Lanco) (taking coal through Road mode also). These issues are leading to coal supply disruptions and not only increases the ECR of the power plant but also many times contribute to forced outages resulting in lower Operational Availability and hence lower PLF.

(e) It has been observed that following pithead thermal power plants units are older than 25 years and even 30 years also. It has been observed that due to wear and tear, the forced outages are more leading to lower PLF.

Sl.no.	Name of Pithead Power Plants	PLF(%) 2021-22	PLF(%) 2022-23	PLF(%) 2023-24 (Apr-Nov, 2023)
1.	Anpara TPS	75.65	79.64	78.42
2.	Korba-West TPS	74.78	82.52	78.99
3.	Singrauli STPS	82.50	87.52	89.43
4.	IB Valley TPS	66.91	76.92	77.56
5.	Talcher STPS	84.18	88.37	84.46
6.	Ramagundem STPS	76.62	70.51	72.27
7.	Rihand STPS	85.26	88.92	90.68
8.	Korba STPS	93.28	91.15	89.92

9.	Farakka STPS	67.52	67.42	75.42
10.	Vindhyachal STPS	85.69	89.54	88.68
11.	Kahalgaon TPS	78.19	76.08	77.54

6.0 National Level Optimization of Surplus Generation Capacity

6.1 The generating capacities are not being optimally utilized on many occasions. Every year, difficulty is observed in meeting the demand and some states do resort to power cuts. The crisis is observed specifically during the months of April, May, September and October. Though the generating capacity is available in the country, but due to one to one agreement constraint, the said capacity even though available cannot be utilized by the entity which is facing crisis due to some reason or the other.

6.2 Many times it is seen that the States which are surplus during some period of time are keeping their own generating stations under reserve shutdown, while there are other States which are facing crisis; hence, the resources even though available in the country, are not being utilized to meet the overall demand in the country. In the mutual interest, the mechanism needs to be established which helps the needy states. The State generating companies can also improve their Plant Load Factor and the effective overall per unit cost of generation of such generating companies can also be reduced.

6.3 A distribution licensee shall intimate its schedule for requisitioning power for each day from each generating company with which it has an agreement for purchase of power at least two hour before the end of the time for placing proposals or bids in the day ahead market for that day, failing which the generating company, shall offer, the un-requisitioned surplus power including the power available against the declared capacity of the unit under shutdown, in the power exchange(s), subject to the limitation of ramping and start up capability, as specified in the Grid Code and the procedure made there under:

Provided that if the power so offered by the generating company is not cleared in Day Ahead Market (DAM), then it shall be offered in other market segments including the Real Time Market (RTM), in the Power Exchange(s); provided also that such offer of power in the market shall be at a price not exceeding 120% of its energy charge, as determined by the Appropriate Commission.

Provided further that if the generating company fails to offer such un-requisitioned surplus power in the power exchange(s), the un-requisitioned surplus power to the extent not offered in the power exchange(s) up to the declared capacity shall not be considered as available for computing the payment of fixed charges.

7.0 Security Constrained Economic Despatch (SCED)

7.1 Hon'ble CERC vide Order in Petition No. 02/SM/2019 (Suo-Motu) dtd. 31st January, 2019, directed implementation of a Pilot on Security Constrained Economic Despatch (SCED) in Inter-State Generating Stations (ISGS) Pan India with effect from 01st April, 2019. The implementation of SCED has been extended by CERC. Finally, the SCED has been formalized by incorporating under IEGC 2023.

7.2 The objective of Security Constrained Economic Despatch (SCED) is to optimise generation despatch and achieve National Merit Order after gate closure in the real time market and after finalisation of schedules under RTM, by incrementing generation from the generating stations with cheaper charge and decrementing commensurate generation from the generating station with higher charge, after considering the operational and technical constraints of generation and transmission facilities.

7.3 More generators should participate in SCED for optimization of generation despatch.

8.0 Recommendations

8.1 In order to improve the PLF of Pithead power plants to 85% and above, the following are recommended.

a) The pit head power plants should carry out the planned maintenance as per the best utility practices resulting in higher plant availability.

b) Coal based State owned generating power plants and independent power producers, especially non pit head power plants may explore the possibility of backing down upto 40% of the technical minimum in line with the **Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022** so that the pit head power plants are scheduled and despatched at the full declared capacity even during high generation from renewable energy sources and relatively low demand period.

c) Unit outage for planned maintenance should be carried out during low demand periods in the country so as to ensure availability of the generating units during high demand period.

d) Presently the production cost optimization application Security Constraints Economic Despatch (SCED) has been operationalised in the country due to which all ISGS pit head plants are being scheduled upto their declared capacity (DC) all time whereas State and IPPs pithead plants might be getting low schedule in accordance to the respective State demand/ portfolio management. Therefore, as all States and IPPs generating units may participate in SCED, so that pit head plants can always be scheduled up to their declared capacity resulting in higher PLF.

e) Adequate coal linkage should be ensured at all time to all the pithead power plants.

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Annexure-I

Pl discuss
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14/6
AD(PP)

Ministry of Power

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O/o SECY. (P)
Dy. No. 6089380
Date 13/06/2023

A presentation was made by Ministry of Power before the Hon'ble Prime Minister for Sectoral Review on 12/06/2023. From PMO, this was attended by Principal Secretary to PM, Adviser to PM and Joint Secretary concerned. HMoP, HMoSP, Cabinet Secretary, CEO NITI Aayog and Finance Secretary also participated in the discussions. Presentation was made by Secretary (P).

2. The Minutes of the meeting will be issued in due course. The following are the main action points:-

(i) All additional capacity for thermal power generation should be set up close to the sources of coal. In this context, the proposals of the states for setting up generation units far away from coal mines should be immediately reviewed. **Action JS (Thermal).**

(ii) The work of awarding contracts for the planned thermal power units should be executed in mission mode and target should be to reach upto the stage of laying foundation stone for starting the work by December, 2023. **Action JS (Thermal).**

(iii) CPSEs should be tasked on priority to set up thermal power generating units near the sources of coal as contribution from the states and private sector is not assured. **Action JS (Thermal).**

(iv) The per capita consumption of electricity should also be computed separately for each state/UT based on the electricity supplied to household category consumers. **Action EA, MoP**

(v) Current trend of billing efficiency and collection efficiency should be analysed in depth for each state/UT and necessary action plan should be implemented so as to achieve targeted loss reduction in a mission mode. States/UTs showing good achievement should be recognized and encouraged. **Action (JS Distribution).**

(vi) Implementation of pre-paid smart metering needs to be immediately fast tracked with first priority being given to areas of poor collection efficiency. **Action JS (Distribution).**

(vii) Strict implementation of LPSC Rules should be ensured. **Action JS (Distribution).**

Contd…2

(viii) A strategy should be planned for each State/UT for a target of 24X7 power supply to all consumers excluding the agriculture consumers which have a separate supply schedule. Ministry of Power should aim at zero power cut targets. **Action JS (Distribution).**

(ix) Expeditious steps should be taken for development of hydro power potential in North-Eastern States, particularly Arunachal Pradesh which has largest unexploited potential in a spirit of partnership with the States. **Action : AS (Hydro), MOP.**

(x) A study may be carried out to ascertain the monitory benefits to a typical household in various States/UTs as a result of implementation of UJALA programme in which highly energy efficient LED bulbs are used. Action : **AS (EC), MOP.**

(xi) National Street Lighting Programme for converting remaining street lights into LEDs should be implemented in a mission mode and any impediment should be immediately resolved by following the ***'Whole of the Government Approach'***. Necessary support may be taken from Ministry of Housing and Urban Affair and Ministry of Finance for resolving the challenge of outstanding dues of EESL. **Action : AS (EC), MOP.**

(xii) Permanent arrangements should be put in place so that electricity is not wasted in street lights during day hours. This can be done through technological solutions. **Action : AS (EC), MOP.**

(xiii) Implementation of conditionalities in RDSS and in 0.5% Additional Borrowing Scheme has shown effective results in implementation of power sector reforms. These should be persued vigorously. **Action (JS Distribution).**

(xiv) The initiatives taken through start-ups for developing AI/ML based solutions for efficiency improvements in distribution sector were appreciated. In addition to implementing these initiatives quickly, 'Hackathon' may be organized in distribution sector regularly for inviting solutions from the start-ups based on pre-identified problem statements. **Action (JS Distribution).**

Contd…3

(xv) There should be greater emphasis on improving PLF of pit-head plants. A study may be carried out about the plant availability norms globally and our power plants should also achieve those benchmarks. **Action : JS (Thermal).**

(xvi) Power sector CPSEs should also invest in development of coal transportations logistics and arrangements may be made with Railways for appropriate rebate in freight to such CPSEs on this account. **Action : JS (Thermal).**

(xvii) The exposure of PFC/REC towards state owned power utilities should be carefully monitored continuously in order to avoid any systematic risk to these NBFCs on account of weak financial position of some of the state owned utilities. **Action (JS Distribution).**

(Alok Kumar)
Secretary (P)
13/06/2023

1. **SS&FA, Ministry of Power**
2. **AS, Ministry of Power**
3. **All Joint Secretaries, Ministry of Power**
4. **Economic Adviser, Ministry of Power**
5. **Chief Engineers (R&R) Chief Engineer (EC) Ministry of Power**

Copy to :-

PS to HMoP

Annexure-II

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
प्रचालन निष्पादन प्रबोधन प्रभाग
Operation Performance Monitoring Division

सेवा में/ To,

1. ED, Grid India
2. Director (Projects), NTPC
3. ED, LANCO

विषय/**Subject: Minutes of the meeting held under the Chairmanship of Member (GO&D), CEA on 22.06.2023 to review & discuss improvement of the PLF of Pit-head power plants -reg.**

महोदय/ Sir,

Minutes of the meeting to review & discuss improvement of the PLF of Pit-head power plants held on 22nd August, 2022 through video conferencing is enclosed herewith for your information and necessary action.

This issues with the approval of Chief Engineer (OPM), CEA.

भवदीय/Yours faithfully,

30/06/23

(सुयश आयूष वर्मा / Suyash Ayush Verma)
उप निदेशक / Dy. Director

Copy to:

1. Member Secretary, NRPC, WRPC, SRPC, ERPC & NERPC.
2. Chief Engineer (TE&TD), CEA
3. Chief Engineer (GM), CEA

Minutes of the meeting held under the Chairmanship of Member (GO&D), CEA on 22.06.2023 to review & discuss improvement of the PLF of Pit-head power plants

A meeting was held under the Chairmanship of Member (GO&D), CEA, on 22.06.2023 in CEA to review and discuss improvement of the PLF of Pit-head power plants. List of participants is enclosed at **Annexure-I**.

1. Member (GO&D), CEA welcomed the participants and requested Chief Engineer (OPM), CEA to take up the agenda.

2. Chief Engineer (OPM), CEA stated that MoP vide email dated 20.06.2023, requested CEA to carry out study to improve the PLF vis-à-vis the global benchmark of coal based thermal power plants. Accordingly, OPM Division, CEA has carried out the analysis of Plant Availability Factor (PAF) and PLF of Pithead Power Plants for April, 2023 and same is enclosed at **Annexure-II**.

   Chief Engineer (OPM) further stated that after detailed examination of data for FY 2021-22 & F.Y. 2022-23, the following Pithead Power Plants were not able to maintain their PLF greater than 85%:

   a) ANPARA TPS
   b) KORBA-WEST TPS
   c) AMARKANTAK EXT TPS
   d) IB VALLEY TPS
   e) LARA TPP
   f) SIPAT STPS
   g) RAMAGUNDEM STPS
   h) KAHALGAON TPS
   i) NORTH KARANPURA TPP
   j) DARLIPALI STPS
   k) FARAKKA STPS
   l) ANPARA C TPS

   He also stated that from the outage analysis, it was seen that the power plants increase their planned maintenance when forced outage are reduced and vice-versa. The power plants should adhere to the standard practices for optimising planned maintenance and take steps to reduce forced outages.

3. NTPC stated that 8% Planned outage is optimum considering annual variations in Planned outage depending on outage plan. Similarly, 4% Forced outage can be taken as optimum value. Due to high penetration of RE into the Grid, the coal based thermal power plants are required to be ramped up and down which is causing stress in various components leading to unexpected and pre-mature failures. Considering the above situation, 85% NAPAF seems to be achievable

target and further reduction due to flexible operation needs to be kept under considered.

Regarding PLF, representative of NTPC stated that taking account of 2% loss due to AGC, backing down during high frequency of around 1% and 10% loss due to outages, the effective PLF which can be maintained is around 87% only.

Further, few of the pithead power plants are getting less schedules due to comparably higher ECR. This is because of higher cost of coal due to non-availability of coal from linked mines / FSA for coal consumption required for higher PLFs. The same is forcing the Stations to opt for imported coal blending along with domestic coal from different sources which is increasing ECR resulting in backing down and lower PLFs

4. Chief Engineer (TE&TD), CEA was of the opinion that normative annual plant availability factor (NAPAF) has no room for improvement given the requirement of planned maintenance and forced outages due to regular load cycling. The PLF of pit head plants are not actually affected by NAPAF; rather it's the scheduling preferences by concerned SLDC which is leading to such lower PLF of pit head stations.

5. Chief Engineer (OPM) presented the studies done by GM division of CEA **(Annexure-III)**. He highlighted that the drawl schedule of States of Odisha, Madhya Pradesh, Rajasthan, Punjab, Tamil Nadu, Karnataka and Uttar Pradesh were examined from the angle of backing down of cheaper pithead generating stations as compared to their costlier coal based generating stations. It may be seen that the States have followed the merit order despatch when the demand was in the medium range. This means that they might have followed the same merit order while scheduling pithead plants when the demand was high. However, the States of Tamil Nadu, Karnataka, Uttar Pradesh, Rajasthan and Madhya Pradesh have not followed the exact merit order when the demand was low during the month. The reasons thereof needs further investigation in consultation with RLDCs and SLDCs. Further, the States of Odisha and Punjab have followed the merit order scheduling even during the low demand as their own pithead plants are cheaper.

6. LANCO stated that PLF of the plant depends on the schedule received from the buyer even if Generator has full availability. Buyers are giving schedules based on the variable charges of the Generator. The variable charges of the Pit head plant are low due to low coal transportation charges. If Coal availability from nearest mine is high then it is always possible that the Pithead plant will get full schedule. However, ACQ coal under FSA is not sufficient for higher PLF and if CIL allocates beyond ACQ coal as per FSA, then Variable charges will be low for Buyers and their plant PLF will be high since their plant is a pit head plant.

7. Member (GO&D) agreed that the Forced Outages will increase if planned maintenance is not done periodically. He also stated that the thorough studies need to be carried out for reason behind low schedule, technical minimum followed by states, coal quality of the mines and other reasons behind decrease in PLF of pithead power plants.

8. After deliberations, following were agreed:
   - **(a)** Planned maintenance should be done periodically to minimise Forced Outages. NAPAF may be retained as 85% for time being.
   - **(b)** Subgroup comprising representatives from Grid India, GM Div. OPM Div., TETD and NTPC may carry out study to identify the issues related to low PLF of pit head plants and suggest remedial measures. The Sub-group may co-opt any member as and when required.
   - **(c)** The above Subgroup will submit their report within one month from the date of issuance of the minutes.

The meeting ended with thanks to the Chair.

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Annexure-I

List of Participants to the meeting regarding review & discuss improvement of the PLF of Pit-head power plants held on 22.06.2023.

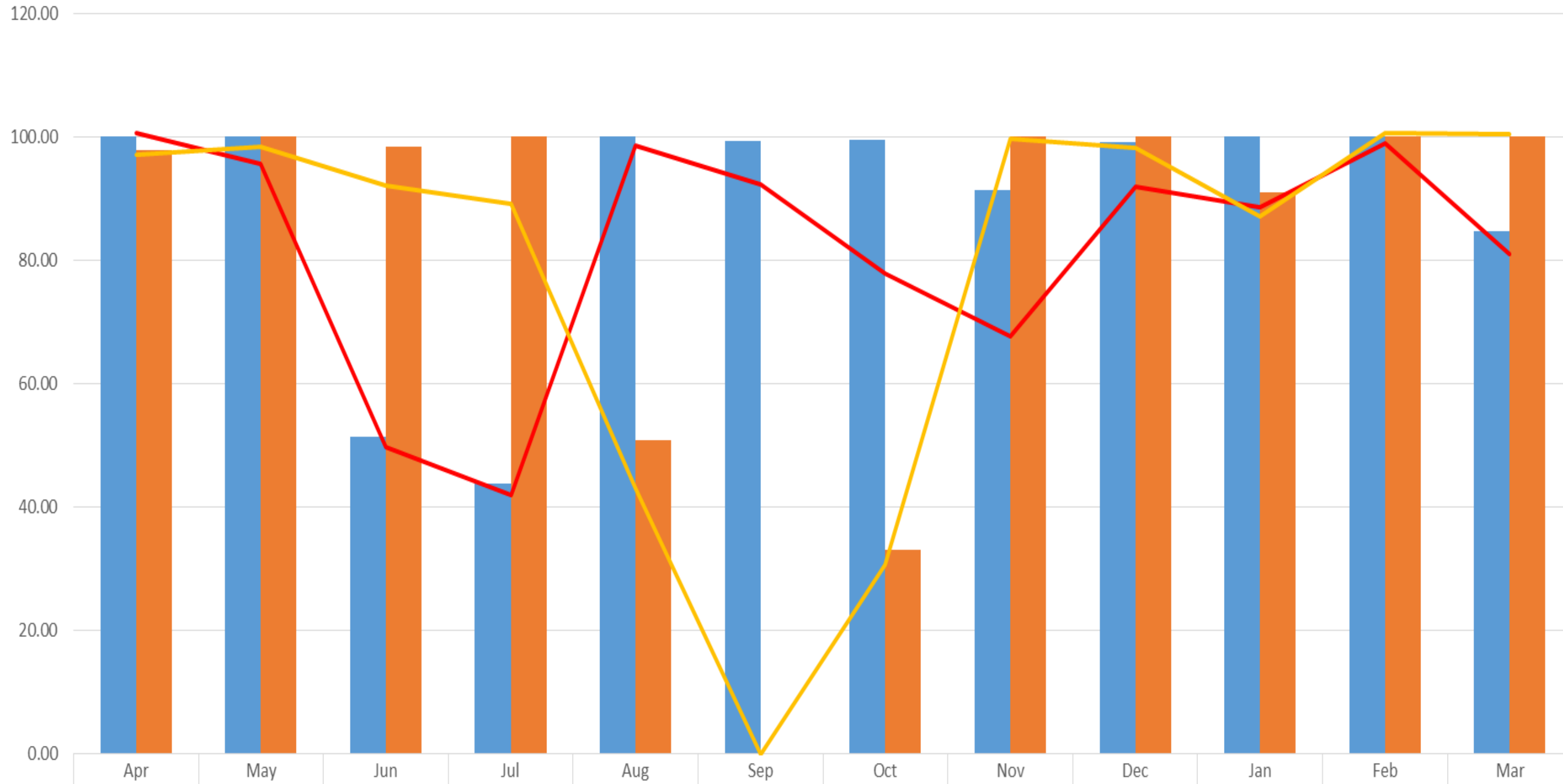
Sl. No.	**Name**	**Designation**
	Central Electricity Authority (CEA)	
1.	B.K. Arya	Member (GO&D)
2.	B. Lyngkhoi	CE (OPM)
3.	D.K. Srivastava	CE (TE&TD)
4.	Maya Kumari	Deputy Director(OPM)
5.	Suyash Ayush Verma	Deputy Director(OPM)
6.	Himalaya Shubham	Deputy Director(GM)
7.	Shishir Prakash	Deputy Director(GM)
8.	Sandeep Kumar	Deputy Director(GM)
9.	Ravi Kant	Deputy Director(SA to Member)
10.	Shubhendu Singh	Assistant Director(GM)
11.	Sakil Ahmad	Assistant Director-II (GM)
	Grid-India	
12.	Surajit Banerjee	CGM, NLDC
13.	Manas Ranjan Chand	DGM, NLDC
	NTPC	
14.	C K Samanta	CGM (OS-SIIS)
15.	G.S. Rao	GM (OS-SIIS)
	LANCO	
16.	Arun Tholia	ED, LANCO Anpara
17.	Pranab Kumar Sharma	AGM, LANCO Anpara

1. AMARKANTAK EXT TPS

	2021-22				2022-23						
AMARKANTAK EXT TPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	100.00	100.68	1.01	0.00	97.77	97.1	0.99	16.07	-2.23	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 16.07; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -
May	100.00	95.64	0.96	0.00	100.00	98.46	0.98	0.00	0.00		
June	51.41	49.68	0.97	0.00	98.38	92.04	0.94	11.67	46.97		
July	43.82	41.99	0.96	417.95	100.00	89.22	0.89	0.00	56.18		
August	100.00	98.66	0.99	0.00	50.89	43.07	0.85	365.40	-49.11	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 6.05; PM: 359.35; Misc: 0;	% Change: FO: - PM: - Misc: -

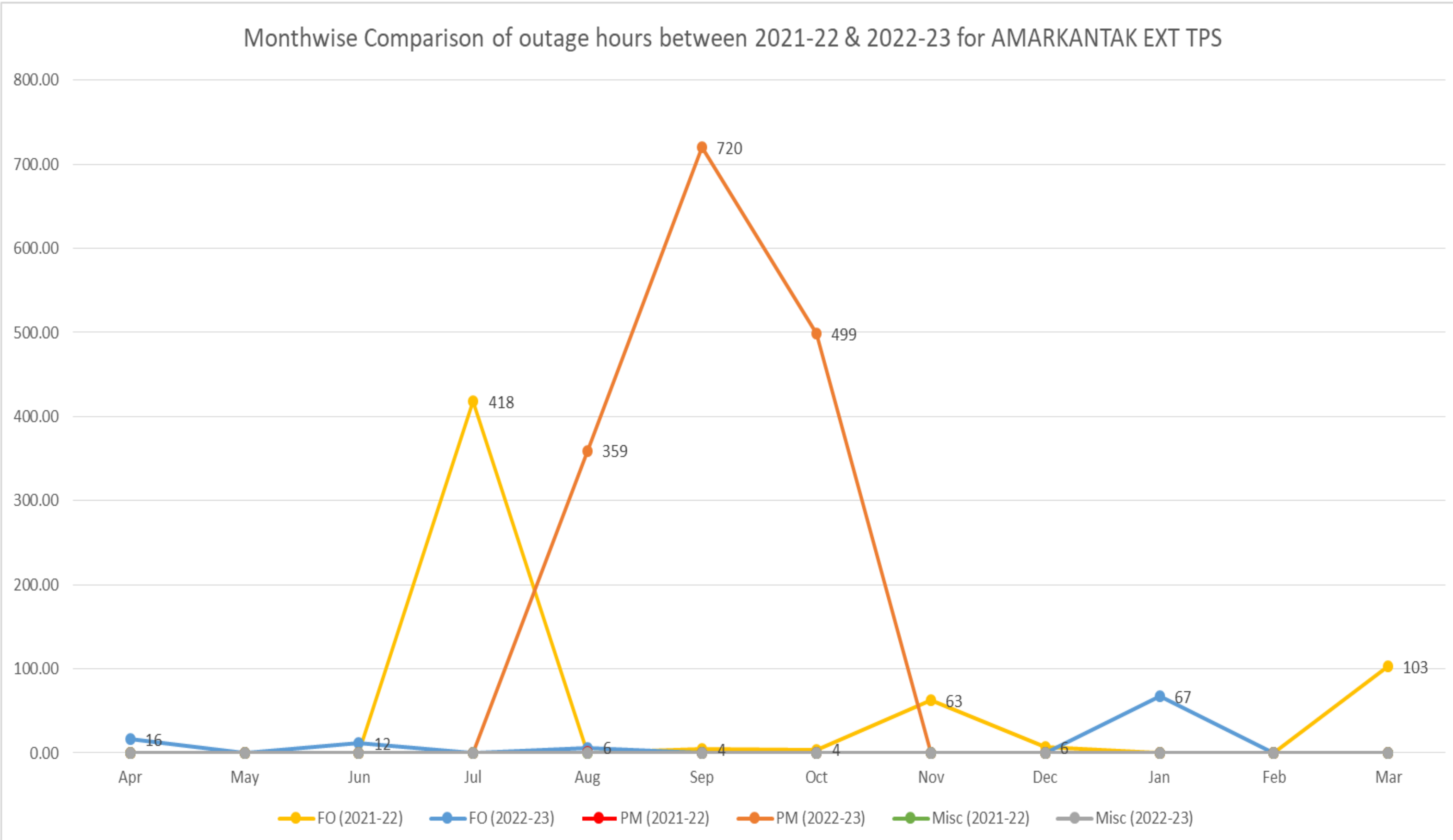
September	99.40	92.29	0.93	4.34	0.00	0	#DIV/0!	720.00	-99.40	2021-22: FO: 4.34; PM: 0; Misc: 0; 2022-23: FO: 0; PM: 720; Misc: 0;	% Change: FO: -100 PM: 71900 Misc: 0
October	99.47	77.85	0.78	3.92	32.99	30.59	0.93	498.55	-66.48	2021-22: FO: 3.92; PM: 0; Misc: 0; 2022-23: FO: 0; PM: 498.55; Misc: 0;	% Change: FO: -100 PM: 49755 Misc: 0
November	91.32	67.62	0.74	62.50	100.00	99.75	1.00	0.00	8.68		
December	99.13	91.83	0.93	6.47	100.00	98.25	0.98	0.00	0.87		
January	100.00	88.54	0.89	0.00	90.98	87.2	0.96	67.08	-9.02	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 67.08; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -
February	100.00	98.89	0.99	0.00	100.00	100.67	1.01	0.00	0.00		
March	84.66	80.97	0.96	103.07	100.00	100.5	1.01	0.00	15.34		

PAF Comparison of AMARKANTAK EXT TPS for 2021-22 & 2022-23

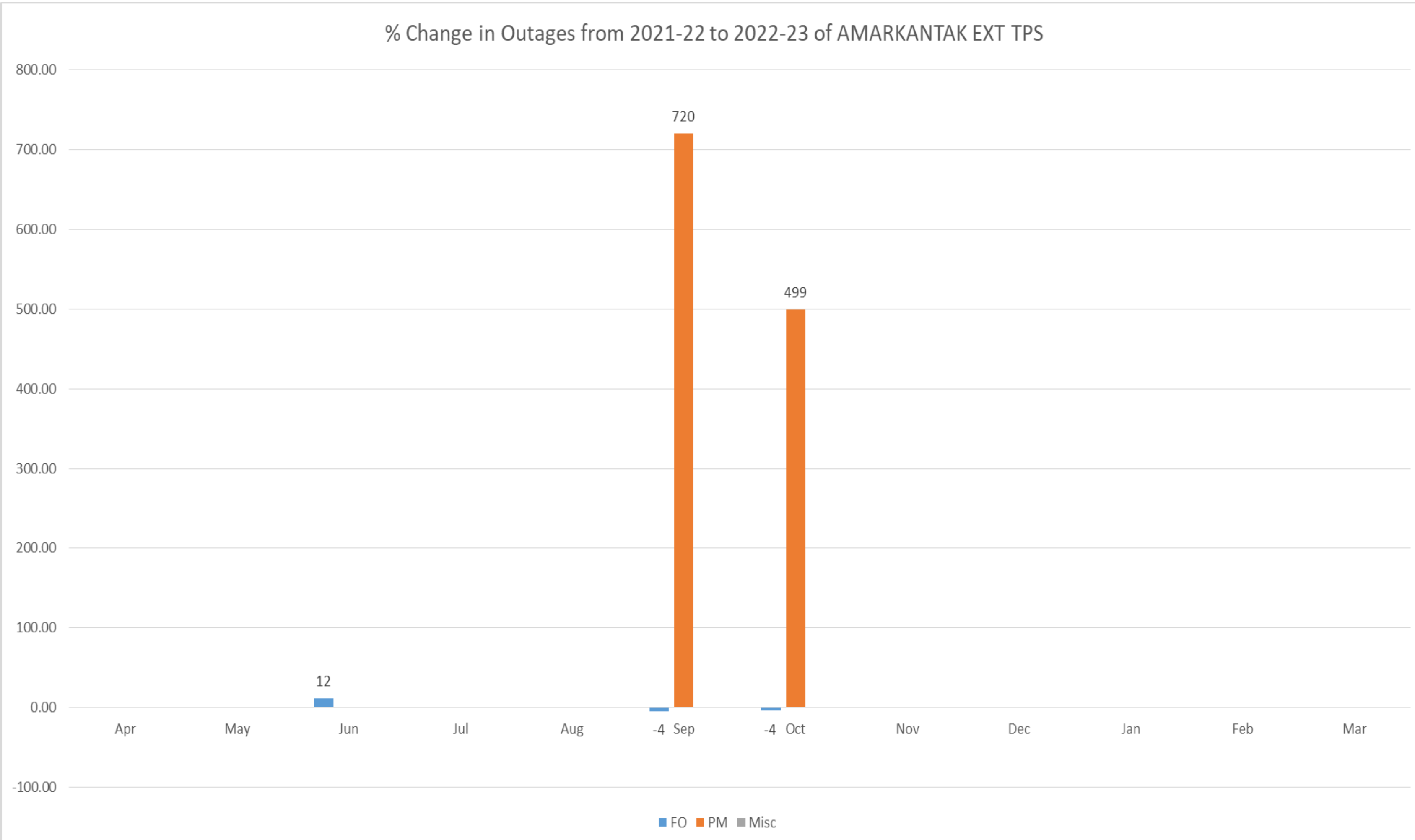


	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 89.1)	100.00	100.00	51.41	43.82	100.00	99.40	99.47	91.32	99.13	100.00	100.00	84.66
PAF 2022-23 (Avg. 80.92)	97.77	100.00	98.38	100.00	50.89	0.00	32.99	100.00	100.00	90.98	100.00	100.00
PLF 2021-22 (Avg. 82.05)	100.68	95.64	49.68	41.99	98.66	92.29	77.85	67.62	91.83	88.54	98.89	80.97
PLF 2022-23 (Avg. 78.07)	97.1	98.46	92.04	89.22	43.07	0	30.59	99.75	98.25	87.2	100.67	100.5

PAF 2021-22 (Avg. 89.1) PAF 2022-23 (Avg. 80.92) PLF 2021-22 (Avg. 82.05) PLF 2022-23 (Avg. 78.07)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for AMARKANTAK EXT TPS
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
720
499
418
359
103
67
63
16
12
6
4
4
6
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)

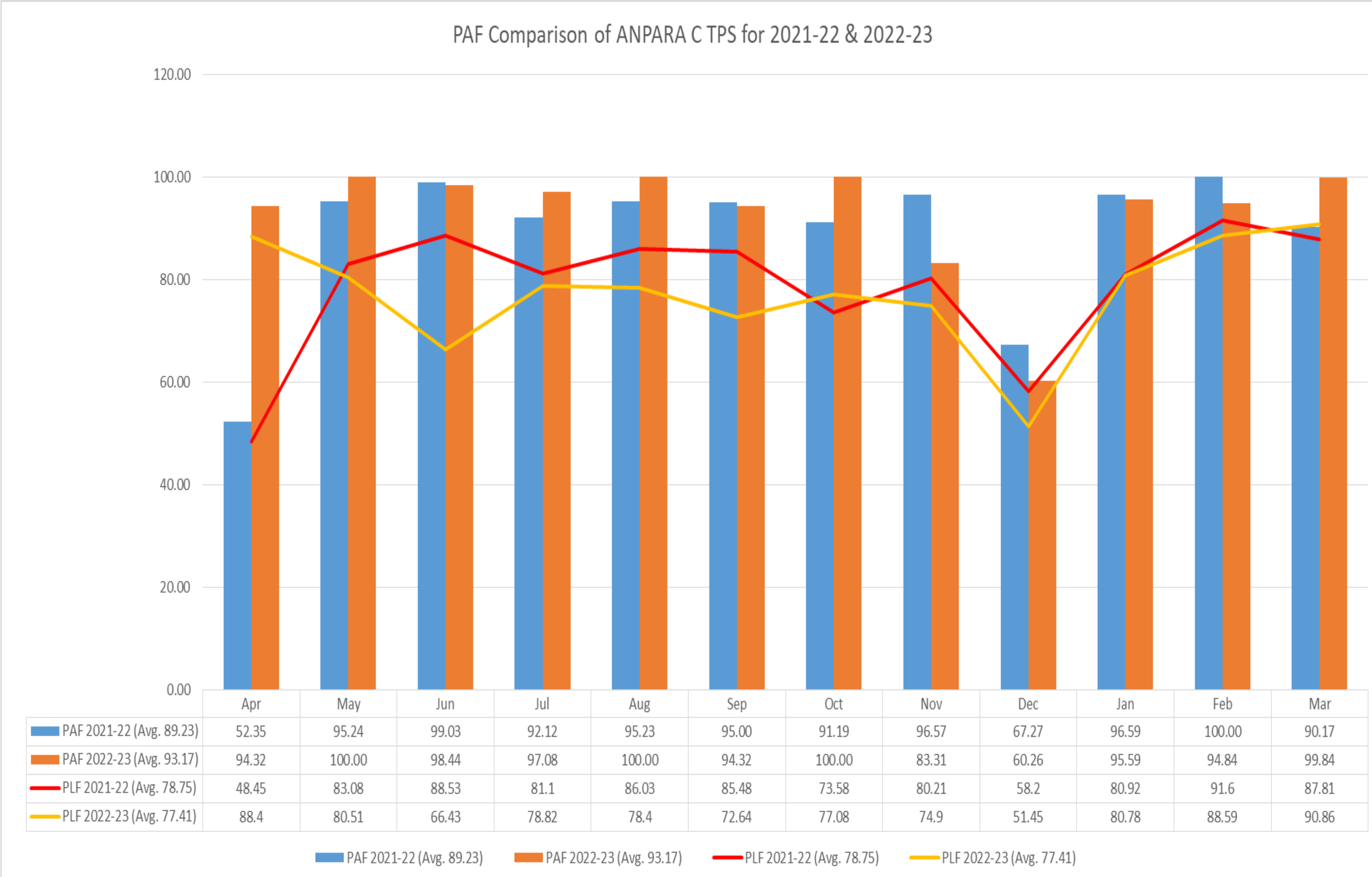

% Change in Outages from 2021-22 to 2022-23 of AMARKANTAK EXT TPS
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
720
499
12
-4
-4
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO
PM
Misc

2. ANPARA C TPS

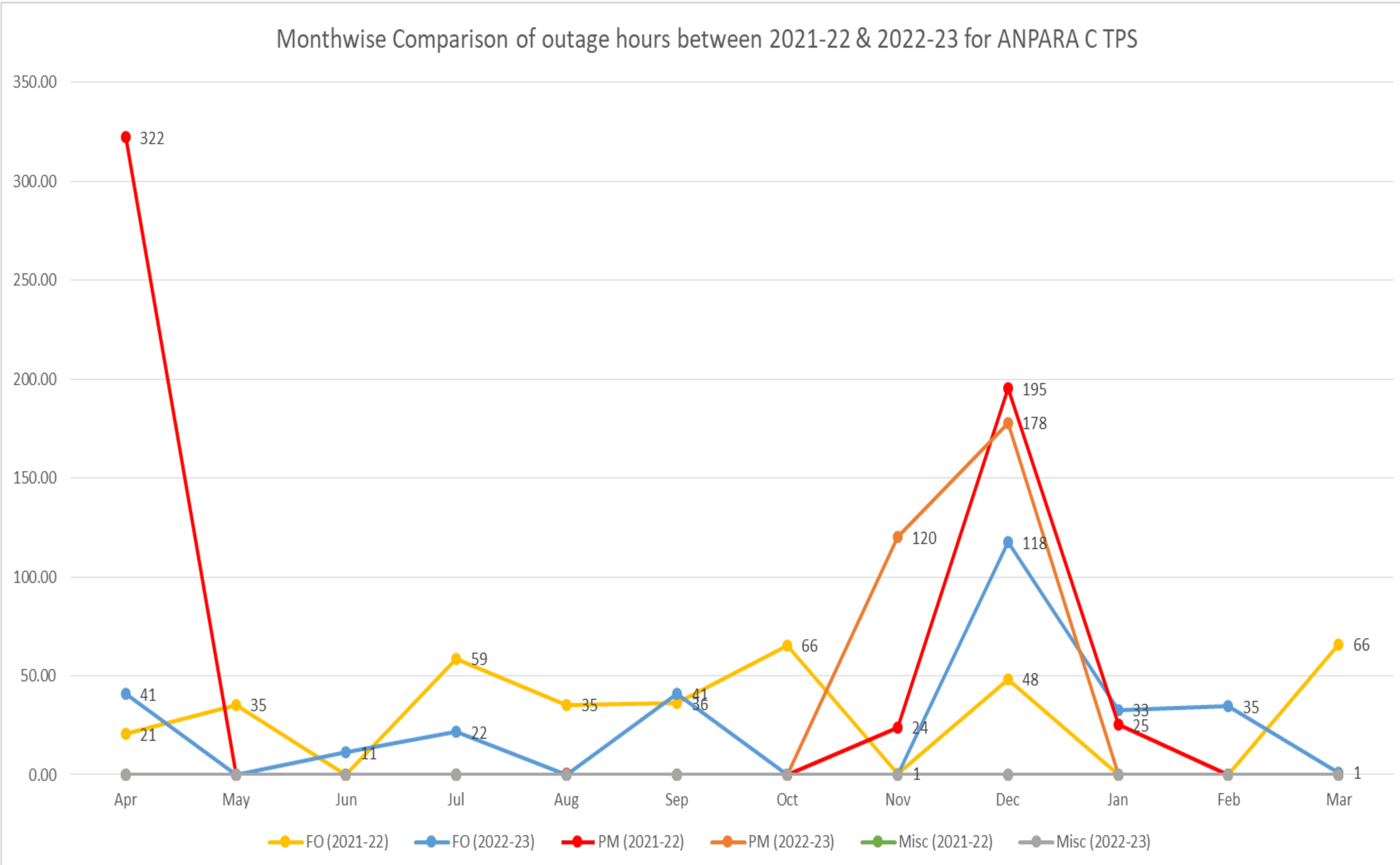
	2021-22				2022-23						
ANPARA C TPS	PAF	PLF	Loading Factor (PLF/PAF)	Outage Hours	PAF	PLF	Loading Factor (PLF/PAF)	Outage Hours	Change in PAF	Reason for Decrease in PAF	% Change in Outages
April	52.35	48.45	0.93	343.07	94.32	88.4	0.94	40.87	41.97		
May	95.24	83.08	0.87	35.44	100.00	80.51	0.81	0.00	4.76		
June	99.03	88.53	0.89	0.00	98.44	66.43	0.67	11.25	-0.59	2021-22: FO: 0; PM: 0; Misc: 0; 2022-23: FO: 11.25; PM: 0; Misc: 0;	% Change: FO: 1025 PM: 0 Misc: 0
July	92.12	81.1	0.88	58.64	97.08	78.82	0.81	21.73	4.96		
August	95.23	86.03	0.90	35.47	100.00	78.4	0.78	0.00	4.77		
September	95.00	85.48	0.90	36.00	94.32	72.64	0.77	40.89	-0.68	2021-22: FO: 36; PM: 0; Misc: 0; 2022-23: FO: 40.89; PM: 0; Misc: 0;	% Change: FO: 13.58 PM: 0 Misc: 0
October	91.19	73.58	0.81	65.52	100.00	77.08	0.77	0.00	8.81		

November	96.57	80.21	0.83	24.71	83.31	74.9	0.90	120.15	-13.25	2021-22: FO: 0.68; PM: 24.03; Misc: 0; 2022-23: FO: 0; PM: 120.15; Misc: 0;	% Change: FO: -100 PM: 400 Misc: 0
December	67.27	58.2	0.87	243.54	60.26	51.45	0.85	295.68	-7.01	2021-22: FO: 48.33; PM: 195.21; Misc: 0; 2022-23: FO: 117.68; PM: 178; Misc: 0;	% Change: FO: 143.49 PM: -8.82 Misc: 0
January	96.59	80.92	0.84	25.33	95.59	80.78	0.85	32.82	-1.01	2021-22: FO: 0; PM: 25.33; Misc: 0; 2022-23: FO: 32.82; PM: 0; Misc: 0;	% Change: FO: 3182 PM: -100 Misc: 0

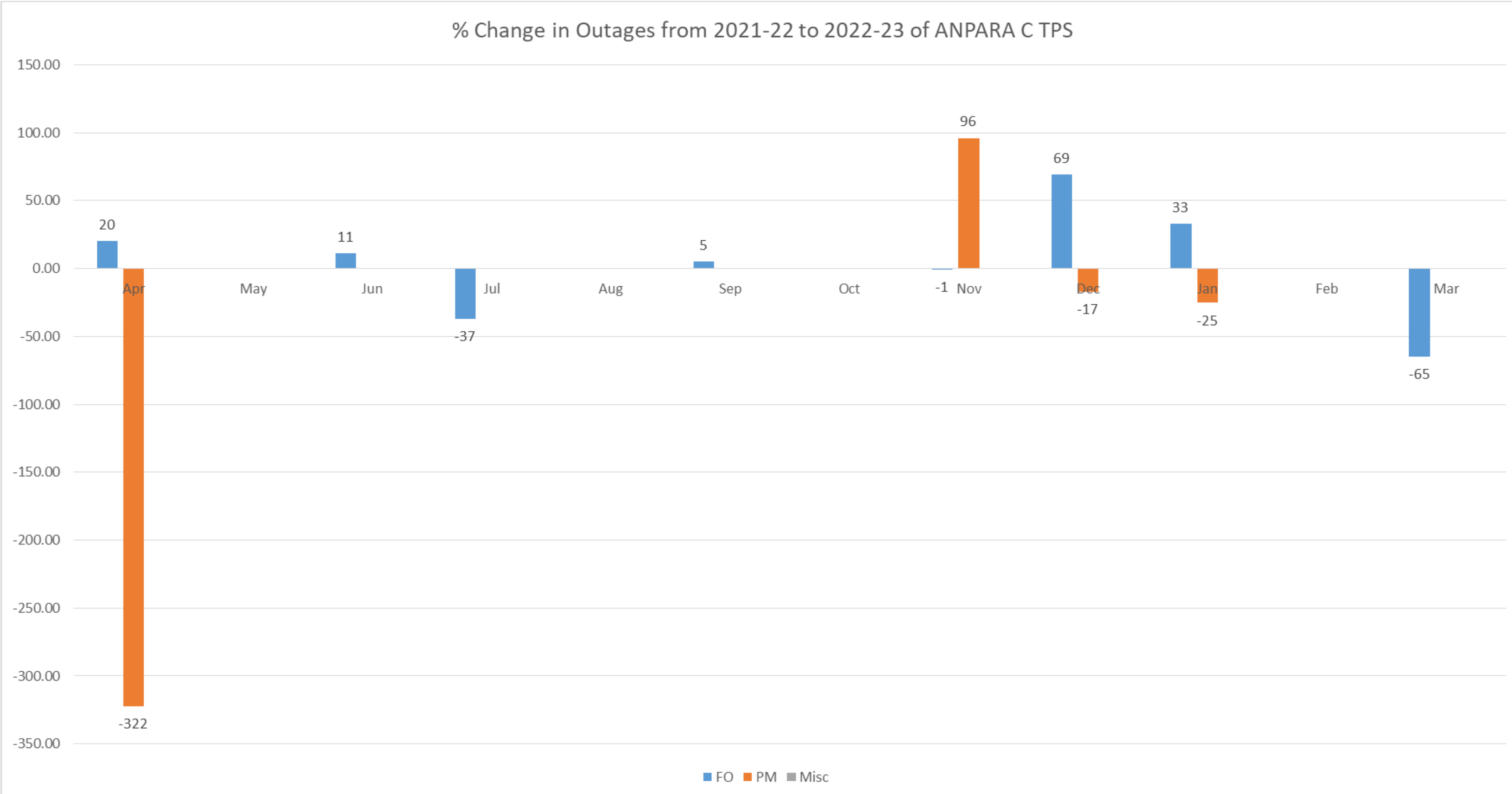
February	100.00	91.6	0.92	0.00	94.84	88.59	0.93	34.68	-5.16	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 34.68; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -
March	90.17	87.81	0.97	66.03	99.84	90.86	0.91	1.21	9.66		



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 89.23)	52.35	95.24	99.03	92.12	95.23	95.00	91.19	96.57	67.27	96.59	100.00	90.17
PAF 2022-23 (Avg. 93.17)	94.32	100.00	98.44	97.08	100.00	94.32	100.00	83.31	60.26	95.59	94.84	99.84
PLF 2021-22 (Avg. 78.75)	48.45	83.08	88.53	81.1	86.03	85.48	73.58	80.21	58.2	80.92	91.6	87.81
PLF 2022-23 (Avg. 77.41)	88.4	80.51	66.43	78.82	78.4	72.64	77.08	74.9	51.45	80.78	88.59	90.86



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for ANPARA C TPS
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
322
41
21
35
11
59
22
35
41
36
66
120
24
1
195
178
118
48
33
25
35
66
1
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)



% Change in Outages from 2021-22 to 2022-23 of ANPARA C TPS
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
-300.00
-350.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
20
-322
11
-37
5
-1
96
69
-17
33
-25
-65
FO
PM
Misc

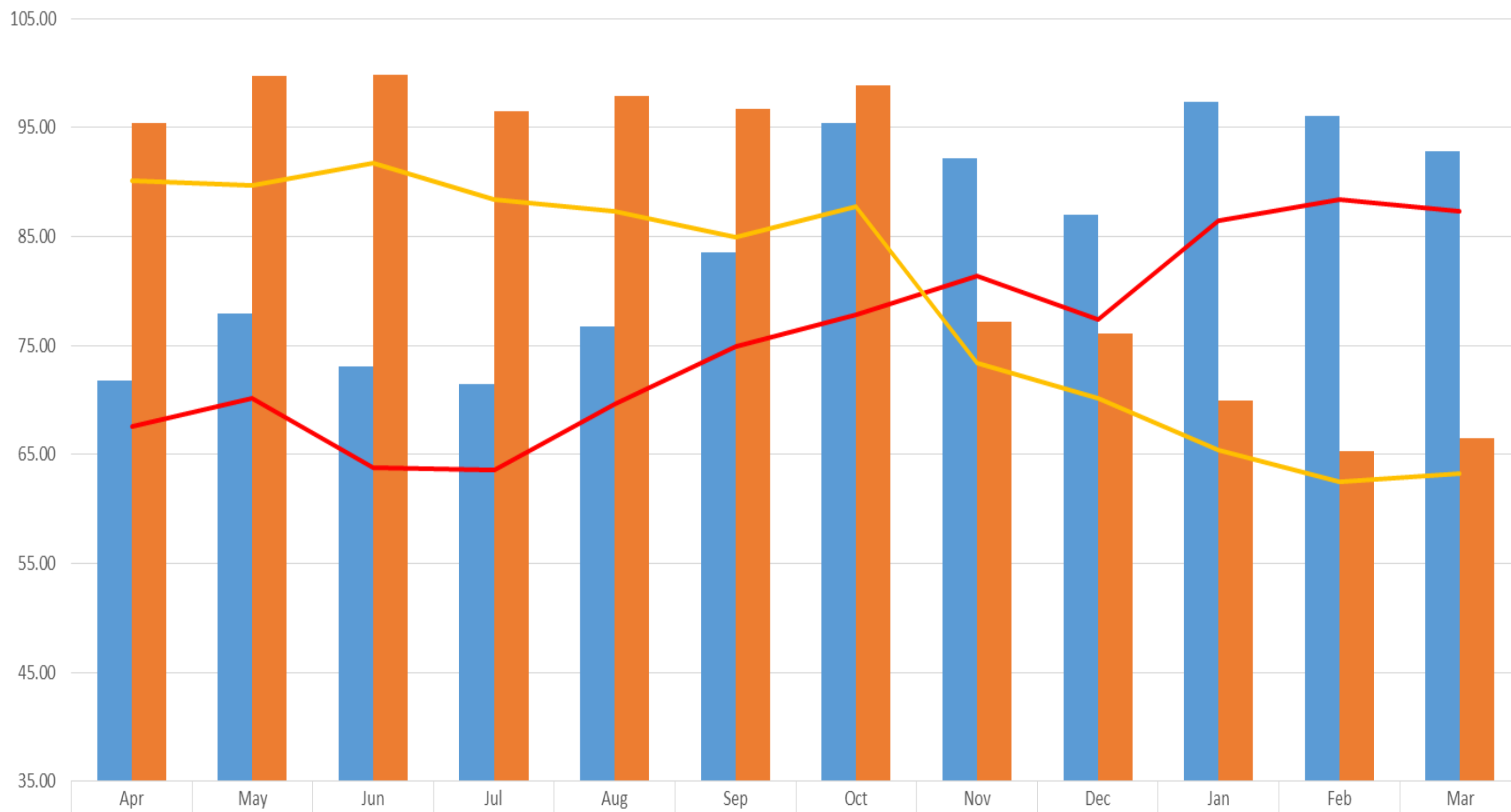
3. ANPARA TPS

	2021-22				2022-23						
ANPARA TPS	PAF	PLF	Loading Factor (PLF/PAF)	Outage Hours	PAF	PLF	Loading Factor (PLF/PAF)	Outage Hours	Change in PAF	Reason for Decrease in PAF	% Change in Outages
April	71.73	67.59	0.94	203.54	95.45	90.12	0.94	32.73	23.72		
May	77.88	70.11	0.90	164.56	99.71	89.73	0.90	2.17	21.83		
June	73.12	63.8	0.87	0.00	99.86	91.75	0.92	1.03	26.73		
July	71.47	63.61	0.89	212.25	96.54	88.39	0.92	25.75	25.07		
August	76.70	69.63	0.91	173.39	97.90	87.33	0.89	15.59	21.21		
September	83.56	74.91	0.90	118.39	96.73	84.99	0.88	23.53	13.18		
October	95.44	77.85	0.82	33.95	98.93	87.71	0.89	7.99	3.49		
November	92.20	81.41	0.88	56.19	77.13	73.39	0.95	164.68	-15.07	2021-22: FO: 56.19; PM: 0; Misc: 0; 2022-23: FO: 28.03; PM: 136.65; Misc: 0;	% Change: FO: -50.12 PM: 13565 Misc: 0

December	87.00	77.36	0.89	96.72	76.11	70.18	0.92	177.74	-10.89	2021-22: FO: 96.72; PM: 0; Misc: 0; 2022-23: FO: 36.3; PM: 141.44; Misc: 0;	% Change: FO: -62.47 PM: 14044 Misc: 0
January	97.38	86.45	0.89	19.48	69.89	65.36	0.94	224.00	-27.49	2021-22: FO: 2.52; PM: 16.96; Misc: 0; 2022-23: FO: 30.82; PM: 193.18; Misc: 0;	% Change: FO: 1123.02 PM: 1039.03 Misc: 0
February	96.09	88.45	0.92	26.25	65.28	62.49	0.96	233.34	-30.82	2021-22: FO: 26.25; PM: 0; Misc: 0; 2022-23: FO: 51.93; PM: 181.41; Misc: 0;	% Change: FO: 97.83 PM: 18041 Misc: 0

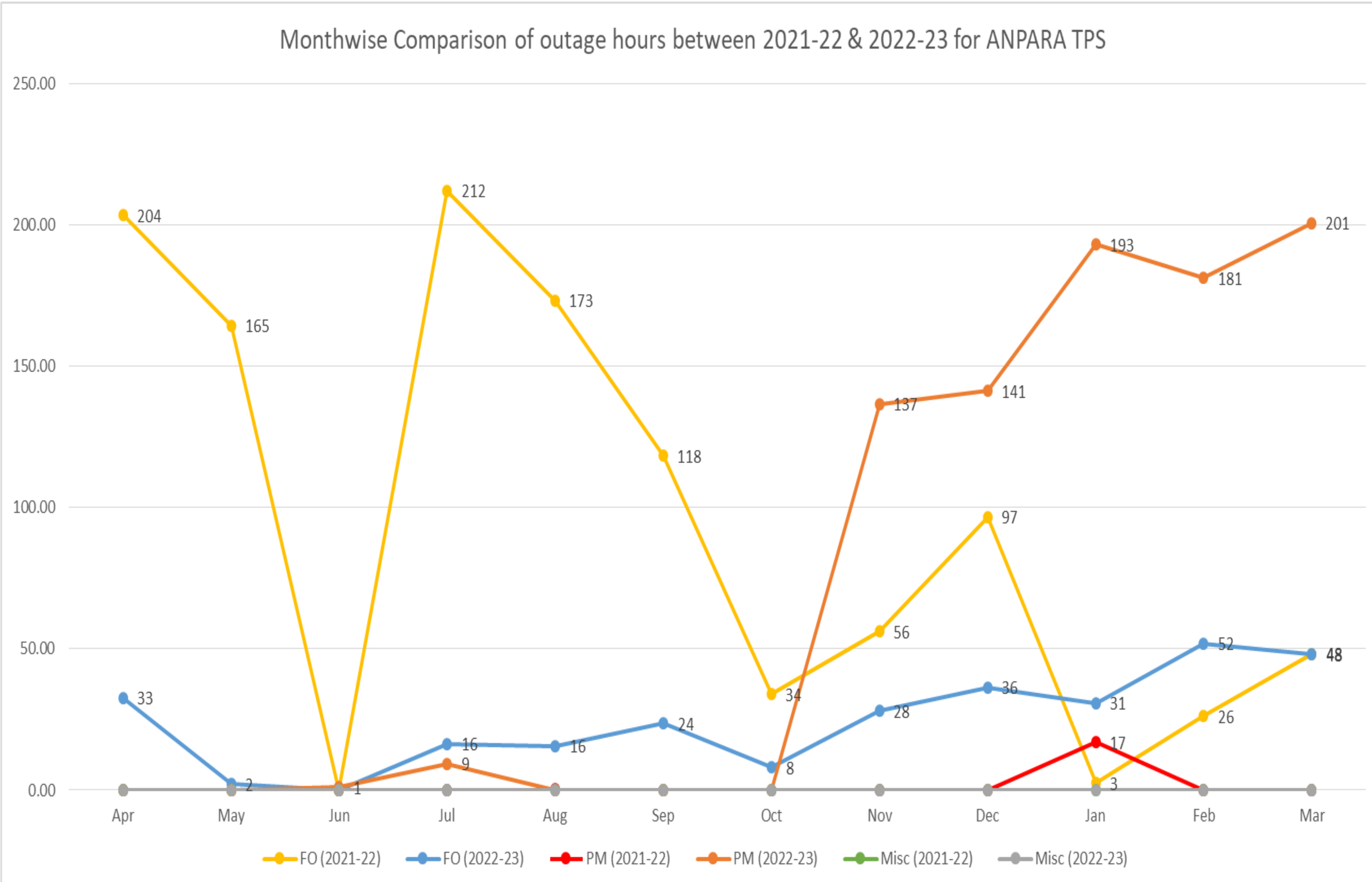
March	92.81	87.36	0.94	48.29	66.53	63.22	0.95	248.98	-26.28	2021-22: FO: 48.29; PM: 0; Misc: 0; 2022-23: FO: 48.13; PM: 200.85; Misc: 0;	% Change: FO: -0.33 PM: 19985 Misc: 0

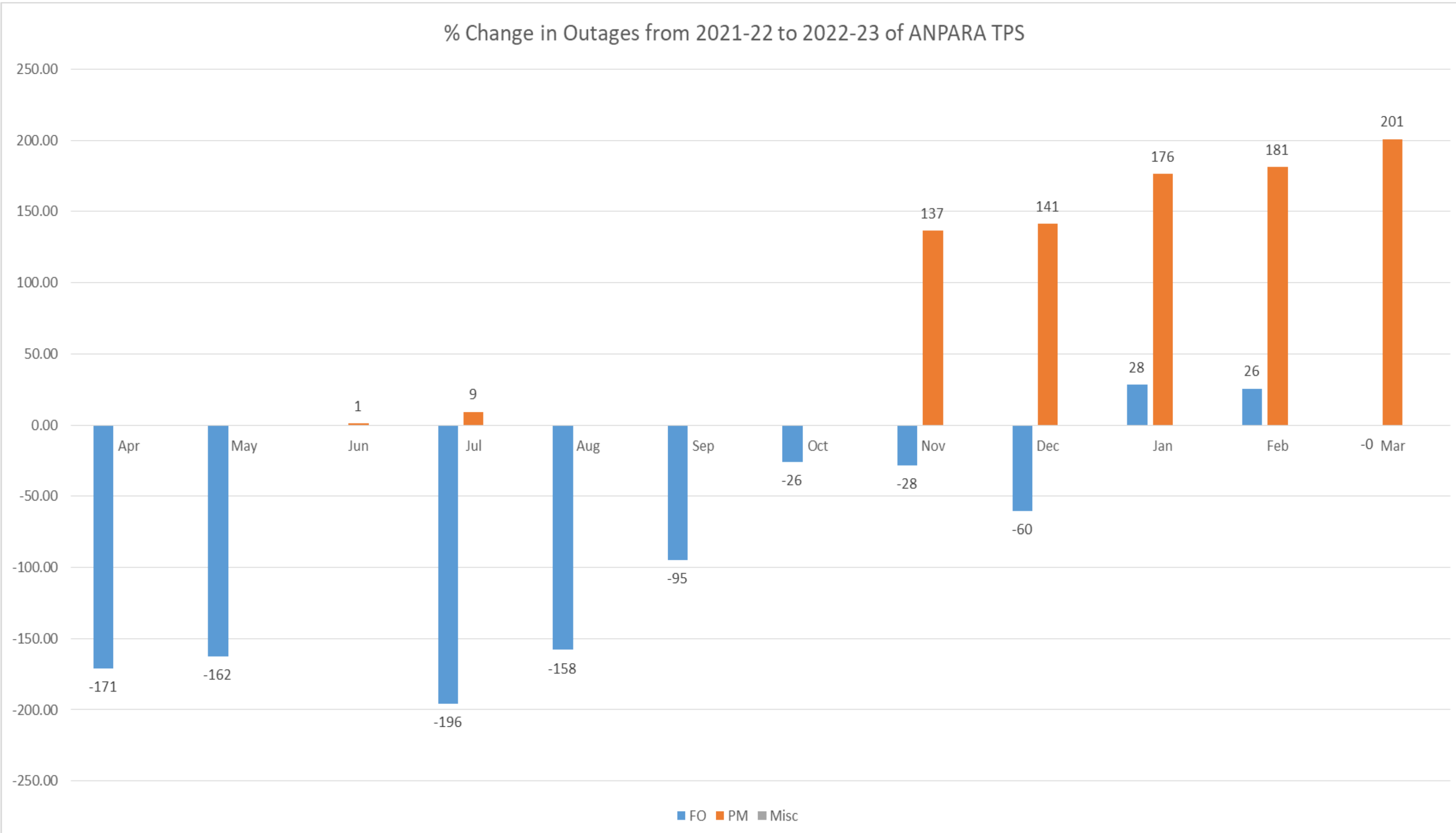
PAF Comparison of ANPARA TPS for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 84.62)	71.73	77.88	73.12	71.47	76.70	83.56	95.44	92.20	87.00	97.38	96.09	92.81
PAF 2022-23 (Avg. 86.67)	95.45	99.71	99.86	96.54	97.90	96.73	98.93	77.13	76.11	69.89	65.28	66.53
PLF 2021-22 (Avg. 75.71)	67.59	70.11	63.8	63.61	69.63	74.91	77.85	81.41	77.36	86.45	88.45	87.36
PLF 2022-23 (Avg. 79.56)	90.12	89.73	91.75	88.39	87.33	84.99	87.71	73.39	70.18	65.36	62.49	63.22

PAF 2021-22 (Avg. 84.62) PAF 2022-23 (Avg. 86.67) PLF 2021-22 (Avg. 75.71) PLF 2022-23 (Avg. 79.56)


Monthwise Comparison of outage hours between 2021-22 & 2022-23 for ANPARA TPS
250.00
200.00
150.00
100.00
50.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
204
165
1
212
173
118
34
56
97
3
26
48
33
2
16
16
24
8
28
36
31
52
9
137
141
193
181
201
17
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)


% Change in Outages from 2021-22 to 2022-23 of ANPARA TPS
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
-171
-162
1
9
-196
-158
-95
-26
-28
137
-60
141
28
176
26
181
-0
201
FO
PM
Misc

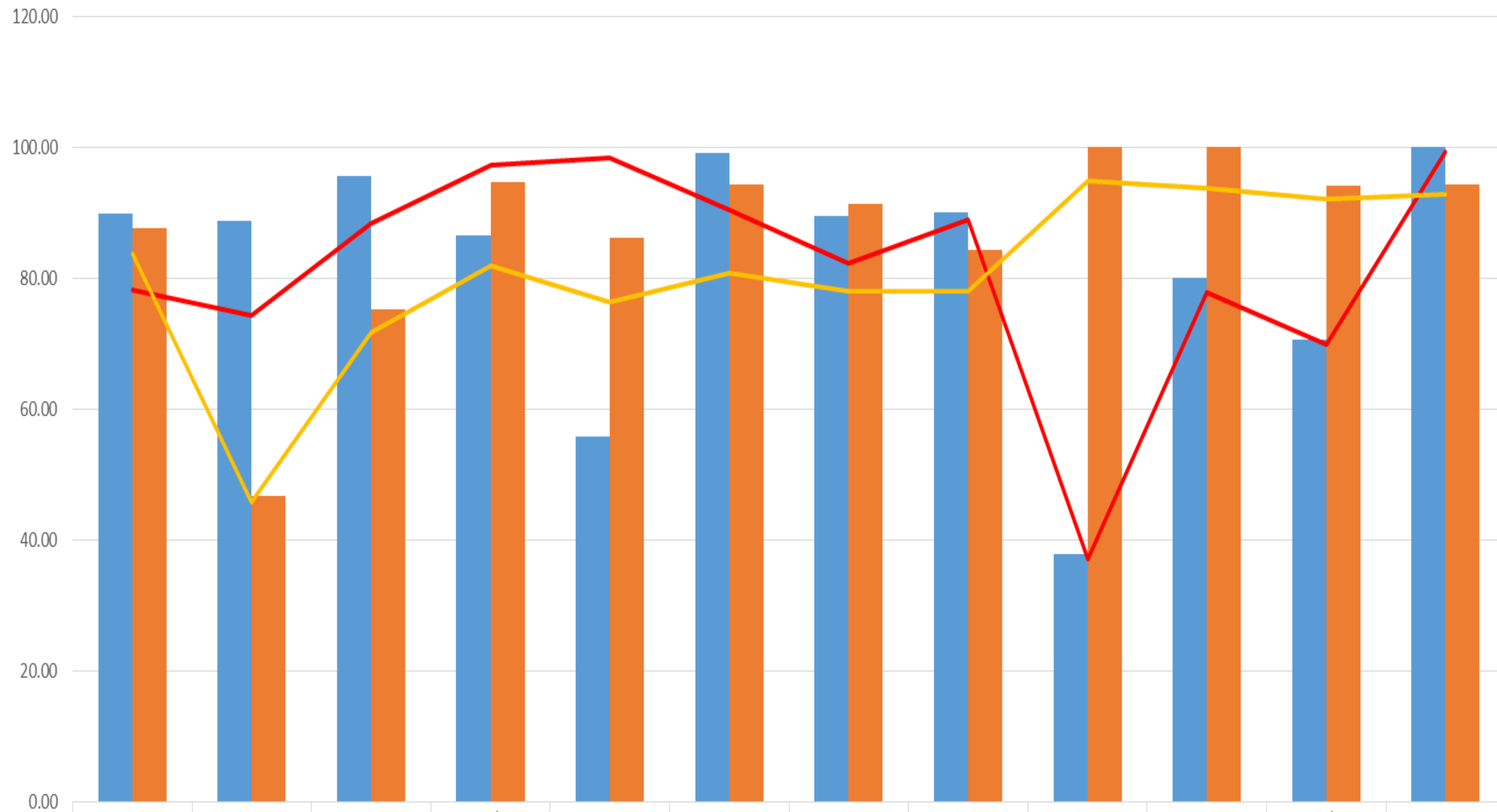
4. DARLIPALI STPS

	2021-22				2022-23						
DARLIPALI STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	89.93	78.31	0.87	72.51	87.74	83.76	0.95	88.30	-2.19	2021-22: FO: 72.51; PM: 0; Misc: 0; 2022-23: FO: 88.3; PM: 0; Misc: 0;	% Change: FO: 21.78 PM: 0 Misc: 0
May	88.83	74.43	0.84	83.12	46.79	45.91	0.98	395.85	-42.03	2021-22: FO: 83.12; PM: 0; Misc: 0; 2022-23: FO: 395.85; PM: 0; Misc: 0;	% Change: FO: 376.24 PM: 0 Misc: 0

June	95.63	88.36	0.92	0.00	75.26	71.69	0.95	178.12	-20.37	2021-22: FO: 0; PM: 0; Misc: 0; 2022-23: FO: 178.12; PM: 0; Misc: 0;	% Change: FO: 17712 PM: 0 Misc: 0
July	86.55	97.38	1.13	100.03	94.77	81.93	0.86	38.94	8.21		
August	55.79	98.39	1.76	328.95	86.10	76.33	0.89	103.43	30.31		
September	99.10	90.47	0.91	6.50	94.33	80.76	0.86	40.80	-4.76	2021-22: FO: 6.5; PM: 0; Misc: 0; 2022-23: FO: 40.8; PM: 0; Misc: 0;	% Change: FO: 527.69 PM: 0 Misc: 0
October	89.48	82.36	0.92	78.25	91.29	77.96	0.85	64.78	1.81		
November	90.11	88.97	0.99	71.22	84.25	78.02	0.93	113.42	-5.86	2021-22: FO: 0; PM: 71.22; Misc: 0; 2022-23: FO: 113.42; PM: 0; Misc: 0;	% Change: FO: 11242 PM: -100 Misc: 0

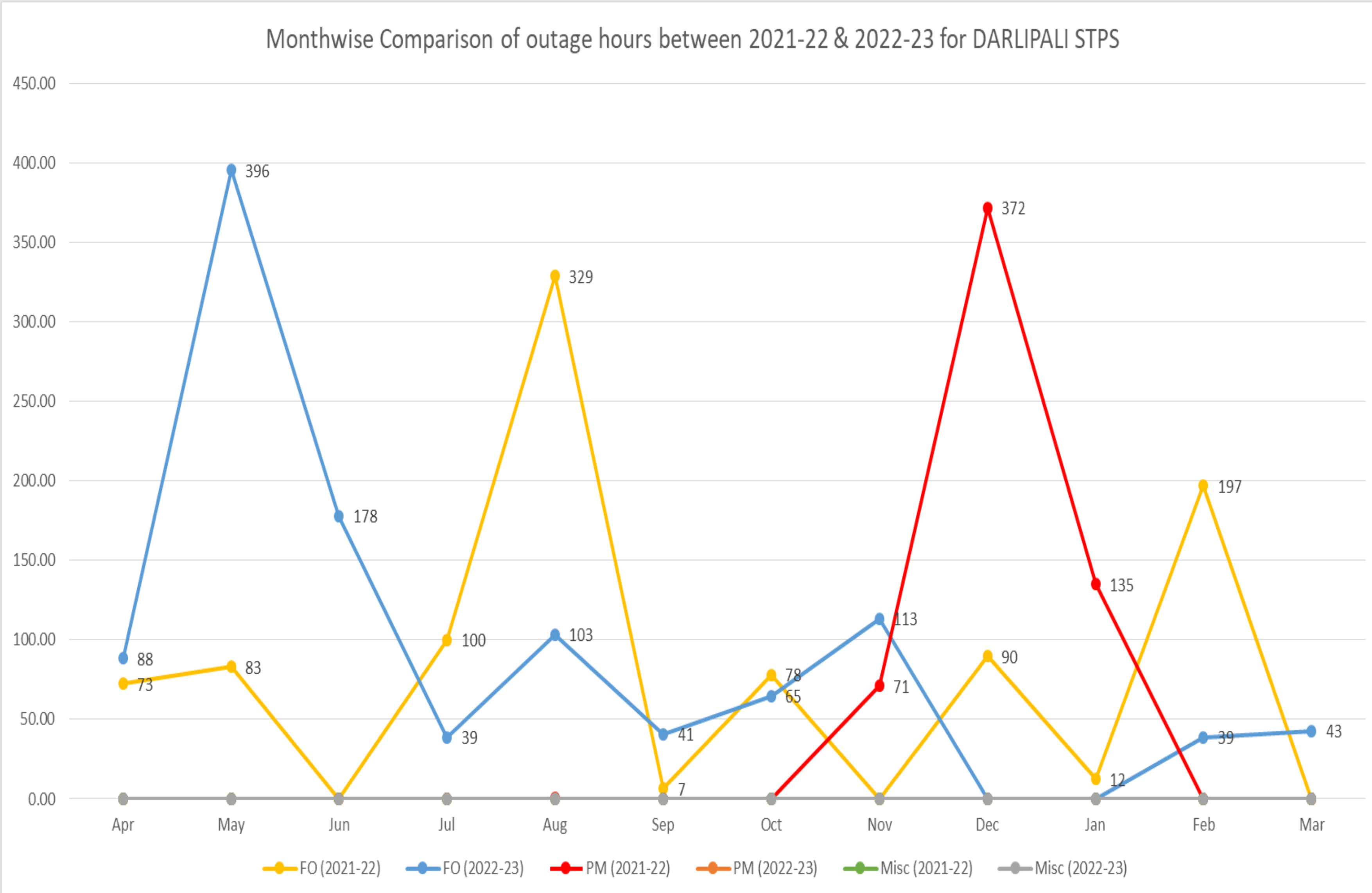
December	37.94	37.09	0.98	461.76	100.00	94.89	0.95	0.00	62.06		
January	80.15	77.88	0.97	147.67	100.00	93.71	0.94	0.00	19.85		
February	70.65	69.92	0.99	197.21	94.22	92.04	0.98	38.84	23.57		
March	100.00	99.24	0.99	0.00	94.26	92.8	0.98	42.73	-5.74	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 42.73; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -

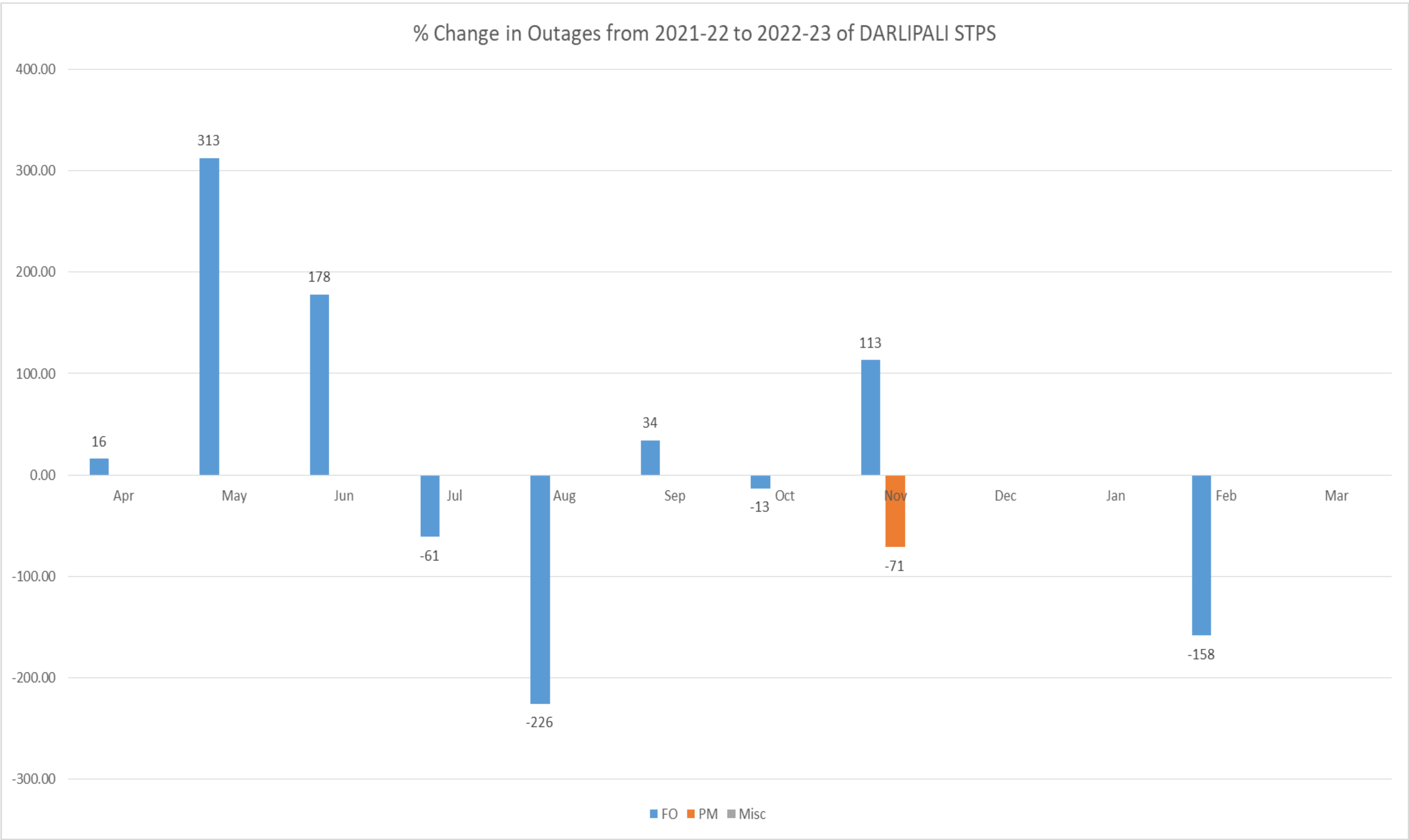
PAF Comparison of DARLIPALI STPS for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 82.01)	89.93	88.83	95.63	86.55	55.79	99.10	89.48	90.11	37.94	80.15	70.65	100.00
PAF 2022-23 (Avg. 87.42)	87.74	46.79	75.26	94.77	86.10	94.33	91.29	84.25	100.00	100.00	94.22	94.26
PLF 2021-22 (Avg. 81.9)	78.31	74.43	88.36	97.38	98.39	90.47	82.36	88.97	37.09	77.88	69.92	99.24
PLF 2022-23 (Avg. 80.82)	83.76	45.91	71.69	81.93	76.33	80.76	77.96	78.02	94.89	93.71	92.04	92.8

PAF 2021-22 (Avg. 82.01) PAF 2022-23 (Avg. 87.42) PLF 2021-22 (Avg. 81.9) PLF 2022-23 (Avg. 80.82)


Monthwise Comparison of outage hours between 2021-22 & 2022-23 for DARLIPALI STPS
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
396
372
329
197
178
135
113
103
100
90
88
83
78
73
71
65
43
41
39
39
12
7
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)



% Change in Outages from 2021-22 to 2022-23 of DARLIPALI STPS
400.00
300.00
200.00
100.00
0.00
-100.00
-200.00
-300.00
313
178
113
16
34
-13
-61
-71
-158
-226
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO
PM
Misc

5. FARAKKA STPS

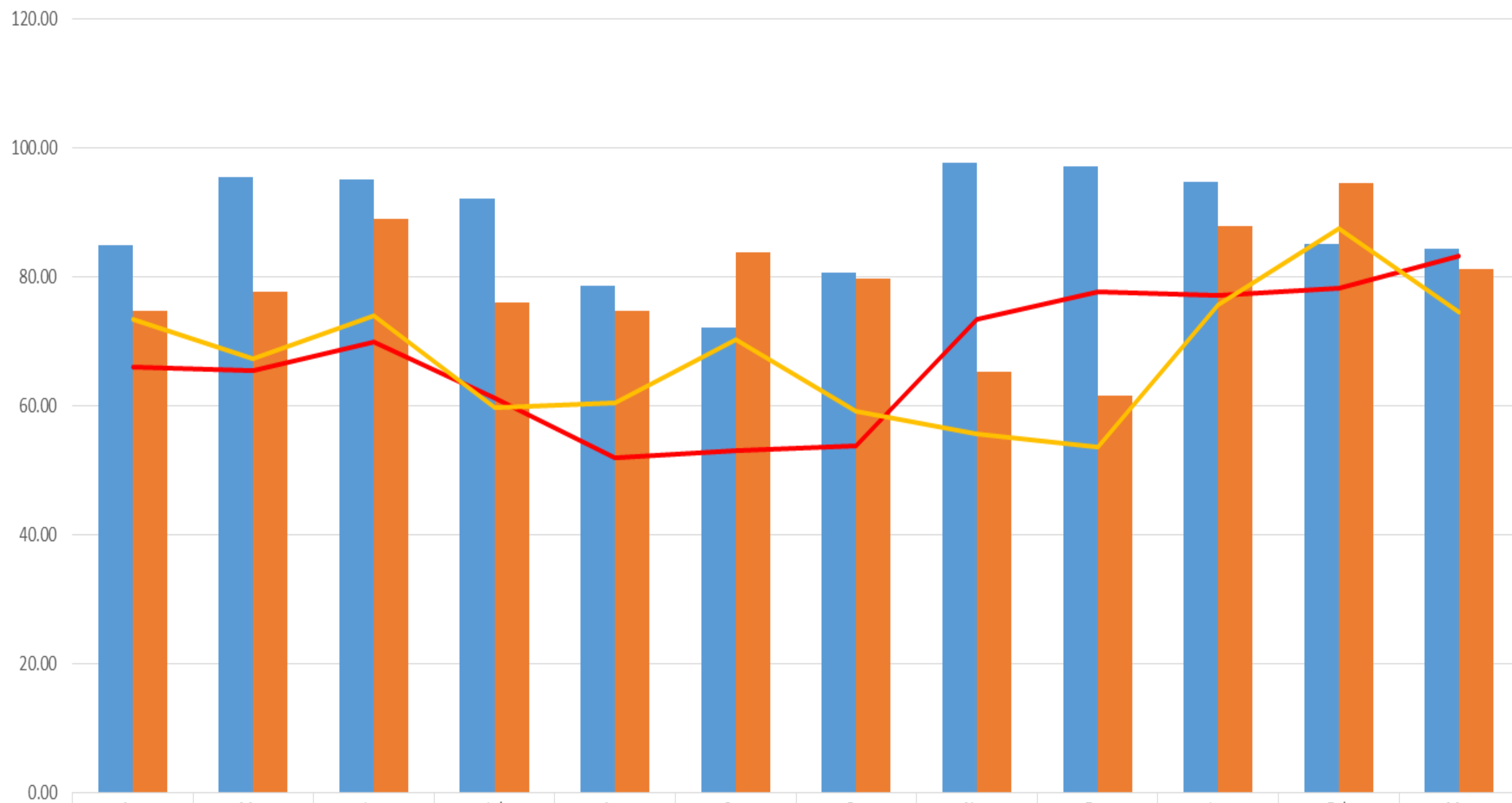
	2021-22				2022-23						
FARAKKA STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	84.92	65.96	0.78	108.55	74.72	73.46	0.98	182.05	-10.21	2021-22: FO: 107.45; PM: 0; Misc: 1.1; 2022-23: FO: 10.62; PM: 171.43; Misc: 0;	% Change: FO: -90.12 PM: 17043 Misc: -100
May	95.44	65.42	0.69	33.93	77.66	67.31	0.87	166.22	-17.78	2021-22: FO: 33.93; PM: 0; Misc: 0; 2022-23: FO: 14.62; PM: 151.6; Misc: 0;	% Change: FO: -56.91 PM: 15060 Misc: 0

June	95.13	69.9	0.73	0.00	88.99	74.02	0.83	79.25	-6.14	2021-22: FO: 0; PM: 0; Misc: 0; 2022-23: FO: 79.25; PM: 0; Misc: 0;	% Change: FO: 7825 PM: 0 Misc: 0
July	92.14	61.17	0.66	58.49	76.00	59.77	0.79	178.58	-16.14	2021-22: FO: 10.51; PM: 47.98; Misc: 0; 2022-23: FO: 178.58; PM: 0; Misc: 0;	% Change: FO: 1599.14 PM: -100 Misc: 0
August	78.63	51.88	0.66	159.00	74.64	60.48	0.81	188.67	-3.99	2021-22: FO: 33.71; PM: 125.29; Misc: 0; 2022-23: FO: 188.67; PM: 0; Misc: 0;	% Change: FO: 459.69 PM: -100 Misc: 0
September	72.20	53.07	0.74	200.18	83.74	70.18	0.84	117.04	11.55		

October	80.64	53.84	0.67	144.07	79.74	59.11	0.74	150.72	-0.89	2021-22: FO: 6.55; PM: 137.52; Misc: 0; 2022-23: FO: 150.72; PM: 0; Misc: 0;	% Change: FO: 2201.07 PM: -100 Misc: 0
November	97.68	73.47	0.75	16.74	65.32	55.62	0.85	249.67	-32.35	2021-22: FO: 16.74; PM: 0; Misc: 0; 2022-23: FO: 204.14; PM: 45.53; Misc: 0;	% Change: FO: 1119.47 PM: 4453 Misc: 0
December	97.13	77.71	0.80	21.36	61.48	53.62	0.87	286.58	-35.65	2021-22: FO: 3.92; PM: 17.44; Misc: 0; 2022-23: FO: 198.87; PM: 35.17; Misc: 52.54;	% Change: FO: 4973.21 PM: 101.66 Misc: 5154

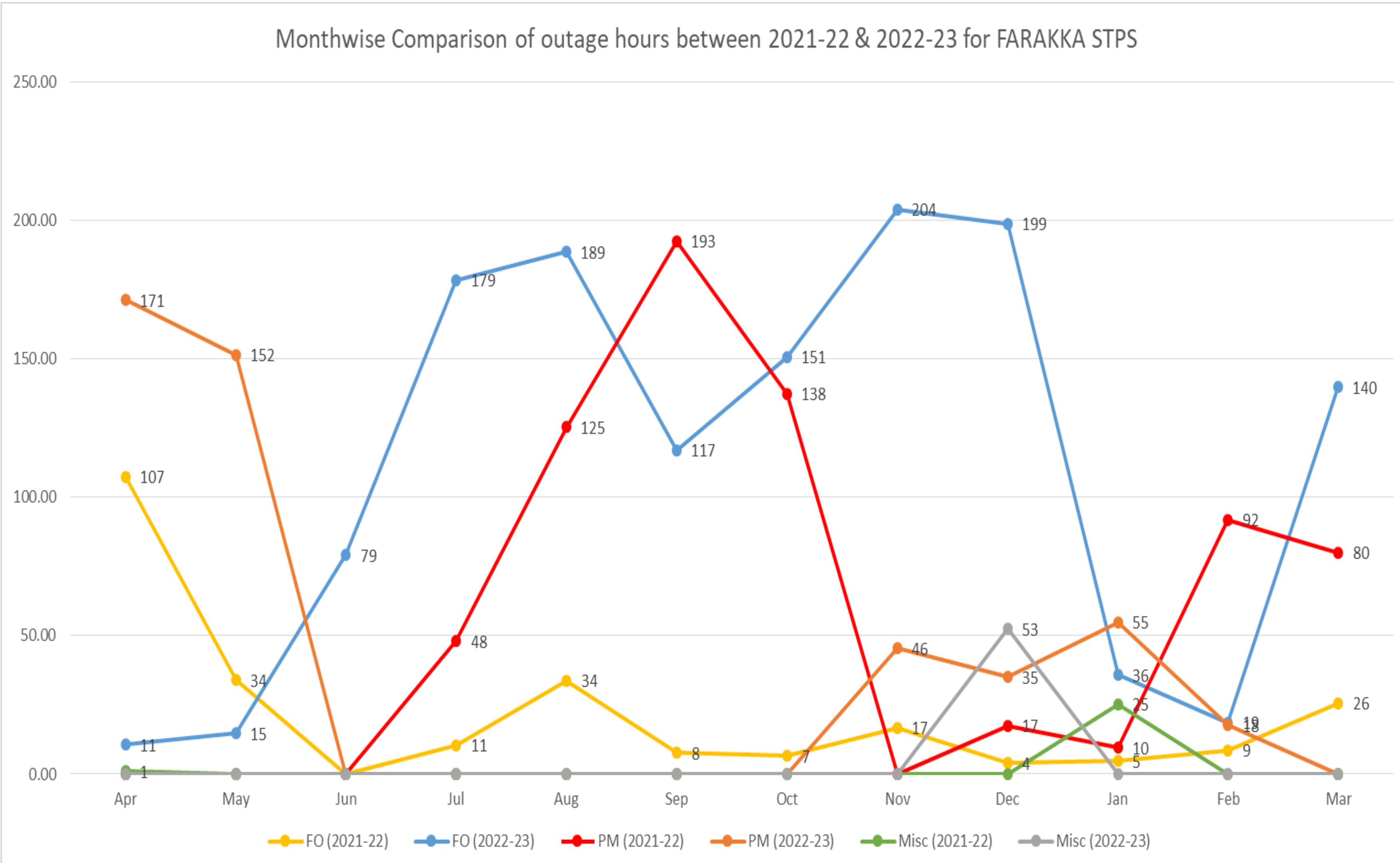
January	94.67	77.13	0.81	39.66	87.82	75.59	0.86	90.60	-6.85	2021-22: FO: 4.81; PM: 9.62; Misc: 25.23; 2022-23: FO: 35.77; PM: 54.83; Misc: 0;	% Change: FO: 643.66 PM: 469.96 Misc: -100
February	85.04	78.3	0.92	100.53	94.60	87.46	0.92	36.26	9.56		
March	84.25	83.23	0.99	105.81	81.20	74.47	0.92	139.86	-3.05	2021-22: FO: 25.69; PM: 80.12; Misc: 0; 2022-23: FO: 139.86; PM: 0; Misc: 0;	% Change: FO: 444.41 PM: -100 Misc: 0

PAF Comparison of FARAKKA STPS for 2021-22 & 2022-23

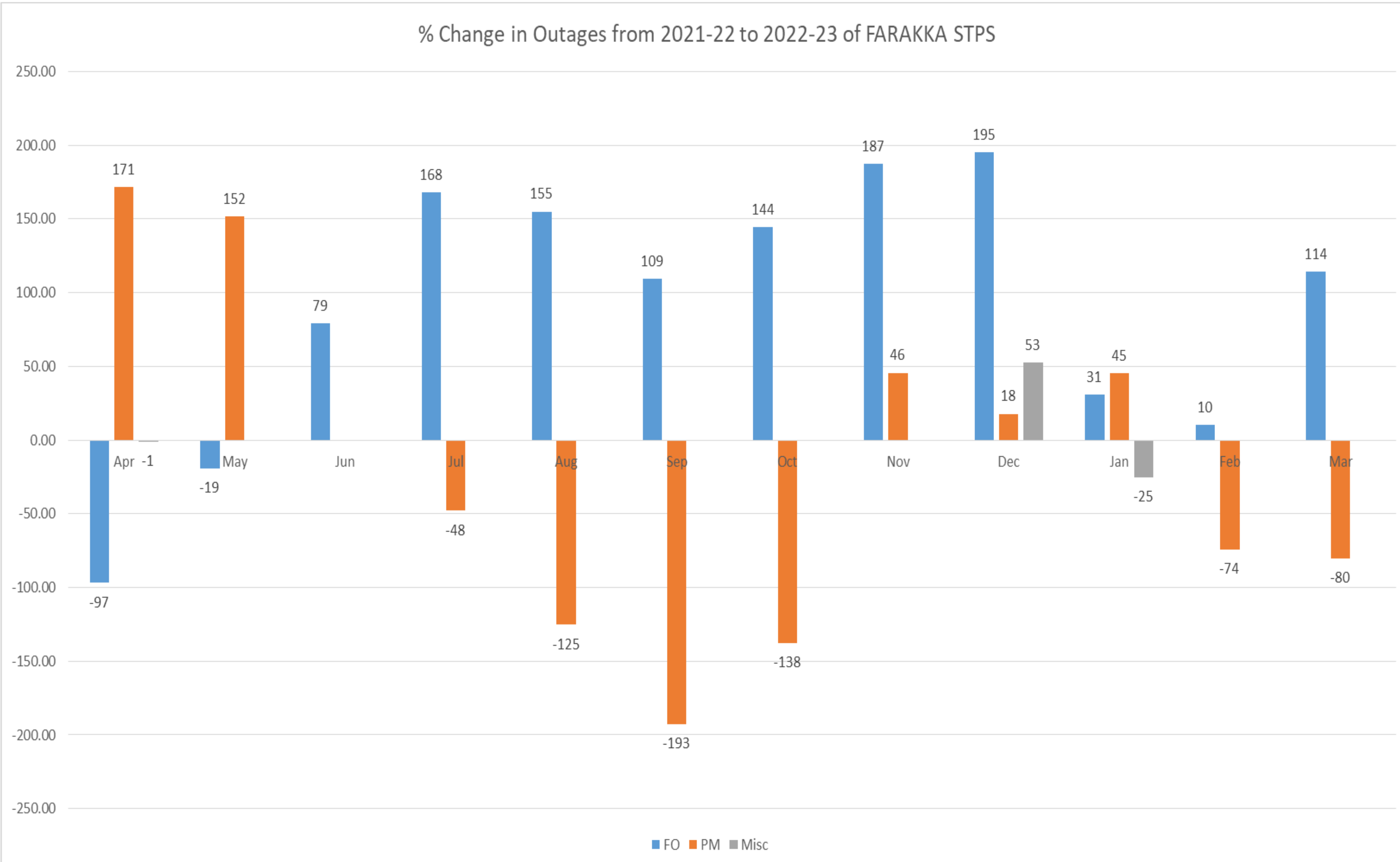


	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 88.16)	84.92	95.44	95.13	92.14	78.63	72.20	80.64	97.68	97.13	94.67	85.04	84.25
PAF 2022-23 (Avg. 78.83)	74.72	77.66	88.99	76.00	74.64	83.74	79.74	65.32	61.48	87.82	94.60	81.20
PLF 2021-22 (Avg. 67.59)	65.96	65.42	69.9	61.17	51.88	53.07	53.84	73.47	77.71	77.13	78.3	83.23
PLF 2022-23 (Avg. 67.59)	73.46	67.31	74.02	59.77	60.48	70.18	59.11	55.62	53.62	75.59	87.46	74.47

PAF 2021-22 (Avg. 88.16) PAF 2022-23 (Avg. 78.83) PLF 2021-22 (Avg. 67.59) PLF 2022-23 (Avg. 67.59)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for FARAKKA STPS
250.00
200.00
150.00
100.00
50.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)



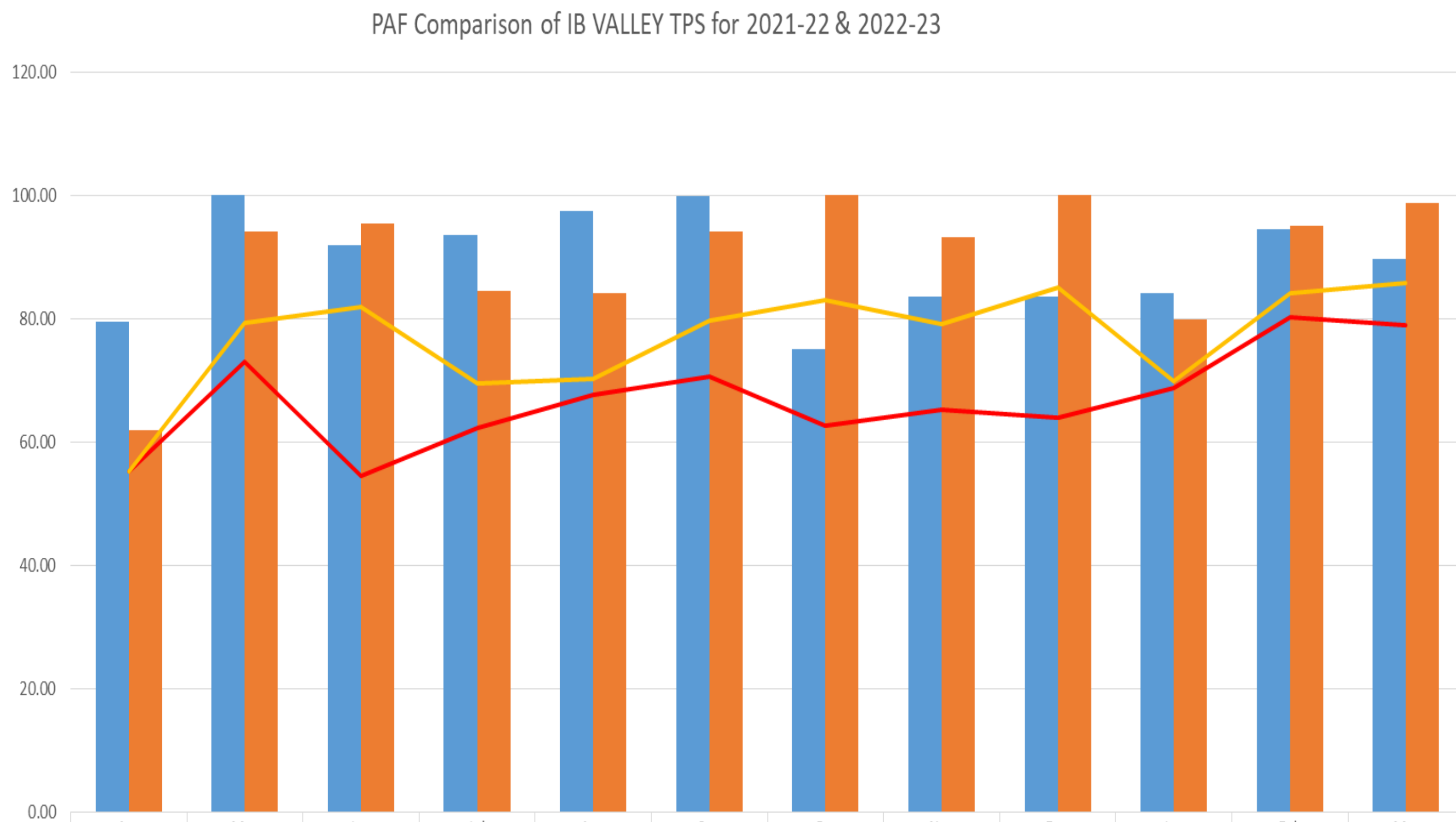
% Change in Outages from 2021-22 to 2022-23 of FARAKKA STPS
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
171
-1
-97
152
-19
79
168
-48
155
-125
109
-193
144
-138
187
46
195
18
53
31
45
-25
10
-74
114
-80
FO
PM
Misc

6. IB VALLEY TPS

	2021-22				2022-23						
IB VALLEY TPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	79.47	55.28	0.70	147.78	61.93	55.26	0.89	274.12	-17.55	2021-22: FO: 147.78; PM: 0; Misc: 0; 2022-23: FO: 1.02; PM: 273.1; Misc: 0;	% Change: FO: -99.31 PM: 27210 Misc: 0
May	100.00	73.12	0.73	0.00	94.06	79.28	0.84	44.18	-5.94	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 17.12; PM: 27.06; Misc: 0;	% Change: FO: - PM: - Misc: -
June	91.91	54.51	0.59	28.72	95.39	82	0.86	33.20	3.48		

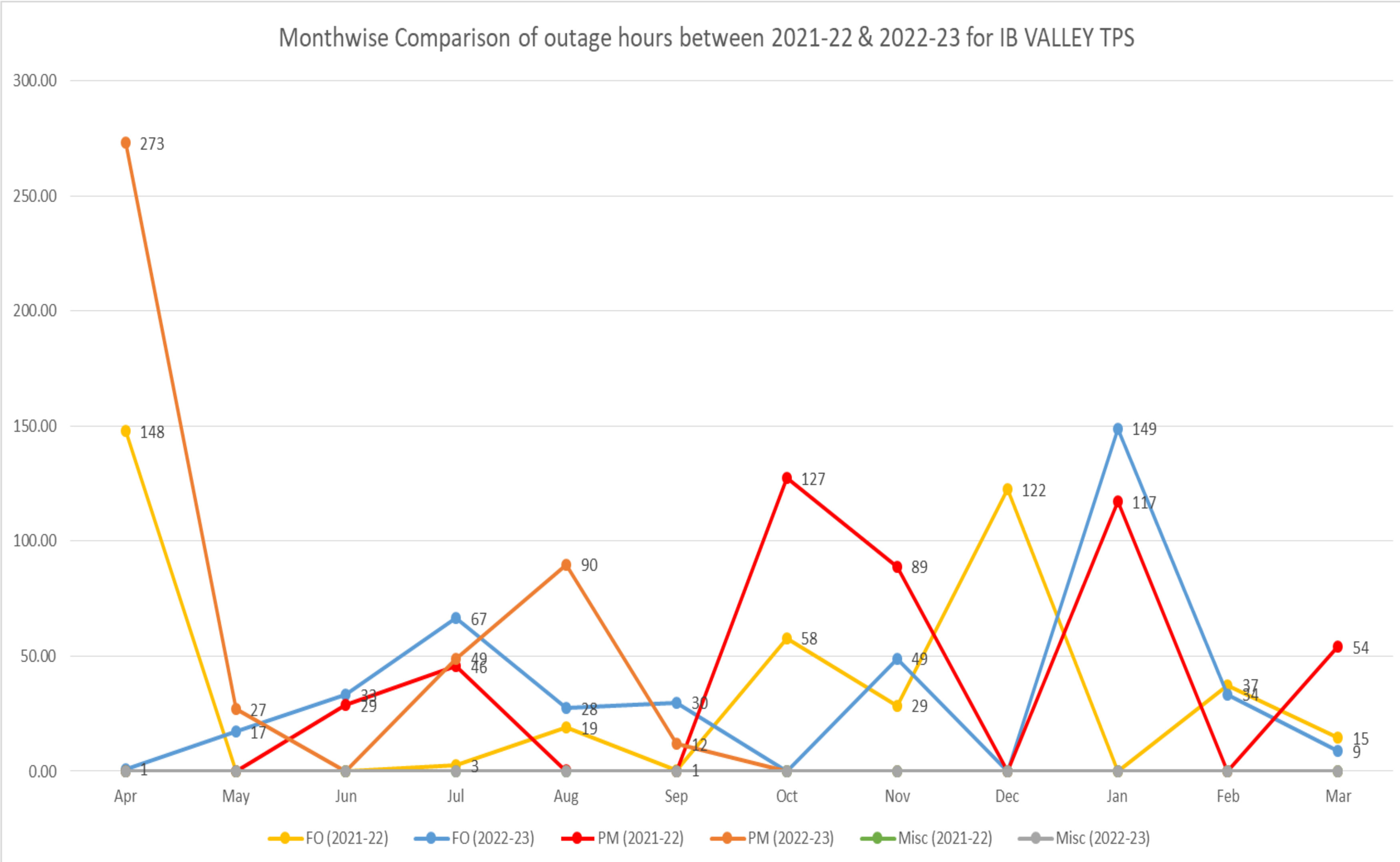
July	93.51	62.28	0.67	48.30	84.48	69.5	0.82	115.50	-9.03	2021-22: FO: 2.65; PM: 45.65; Misc: 0; 2022-23: FO: 66.54; PM: 48.96; Misc: 0;	% Change: FO: 2410.94 PM: 7.25 Misc: 0
August	97.46	67.59	0.69	18.90	84.23	70.26	0.83	117.31	-13.23	2021-22: FO: 18.9; PM: 0; Misc: 0; 2022-23: FO: 27.52; PM: 89.79; Misc: 0;	% Change: FO: 45.61 PM: 8879 Misc: 0
September	99.93	70.63	0.71	0.54	94.22	79.78	0.85	41.64	-5.71	2021-22: FO: 0.54; PM: 0; Misc: 0; 2022-23: FO: 29.87; PM: 11.77; Misc: 0;	% Change: FO: 5431.48 PM: 1077 Misc: 0
October	75.08	62.71	0.84	185.41	100.00	83.12	0.83	0.00	24.92		
November	83.68	65.3	0.78	117.52	93.19	79.18	0.85	49.02	9.51		
December	83.55	63.97	0.77	122.43	100.00	85.16	0.85	0.00	16.45		

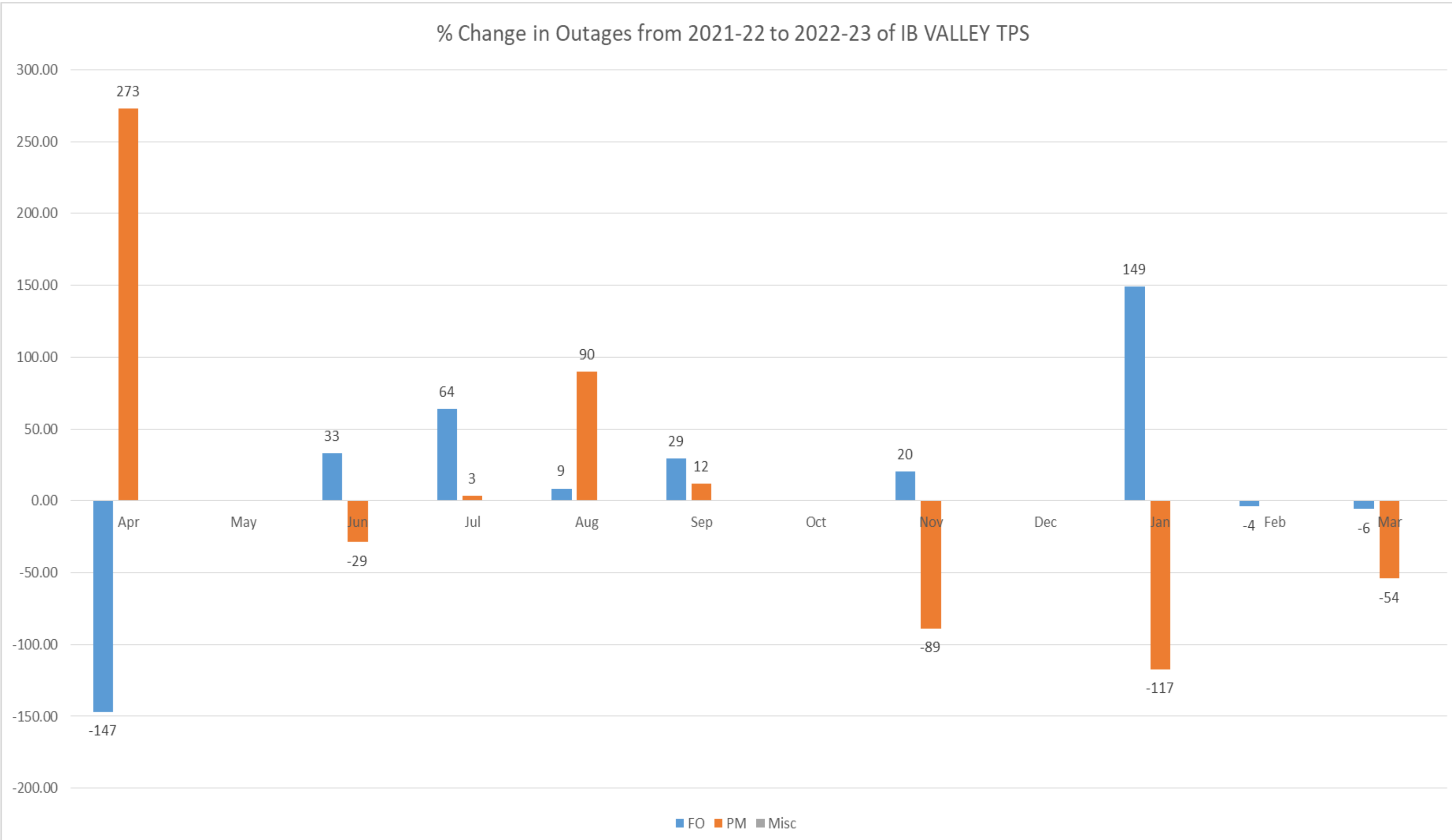
January	84.23	68.83	0.82	117.31	79.97	69.86	0.87	148.99	-4.26	2021-22: FO: 0; PM: 117.31; Misc: 0; 2022-23: FO: 148.99; PM: 0; Misc: 0;	% Change: FO: 14799 PM: -100 Misc: 0
February	94.43	80.31	0.85	37.41	95.02	84.09	0.89	33.50	0.58		
March	89.77	79.01	0.88	68.77	98.80	85.87	0.87	8.89	9.04		



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 89.42)	79.47	100.00	91.91	93.51	97.46	99.93	75.08	83.68	83.55	84.23	94.43	89.77
PAF 2022-23 (Avg. 90.11)	61.93	94.06	95.39	84.48	84.23	94.22	100.00	93.19	100.00	79.97	95.02	98.80
PLF 2021-22 (Avg. 66.96)	55.28	73.12	54.51	62.28	67.59	70.63	62.71	65.3	63.97	68.83	80.31	79.01
PLF 2022-23 (Avg. 76.95)	55.26	79.28	82	69.5	70.26	79.78	83.12	79.18	85.16	69.86	84.09	85.87

PAF 2021-22 (Avg. 89.42) PAF 2022-23 (Avg. 90.11) PLF 2021-22 (Avg. 66.96) PLF 2022-23 (Avg. 76.95)


Monthwise Comparison of outage hours between 2021-22 & 2022-23 for IB VALLEY TPS
300.00
250.00
200.00
150.00
100.00
50.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
273
148
27
17
33
29
67
49
46
3
90
28
19
30
12
1
127
58
89
49
29
122
149
117
37
34
54
15
9
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)



% Change in Outages from 2021-22 to 2022-23 of IB VALLEY TPS
300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
273
-147
33
-29
64
3
9
90
29
12
20
-89
149
-117
-4
-6
-54
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO
PM
Misc

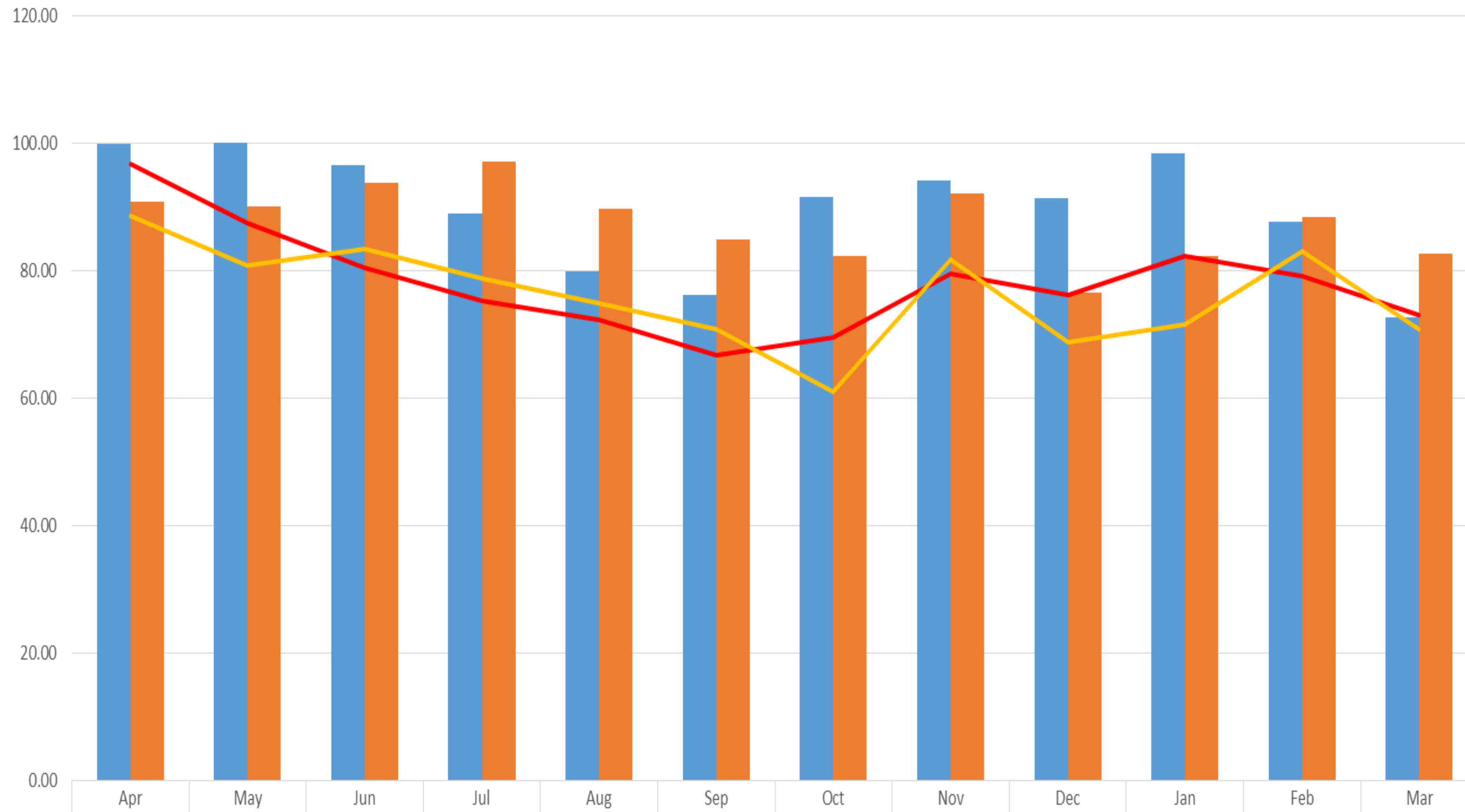
7. KAHALGAON TPS

	2021-22				2022-23						
KAHALGAON TPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	99.82	96.68	0.97	1.27	90.80	88.56	0.98	66.23	-9.02	2021-22: FO: 1.27; PM: 0; Misc: 0; 2022-23: FO: 27.77; PM: 38.46; Misc: 0;	% Change: FO: 2086.61 PM: 3746 Misc: 0
May	100.00	87.45	0.87	0.00	90.06	80.85	0.90	73.97	-9.94	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 73.97; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -

June	96.48	80.38	0.83	25.38	93.68	83.46	0.89	45.47	-2.79	2021-22: FO: 0; PM: 25.38; Misc: 0; 2022-23: FO: 45.47; PM: 0; Misc: 0;	% Change: FO: 4447 PM: -100 Misc: 0
July	88.88	75.33	0.85	82.76	97.15	78.82	0.81	21.19	8.28		
August	79.86	72.31	0.91	149.88	89.70	74.92	0.84	76.66	9.84		
September	76.11	66.66	0.88	172.01	84.94	70.79	0.83	108.44	8.83		
October	91.57	69.49	0.76	62.72	82.34	61.03	0.74	131.42	-9.23	2021-22: FO: 14.07; PM: 48.65; Misc: 0; 2022-23: FO: 131.42; PM: 0; Misc: 0;	% Change: FO: 834.04 PM: -100 Misc: 0
November	94.18	79.59	0.85	41.93	92.05	81.73	0.89	57.21	-2.12	2021-22: FO: 9.99; PM: 31.94; Misc: 0; 2022-23: FO: 15.28; PM: 41.93; Misc: 0;	% Change: FO: 52.95 PM: 31.28 Misc: 0

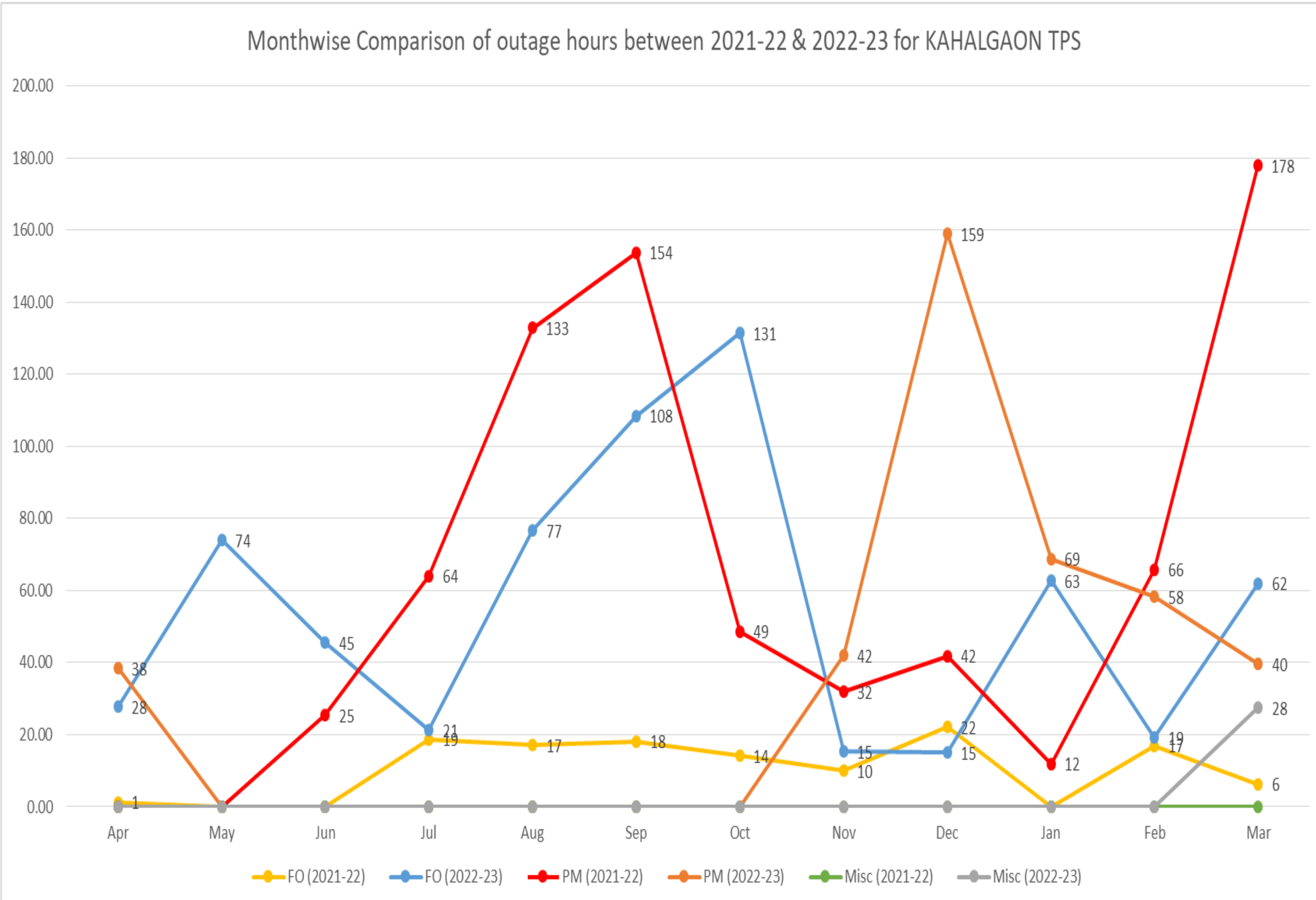
December	91.39	76.26	0.83	64.06	76.61	68.79	0.90	174.05	-14.78	2021-22: FO: 22.18; PM: 41.88; Misc: 0; 2022-23: FO: 15.08; PM: 158.97; Misc: 0;	% Change: FO: -32.01 PM: 279.58 Misc: 0
January	98.40	82.32	0.84	11.90	82.32	71.48	0.87	131.52	-16.08	2021-22: FO: 0; PM: 11.9; Misc: 0; 2022-23: FO: 62.78; PM: 68.74; Misc: 0;	% Change: FO: 6178 PM: 477.65 Misc: 0
February	87.69	79.24	0.90	82.74	88.50	83.09	0.94	77.31	0.81		
March	72.60	72.96	1.01	184.16	82.65	70.81	0.86	129.06	10.06		

PAF Comparison of KAHALGAON TPS for 2021-22 & 2022-23

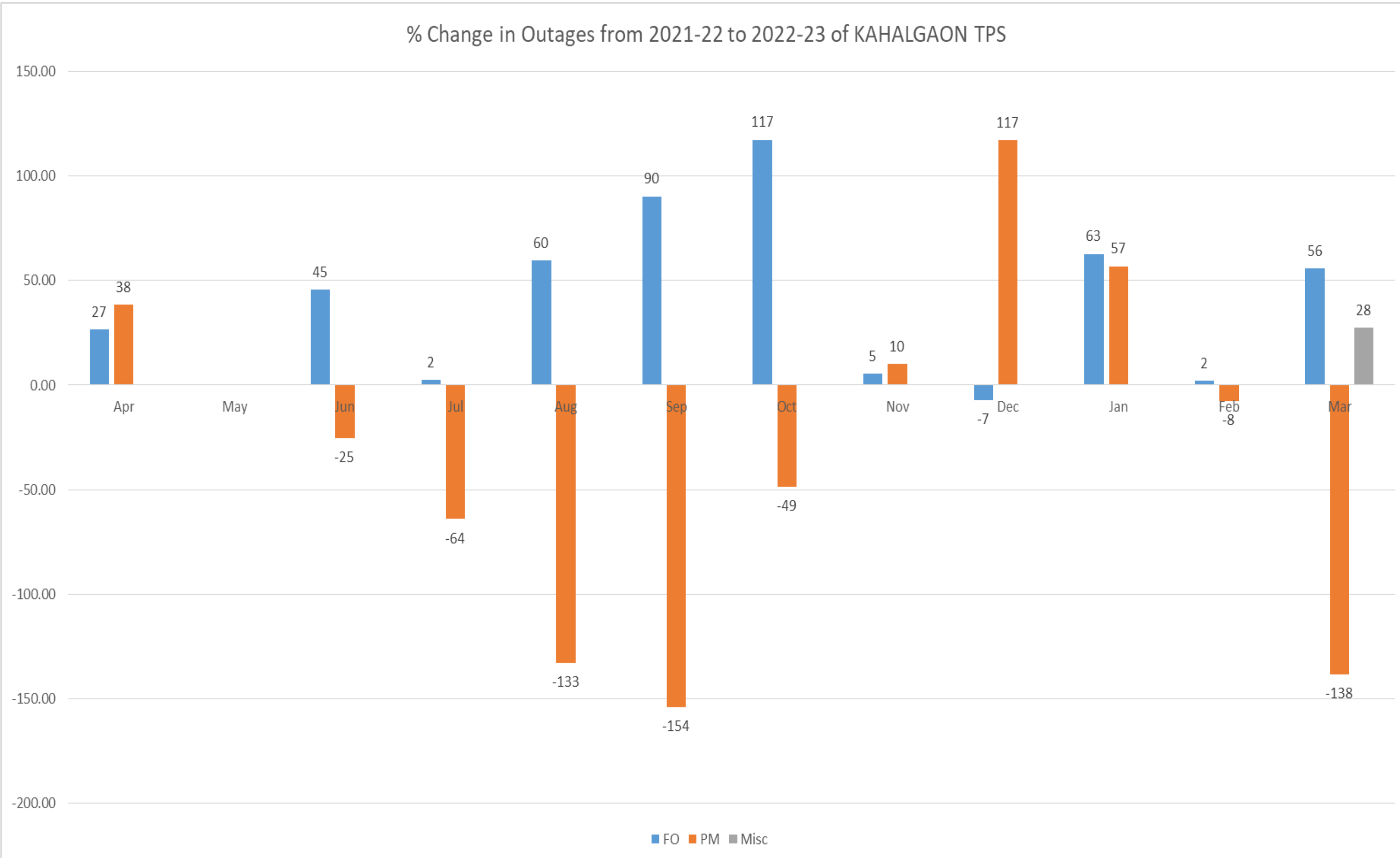


	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 89.75)	99.82	100.00	96.48	88.88	79.86	76.11	91.57	94.18	91.39	98.40	87.69	72.60
PAF 2022-23 (Avg. 87.57)	90.80	90.06	93.68	97.15	89.70	84.94	82.34	92.05	76.61	82.32	88.50	82.65
PLF 2021-22 (Avg. 78.22)	96.68	87.45	80.38	75.33	72.31	66.66	69.49	79.59	76.26	82.32	79.24	72.96
PLF 2022-23 (Avg. 76.19)	88.56	80.85	83.46	78.82	74.92	70.79	61.03	81.73	68.79	71.48	83.09	70.81

PAF 2021-22 (Avg. 89.75) PAF 2022-23 (Avg. 87.57) PLF 2021-22 (Avg. 78.22) PLF 2022-23 (Avg. 76.19)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for KAHALGAON TPS
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)

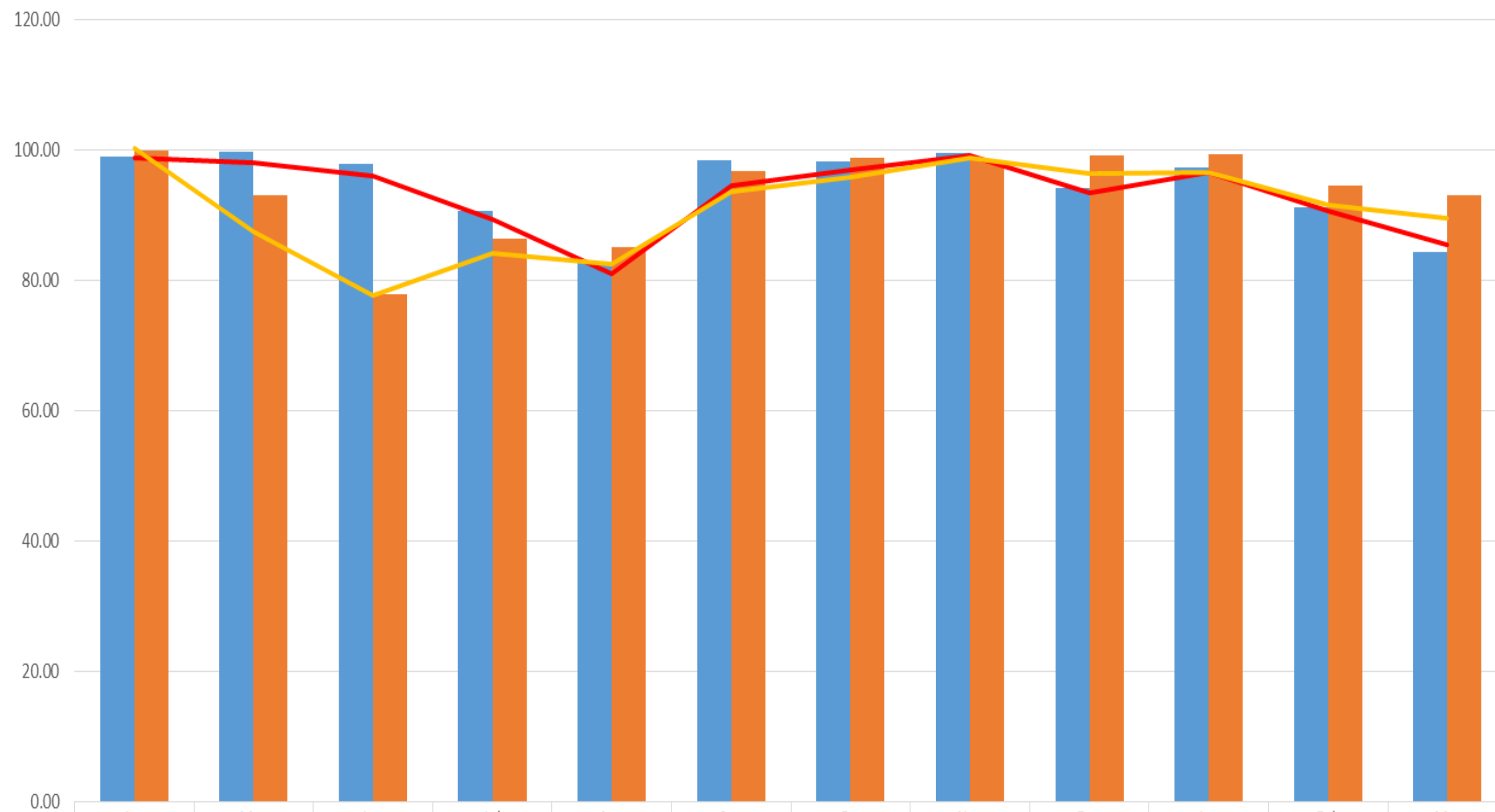

% Change in Outages from 2021-22 to 2022-23 of KAHALGAON TPS
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
27
38
45
-25
2
-64
60
-133
90
-154
117
-49
5
10
-7
117
63
57
2
-8
56
-138
28
FO
PM
Misc

8. KORBA STPS

	2021-22				2022-23						
KORBA STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	98.97	98.73	1.00	7.39	99.96	100.31	1.00	0.30	0.98		
May	99.68	98.11	0.98	2.35	92.99	87.45	0.94	52.14	-6.69	2021-22: FO: 2.35; PM: 0; Misc: 0; 2022-23: FO: 15.19; PM: 36.95; Misc: 0;	% Change: FO: 546.38 PM: 3595 Misc: 0
June	97.88	95.97	0.98	0.00	77.88	77.59	1.00	159.24	-20.00	2021-22: FO: 0; PM: 0; Misc: 0; 2022-23: FO: 20.78; PM: 138.46; Misc: 0;	% Change: FO: 1978 PM: 13746 Misc: 0

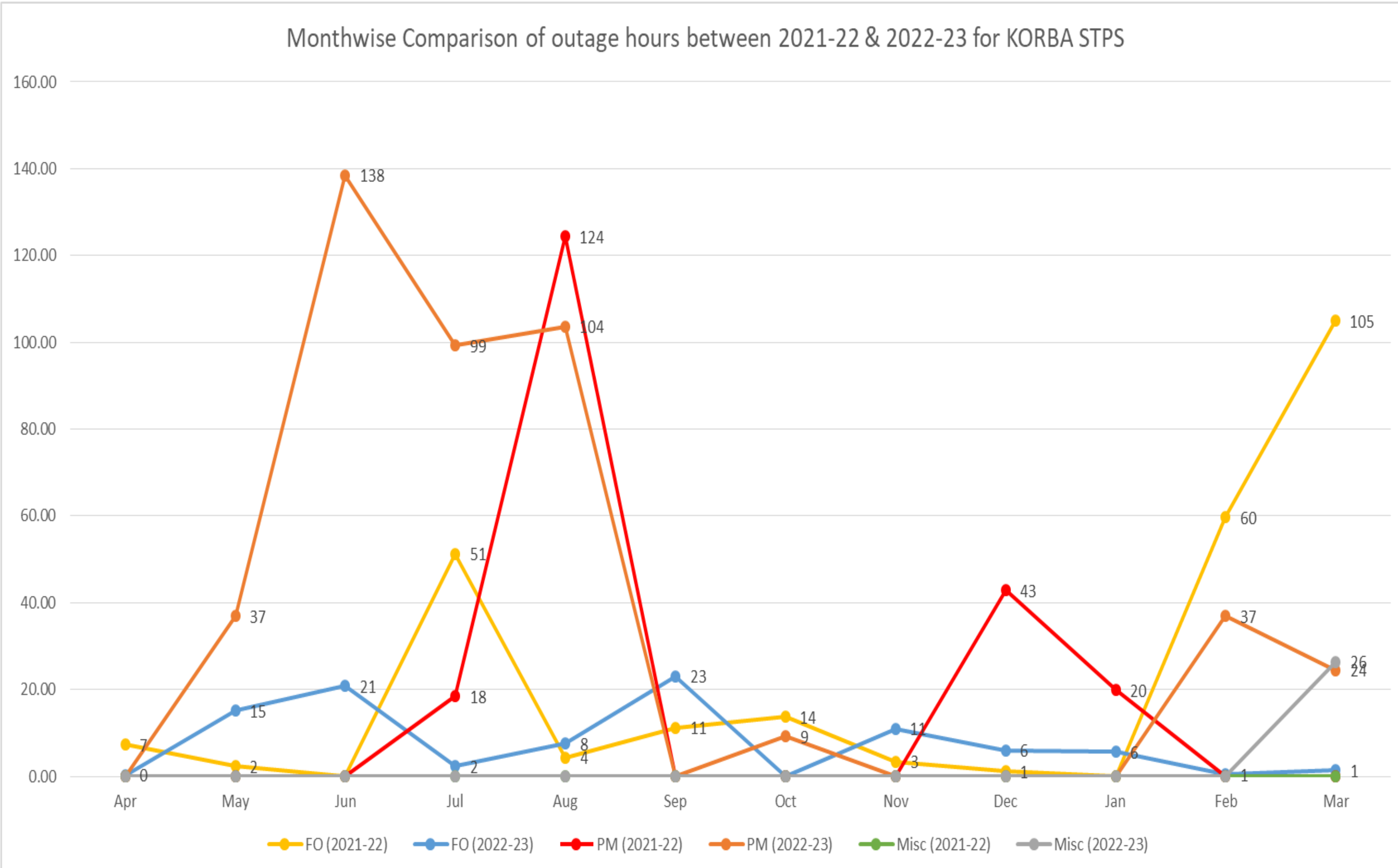
July	90.62	89.29	0.99	69.76	86.35	84.09	0.97	101.56	-4.27	2021-22: FO: 51.3; PM: 18.46; Misc: 0; 2022-23: FO: 2.32; PM: 99.24; Misc: 0;	% Change: FO: -95.48 PM: 437.59 Misc: 0
August	82.70	80.97	0.98	128.72	85.04	82.55	0.97	111.32	2.34		
September	98.43	94.56	0.96	11.28	96.80	93.57	0.97	23.07	-1.64	2021-22: FO: 11.28; PM: 0; Misc: 0; 2022-23: FO: 23.07; PM: 0; Misc: 0;	% Change: FO: 104.52 PM: 0 Misc: 0
October	98.15	96.86	0.99	13.78	98.75	95.77	0.97	9.28	0.60		
November	99.52	99.13	1.00	3.45	98.47	98.75	1.00	11.00	-1.05	2021-22: FO: 3.45; PM: 0; Misc: 0; 2022-23: FO: 11; PM: 0; Misc: 0;	% Change: FO: 218.84 PM: 0 Misc: 0
December	94.07	93.43	0.99	44.09	99.19	96.33	0.97	5.99	5.12		
January	97.33	96.48	0.99	19.86	99.24	96.55	0.97	5.69	1.91		
February	91.11	90.66	1.00	59.76	94.43	91.52	0.97	37.43	3.32		
March	84.38	85.41	1.01	105.00	92.96	89.49	0.96	52.35	8.59		

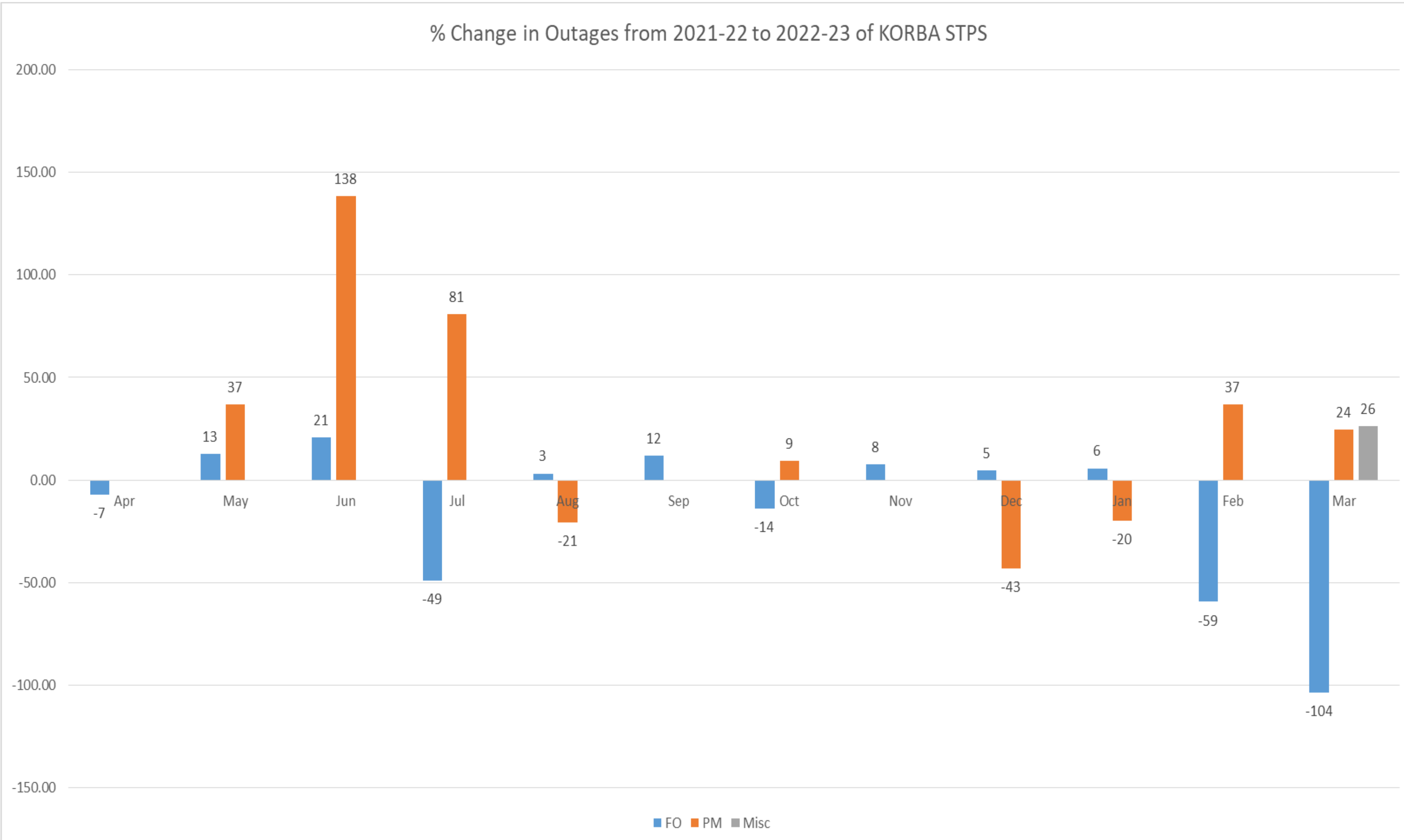
PAF Comparison of KORBA STPS for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 94.4)	98.97	99.68	97.88	90.62	82.70	98.43	98.15	99.52	94.07	97.33	91.11	84.38
PAF 2022-23 (Avg. 93.51)	99.96	92.99	77.88	86.35	85.04	96.80	98.75	98.47	99.19	99.24	94.43	92.96
PLF 2021-22 (Avg. 93.3)	98.73	98.11	95.97	89.29	80.97	94.56	96.86	99.13	93.43	96.48	90.66	85.41
PLF 2022-23 (Avg. 91.16)	100.31	87.45	77.59	84.09	82.55	93.57	95.77	98.75	96.33	96.55	91.52	89.49

PAF 2021-22 (Avg. 94.4) PAF 2022-23 (Avg. 93.51) PLF 2021-22 (Avg. 93.3) PLF 2022-23 (Avg. 91.16)


Monthwise Comparison of outage hours between 2021-22 & 2022-23 for KORBA STPS
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)


% Change in Outages from 2021-22 to 2022-23 of KORBA STPS
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
-7
13
37
21
138
-49
81
3
-21
12
-14
9
8
5
-43
6
-20
-59
37
-104
24
26
FO
PM
Misc

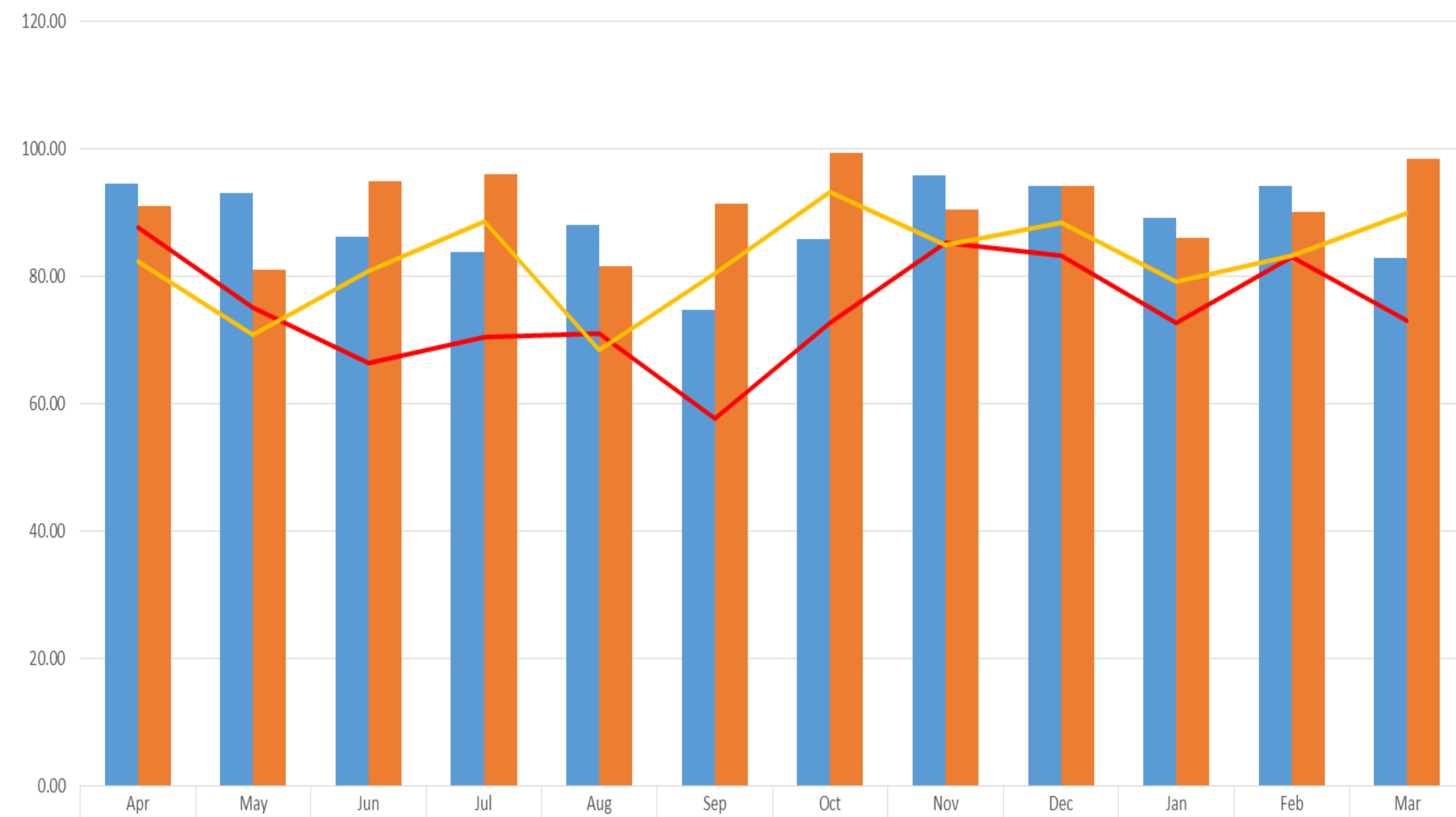
9. KORBA-WEST TPS

	2021-22				2022-23						
KORBA-WEST TPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	94.46	87.59	0.93	39.89	90.99	82.29	0.90	64.89	-3.47	2021-22: FO: 37.78; PM: 0; Misc: 2.11; 2022-23: FO: 8.47; PM: 56.42; Misc: 0;	% Change: FO: -77.58 PM: 5542 Misc: -100
May	93.08	75.1	0.81	51.48	80.98	70.88	0.88	141.48	-12.10	2021-22: FO: 22.88; PM: 0; Misc: 28.6; 2022-23: FO: 24.88; PM: 116.6; Misc: 0;	% Change: FO: 8.74 PM: 11560 Misc: -100
June	86.11	66.38	0.77	60.40	94.89	80.83	0.85	36.80	8.78		
July	83.78	70.52	0.84	120.66	95.98	88.57	0.92	29.87	12.20		

August	87.99	70.95	0.81	89.32	81.63	68.37	0.84	136.69	-6.37	2021-22: FO: 59.25; PM: 30.07; Misc: 0; 2022-23: FO: 132.51; PM: 0; Misc: 4.18;	% Change: FO: 123.65 PM: -100 Misc: 318
September	74.79	57.68	0.77	181.54	91.33	80.48	0.88	62.46	16.54		
October	85.91	72.66	0.85	104.85	99.29	93.17	0.94	5.25	13.39		
November	95.85	85.34	0.89	29.85	90.36	84.96	0.94	69.43	-5.50	2021-22: FO: 19.17; PM: 10.68; Misc: 0; 2022-23: FO: 13.08; PM: 56.35; Misc: 0;	% Change: FO: -31.77 PM: 427.62 Misc: 0
December	94.18	83.2	0.88	43.31	94.21	88.39	0.94	43.05	0.03		
January	89.12	72.62	0.81	80.93	85.92	79.13	0.92	104.73	-3.20	2021-22: FO: 47.44; PM: 33.49; Misc: 0; 2022-23: FO: 37.03; PM: 67.7; Misc: 0;	% Change: FO: -21.94 PM: 102.15 Misc: 0

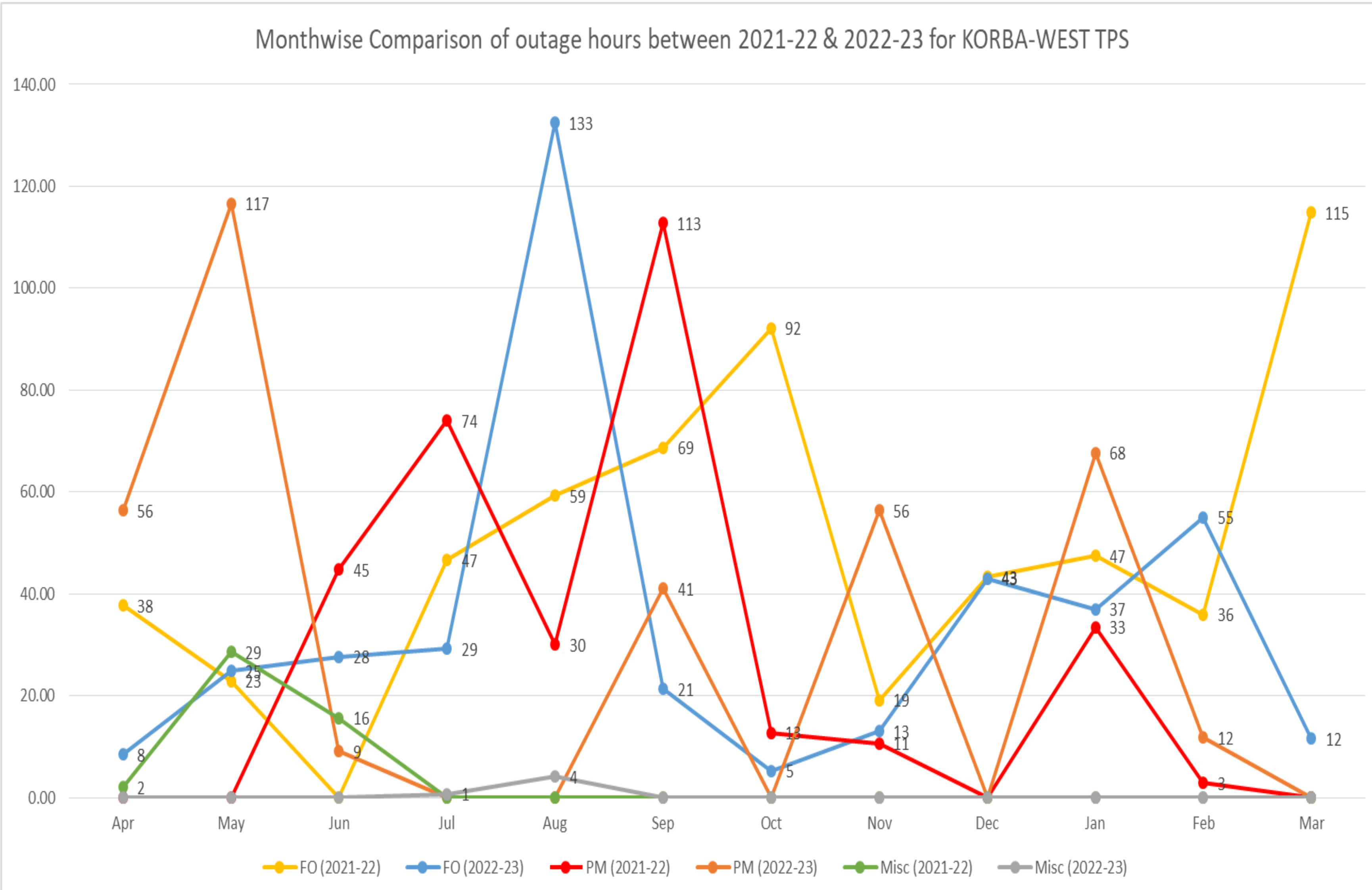
February	94.21	83.02	0.88	38.92	90.06	83.24	0.92	66.80	-4.15	2021-22: FO: 35.99; PM: 2.93; Misc: 0; 2022-23: FO: 55.05; PM: 11.75; Misc: 0;	% Change: FO: 52.96 PM: 301.02 Misc: 0
March	82.90	73.04	0.88	114.90	98.44	89.91	0.91	11.63	15.54		

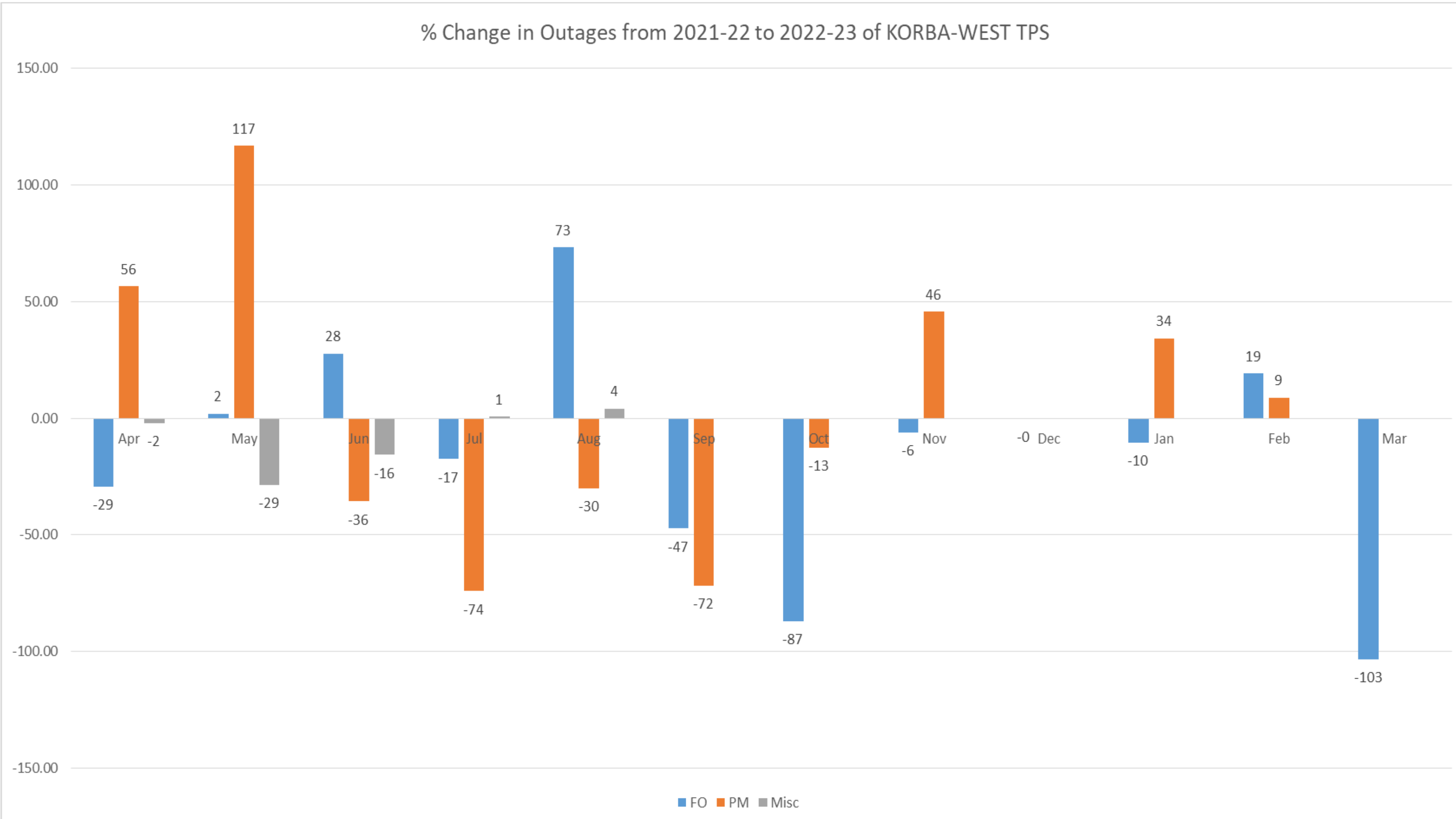
PAF Comparison of KORBA-WEST TPS for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 88.53)	94.46	93.08	86.11	83.78	87.99	74.79	85.91	95.85	94.18	89.12	94.21	82.90
PAF 2022-23 (Avg. 91.17)	90.99	80.98	94.89	95.98	81.63	91.33	99.29	90.36	94.21	85.92	90.06	98.44
PLF 2021-22 (Avg. 74.84)	87.59	75.1	66.38	70.52	70.95	57.68	72.66	85.34	83.2	72.62	83.02	73.04
PLF 2022-23 (Avg. 82.52)	82.29	70.88	80.83	88.57	68.37	80.48	93.17	84.96	88.39	79.13	83.24	89.91

PAF 2021-22 (Avg. 88.53) PAF 2022-23 (Avg. 91.17) PLF 2021-22 (Avg. 74.84) PLF 2022-23 (Avg. 82.52)


Monthwise Comparison of outage hours between 2021-22 & 2022-23 for KORBA-WEST TPS
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)



% Change in Outages from 2021-22 to 2022-23 of KORBA-WEST TPS
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
56
-29
-2
2
117
-29
28
-36
-16
-17
-74
1
73
-30
4
-47
-72
-87
-13
-6
46
-0
-10
34
19
9
-103
FO
PM
Misc

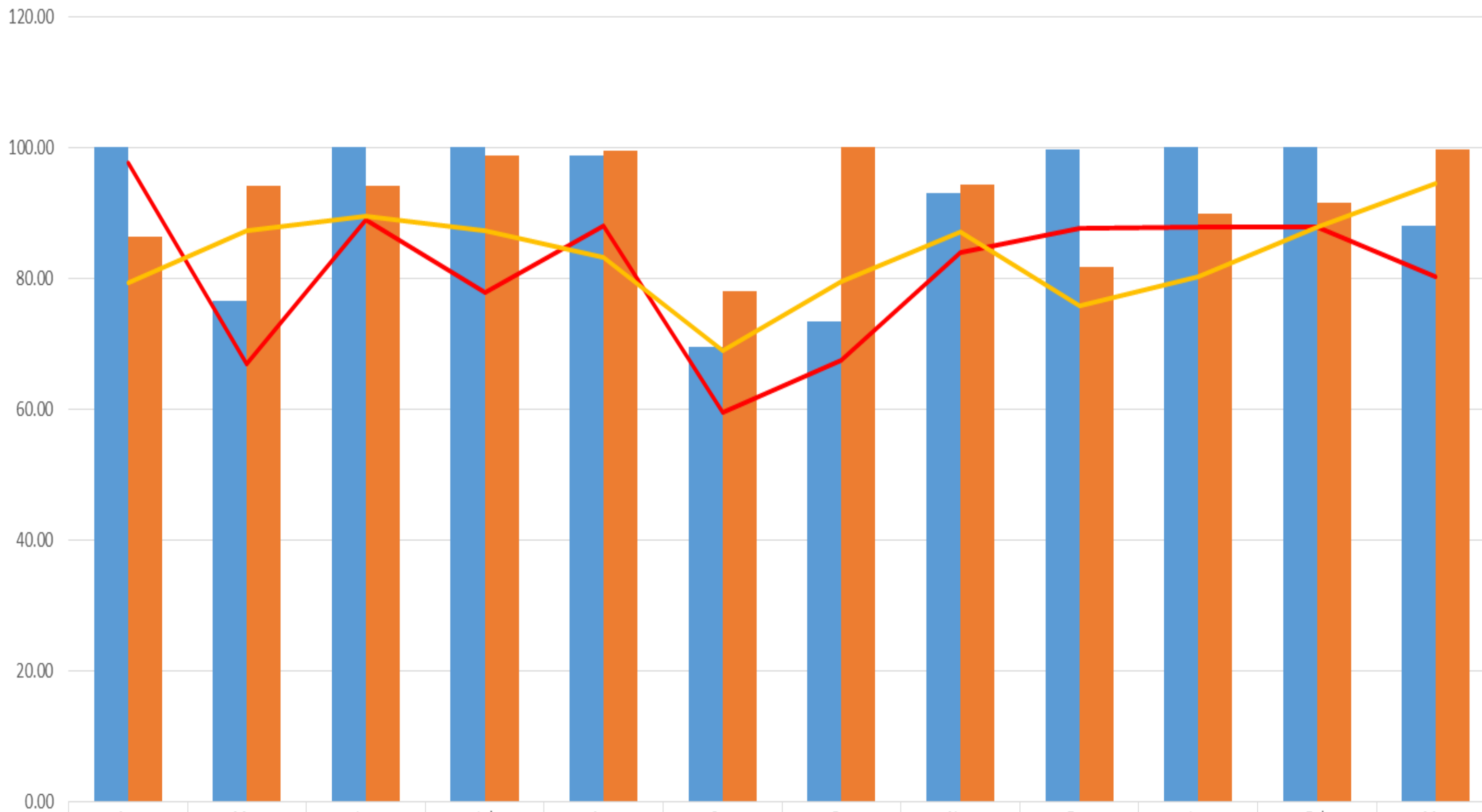
10. LARA TPP

	2021-22				2022-23						
LARA TPP	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	100.00	97.73	0.98	0.00	86.43	79.25	0.92	97.69	-13.57	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 94.02; PM: 3.67; Misc: 0;	% Change: FO: - PM: - Misc: -
May	76.57	66.95	0.87	174.30	94.16	87.31	0.93	43.43	17.59		
June	100.00	89.04	0.89	0.00	94.20	89.55	0.95	41.77	-5.80	2021-22: FO: 0; PM: -; Misc: -; 2022-23: FO: 41.77; PM: 0; Misc: 0;	% Change: FO: 4077 PM: - Misc: -

July	100.00	77.9	0.78	0.00	98.74	87.26	0.88	9.36	-1.26	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 9.36; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -
August	98.81	88.01	0.89	8.86	99.45	83.22	0.84	4.08	0.64		
September	69.54	59.46	0.86	219.34	78.03	68.99	0.88	158.17	8.50		
October	73.41	67.41	0.92	197.83	100.00	79.46	0.79	0.00	26.59		
November	93.06	83.93	0.90	49.98	94.39	87.04	0.92	40.37	1.34		
December	99.69	87.67	0.88	2.31	81.72	75.85	0.93	135.99	-17.97	2021-22: FO: 2.31; PM: 0; Misc: 0; 2022-23: FO: 0; PM: 135.99; Misc: 0;	% Change: FO: -100 PM: 13499 Misc: 0

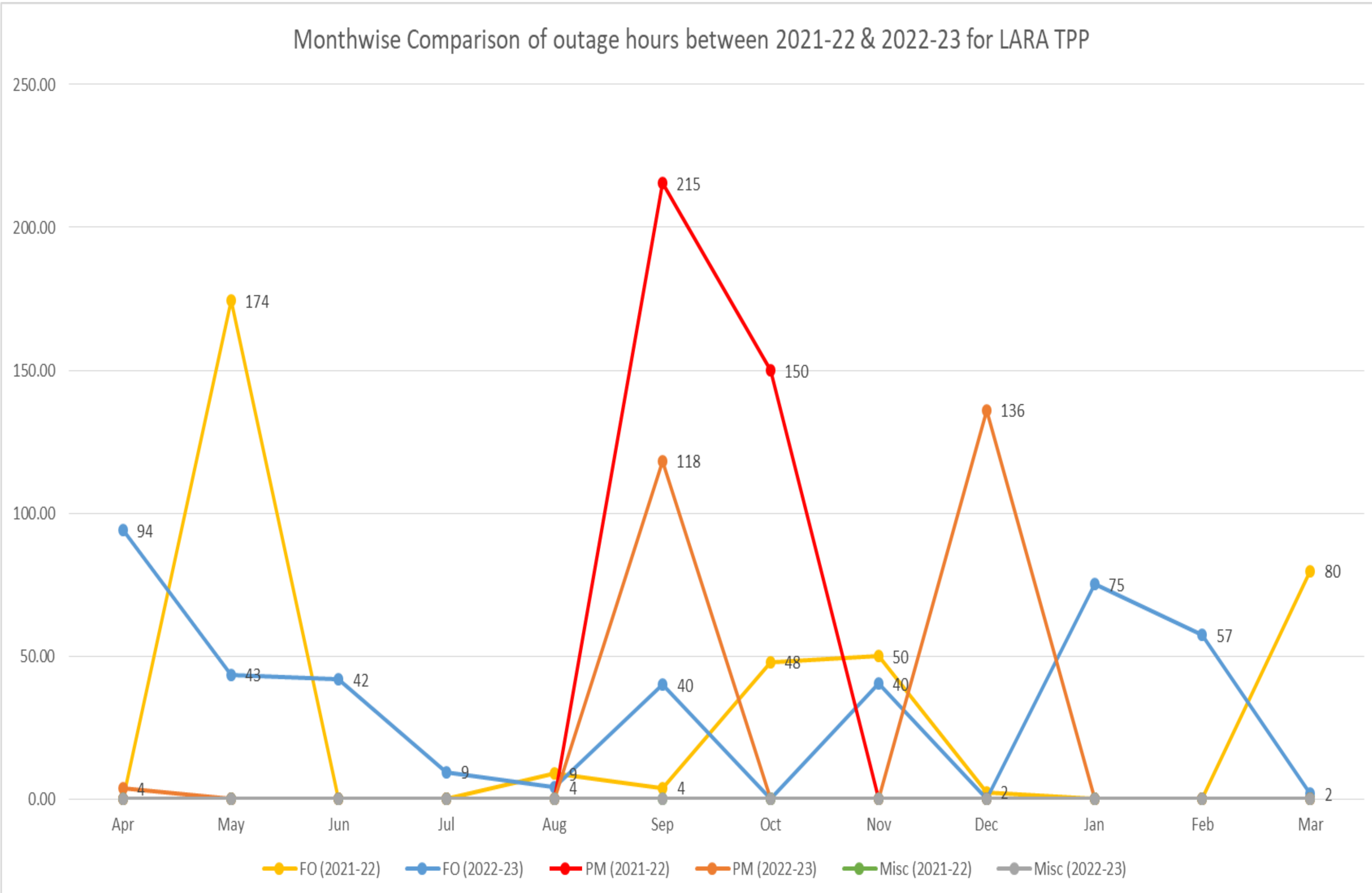
January	100.00	87.79	0.88	0.00	89.91	80.3	0.89	75.03	-10.09	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 75.03; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -
February	100.00	87.77	0.88	0.00	91.47	87.79	0.96	57.31	-8.53	2021-22: FO: -; PM: -; Misc: -; 2022-23: FO: 57.31; PM: 0; Misc: 0;	% Change: FO: - PM: - Misc: -
March	88.12	80.3	0.91	79.83	99.75	94.6	0.95	1.85	11.63		

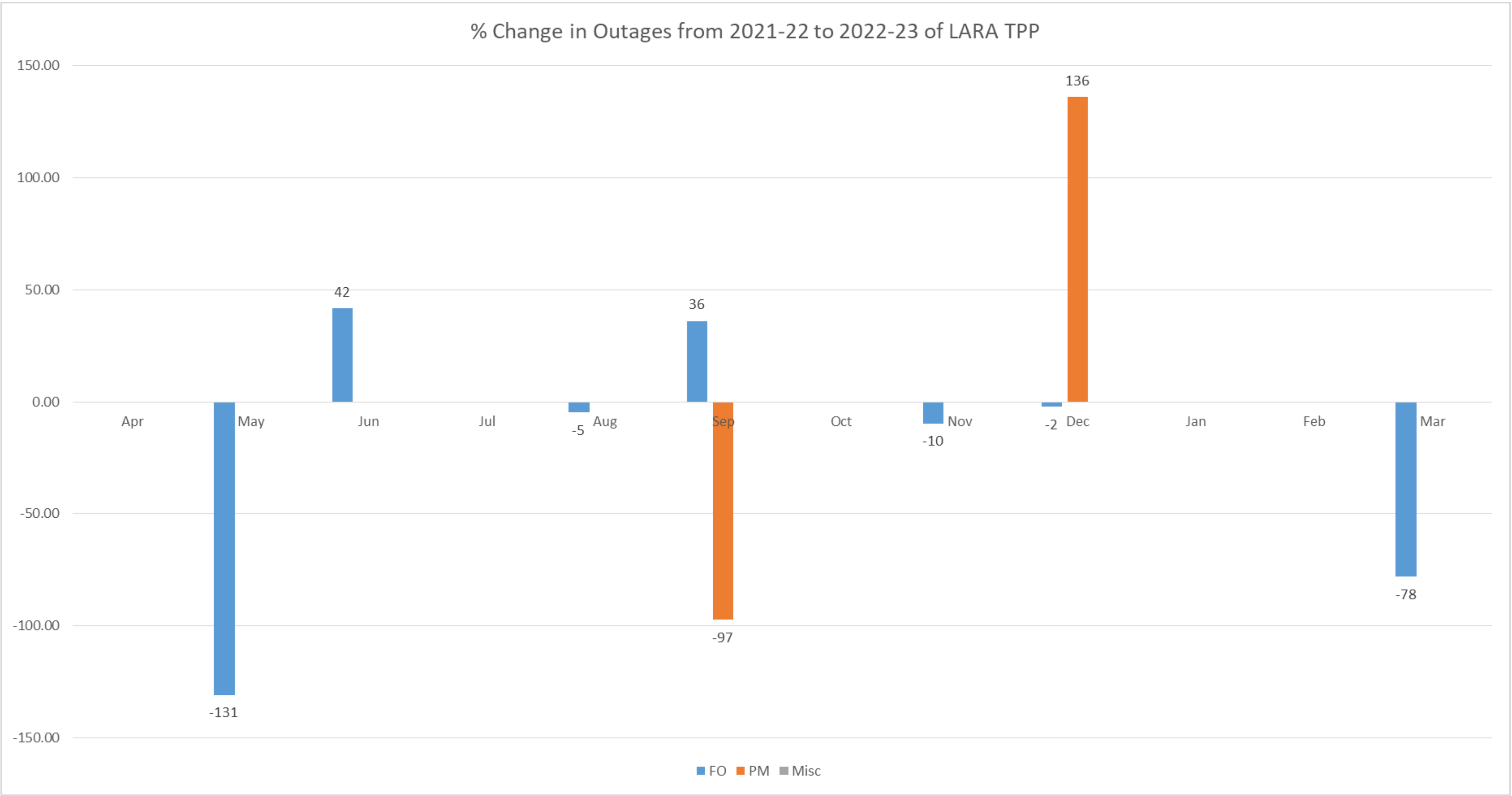
PAF Comparison of LARA TPP for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 91.6)	100.00	76.57	100.00	100.00	98.81	69.54	73.41	93.06	99.69	100.00	100.00	88.12
PAF 2022-23 (Avg. 92.36)	86.43	94.16	94.20	98.74	99.45	78.03	100.00	94.39	81.72	89.91	91.47	99.75
PLF 2021-22 (Avg. 81.16)	97.73	66.95	89.04	77.9	88.01	59.46	67.41	83.93	87.67	87.79	87.77	80.3
PLF 2022-23 (Avg. 83.39)	79.25	87.31	89.55	87.26	83.22	68.99	79.46	87.04	75.85	80.3	87.79	94.6

PAF 2021-22 (Avg. 91.6) PAF 2022-23 (Avg. 92.36) PLF 2021-22 (Avg. 81.16) PLF 2022-23 (Avg. 83.39)

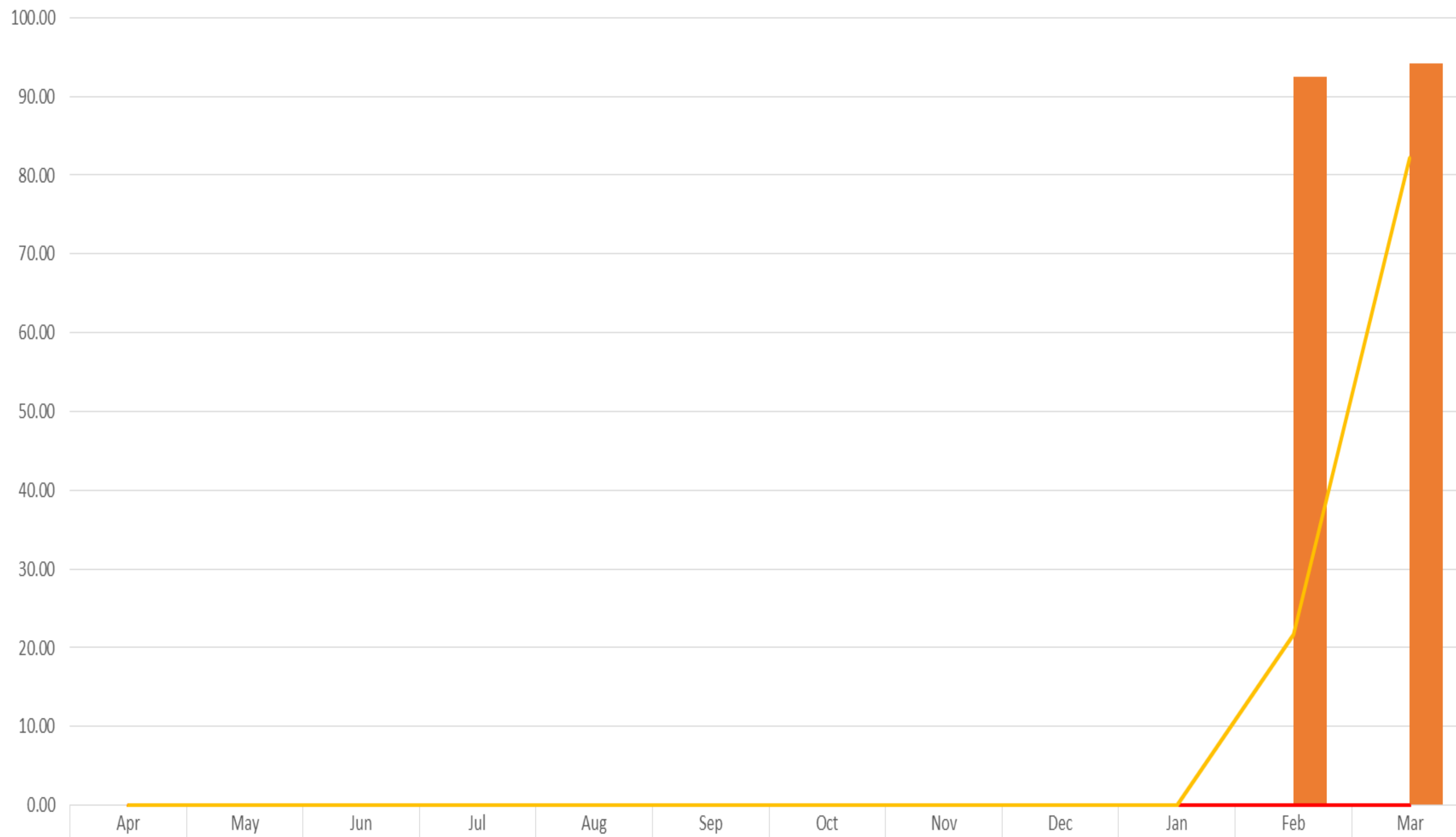

Monthwise Comparison of outage hours between 2021-22 & 2022-23 for LARA TPP
250.00
200.00
150.00
100.00
50.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
215
174
150
136
118
94
80
75
57
50
48
43
42
40
40
9
9
4
4
4
2
2
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)


% Change in Outages from 2021-22 to 2022-23 of LARA TPP
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
-131
42
-5
36
-97
-10
-2
136
-78
FO
PM
Misc

11. NORTH KARANPURA TPP

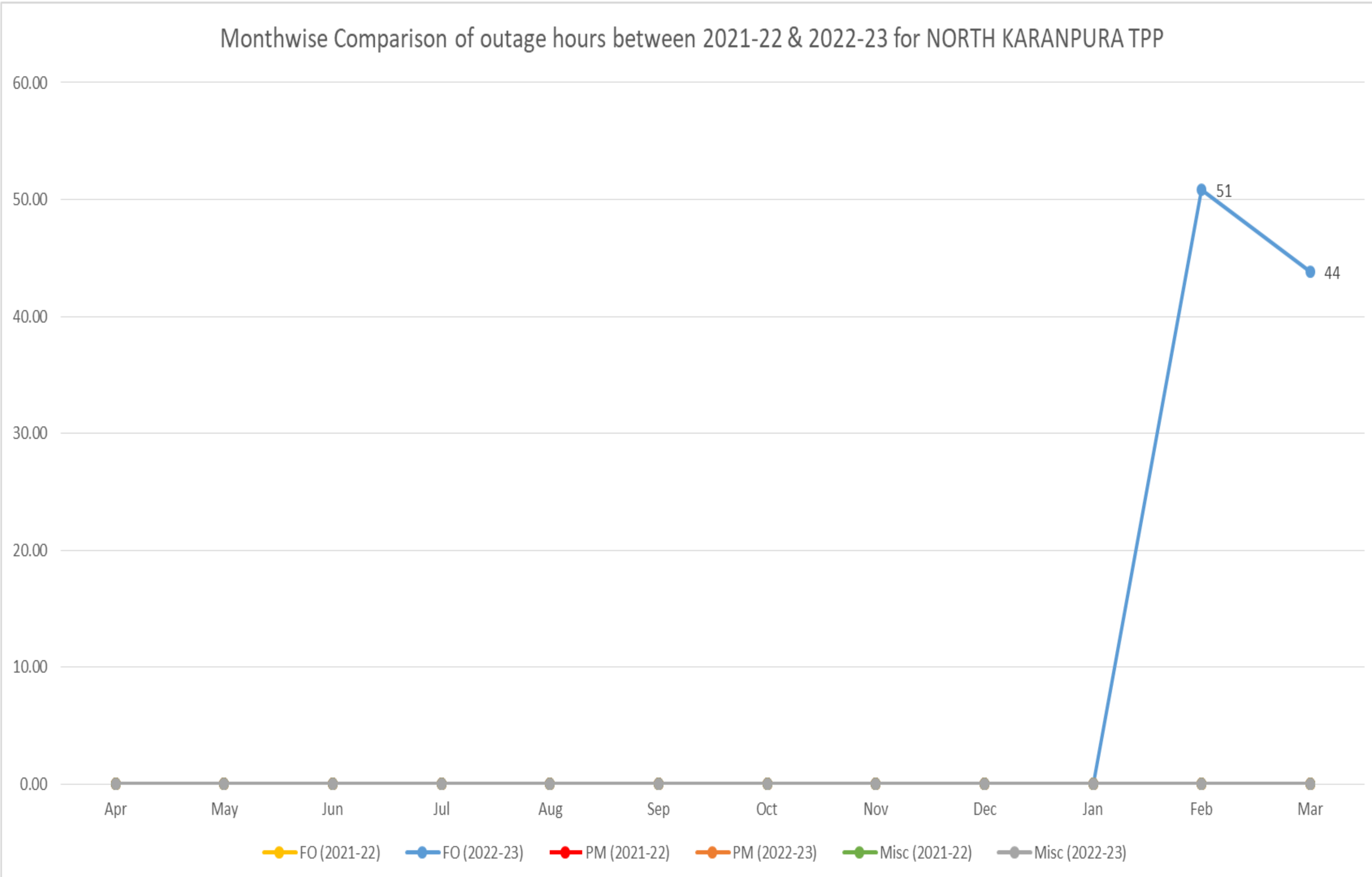
	2021-22				2022-23						
NORTH KARANPURA TPP	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
May	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
June	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
July	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
August	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
September	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
October	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
November	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
December	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
January	0.00	0	-	0.00	0.00	0	-	0.00	0.00		
February	0.00	0	-	0.00	92.44	21.65	0.23	50.80	92.44		
March	0.00	0	-	0.00	94.11	82.14	0.87	43.80	94.11		

PAF Comparison of NORTH KARANPURA TPP for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 0)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PAF 2022-23 (Avg. 15.55)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.44	94.11
PLF 2021-22 (Avg. 0)	0	0	0	0	0	0	0	0	0	0	0	0
PLF 2022-23 (Avg. 8.65)	0	0	0	0	0	0	0	0	0	0	21.65	82.14

PAF 2021-22 (Avg. 0) PAF 2022-23 (Avg. 15.55) PLF 2021-22 (Avg. 0) PLF 2022-23 (Avg. 8.65)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for NORTH KARANPURA TPP
60.00
50.00
40.00
30.00
20.00
10.00
0.00
51
44
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)

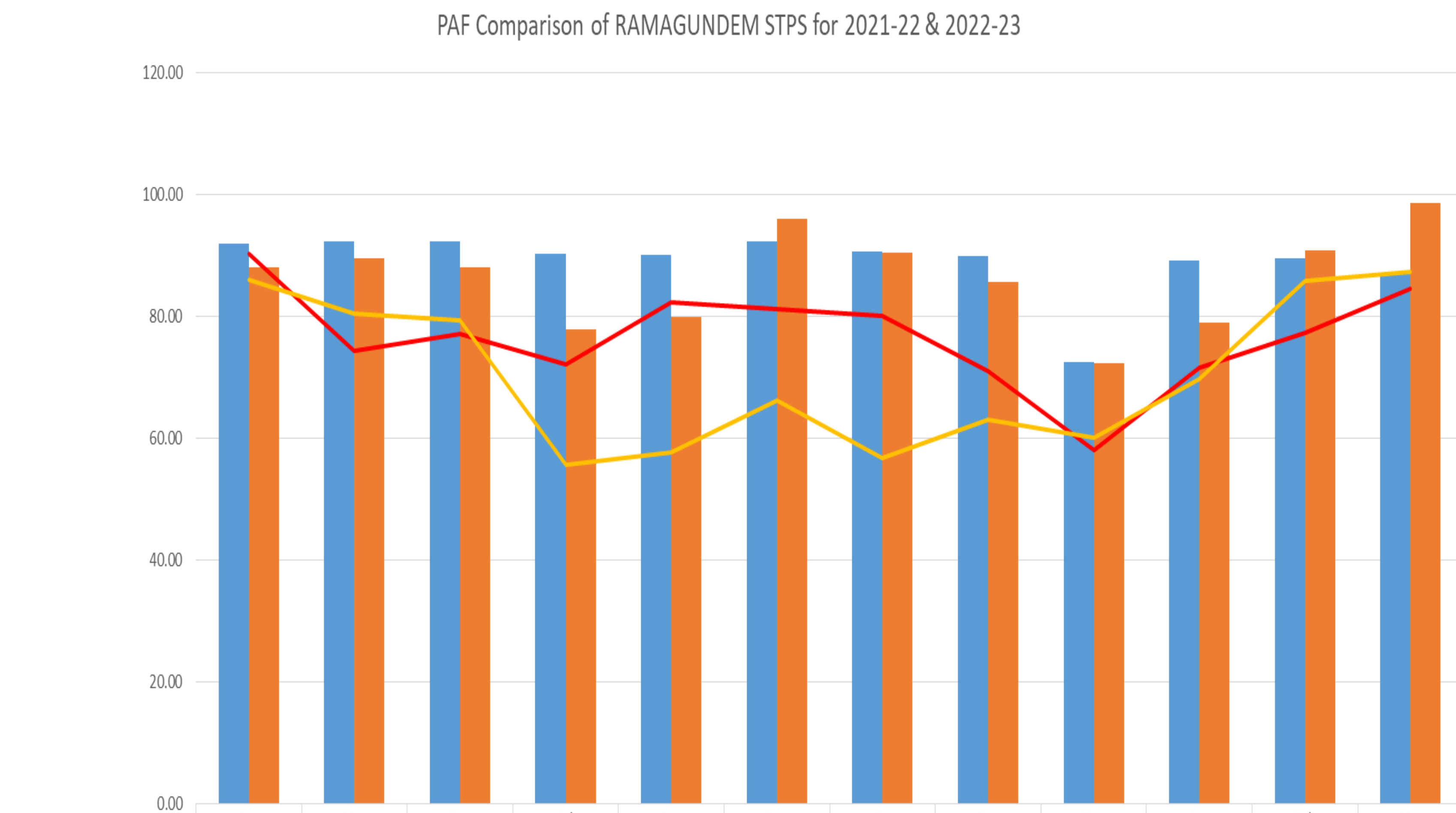
12. RAMAGUNDEM STPS

	2021-22				2022-23						
RAMAGUNDEM STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	91.86	90.34	0.98	58.61	88.07	86.08	0.98	85.89	-3.79	2021-22: FO: 3.23; PM: 55.38; Misc: 0; 2022-23: FO: 27.24; PM: 55.38; Misc: 3.27;	% Change: FO: 743.34 PM: 0 Misc: 227
May	92.31	74.39	0.81	57.23	89.52	80.36	0.90	78.00	-2.79	2021-22: FO: 0; PM: 57.23; Misc: 0; 2022-23: FO: 25.34; PM: 52.66; Misc: 0;	% Change: FO: 2434 PM: -7.99 Misc: 0

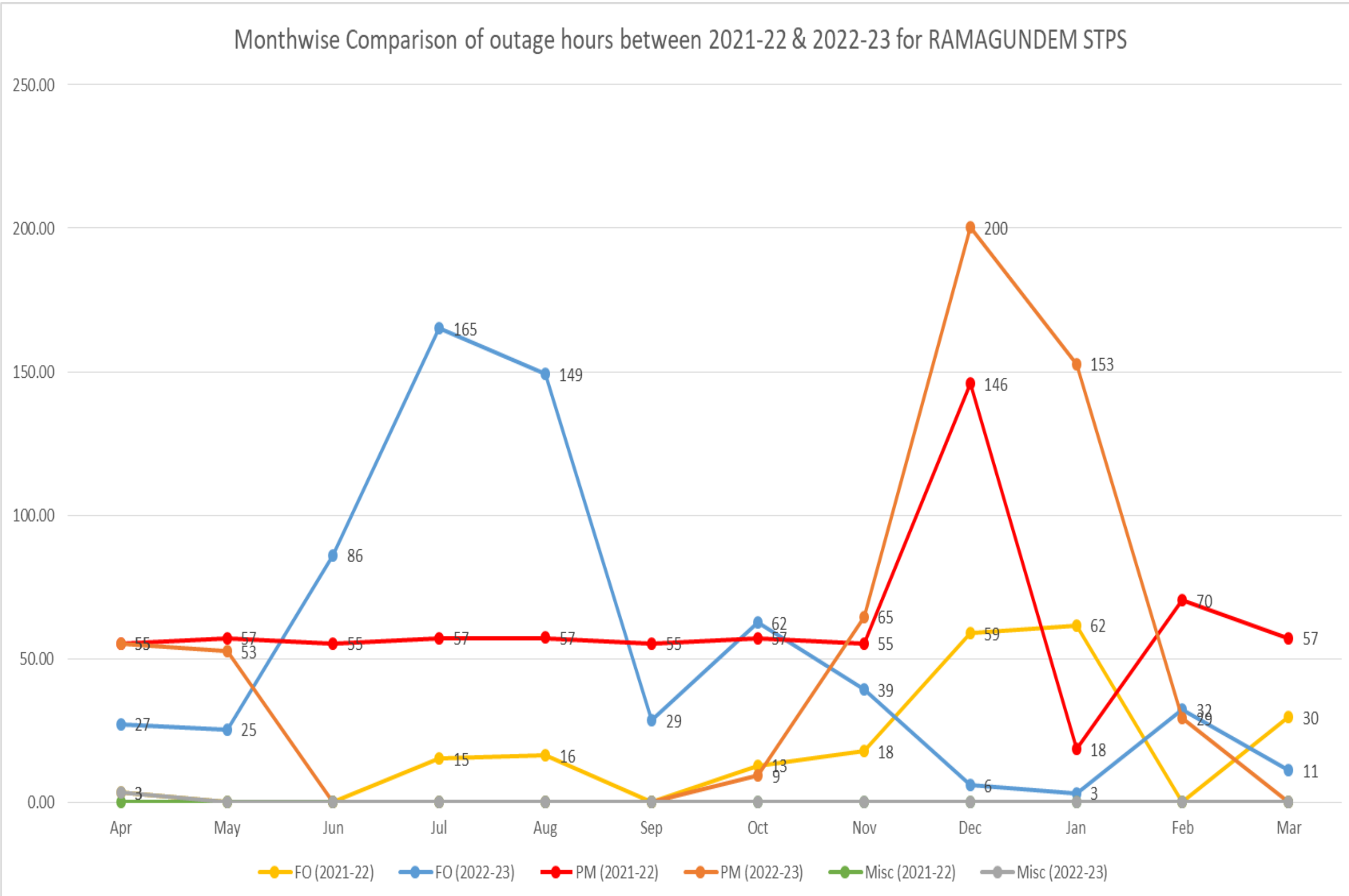
June	92.31	77.13	0.84	55.38	88.06	79.25	0.90	85.99	-4.25	2021-22: FO: 0; PM: 55.38; Misc: 0; 2022-23: FO: 85.99; PM: 0; Misc: 0;	% Change: FO: 8499 PM: -100 Misc: 0
July	90.28	72.17	0.80	72.35	77.80	55.69	0.72	165.14	-12.47	2021-22: FO: 15.12; PM: 57.23; Misc: 0; 2022-23: FO: 165.14; PM: 0; Misc: 0;	% Change: FO: 992.2 PM: -100 Misc: 0
August	90.12	82.27	0.91	73.51	79.95	57.71	0.72	149.18	-10.17	2021-22: FO: 16.28; PM: 57.23; Misc: 0; 2022-23: FO: 149.18; PM: 0; Misc: 0;	% Change: FO: 816.34 PM: -100 Misc: 0
September	92.31	81.15	0.88	55.38	96.03	66.2	0.69	28.59	3.72		

October	90.60	80.05	0.88	69.91	90.36	56.81	0.63	71.72	-0.24	2021-22: FO: 12.68; PM: 57.23; Misc: 0; 2022-23: FO: 62.45; PM: 9.27; Misc: 0;	% Change: FO: 392.51 PM: -83.8 Misc: 0
November	89.83	70.98	0.79	73.22	85.58	63.03	0.74	103.82	-4.25	2021-22: FO: 17.84; PM: 55.38; Misc: 0; 2022-23: FO: 39.29; PM: 64.53; Misc: 0;	% Change: FO: 120.24 PM: 16.52 Misc: 0
December	72.46	57.98	0.80	204.91	72.28	60	0.83	206.25	-0.18	2021-22: FO: 58.95; PM: 145.96; Misc: 0; 2022-23: FO: 5.94; PM: 200.31; Misc: 0;	% Change: FO: -89.92 PM: 37.24 Misc: 0

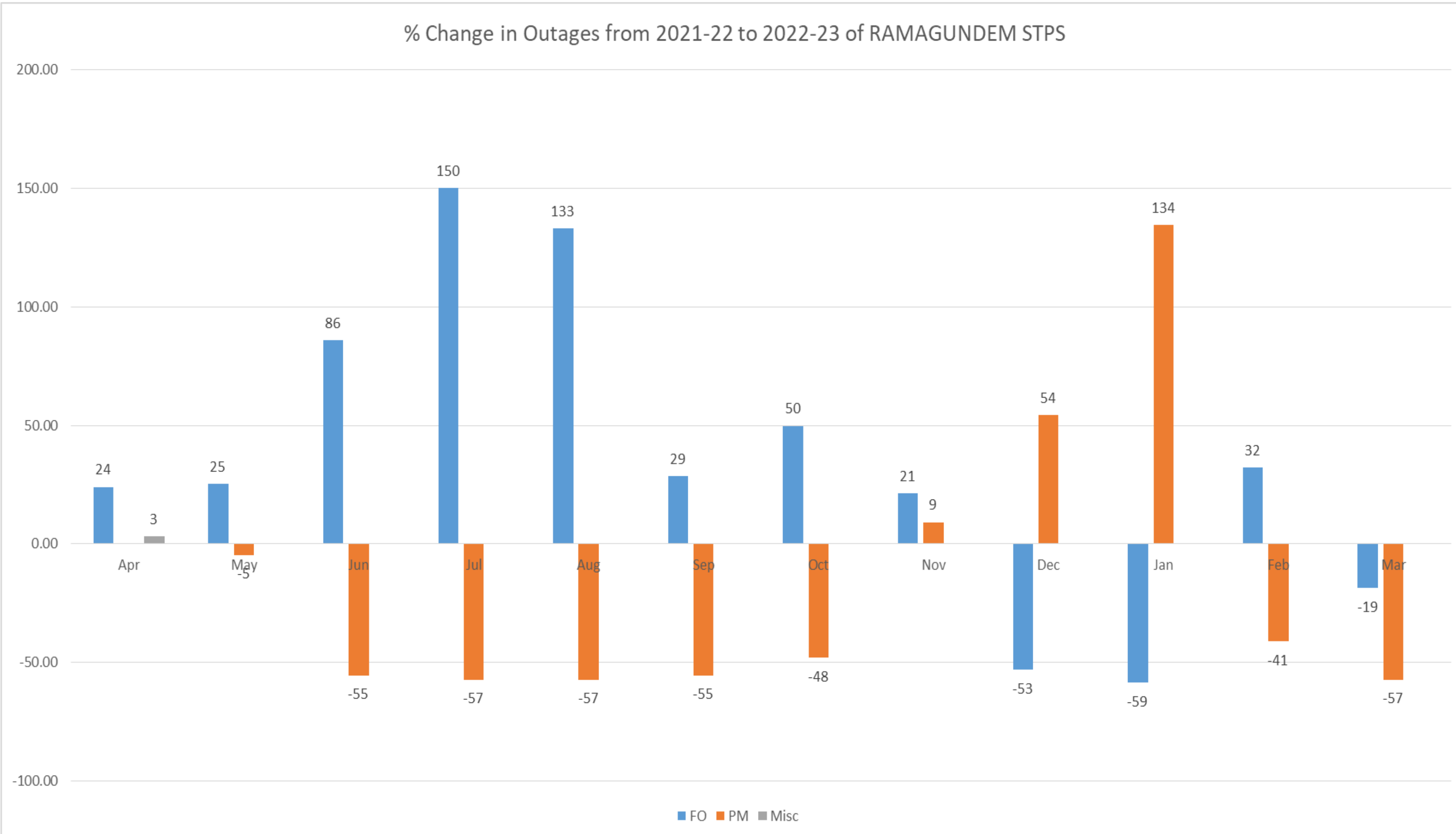
January	89.23	71.56	0.80	80.11	79.05	69.77	0.88	155.88	-10.18	2021-22: FO: 61.69; PM: 18.42; Misc: 0; 2022-23: FO: 3.11; PM: 152.77; Misc: 0;	% Change: FO: -94.96 PM: 729.37 Misc: 0
February	89.53	77.32	0.86	70.37	90.86	85.89	0.95	61.40	1.33		
March	87.08	84.54	0.97	86.81	98.52	87.22	0.89	11.02	11.44		



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 88.99)	91.86	92.31	92.31	90.28	90.12	92.31	90.60	89.83	72.46	89.23	89.53	87.08
PAF 2022-23 (Avg. 86.34)	88.07	89.52	88.06	77.80	79.95	96.03	90.36	85.58	72.28	79.05	90.86	98.52
PLF 2021-22 (Avg. 76.66)	90.34	74.39	77.13	72.17	82.27	81.15	80.05	70.98	57.98	71.56	77.32	84.54
PLF 2022-23 (Avg. 70.67)	86.08	80.36	79.25	55.69	57.71	66.2	56.81	63.03	60	69.77	85.89	87.22



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for RAMAGUNDEM STPS
250.00
200.00
150.00
100.00
50.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)

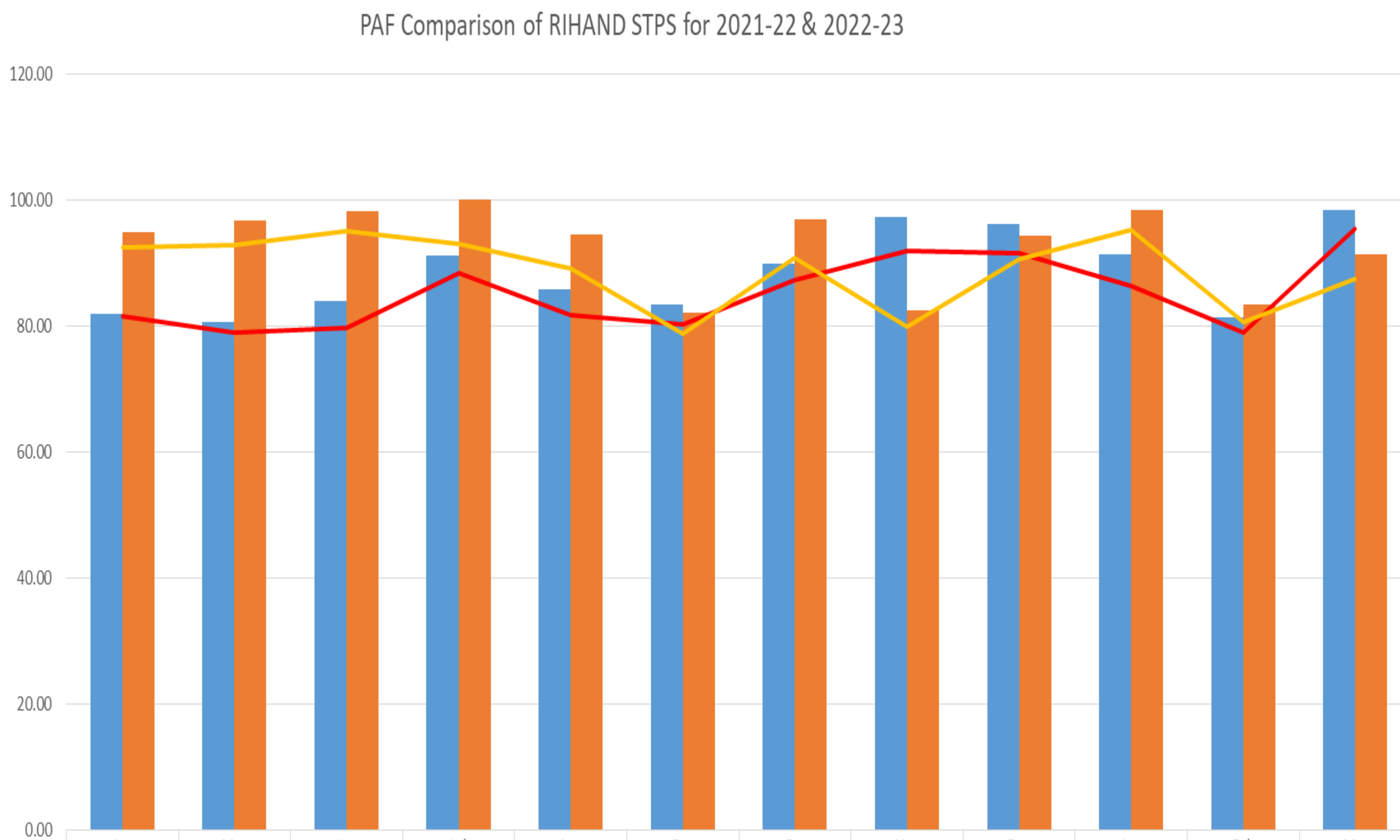


% Change in Outages from 2021-22 to 2022-23 of RAMAGUNDEM STPS
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
24
3
25
-5
86
-55
150
-57
133
-57
29
-55
50
-48
21
9
-53
54
-59
134
32
-41
-19
-57
FO
PM
Misc

13. RIHAND STPS

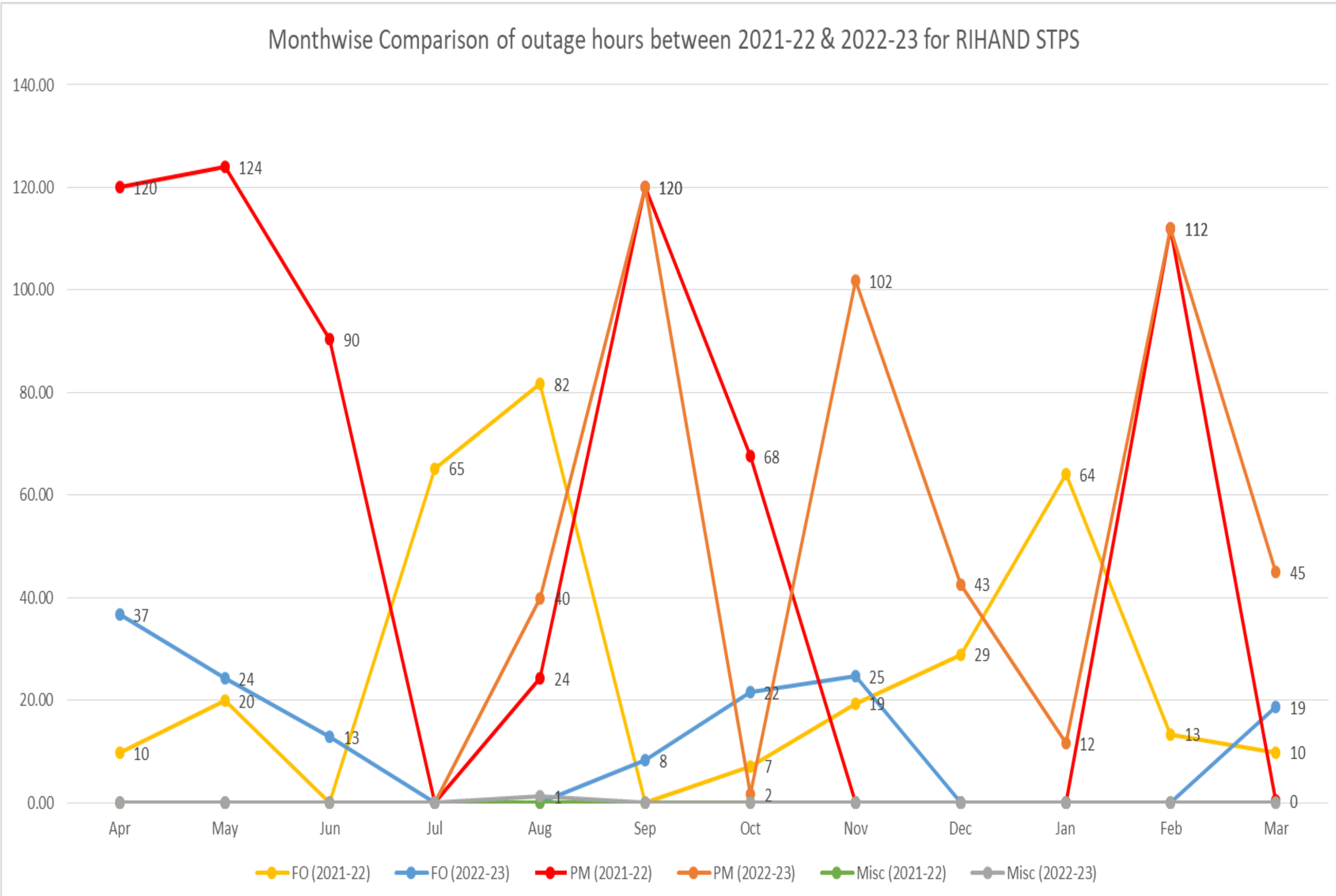
	2021-22				2022-23						
RIHAND STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	81.98	81.48	0.99	58.61	94.91	92.42	0.97	85.89	12.92		
May	80.66	78.88	0.98	57.23	96.74	92.92	0.96	78.00	16.09		
June	83.99	79.79	0.95	55.38	98.21	94.99	0.97	85.99	14.22		
July	91.23	88.47	0.97	72.35	100.00	92.99	0.93	165.14	8.77		
August	85.77	81.79	0.95	73.51	94.48	89.1	0.94	149.18	8.70		
September	83.33	80.24	0.96	55.38	82.19	78.77	0.96	28.59	-1.15	2021-22: FO: 0; PM: 55.38; Misc: 0; 2022-23: FO: 28.59; PM: 0; Misc: 0;	% Change: FO: 2759 PM: -100 Misc: 0
October	89.96	87.31	0.97	69.91	96.87	90.81	0.94	71.72	6.91		

November	97.31	91.95	0.94	73.22	82.43	79.98	0.97	103.82	-14.88	2021-22: FO: 17.84; PM: 55.38; Misc: 0; 2022-23: FO: 39.29; PM: 64.53; Misc: 0;	% Change: FO: 120.24 PM: 16.52 Misc: 0
December	96.11	91.53	0.95	204.91	94.28	90.6	0.96	206.25	-1.83	2021-22: FO: 58.95; PM: 145.96; Misc: 0; 2022-23: FO: 5.94; PM: 200.31; Misc: 0;	% Change: FO: -89.92 PM: 37.24 Misc: 0
January	91.38	86.36	0.95	80.11	98.44	95.26	0.97	155.88	7.06		
February	81.34	78.95	0.97	70.37	83.33	80.55	0.97	61.40	1.99		
March	98.48	95.5	0.97	86.81	91.46	87.54	0.96	11.02	-7.02	2021-22: FO: 29.58; PM: 57.23; Misc: 0; 2022-23: FO: 11.02; PM: 0; Misc: 0;	% Change: FO: -62.75 PM: -100 Misc: 0

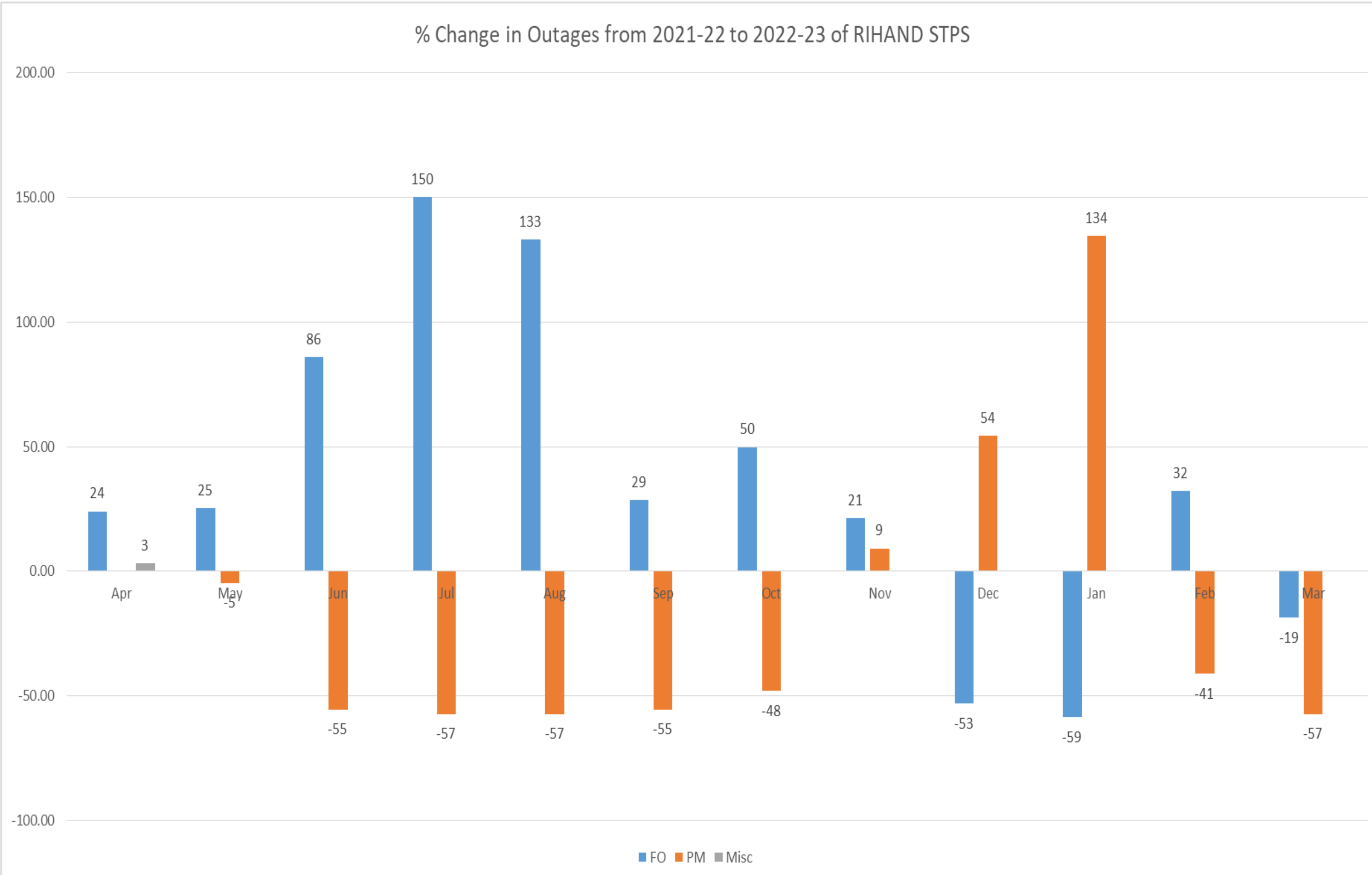


	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 88.46)	81.98	80.66	83.99	91.23	85.77	83.33	89.96	97.31	96.11	91.38	81.34	98.48
PAF 2022-23 (Avg. 92.78)	94.91	96.74	98.21	100.00	94.48	82.19	96.87	82.43	94.28	98.44	83.33	91.46
PLF 2021-22 (Avg. 85.19)	81.48	78.88	79.79	88.47	81.79	80.24	87.31	91.95	91.53	86.36	78.95	95.5
PLF 2022-23 (Avg. 88.83)	92.42	92.92	94.99	92.99	89.1	78.77	90.81	79.98	90.6	95.26	80.55	87.54

PAF 2021-22 (Avg. 88.46) PAF 2022-23 (Avg. 92.78) PLF 2021-22 (Avg. 85.19) PLF 2022-23 (Avg. 88.83)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for RIHAND STPS
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
120
124
90
82
65
120
68
102
112
64
45
43
40
37
24
24
20
29
25
22
19
19
13
10
13
12
10
8
7
2
1
0
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)


% Change in Outages from 2021-22 to 2022-23 of RIHAND STPS
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
24
3
25
-5
86
-55
150
-57
133
-57
29
-55
50
-48
21
9
-53
54
-59
134
32
-41
-19
-57
FO
PM
Misc

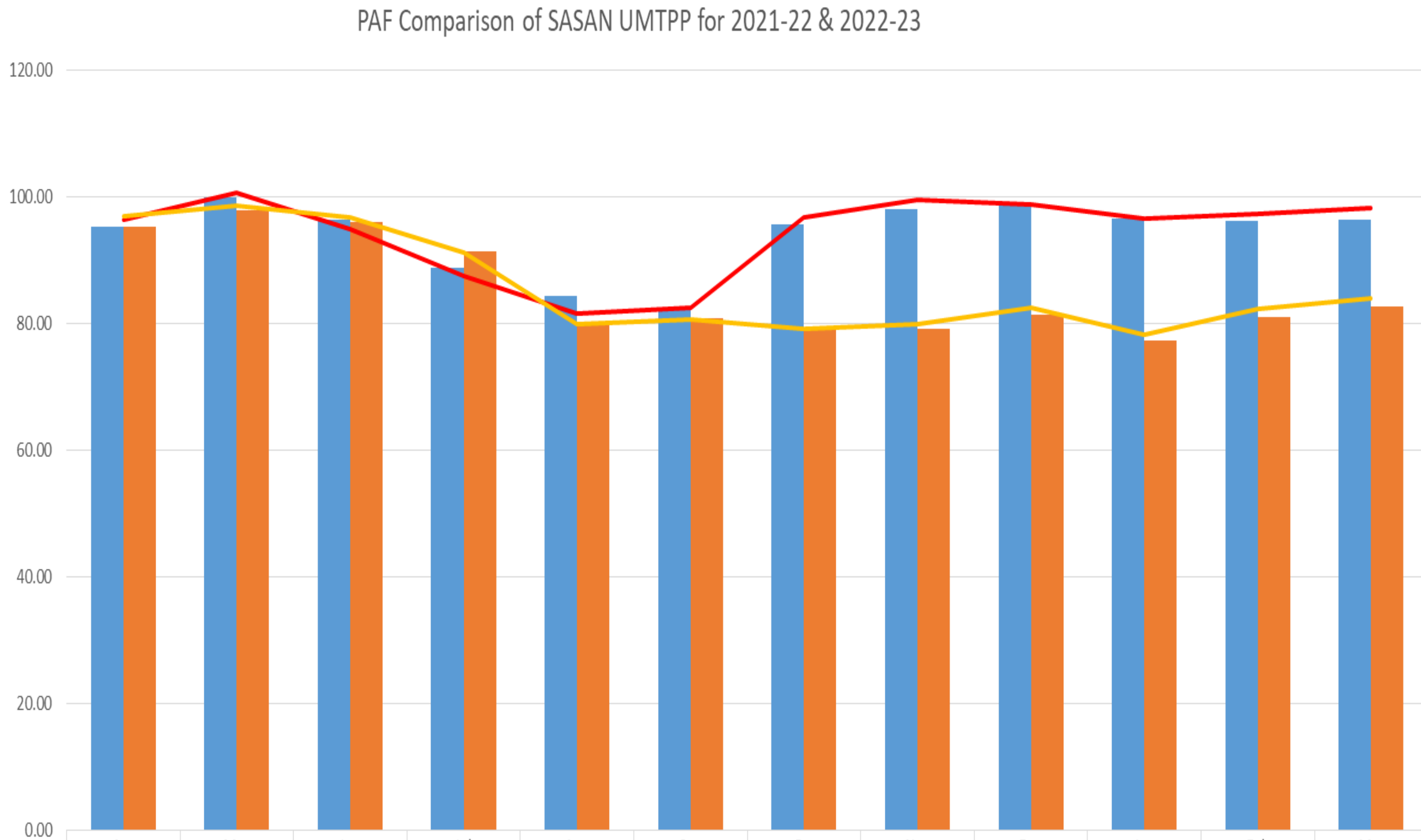
14. SASAN UMTPP

	2021-22				2022-23				Change in PAF	Reason for Decrease in PAF	% Change in Outages
SASAN UMTPP	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**			
April	95.18	96.39	1.01	34.69	95.31	97.01	1.02	33.79	0.12		
May	99.91	100.69	1.01	0.66	97.77	98.54	1.01	16.57	-2.14	2021-22: FO: 0.66; PM: 0; Misc: 0; 2022-23: FO: 16.57; PM: 0; Misc: 0;	% Change: FO: 2410.61 PM: 0 Misc: 0
June	96.44	94.83	0.98	0.00	96.02	96.75	1.01	28.64	-0.42	2021-22: FO: 0; PM: 0; Misc: 0; 2022-23: FO: 28.64; PM: 0; Misc: 0;	% Change: FO: 2764 PM: 0 Misc: 0
July	88.79	87.52	0.99	83.38	91.38	91.14	1.00	64.16	2.58		

August	84.42	81.64	0.97	115.92	80.00	79.81	1.00	148.80	-4.42	2021-22: FO: 34.05; PM: 81.87; Misc: 0; 2022-23: FO: 126.32; PM: 22.48; Misc: 0;	% Change: FO: 270.98 PM: -72.54 Misc: 0
September	82.57	82.45	1.00	125.48	80.82	80.71	1.00	138.08	-1.75	2021-22: FO: 34.78; PM: 90.7; Misc: 0; 2022-23: FO: 138.08; PM: 0; Misc: 0;	% Change: FO: 297.01 PM: -100 Misc: 0
October	95.62	96.7	1.01	32.62	78.97	79.08	1.00	156.48	-16.65	2021-22: FO: 32.62; PM: 0; Misc: 0; 2022-23: FO: 156.48; PM: 0; Misc: 0;	% Change: FO: 379.71 PM: 0 Misc: 0

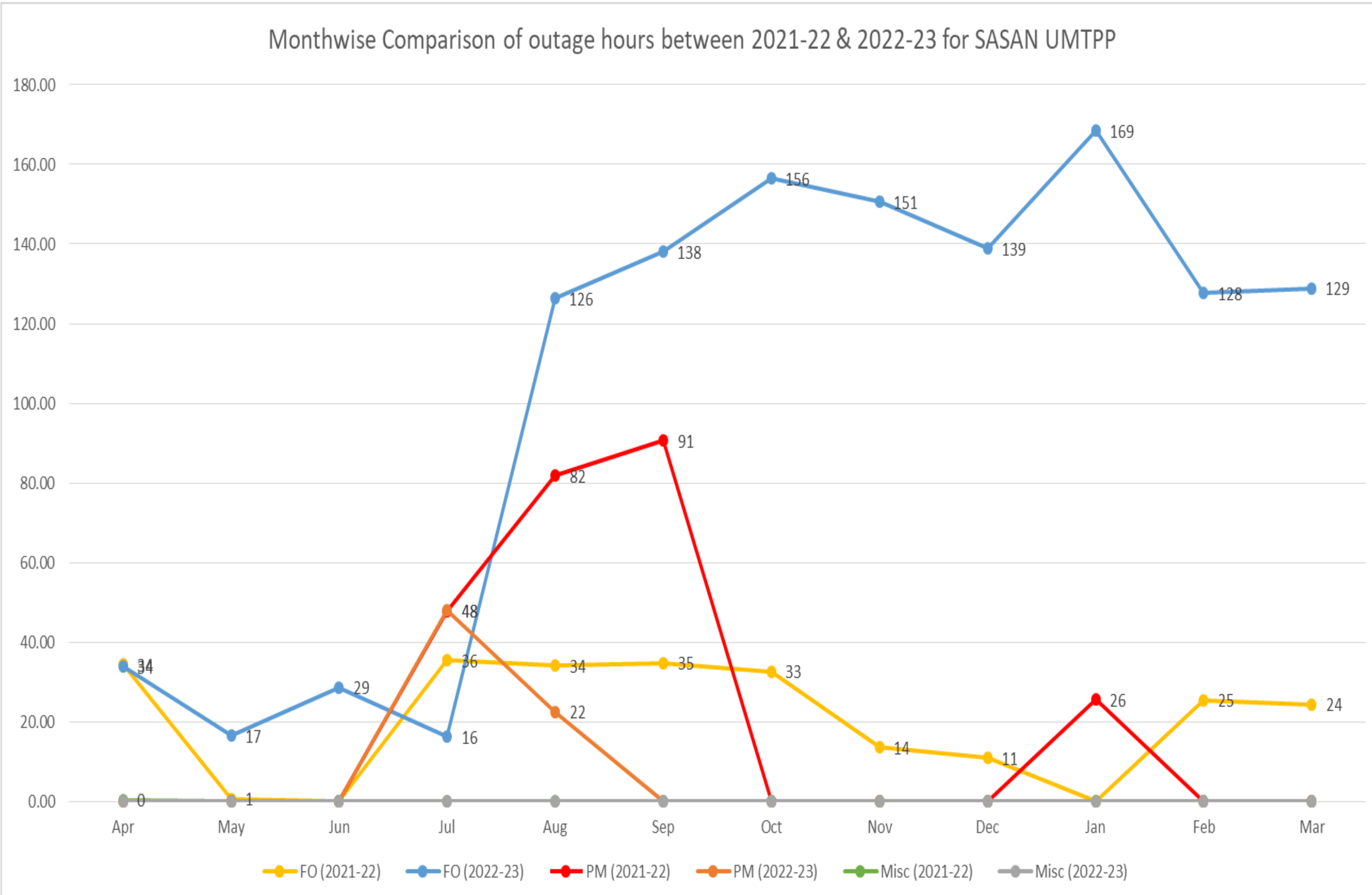
November	98.11	99.49	1.01	13.62	79.08	79.8	1.01	150.62	-19.03	2021-22: FO: 13.62; PM: 0; Misc: 0; 2022-23: FO: 150.62; PM: 0; Misc: 0;	% Change: FO: 1005.87 PM: 0 Misc: 0
December	98.53	98.72	1.00	10.94	81.34	82.42	1.01	138.81	-17.19	2021-22: FO: 10.94; PM: 0; Misc: 0; 2022-23: FO: 138.81; PM: 0; Misc: 0;	% Change: FO: 1168.83 PM: 0 Misc: 0
January	96.57	96.5	1.00	25.54	77.35	78.16	1.01	168.50	-19.21	2021-22: FO: 0; PM: 25.54; Misc: 0; 2022-23: FO: 168.5; PM: 0; Misc: 0;	% Change: FO: 16750 PM: -100 Misc: 0

February	96.21	97.29	1.01	25.44	81.00	82.27	1.02	127.70	-15.22	2021-22: FO: 25.44; PM: 0; Misc: 0; 2022-23: FO: 127.7; PM: 0; Misc: 0;	% Change: FO: 401.97 PM: 0 Misc: 0
March	96.38	98.2	1.02	24.32	82.67	83.94	1.02	128.93	-13.71	2021-22: FO: 24.32; PM: 0; Misc: 0; 2022-23: FO: 128.93; PM: 0; Misc: 0;	% Change: FO: 430.14 PM: 0 Misc: 0

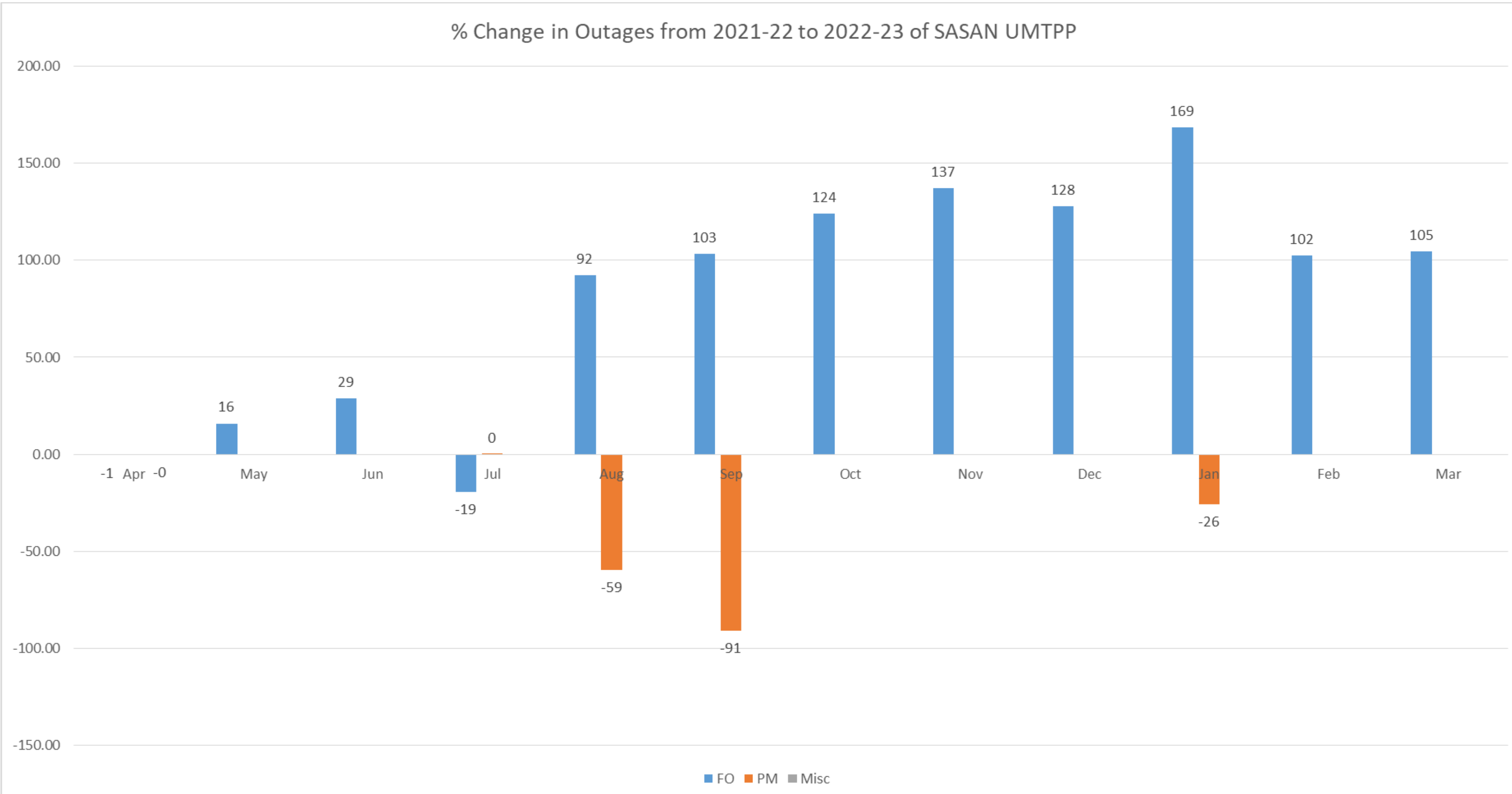


	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 94.06)	95.18	99.91	96.44	88.79	84.42	82.57	95.62	98.11	98.53	96.57	96.21	96.38
PAF 2022-23 (Avg. 85.14)	95.31	97.77	96.02	91.38	80.00	80.82	78.97	79.08	81.34	77.35	81.00	82.67
PLF 2021-22 (Avg. 94.2)	96.39	100.69	94.83	87.52	81.64	82.45	96.7	99.49	98.72	96.5	97.29	98.2
PLF 2022-23 (Avg. 85.8)	97.01	98.54	96.75	91.14	79.81	80.71	79.08	79.8	82.42	78.16	82.27	83.94

PAF 2021-22 (Avg. 94.06) PAF 2022-23 (Avg. 85.14) PLF 2021-22 (Avg. 94.2) PLF 2022-23 (Avg. 85.8)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for SASAN UMTPP
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
34
34
0
17
1
29
48
36
16
126
82
34
22
138
91
35
156
33
151
14
139
11
169
26
128
25
129
24
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)

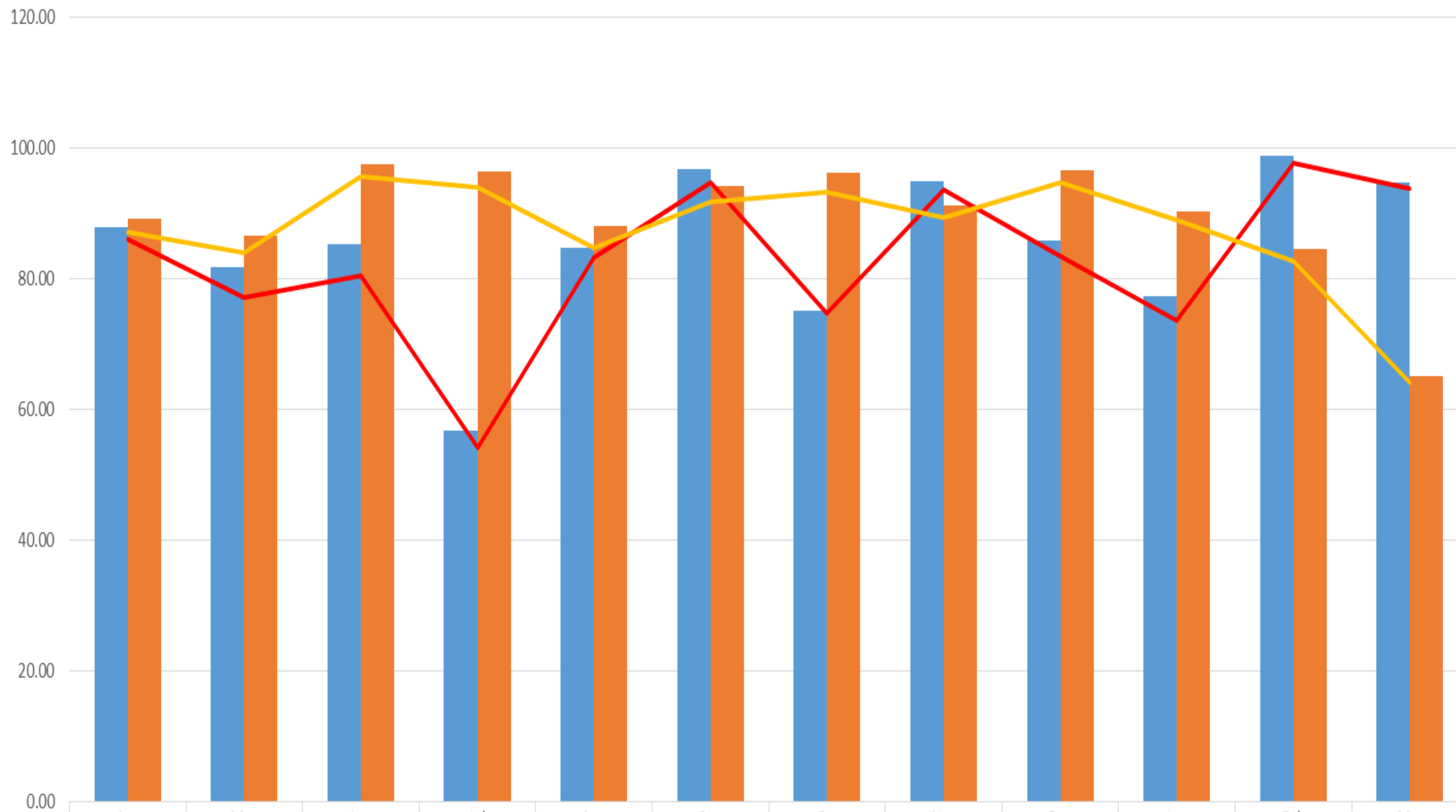

% Change in Outages from 2021-22 to 2022-23 of SASAN UMTPP
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-1
-0
16
29
0
-19
92
-59
103
-91
124
137
128
169
-26
102
105
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO
PM
Misc

15. SINGRAULI STPS

	2021-22				2022-23				Change in PAF	Reason for Decrease in PAF	% Change in Outages
SINGRAULI STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**			
April	87.86	85.96	0.98	87.42	89.13	87.04	0.98	78.23	1.28		
May	81.71	77.06	0.94	136.09	86.54	84.01	0.97	100.17	4.83		
June	85.31	80.42	0.94	12.00	97.46	95.64	0.98	18.29	12.15		
July	56.74	54.25	0.96	321.88	96.37	93.97	0.98	27.05	39.63		
August	84.66	83.17	0.98	114.14	88.04	84.69	0.96	88.98	3.38		
September	96.66	94.65	0.98	24.07	94.18	91.71	0.97	41.92	-2.48	2021-22: FO: 24.07; PM: 0; Misc: 0; 2022-23: FO: 7.96; PM: 33.96; Misc: 0;	% Change: FO: -66.93 PM: 3296 Misc: 0
October	75.04	74.67	1.00	185.68	96.26	93.19	0.97	27.84	21.22		

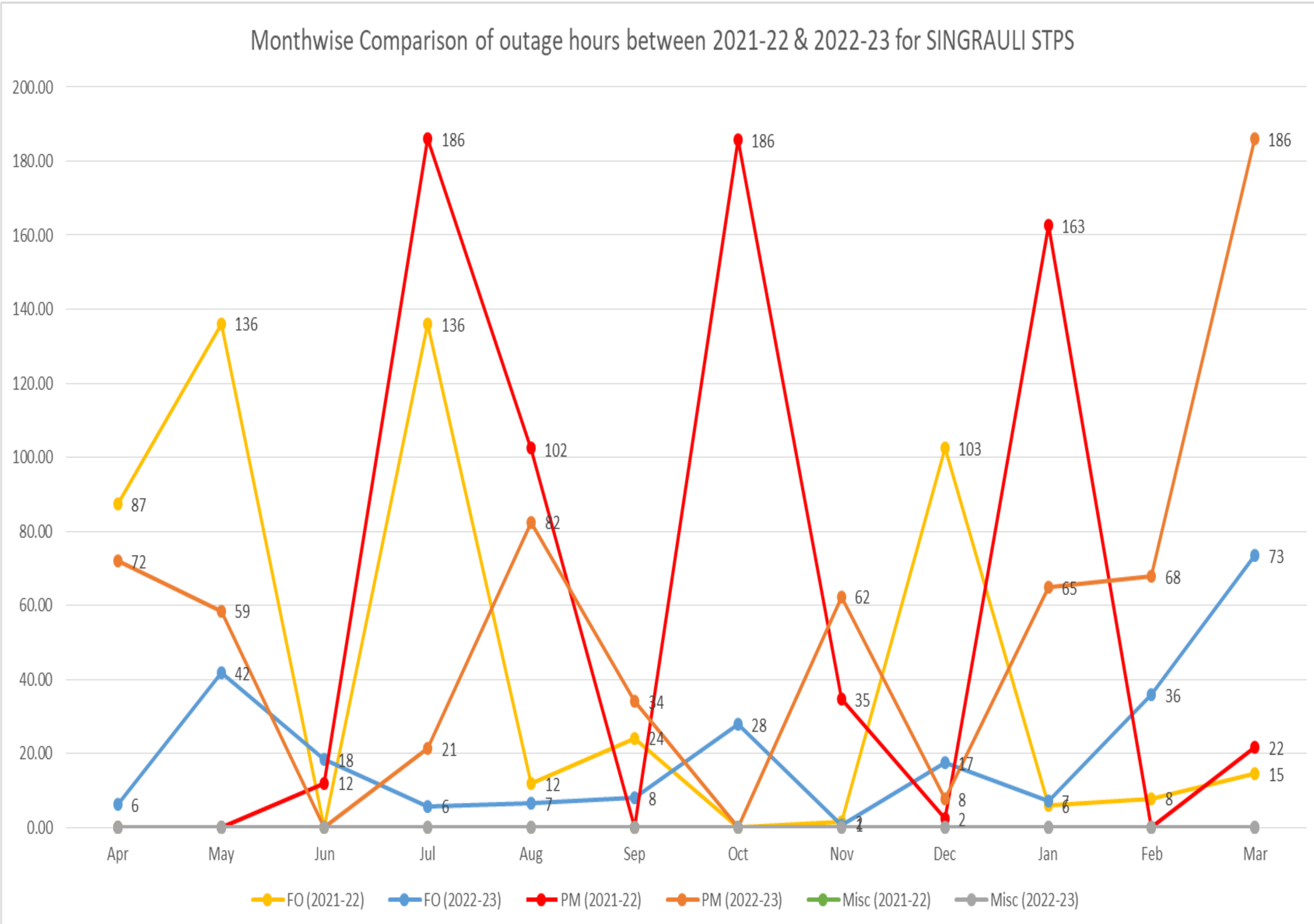
November	94.98	93.63	0.99	36.17	91.24	89.41	0.98	63.07	-3.74	2021-22: FO: 1.51; PM: 34.66; Misc: 0; 2022-23: FO: 0.74; PM: 62.33; Misc: 0;	% Change: FO: -50.99 PM: 79.83 Misc: 0
December	85.91	83.36	0.97	104.86	96.62	94.69	0.98	25.18	10.71		
January	77.35	73.55	0.95	168.53	90.34	88.98	0.98	71.88	12.99		
February	98.84	97.69	0.99	7.81	84.57	82.71	0.98	103.69	-14.27	2021-22: FO: 7.81; PM: 0; Misc: 0; 2022-23: FO: 35.88; PM: 67.81; Misc: 0;	% Change: FO: 359.41 PM: 6681 Misc: 0
March	94.62	93.84	0.99	36.18	65.12	64.11	0.98	259.49	-29.49	2021-22: FO: 14.51; PM: 21.67; Misc: 0; 2022-23: FO: 73.49; PM: 186; Misc: 0;	% Change: FO: 406.48 PM: 758.33 Misc: 0

PAF Comparison of SINGRAULI STPS for 2021-22 & 2022-23

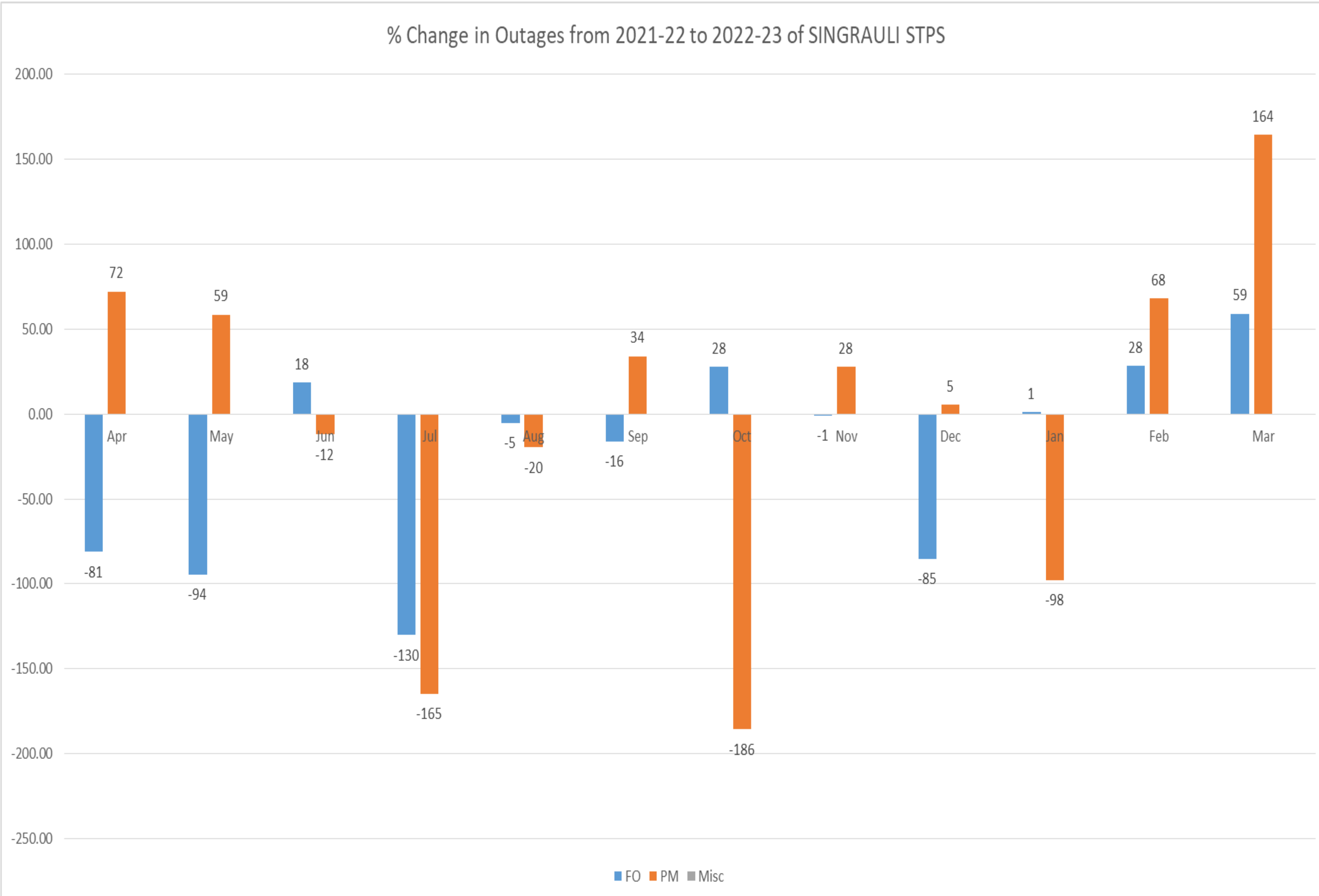


	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 84.97)	87.86	81.71	85.31	56.74	84.66	96.66	75.04	94.98	85.91	77.35	98.84	94.62
PAF 2022-23 (Avg. 89.66)	89.13	86.54	97.46	96.37	88.04	94.18	96.26	91.24	96.62	90.34	84.57	65.12
PLF 2021-22 (Avg. 82.69)	85.96	77.06	80.42	54.25	83.17	94.65	74.67	93.63	83.36	73.55	97.69	93.84
PLF 2022-23 (Avg. 87.51)	87.04	84.01	95.64	93.97	84.69	91.71	93.19	89.41	94.69	88.98	82.71	64.11

PAF 2021-22 (Avg. 84.97)   PAF 2022-23 (Avg. 89.66)   PLF 2021-22 (Avg. 82.69)   PLF 2022-23 (Avg. 87.51)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for SINGRAULI STPS
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
87
136
136
186
102
186
103
163
186
72
59
42
18
12
6
21
82
12
7
34
24
8
28
62
35
17
8
2
65
7
6
68
36
8
73
22
15
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)

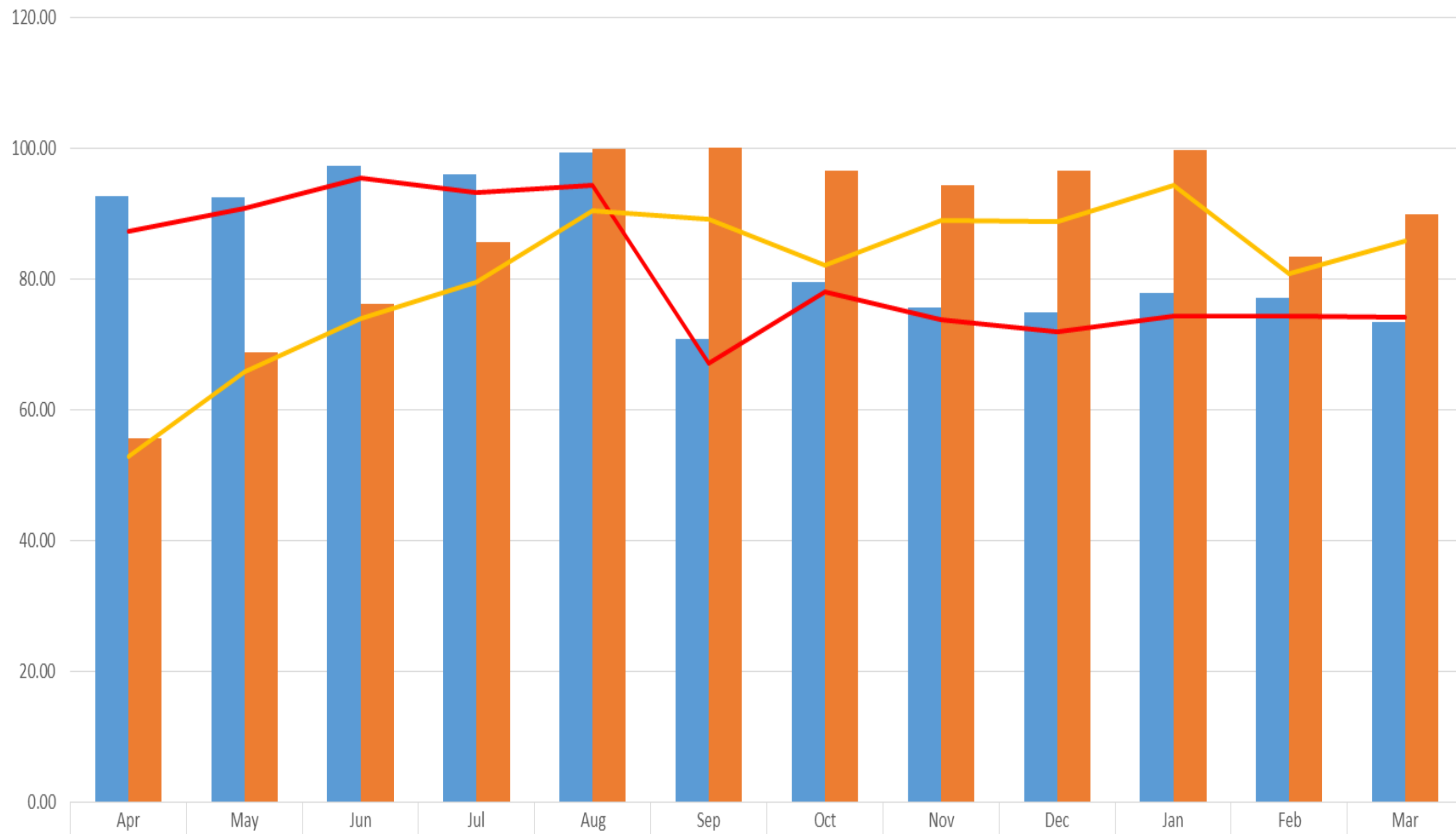

% Change in Outages from 2021-22 to 2022-23 of SINGRAULI STPS
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
-81
72
-94
59
18
-12
-130
-165
-5
-20
-16
34
28
-186
-1
28
-85
5
1
-98
28
68
59
164
FO
PM
Misc

16. SIPAT STPS

	2021-22				2022-23						
SIPAT STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	92.60	87.35	0.94	53.25	55.60	52.88	0.95	319.69	-37.01	2021-22: FO: 53.25; PM: 0; Misc: 0; 2022-23: FO: 160.23; PM: 159.46; Misc: 0;	% Change: FO: 200.9 PM: 15846 Misc: 0
May	92.46	90.73	0.98	56.07	68.74	65.78	0.96	232.56	-23.72	2021-22: FO: 22.15; PM: 33.92; Misc: 0; 2022-23: FO: 67.78; PM: 164.78; Misc: 0;	% Change: FO: 206 PM: 385.79 Misc: 0

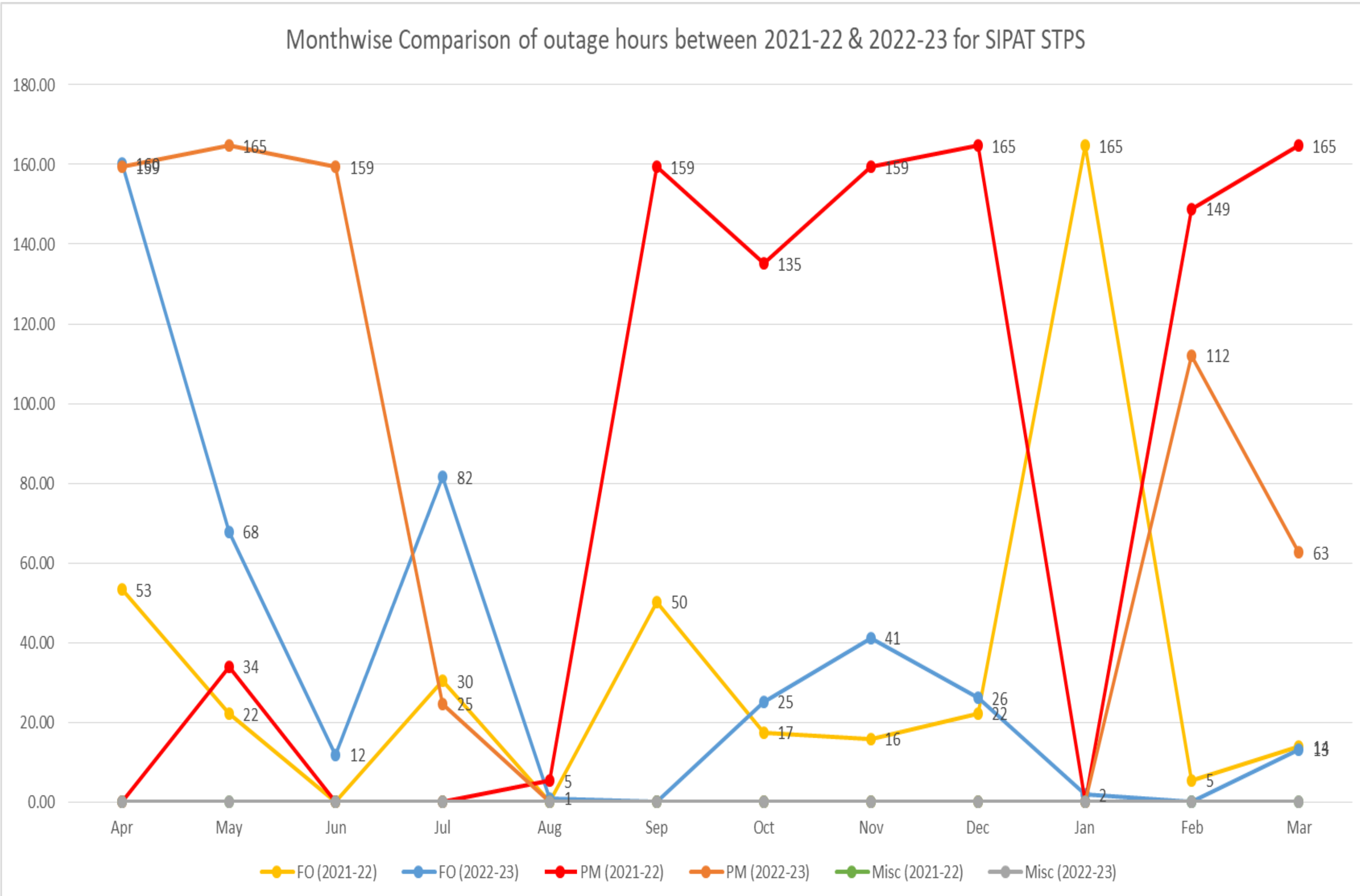
June	97.30	95.37	0.98	0.00	76.21	73.91	0.97	171.26	-21.08	2021-22: FO: 0; PM: 0; Misc: 0; 2022-23: FO: 11.8; PM: 159.46; Misc: 0;	% Change: FO: 1080 PM: 15846 Misc: 0
July	95.91	93.26	0.97	30.42	85.71	79.55	0.93	106.30	-10.20	2021-22: FO: 30.42; PM: 0; Misc: 0; 2022-23: FO: 81.61; PM: 24.69; Misc: 0;	% Change: FO: 168.28 PM: 2369 Misc: 0
August	99.28	94.4	0.95	5.35	99.88	90.45	0.91	0.92	0.60		
September	70.88	67.06	0.95	209.69	100.00	89.13	0.89	0.00	29.12		
October	79.49	78.07	0.98	152.59	96.62	82.11	0.85	25.15	17.13		
November	75.65	73.7	0.97	175.34	94.28	89.04	0.94	41.21	18.63		
December	74.86	71.91	0.96	187.06	96.50	88.71	0.92	26.06	21.64		
January	77.85	74.3	0.95	164.78	99.74	94.27	0.95	1.90	21.89		
February	77.05	74.43	0.97	154.26	83.32	80.74	0.97	112.09	6.28		
March	73.42	74.19	1.01	178.60	89.81	85.83	0.96	75.81	16.39		

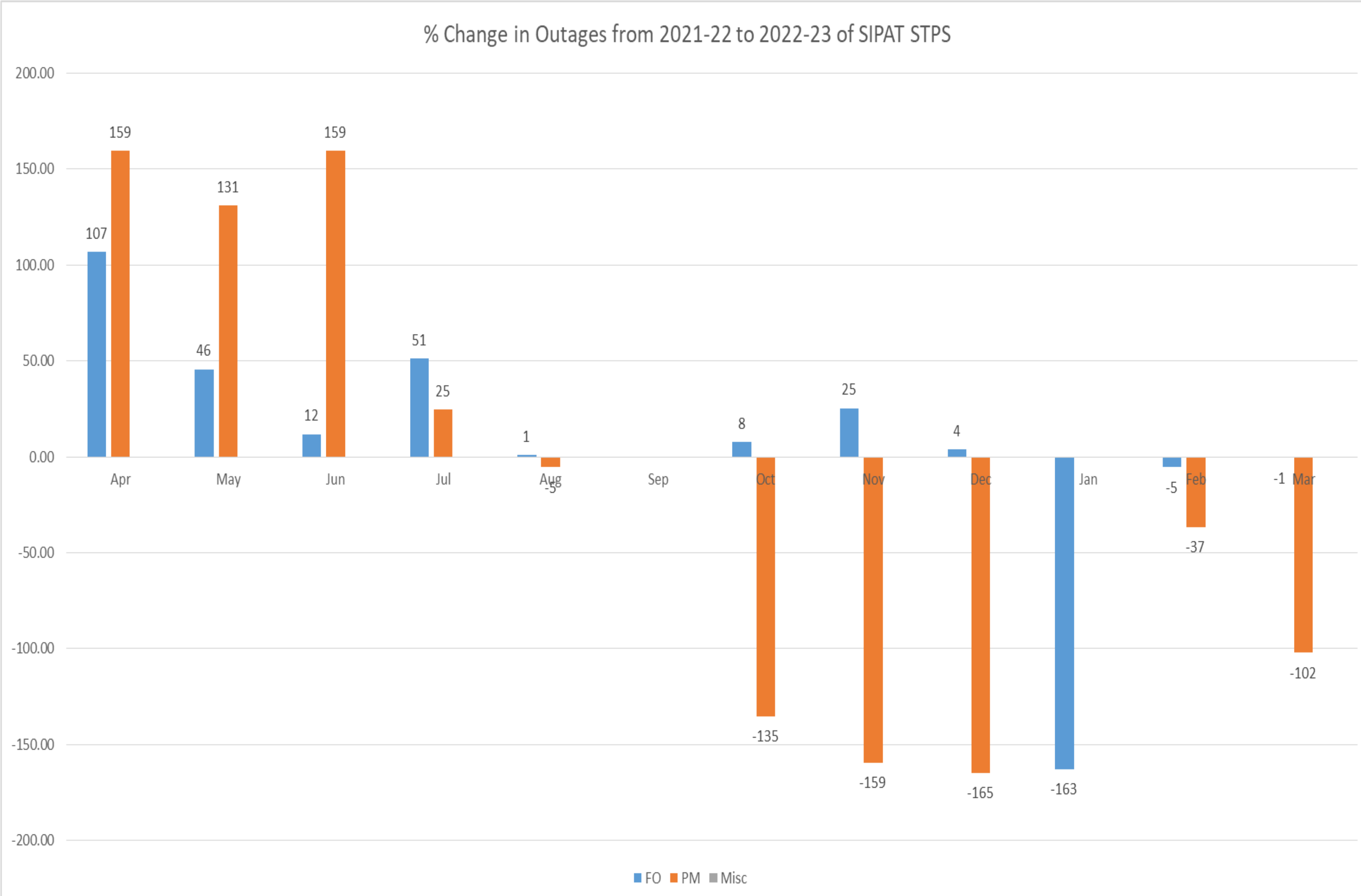
PAF Comparison of SIPAT STPS for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 83.9)	92.60	92.46	97.30	95.91	99.28	70.88	79.49	75.65	74.86	77.85	77.05	73.42
PAF 2022-23 (Avg. 87.2)	55.60	68.74	76.21	85.71	99.88	100.00	96.62	94.28	96.50	99.74	83.32	89.81
PLF 2021-22 (Avg. 81.23)	87.35	90.73	95.37	93.26	94.4	67.06	78.07	73.7	71.91	74.3	74.43	74.19
PLF 2022-23 (Avg. 81.03)	52.88	65.78	73.91	79.55	90.45	89.13	82.11	89.04	88.71	94.27	80.74	85.83

PAF 2021-22 (Avg. 83.9) PAF 2022-23 (Avg. 87.2) PLF 2021-22 (Avg. 81.23) PLF 2022-23 (Avg. 81.03)


Monthwise Comparison of outage hours between 2021-22 & 2022-23 for SIPAT STPS
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
53
165
159
68
12
82
30
25
34
22
5
1
159
50
135
25
17
159
41
16
165
26
22
165
2
149
112
5
165
63
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)

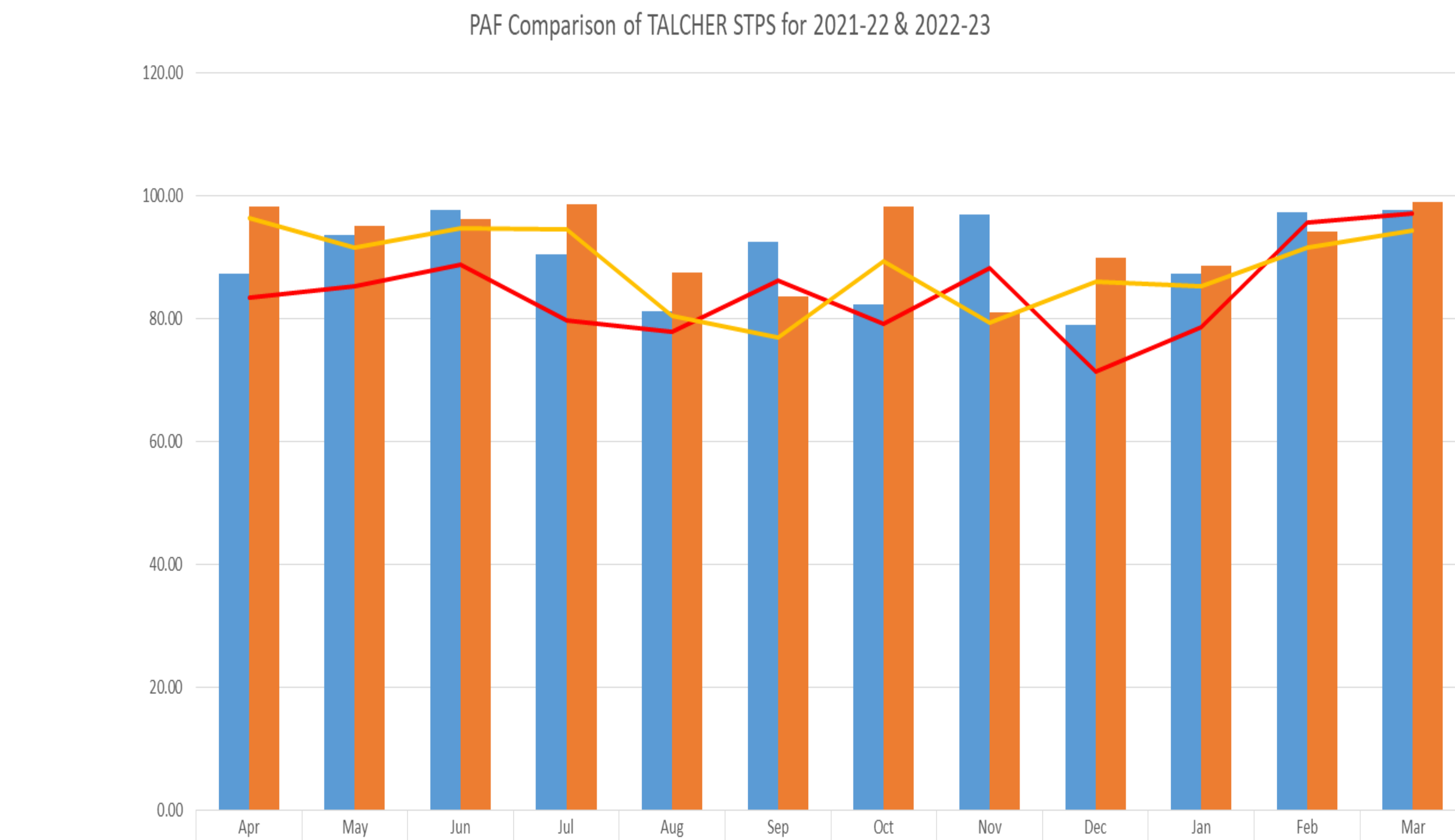


% Change in Outages from 2021-22 to 2022-23 of SIPAT STPS
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
107
159
46
131
12
159
51
25
1
-5
8
-135
25
-159
4
-165
-163
-5
-37
-1
-102
FO
PM
Misc

17. TALCHER STPS

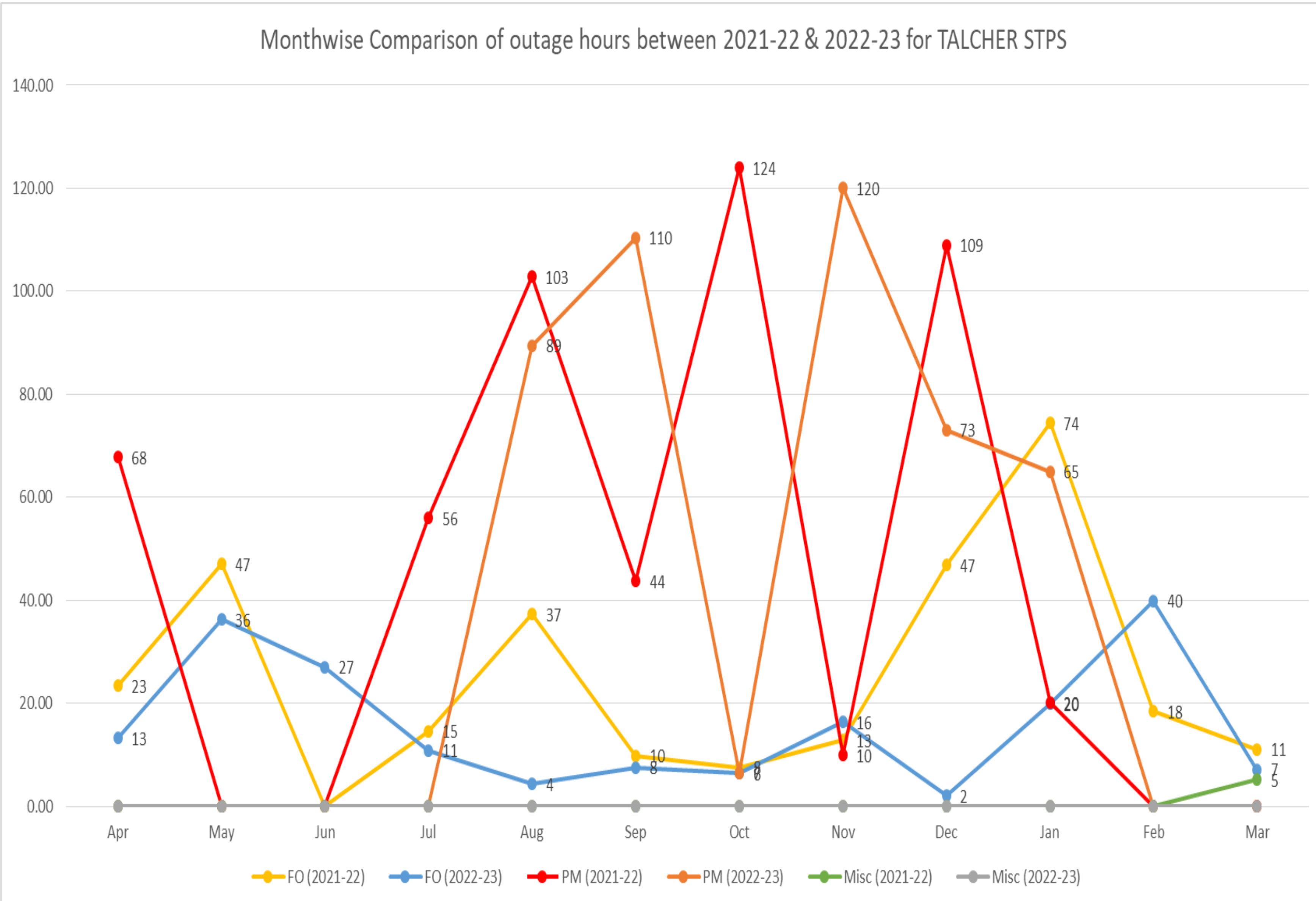
	2021-22				2022-23				Change in PAF	Reason for Decrease in PAF	% Change in Outages
TALCHER STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**			
April	87.32	83.46	0.96	91.27	98.15	96.44	0.98	13.29	10.83		
May	93.68	85.35	0.91	47.03	95.12	91.55	0.96	36.30	1.44		
June	97.72	88.8	0.91	0.00	96.25	94.75	0.98	27.02	-1.47	2021-22: FO: 0; PM: 0; Misc: 0; 2022-23: FO: 27.02; PM: 0; Misc: 0;	% Change: FO: 2602 PM: 0 Misc: 0
July	90.52	79.69	0.88	70.51	98.54	94.54	0.96	10.85	8.02		
August	81.15	77.88	0.96	140.22	87.40	80.43	0.92	93.77	6.24		
September	92.55	86.26	0.93	53.62	83.62	76.99	0.92	117.97	-8.94	2021-22: FO: 9.86; PM: 43.76; Misc: 0; 2022-23: FO: 7.58; PM: 110.39; Misc: 0;	% Change: FO: -23.12 PM: 152.26 Misc: 0
October	82.31	79.23	0.96	131.59	98.26	89.29	0.91	12.92	15.95		

November	96.84	88.31	0.91	22.76	81.06	79.35	0.98	136.40	-15.78	2021-22: FO: 12.87; PM: 9.89; Misc: 0; 2022-23: FO: 16.4; PM: 120; Misc: 0;	% Change: FO: 27.43 PM: 1113.35 Misc: 0
December	79.05	71.46	0.90	155.85	89.91	85.99	0.96	75.07	10.86		
January	87.31	78.55	0.90	94.45	88.58	85.3	0.96	84.96	1.28		
February	97.25	95.65	0.98	18.48	94.07	91.53	0.97	39.88	-3.18	2021-22: FO: 18.48; PM: 0; Misc: 0; 2022-23: FO: 39.88; PM: 0; Misc: 0;	% Change: FO: 115.8 PM: 0 Misc: 0
March	97.57	97.02	0.99	16.31	99.04	94.36	0.95	7.16	1.47		

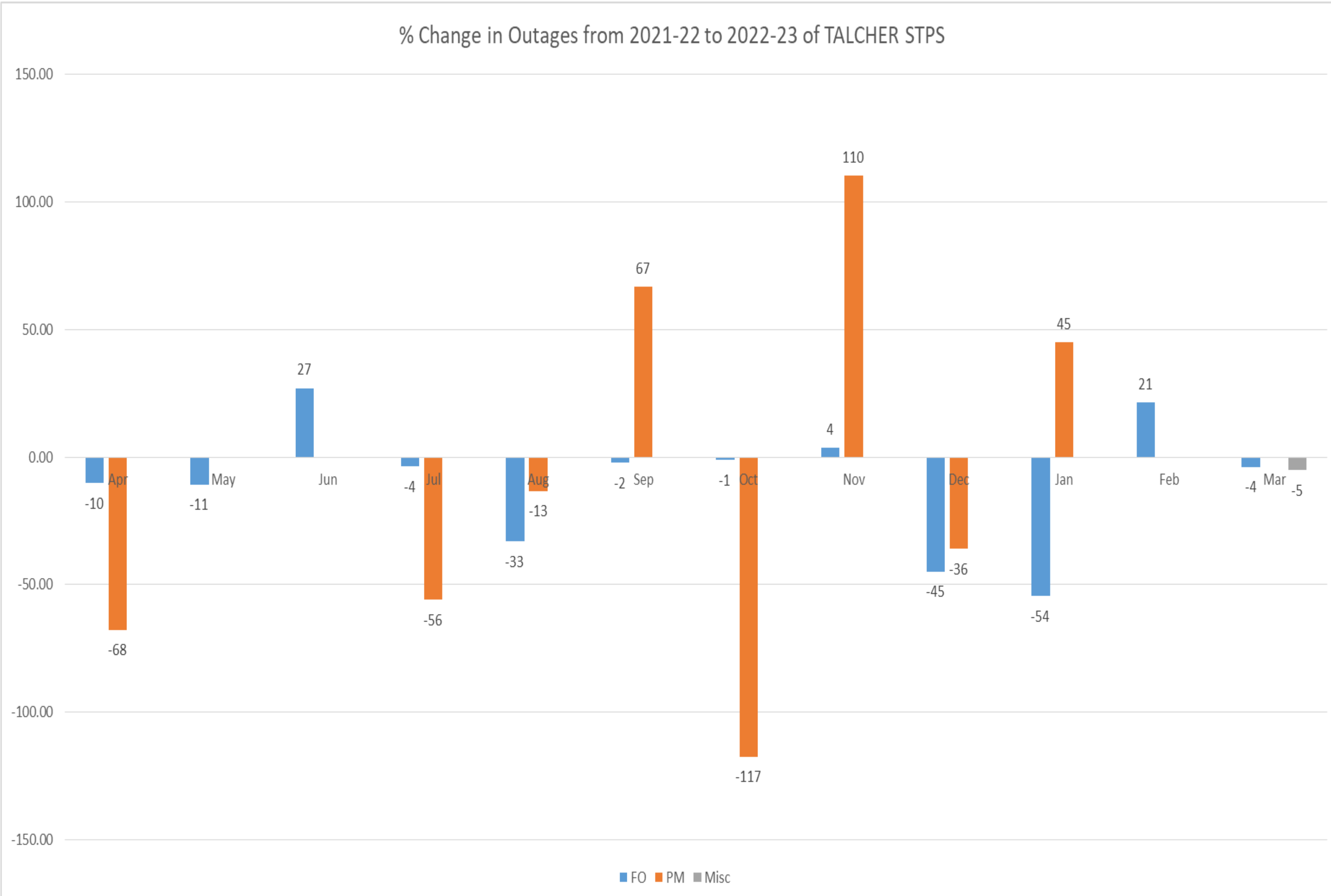


	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 90.27)	87.32	93.68	97.72	90.52	81.15	92.55	82.31	96.84	79.05	87.31	97.25	97.57
PAF 2022-23 (Avg. 92.5)	98.15	95.12	96.25	98.54	87.40	83.62	98.26	81.06	89.91	88.58	94.07	99.04
PLF 2021-22 (Avg. 84.31)	83.46	85.35	88.8	79.69	77.88	86.26	79.23	88.31	71.46	78.55	95.65	97.02
PLF 2022-23 (Avg. 88.38)	96.44	91.55	94.75	94.54	80.43	76.99	89.29	79.35	85.99	85.3	91.53	94.36

PAF 2021-22 (Avg. 90.27)   PAF 2022-23 (Avg. 92.5)   PLF 2021-22 (Avg. 84.31)   PLF 2022-23 (Avg. 88.38)



Monthwise Comparison of outage hours between 2021-22 & 2022-23 for TALCHER STPS
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
68
23
13
47
36
27
56
15
11
103
89
37
4
110
44
10
8
124
8
6
120
16
13
10
109
73
47
2
74
65
20
40
18
11
7
5
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)



% Change in Outages from 2021-22 to 2022-23 of TALCHER STPS
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
-10
-68
-11
27
-4
-56
-33
-13
-2
67
-1
-117
4
110
-45
-36
-54
45
21
-4
-5
FO
PM
Misc

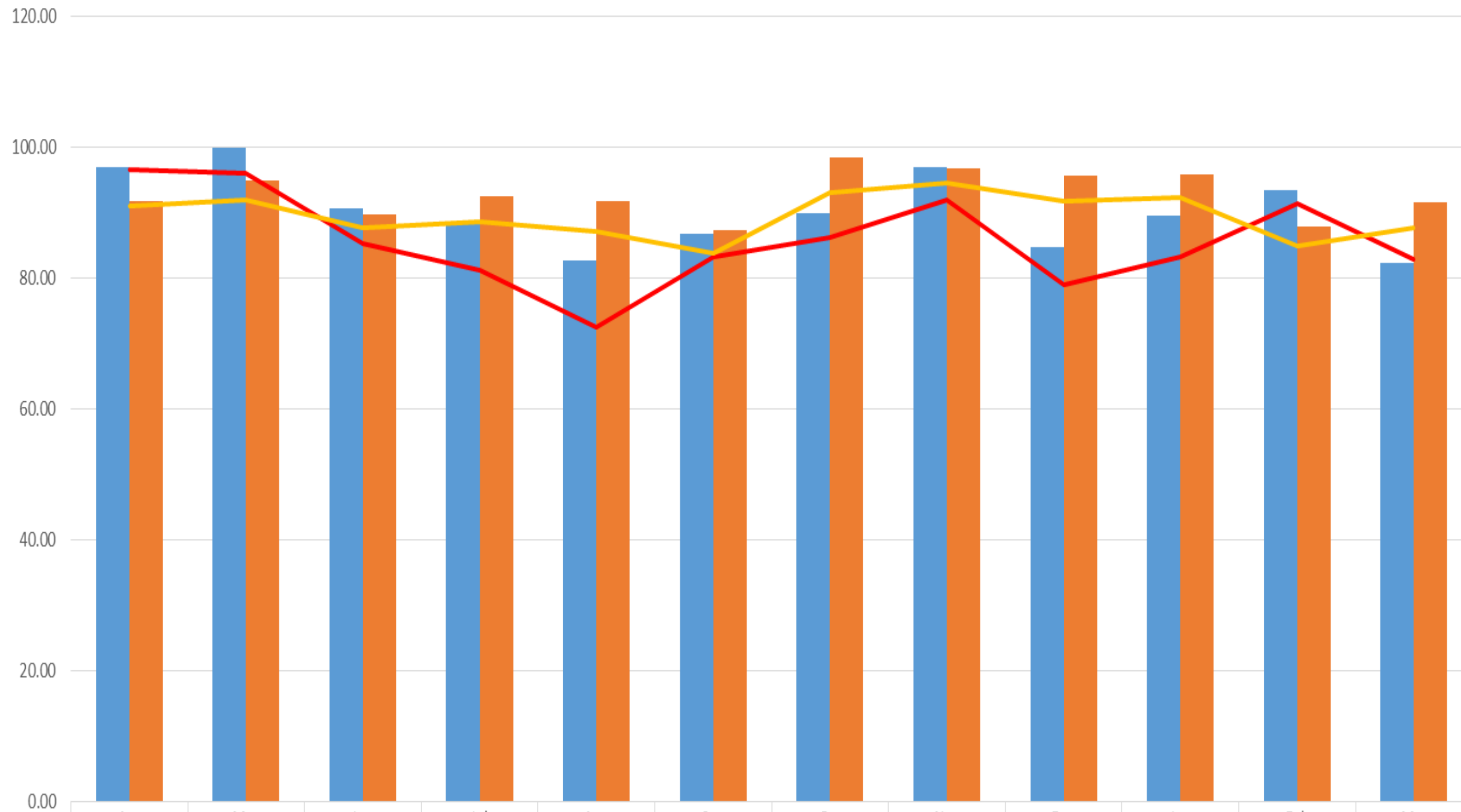
18. VINDHYACHAL STPS

	2021-22				2022-23						
VINDHYACHAL STPS	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**PAF**	**PLF**	**Loading Factor (PLF/PAF)**	**Outage Hours**	**Change in PAF**	**Reason for Decrease in PAF**	**% Change in Outages**
April	96.93	96.54	1.00	22.11	91.81	90.93	0.99	58.94	-5.11	2021-22: FO: 10.39; PM: 11.72; Misc: 0; 2022-23: FO: 2.17; PM: 56.77; Misc: 0;	% Change: FO: -79.11 PM: 384.39 Misc: 0
May	99.94	95.99	0.96	0.44	94.93	91.85	0.97	37.69	-5.01	2021-22: FO: 0.44; PM: 0; Misc: 0; 2022-23: FO: 7.39; PM: 30.3; Misc: 0;	% Change: FO: 1579.55 PM: 2930 Misc: 0

June	90.69	85.35	0.94	27.69	89.74	87.61	0.98	73.88	-0.95	2021-22: FO: 0; PM: 27.69; Misc: 0; 2022-23: FO: 3.43; PM: 70.45; Misc: 0;	% Change: FO: 243 PM: 154.42 Misc: 0
July	88.24	81.2	0.92	87.50	92.43	88.58	0.96	56.34	4.19		
August	82.68	72.53	0.88	128.83	91.65	87.13	0.95	62.10	8.97		
September	86.77	83.18	0.96	95.23	87.21	83.8	0.96	92.08	0.44		
October	89.91	86.21	0.96	75.08	98.39	93.04	0.95	11.99	8.48		
November	96.95	91.99	0.95	21.96	96.77	94.46	0.98	23.25	-0.18	2021-22: FO: 21.96; PM: 0; Misc: 0; 2022-23: FO: 0; PM: 23.25; Misc: 0;	% Change: FO: -100 PM: 2225 Misc: 0
December	84.68	78.97	0.93	113.98	95.61	91.82	0.96	32.69	10.93		
January	89.43	83.15	0.93	78.65	95.88	92.22	0.96	30.63	6.45		

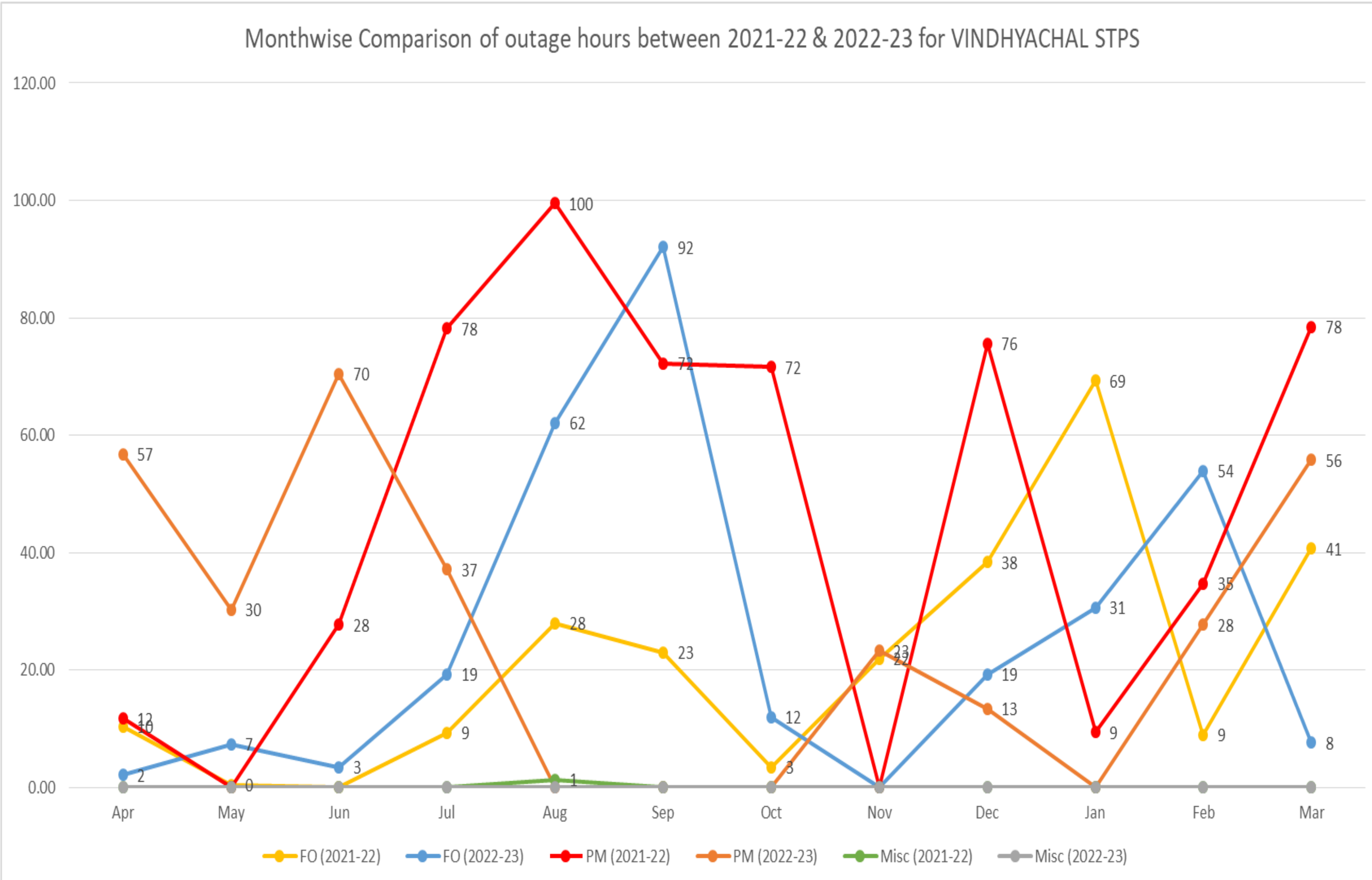
February	93.49	91.28	0.98	43.74	87.85	84.84	0.97	81.62	-5.64	2021-22: FO: 8.98; PM: 34.76; Misc: 0; 2022-23: FO: 53.92; PM: 27.7; Misc: 0;	% Change: FO: 500.45 PM: - 20.31 Misc: 0
March	82.27	82.89	1.01	119.16	91.48	87.74	0.96	63.39	9.21		

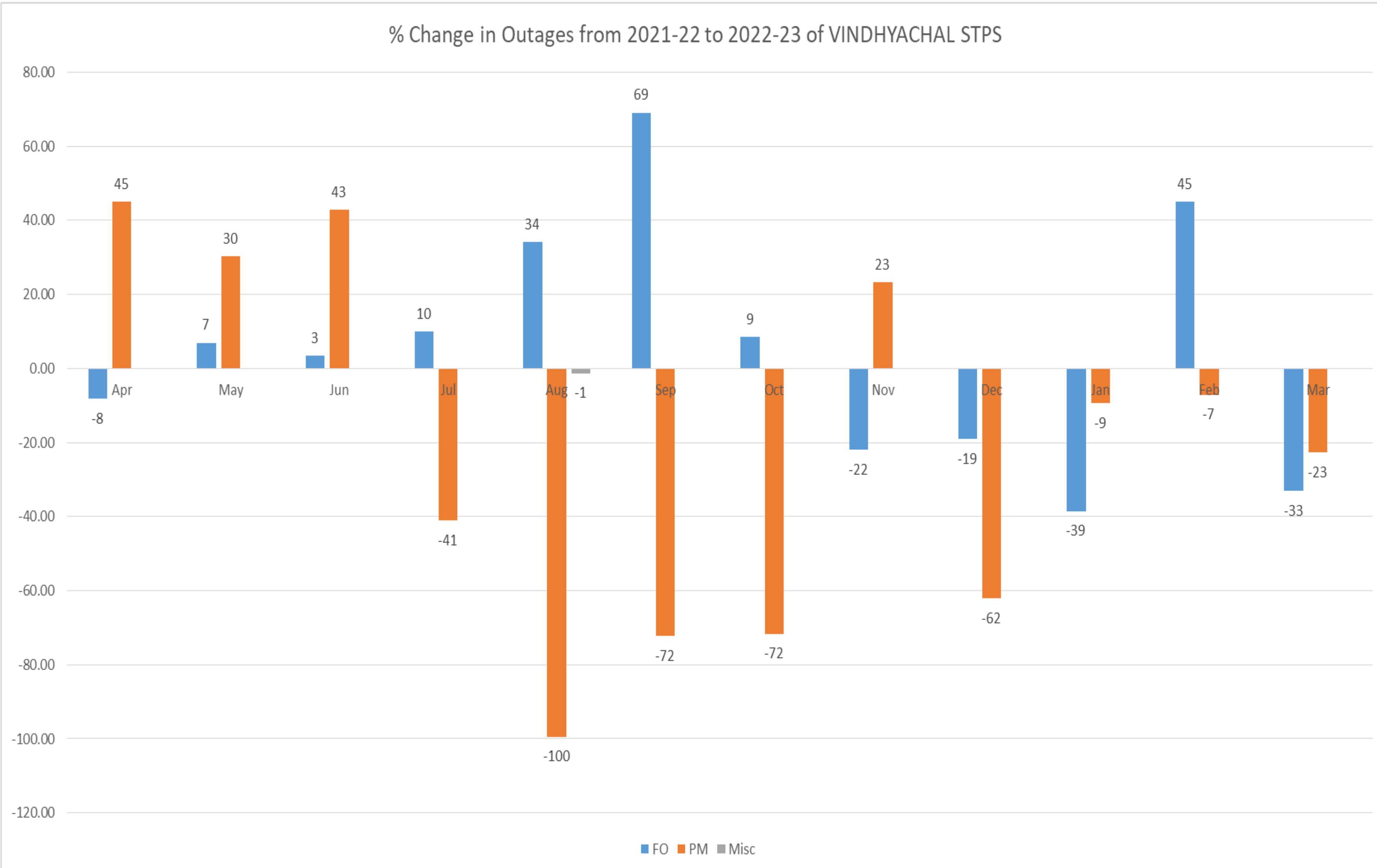
PAF Comparison of VINDHYACHAL STPS for 2021-22 & 2022-23



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
PAF 2021-22 (Avg. 90.17)	96.93	99.94	90.69	88.24	82.68	86.77	89.91	96.95	84.68	89.43	93.49	82.27
PAF 2022-23 (Avg. 92.81)	91.81	94.93	89.74	92.43	91.65	87.21	98.39	96.77	95.61	95.88	87.85	91.48
PLF 2021-22 (Avg. 85.77)	96.54	95.99	85.35	81.2	72.53	83.18	86.21	91.99	78.97	83.15	91.28	82.89
PLF 2022-23 (Avg. 89.5)	90.93	91.85	87.61	88.58	87.13	83.8	93.04	94.46	91.82	92.22	84.84	87.74

PAF 2021-22 (Avg. 90.17) PAF 2022-23 (Avg. 92.81) PLF 2021-22 (Avg. 85.77) PLF 2022-23 (Avg. 89.5)


Monthwise Comparison of outage hours between 2021-22 & 2022-23 for VINDHYACHAL STPS
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
FO (2021-22)
FO (2022-23)
PM (2021-22)
PM (2022-23)
Misc (2021-22)
Misc (2022-23)



% Change in Outages from 2021-22 to 2022-23 of VINDHYACHAL STPS
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
-100.00
-120.00
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
-8
45
7
30
3
43
10
-41
34
-100
-1
69
-72
9
-72
-22
23
-19
-62
-39
-9
45
-7
-33
-23
FO
PM
Misc

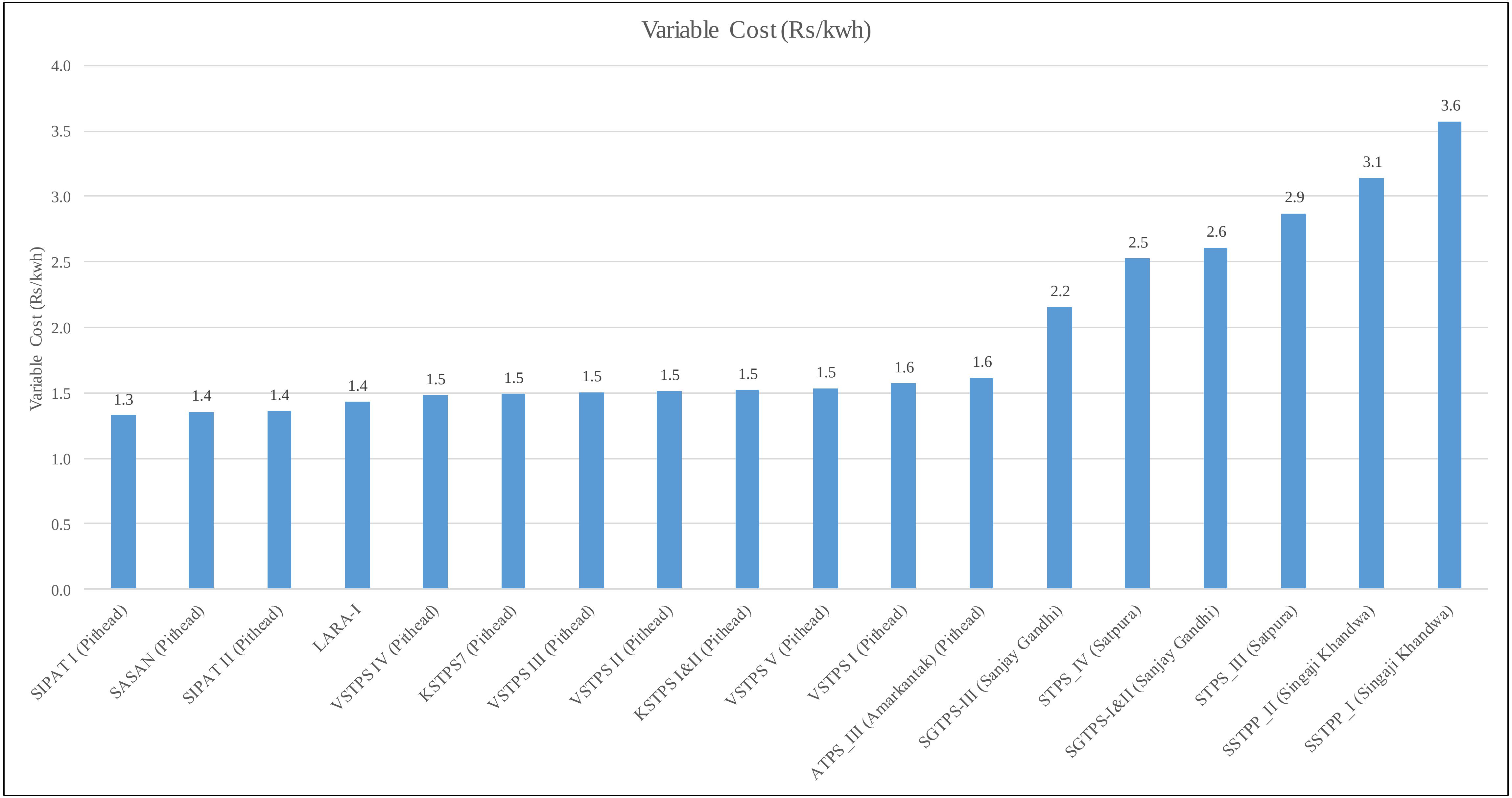
Analysis of Pithead Station

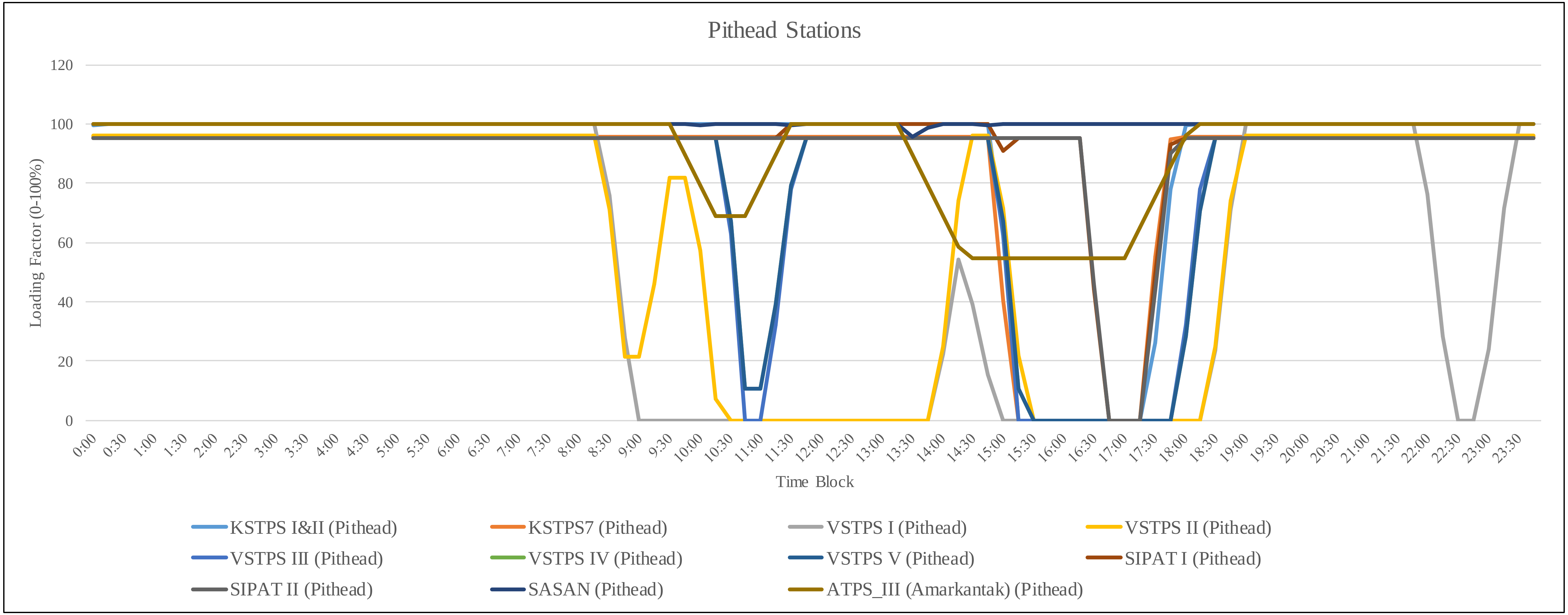
Madhya Pradesh: Scenario during low demand day

- Demand of 8727 MW on 30th April, 2023.

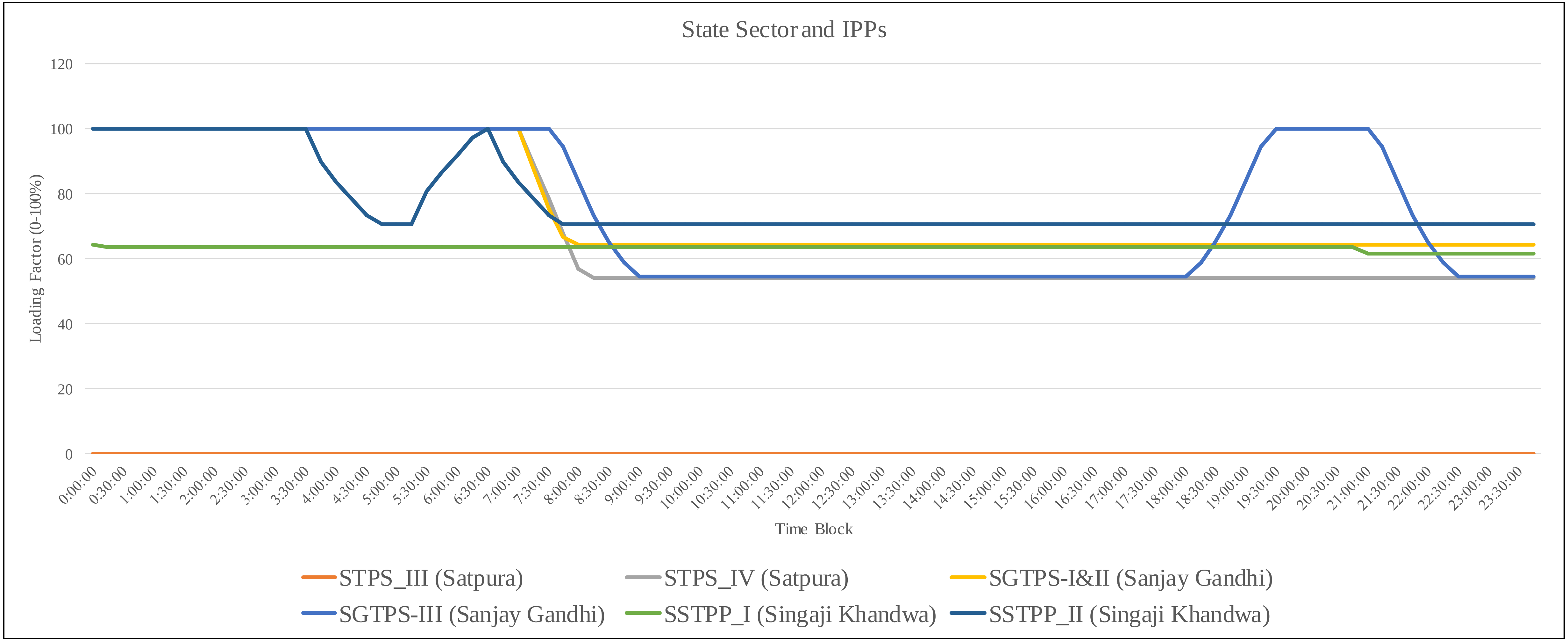
- From 09:00 hrs to 18:00 hrs, Madhya Pradesh has backed down pithead generating stations which are Vindhyachal STPS-I, Vindhyachal STPS-II, Vindhyachal STPS-V while given schedule to the costlier stations such as Amarkantak TPS-III and Singaji Khandwa TPP-II.

- Further, their own costlier plants such as Amarkantak TPS-III and Singaji Khandwa TPP-II was brought down to technical minimum of 55% during 15:00 to 18:00 hrs while pit head plants such as Vindhyachal STPS-I, Vindhyachal STPS-II, Vindhyachal STPS-V has been backed down to 0% at that time.


Variable Cost (Rs/kwh)
Variable Cost (Rs/kwh)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1.3
1.4
1.4
1.4
1.5
1.5
1.5
1.5
1.5
1.5
1.6
1.6
2.2
2.5
2.6
2.9
3.1
3.6
SIPAT I (Pithead)
SASAN (Pithead)
SIPAT II (Pithead)
LARA-I
VSTPS IV (Pithead)
KSTPS7 (Pithead)
VSTPS III (Pithead)
VSTPS II (Pithead)
KSTPS I&II (Pithead)
VSTPS V (Pithead)
VSTPS I (Pithead)
ATPS_III (Amarkantak) (Pithead)
SGTPS-III (Sanjay Gandhi)
STPS_IV (Satpura)
SGTPS-I&II (Sanjay Gandhi)
STPS_III (Satpura)
SSTPP_II (Singaji Khandwa)
SSTPP_I (Singaji Khandwa)

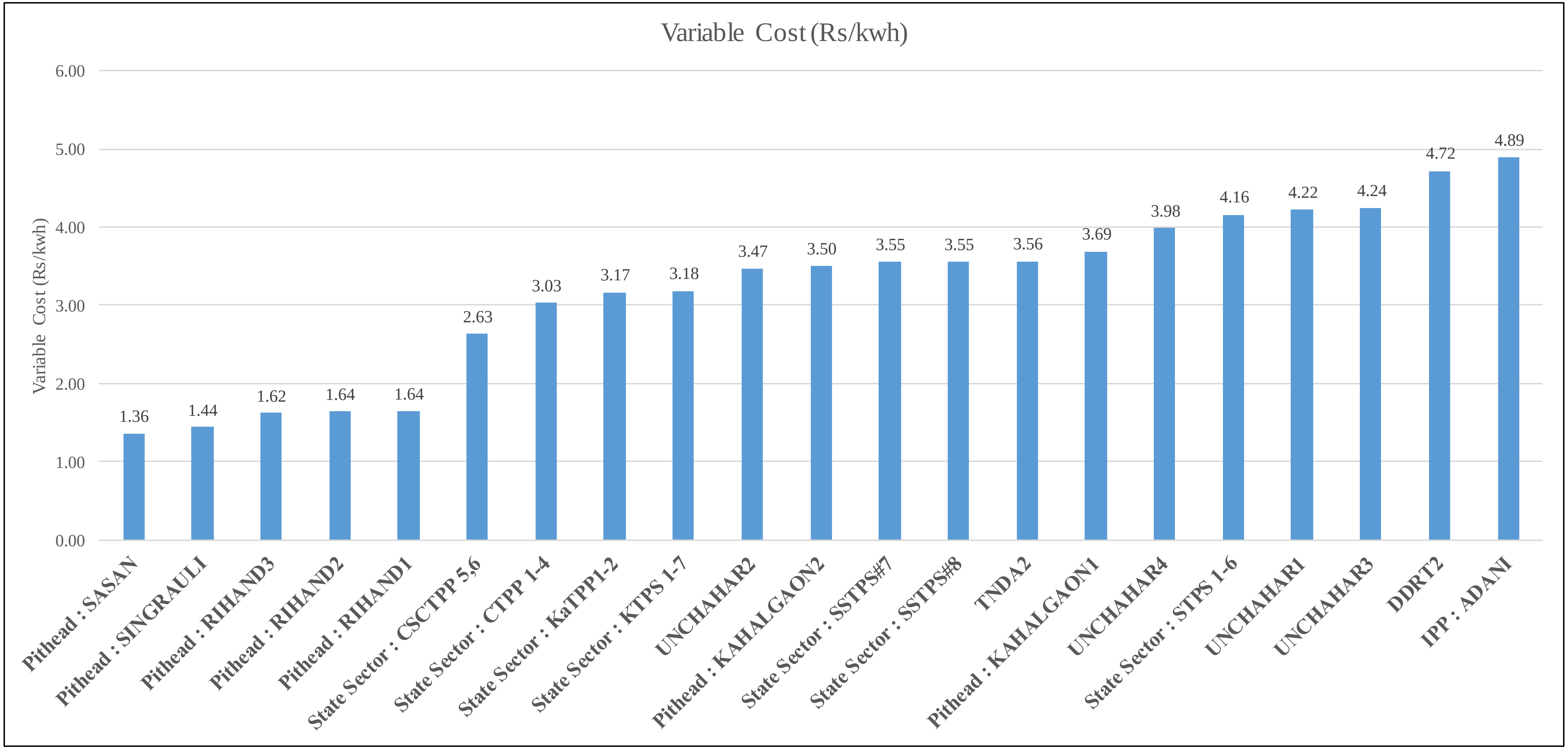


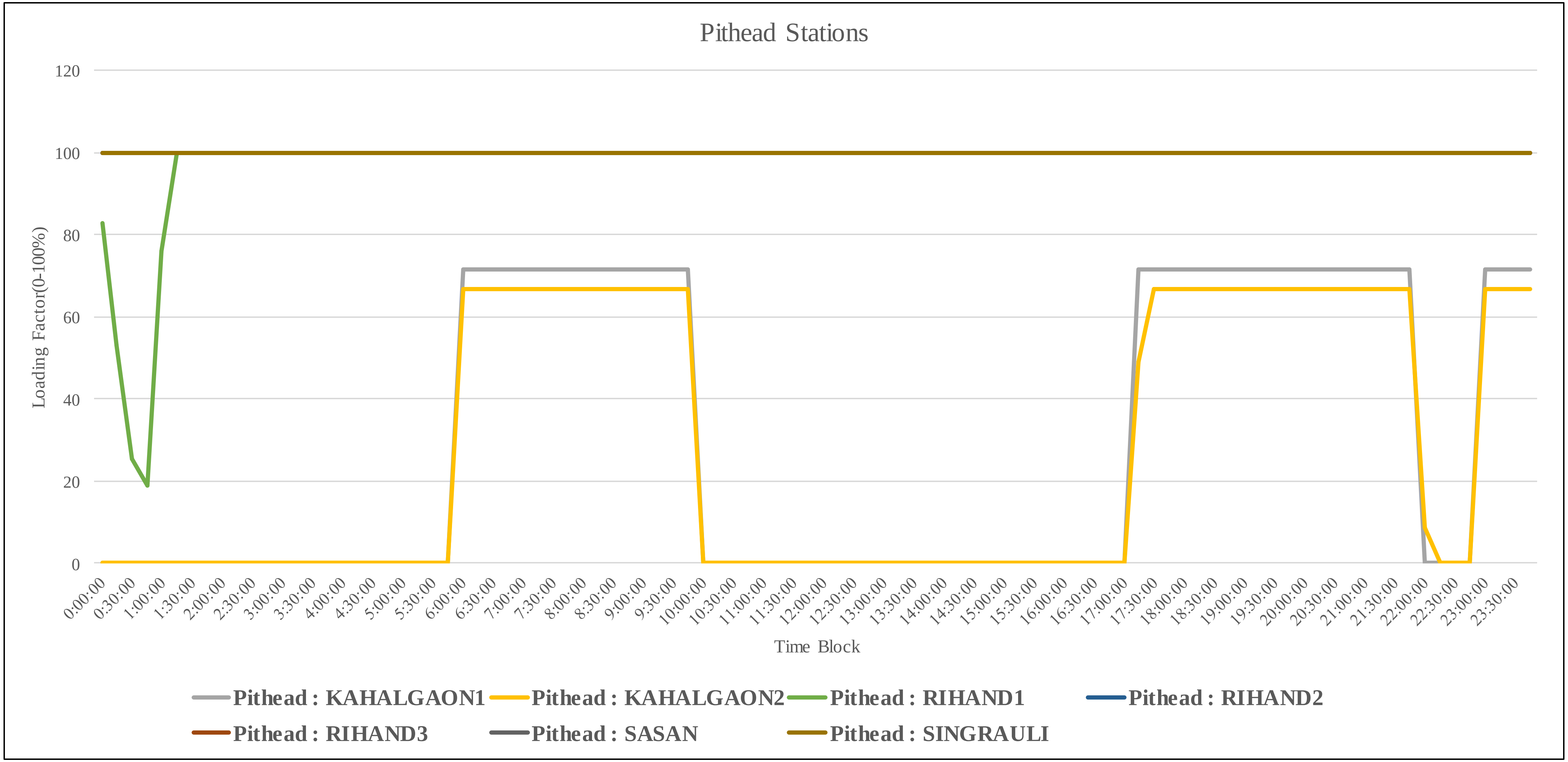
Pithead Stations
Loading Factor (0-100%)
120
100
80
60
40
20
0
0:00
0:30
1:00
1:30
2:00
2:30
3:00
3:30
4:00
4:30
5:00
5:30
6:00
6:30
7:00
7:30
8:00
8:30
9:00
9:30
10:00
10:30
11:00
11:30
12:00
12:30
13:00
13:30
14:00
14:30
15:00
15:30
16:00
16:30
17:00
17:30
18:00
18:30
19:00
19:30
20:00
20:30
21:00
21:30
22:00
22:30
23:00
23:30
Time Block
KSTPS I&II (Pithead)
KSTPS7 (Pithead)
VSTPS I (Pithead)
VSTPS II (Pithead)
VSTPS III (Pithead)
VSTPS IV (Pithead)
VSTPS V (Pithead)
SIPAT I (Pithead)
SIPAT II (Pithead)
SASAN (Pithead)
ATPS_III (Amarkantak) (Pithead)


State Sector and IPPs
Loading Factor (0-100%)
120
100
80
60
40
20
0
0:00:00
0:30:00
1:00:00
1:30:00
2:00:00
2:30:00
3:00:00
3:30:00
4:00:00
4:30:00
5:00:00
5:30:00
6:00:00
6:30:00
7:00:00
7:30:00
8:00:00
8:30:00
9:00:00
9:30:00
10:00:00
10:30:00
11:00:00
11:30:00
12:00:00
12:30:00
13:00:00
13:30:00
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
16:30:00
17:00:00
17:30:00
18:00:00
18:30:00
19:00:00
19:30:00
20:00:00
20:30:00
21:00:00
21:30:00
22:00:00
22:30:00
23:00:00
23:30:00
Time Block
STPS_III (Satpura)
STPS_IV (Satpura)
SGTPS-I&II (Sanjay Gandhi)
SGTPS-III (Sanjay Gandhi)
SSTPP_I (Singaji Khandwa)
SSTPP_II (Singaji Khandwa)

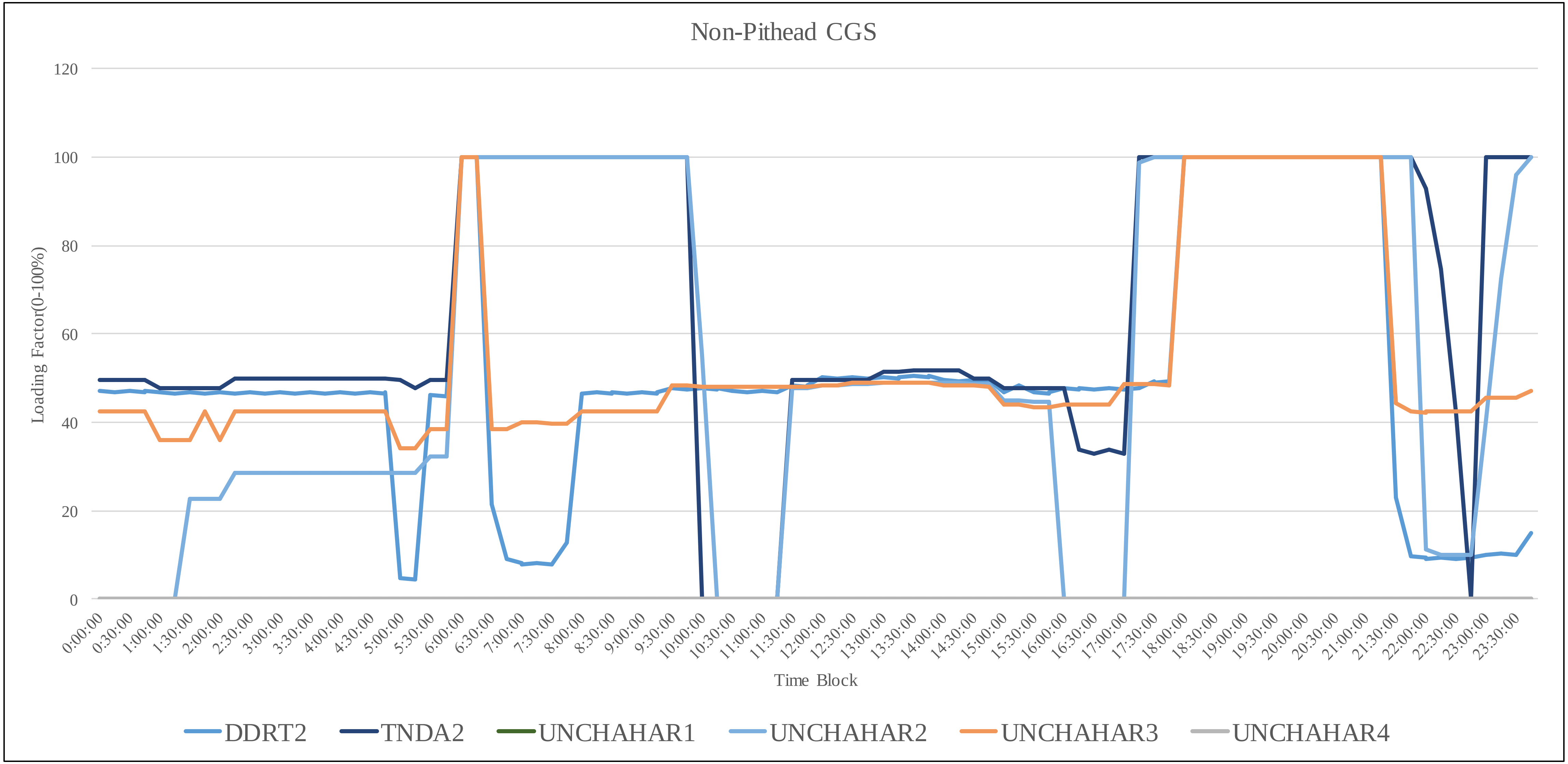
Rajasthan: Scenario during low demand day

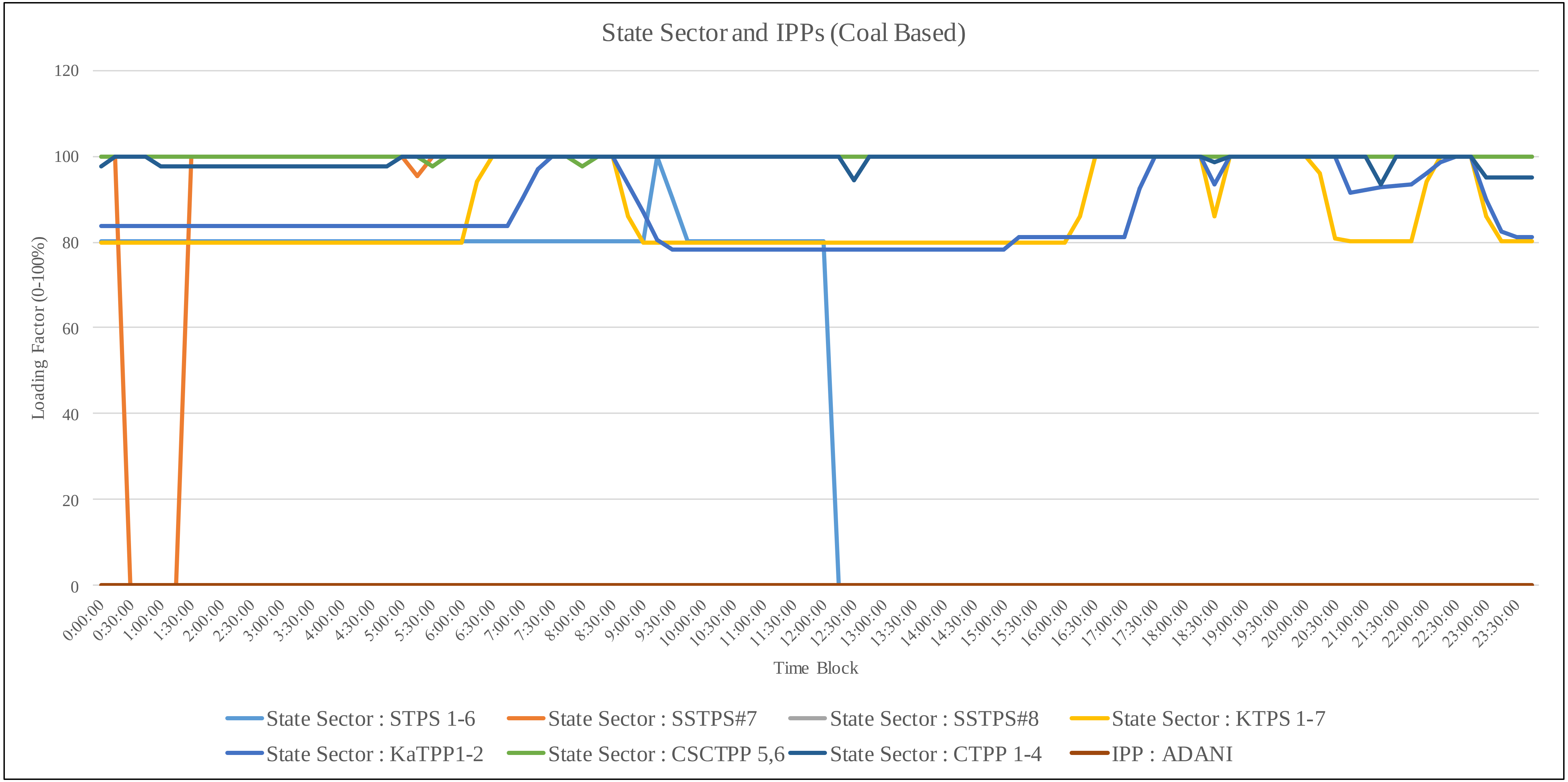
- Minimum demand of 9671 MW on 01th April, 2023.
- From 00:00 hrs to 05:10 hrs and 10:30 to 16:30 hrs, State of Rajasthan has backed down pithead generating stations which are Kahalgaon-I and Kahalgaon-II (**Rajasthan has allocation of 25 MW and 106 MW only in Kahalgaon –I and Kahalgaon-II**).
- Further, their own costlier plants and non-pithead costlier central generating stations was brought down to technical minimum of 55% during the day while pit head plants such as Kahalgaon-I and Kahalgaon-II has been backed down to 0%.
- These stations are located in Eastern Region and have maximum allocation to Eastern Region beneficiaries.


Variable Cost (Rs/kwh)
Variable Cost (Rs/kwh)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.36
1.44
1.62
1.64
1.64
2.63
3.03
3.17
3.18
3.47
3.50
3.55
3.55
3.56
3.69
3.98
4.16
4.22
4.24
4.72
4.89
Pithead : SASAN
Pithead : SINGRAULI
Pithead : RIHAND3
Pithead : RIHAND2
Pithead : RIHAND1
State Sector : CSCTPP 5,6
State Sector : CTPP 1-4
State Sector : KaTPP1-2
State Sector : KTPS 1-7
UNCHAHAR2
Pithead : KAHALGAON2
State Sector : SSTPS#7
State Sector : SSTPS#8
TNDA2
Pithead : KAHALGAON1
UNCHAHAR4
State Sector : STPS 1-6
UNCHAHAR1
UNCHAHAR3
DDRT2
IPP : ADANI



Pithead Stations
120
100
80
60
40
20
0
Loading Factor(0-100%)
0:00:00
0:30:00
1:00:00
1:30:00
2:00:00
2:30:00
3:00:00
3:30:00
4:00:00
4:30:00
5:00:00
5:30:00
6:00:00
6:30:00
7:00:00
7:30:00
8:00:00
8:30:00
9:00:00
9:30:00
10:00:00
10:30:00
11:00:00
11:30:00
12:00:00
12:30:00
13:00:00
13:30:00
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
16:30:00
17:00:00
17:30:00
18:00:00
18:30:00
19:00:00
19:30:00
20:00:00
20:30:00
21:00:00
21:30:00
22:00:00
22:30:00
23:00:00
23:30:00
Time Block
Pithead : KAHALGAON1
Pithead : KAHALGAON2
Pithead : RIHAND1
Pithead : RIHAND2
Pithead : RIHAND3
Pithead : SASAN
Pithead : SINGRAULI


Non-Pithead CGS
Loading Factor(0-100%)
120
100
80
60
40
20
0
0:00:00
0:30:00
1:00:00
1:30:00
2:00:00
2:30:00
3:00:00
3:30:00
4:00:00
4:30:00
5:00:00
5:30:00
6:00:00
6:30:00
7:00:00
7:30:00
8:00:00
8:30:00
9:00:00
9:30:00
10:00:00
10:30:00
11:00:00
11:30:00
12:00:00
12:30:00
13:00:00
13:30:00
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
16:30:00
17:00:00
17:30:00
18:00:00
18:30:00
19:00:00
19:30:00
20:00:00
20:30:00
21:00:00
21:30:00
22:00:00
22:30:00
23:00:00
23:30:00
Time Block
DDRT2
TNDA2
UNCHAHAR1
UNCHAHAR2
UNCHAHAR3
UNCHAHAR4



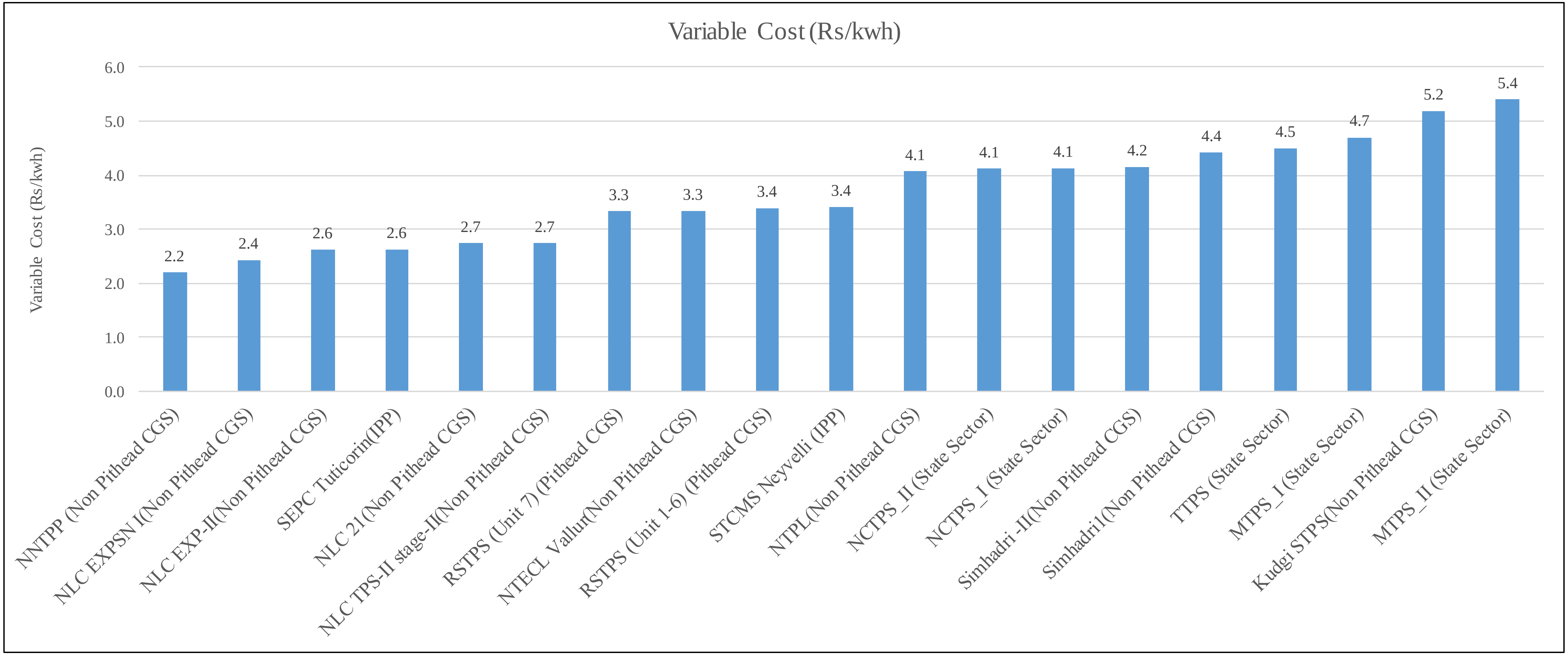
State Sector and IPPs (Coal Based)
120
100
80
60
40
20
0
Loading Factor (0-100%)
0:00:00
0:30:00
1:00:00
1:30:00
2:00:00
2:30:00
3:00:00
3:30:00
4:00:00
4:30:00
5:00:00
5:30:00
6:00:00
6:30:00
7:00:00
7:30:00
8:00:00
8:30:00
9:00:00
9:30:00
10:00:00
10:30:00
11:00:00
11:30:00
12:00:00
12:30:00
13:00:00
13:30:00
14:00:00
14:30:00
15:00:00
15:30:00
16:00:00
16:30:00
17:00:00
17:30:00
18:00:00
18:30:00
19:00:00
19:30:00
20:00:00
20:30:00
21:00:00
21:30:00
22:00:00
22:30:00
23:00:00
23:30:00
Time Block
State Sector : STPS 1-6
State Sector : SSTPS#7
State Sector : SSTPS#8
State Sector : KTPS 1-7
State Sector : KaTPP1-2
State Sector : CSCTPP 5,6
State Sector : CTPP 1-4
IPP : ADANI

Analysis of Ramagundem Pit-head plant

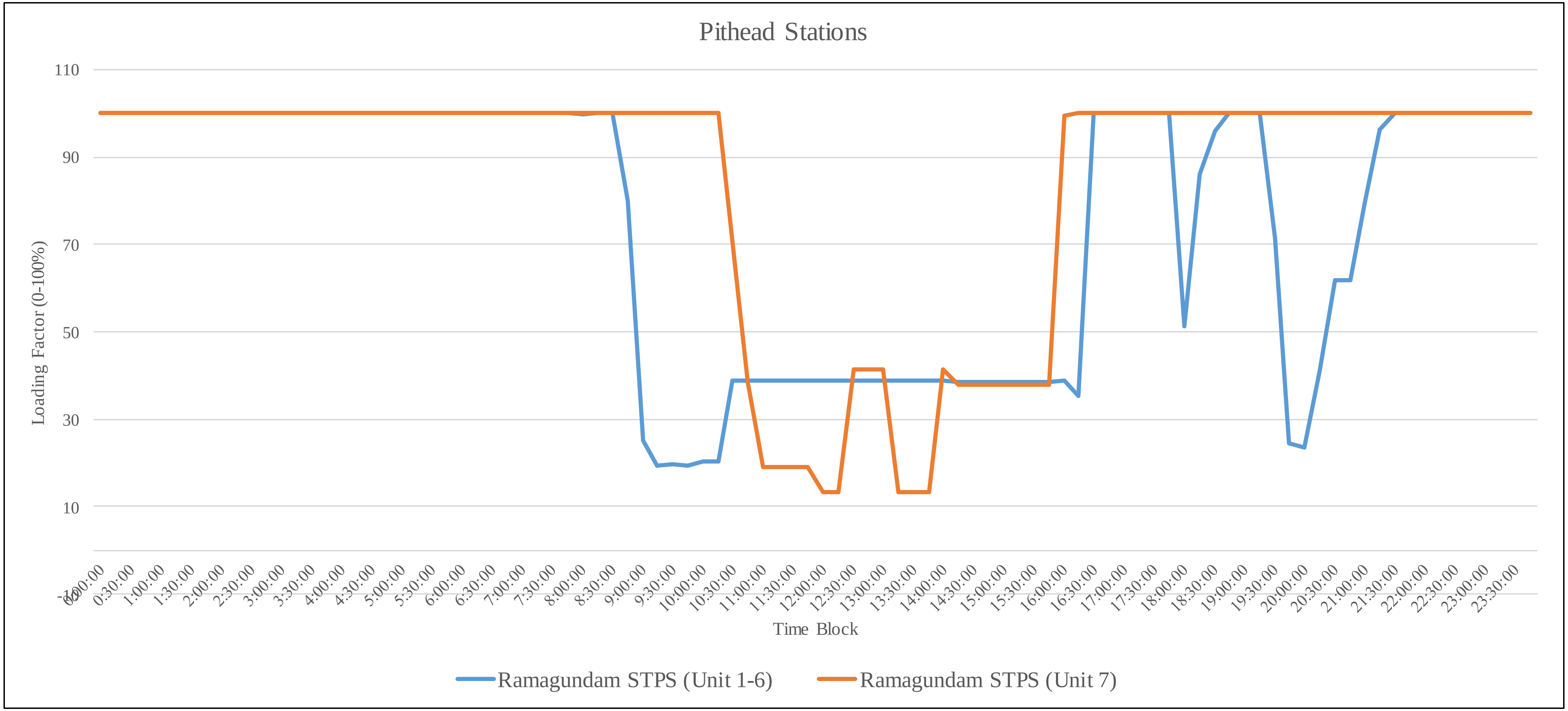
The States of Karnataka and Tamil Nadu have been analyzed as their share allocation is 1020 MW.

Tamil Nadu: Scenario during low demand day

- Minimum demand of 14,905 MW on 02nd April, 2023.
- From 09:00 hrs to 15:45 hrs, State of Tamil Nadu has backed down pithead generating stations which are Ramagundam (Unit 1 to 6) and Ramagundam STPS (Unit 7) while scheduled the costlier stations such as Kudgi STPS, NCTPS-I and NCTPS-II.
- Further, costlier non-pithead stations such as Kudgi STPS was brought to technical minimum of 55% during 10:00 to 16:00 hrs Ramagundam (Unit 1 to 6) and Ramagundam STPS (Unit 7) has been backed down to 20% to 35% at that time.
- Despite of being costlier stations than Ramagundem, its own generating stations like NCTPS-I and NCTPS-II were scheduled to 60%-100% during that time.
- MTPS-I, MTPS-II and TTPS was backed down to 40%, 60%-80%, 20% respectively during 10:00 Hrs to 17:00 Hrs.



Variable Cost (Rs/kwh)
Variable Cost (Rs/kwh)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2.2
2.4
2.6
2.6
2.7
2.7
3.3
3.3
3.4
3.4
4.1
4.1
4.1
4.2
4.4
4.5
4.7
5.2
5.4
NNTPP (Non Pithead CGS)
NLC EXPSN I(Non Pithead CGS)
NLC EXP-II(Non Pithead CGS)
SEPC Tuticorin(IPP)
NLC 21(Non Pithead CGS)
NLC TPS-II stage-II(Non Pithead CGS)
RSTPS (Unit 7) (Pithead CGS)
NTECL Vallur(Non Pithead CGS)
RSTPS (Unit 1-6) (Pithead CGS)
STCMS Neyvelli (IPP)
NTPL(Non Pithead CGS)
NCTPS_II (State Sector)
NCTPS_I (State Sector)
Simhadri -II(Non Pithead CGS)
Simhadri1(Non Pithead CGS)
TTPS (State Sector)
MTPS_I (State Sector)
Kudgi STPS(Non Pithead CGS)
MTPS_II (State Sector)



Pithead Stations
Loading Factor (0-100%)
110
90
70
50
30
10
-10
Time Block
0:00:00
0:30:00
1:00:00
1:30:00
2:00:00
2:30:00
3:00:00
3:30:00
4:00:00
4:30:00
5:00:00
5:30:00
6:00:00
6:30:00
7:00:00
7:30:00
8:00:00
8:30:00
9:00:00
9:30:00
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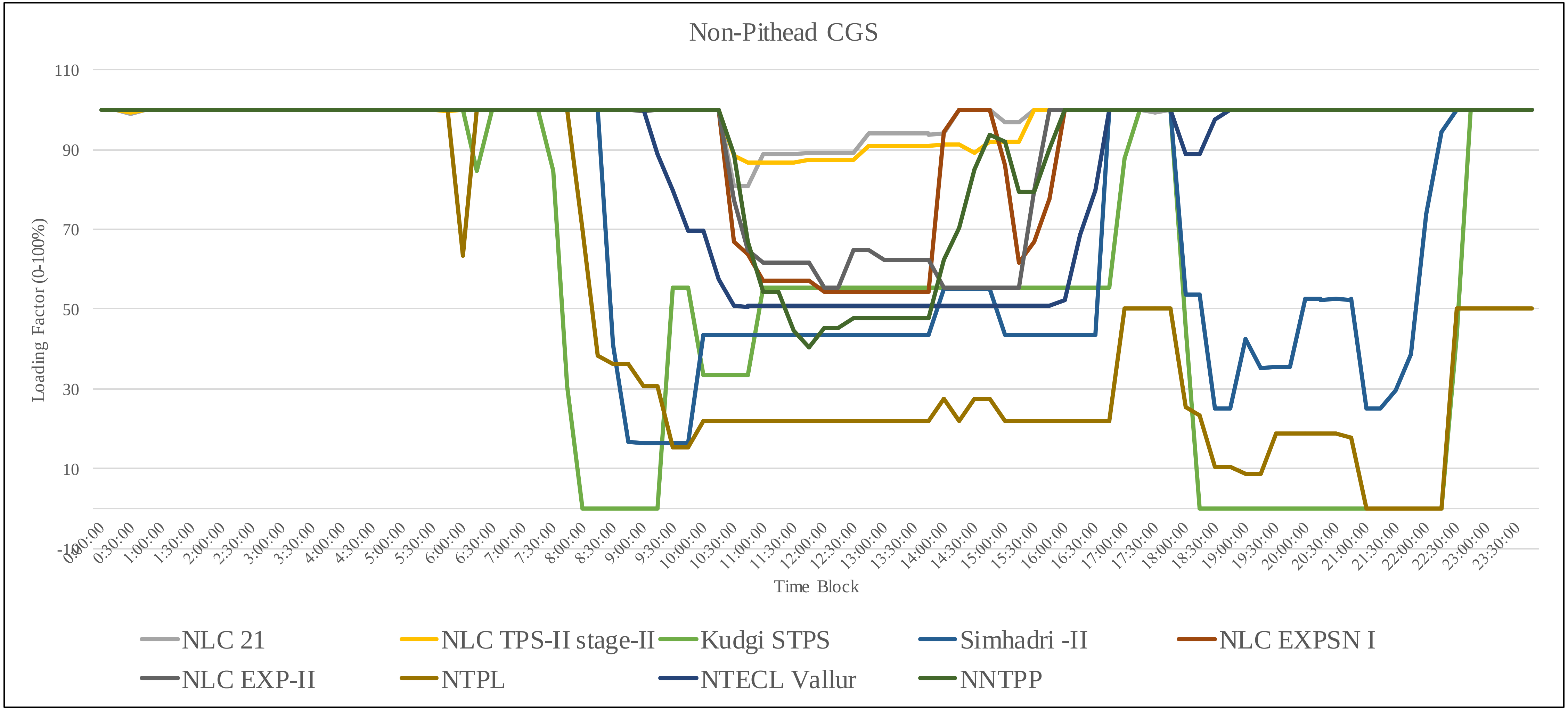
Ramagundam STPS (Unit 1-6)
Ramagundam STPS (Unit 7)



Non-Pithead CGS
110
90
70
50
30
10
-10
Loading Factor (0-100%)
0:00:00
0:30:00
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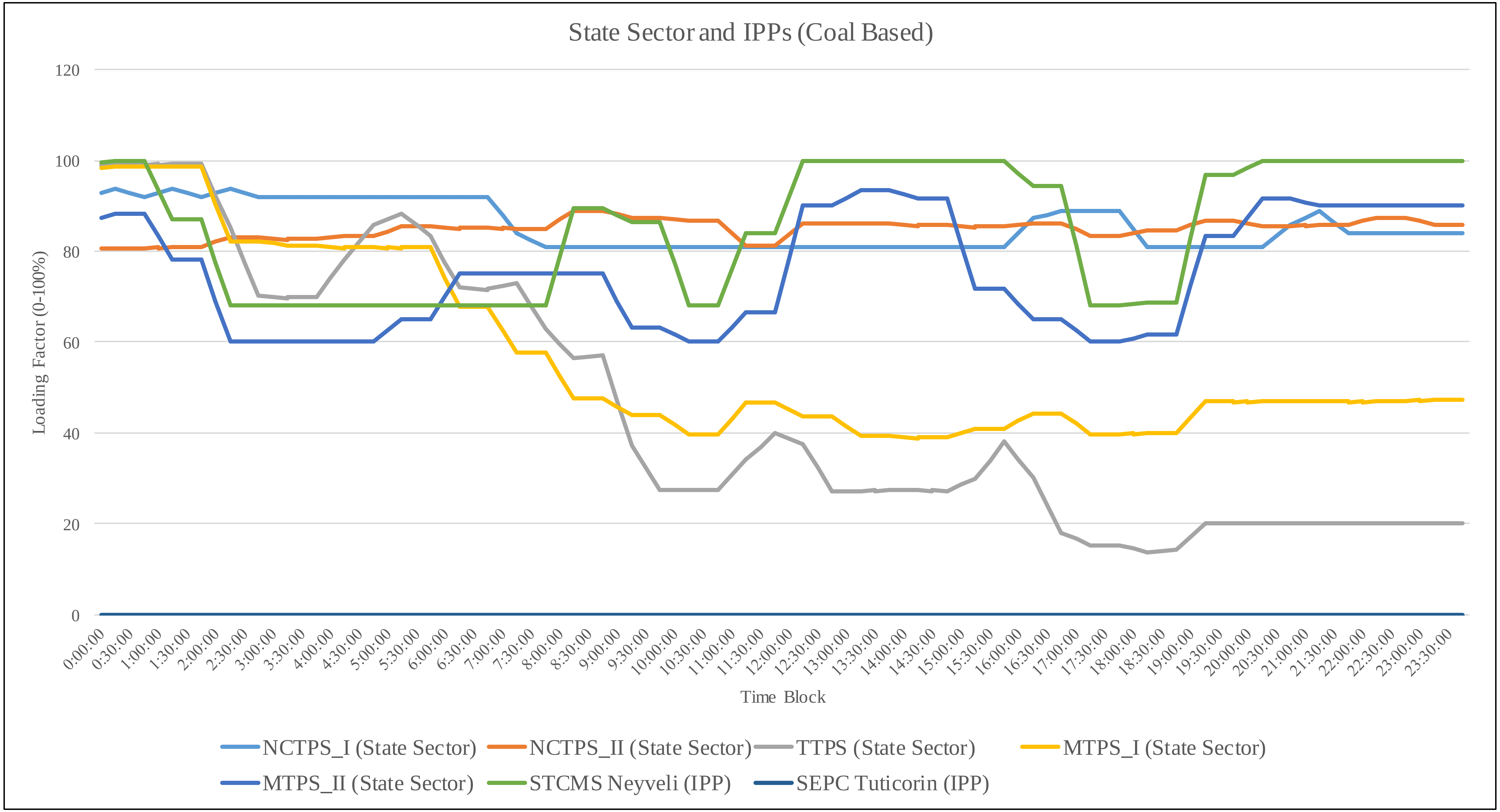
23:00:00
23:30:00
Time Block
NLC 21
NLC TPS-II stage-II
Kudgi STPS
Simhadri -II
NLC EXPSN I
NLC EXP-II
NTPL
NTECL Vallur
NNTPP


State Sector and IPPs (Coal Based)
120
100
80
60
40
20
0
Loading Factor (0-100%)
0:00:00
0:30:00
1:00:00
1:30:00
2:00:00
2:30:00
3:00:00
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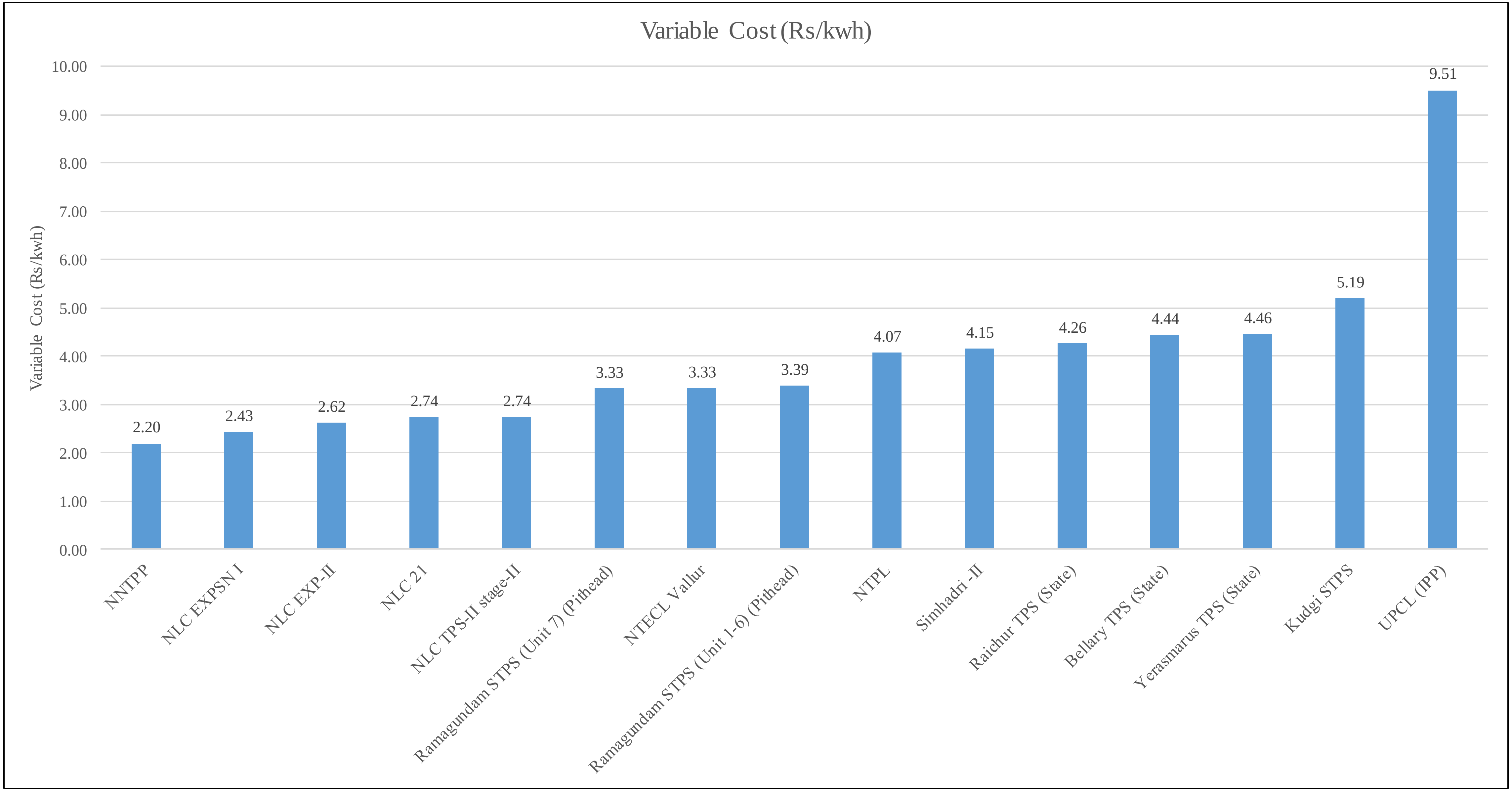
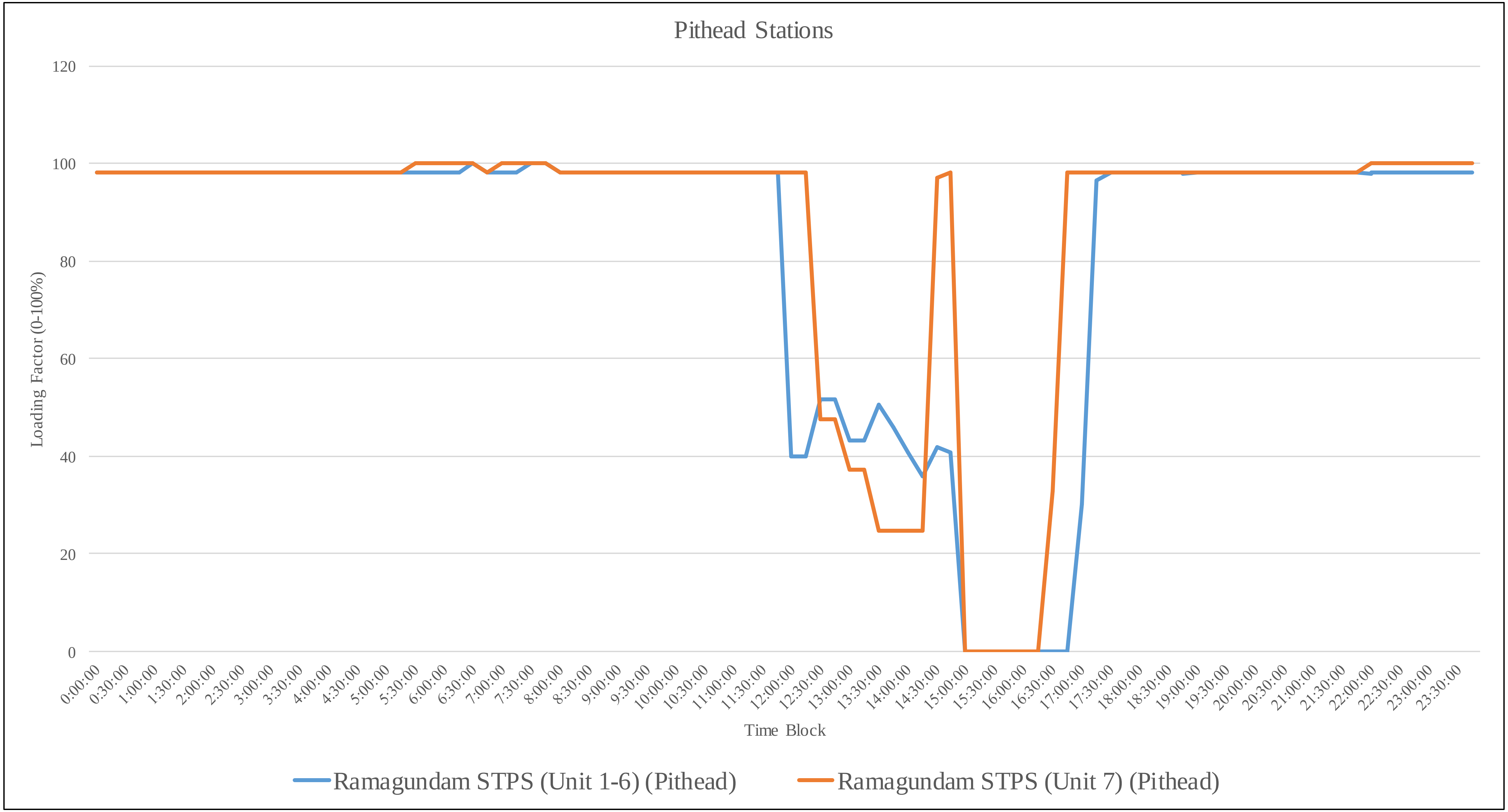
Time Block
NCTPS_I (State Sector)
NCTPS_II (State Sector)
TTPS (State Sector)
MTPS_I (State Sector)
MTPS_II (State Sector)
STCMS Neyveli (IPP)
SEPC Tuticorin (IPP)

Karnataka: Scenario during low demand day

- Minimum demand of 13,401 MW on 09nd April, 2023.
- From 12:00 hrs to 16:30 hrs, State of Karnataka has backed down pithead generating stations which are Ramagundam (Unit 1 to 6) and Ramagundam STPS (Unit 7) while scheduled the costlier stations such as Kudgi STPS, NTPL and Simhadri-II.
- Further, costlier non-pithead stations such as Kudgi STPS was brought to technical minimum of 55% during 15:00 to 17:00 hrs Ramagundam (Unit 1 to 6) and Ramagundam STPS (Unit 7) has been backed down to 0% at that time.
- Despite of being costlier stations than Ramagundem, its own generating stations like NTPL and Simhadri-II were scheduled to 40% during that time.
- Yerasamus STPS despite of having higher cost than Ramagundem run at 100% during whole day.



Variable Cost (Rs/kwh)
Variable Cost (Rs/kwh)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2.20
2.43
2.62
2.74
2.74
3.33
3.33
3.39
4.07
4.15
4.26
4.44
4.46
5.19
9.51
NNTPP
NLC EXPSN I
NLC EXP-II
NLC 21
NLC TPS-II stage-II
Ramagundam STPS (Unit 7) (Pithead)
NTECL Vallur
Ramagundam STPS (Unit 1-6) (Pithead)
NTPL
Simhadri -II
Raichur TPS (State)
Bellary TPS (State)
Yerasmarus TPS (State)
Kudgi STPS
UPCL (IPP)


Pithead Stations
Loading Factor (0-100%)
120
100
80
60
40
20
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0:00:00
0:30:00
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1:30:00
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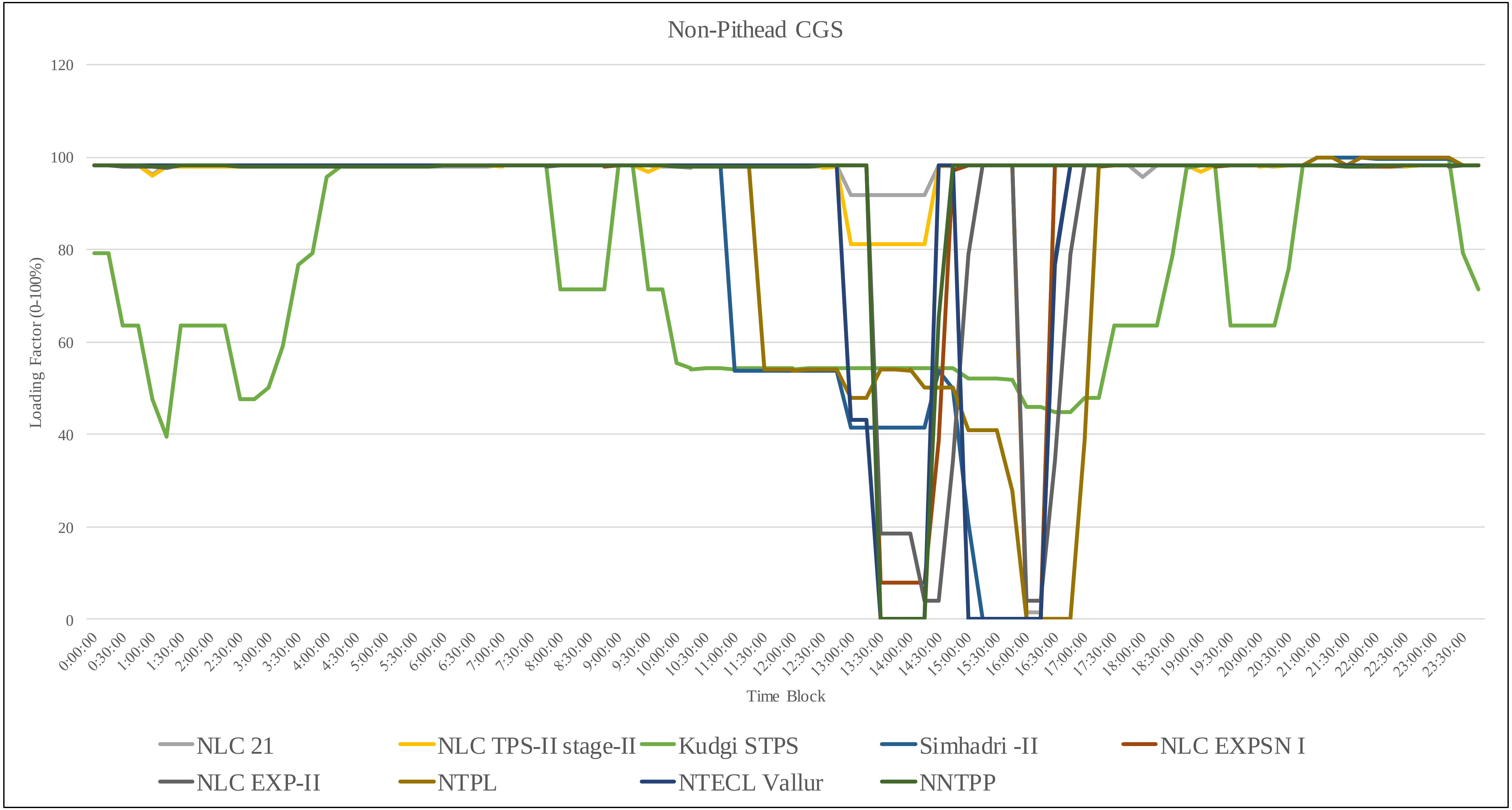
Time Block
Ramagundam STPS (Unit 1-6) (Pithead)
Ramagundam STPS (Unit 7) (Pithead)



Non-Pithead CGS
Loading Factor (0-100%)
120
100
80
60
40
20
0
0:00:00
0:30:00
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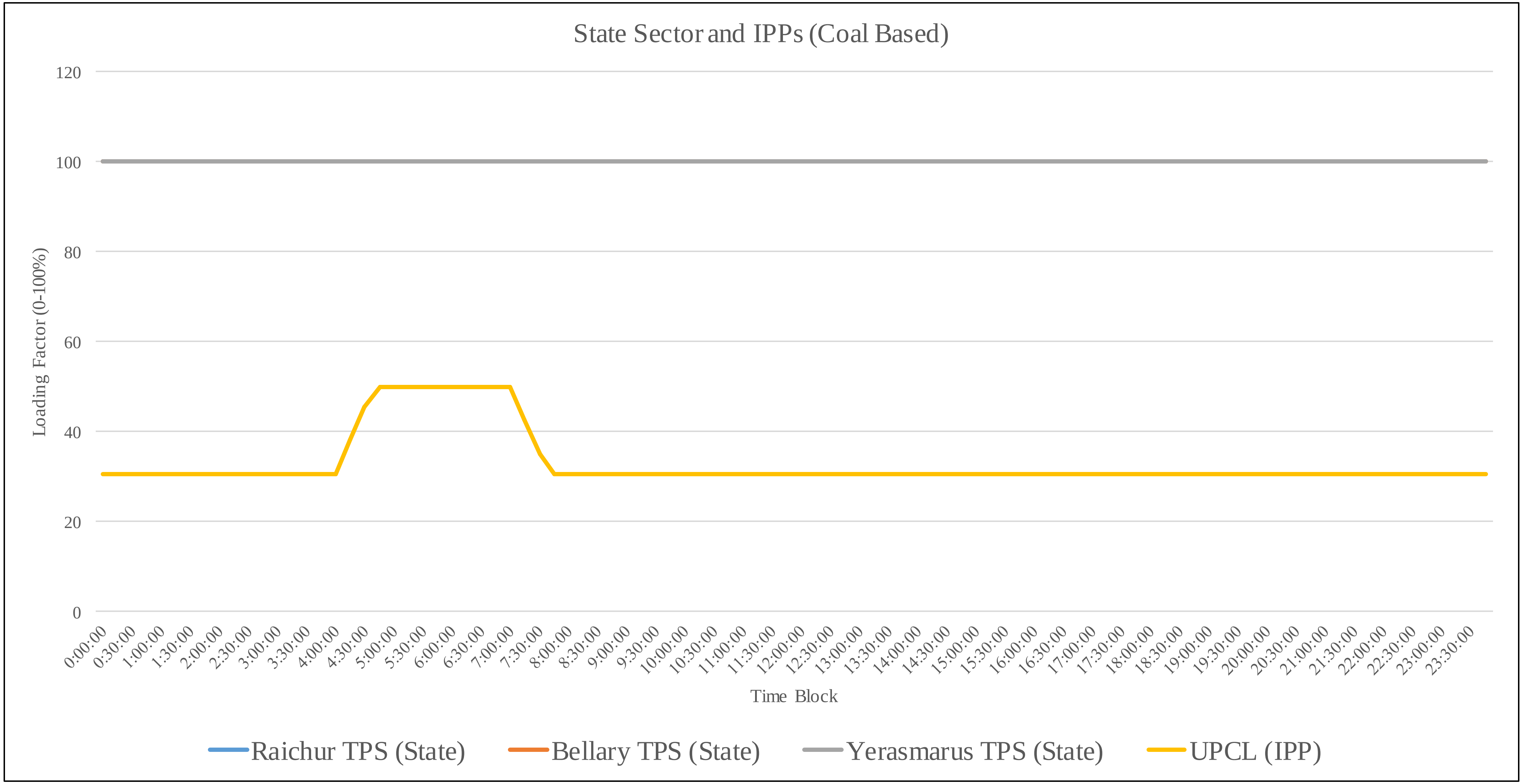
Time Block
NLC 21
NLC TPS-II stage-II
Kudgi STPS
Simhadri -II
NLC EXPSN I
NLC EXP-II
NTPL
NTECL Vallur
NNTPP


State Sector and IPPs (Coal Based)
Loading Factor (0-100%)
120
100
80
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1:00:00
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Time Block
Raichur TPS (State)
Bellary TPS (State)
Yerasmarus TPS (State)
UPCL (IPP)

Minutes of Review Meeting taken by CE, OPM, CEA through VC with SRPC, SRLDCs, SLDCs, Gencos, Utilities etc., for "Improving Pit-head plants" on 7th July, 2023.

A review meeting was taken under the Chairmanship of Sh. B. Lyngkhoi, CE (OPM), CEA. He welcomed MS, SRPC, ED & CGM, SRLDC and all the senior officers from SLDCs, Gencos of Southern Region. At the outset Sh. Lyngkhoi informed that MoP has directed that there should be greater emphasis on improving PLF of pit-head plants. Further, a study may be carried out about the plant availability norms globally and power plants in the country should also achieve those benchmarks.

He requested the members to discuss on 3 agenda:

1. PAF adopted globally
2. PLF of pit-heads
3. MoD followed by States

Members stated that as per Global Energy Monitor 2023 (January, 2023), the Operating Coal Fire capacity of top 10 countries are as below:

Sl. No	Name of Country	Coal Fire Plants IC in GW	% Share of Coal plants contribution	PAF	PLF
1	China	1092	62	?	?
2	India	203	74	?	?
3	USA	64	15	?	?
4	Japan	50	65	?	?
5	South Africa	43	80	?	?
6	Indonesia	40	64	?	?
7	South Korea	36	34	?	?
8	Russia	30	55	?	?
9	Vietnam	25	40	?	?
10	Australia	16	51	?	?

Note: Figures are approximated

Further, as more and more RE are penetrating into the grid, the mixed ratio of thermal power will get decreased and PLF will be naturally be in declining trend. It can be seen from CEA's Report on Optimal Generation Capacity Mix for the year 2029-30, the performance analysis of thermal units "Cost vs PLF" indicates that plants having lesser VC will always get the scheduled than those which have higher VC.

CE (OPM) enquired if SR States followed the merit order dispatch and also enquired about the Technical Minimum adopted by the States.

Sl No.	Name of State	Station	Unit (MW)	TML Status
1	Andhra Pradesh	Vijayawada 1	2 x 210	71%
2		Vijayawada 2	2 x 210	71%
3		Vijayawada 3	2 x 210	71%
4		Vijayawada 4	1x500	71%
5		Rayalaseema A	2 x 210	71%
6		Rayalaseema B	2x210	71%
7		Rayalaseema Stg-III Unit V	1 x 210	71%
8		Rayalseema D	1x600	55%
9		Krishnapatanam(SDSTPS) -I & II	2x800	55%
10		Krishnapatanam(SDSTPS) -III	1x800	55%
11		HNPCL	2x520	55%
12	Karnataka	Raichur TPS	7 x 210+1 x 250	70%
13		Bellari TPS	2 x 500+1x700	55%
14		Yeramarus TPS	2x800	55%
15		UPCL	2x600	55%
16	Tamil Nadu	Tuticorin TPS	5x210	80%
17		Mettur TPS	4 x 210	80%
18		North Chennai TPS	3 x 210	80%
19		MTPP Stage III	1 x 600	60%
20		NCTPP Stage II	2 x 600	60%
21	Telangana	Kothagudem D	2 x 250	65%
22		Kothagudem E	1x500	66%
23		Kothagudam Stage VII	1x800	68%
24		Ramagundam B	1 x 62.5	58%
25		Kakatiya TPP	1x500+1x600	66%
26		Bhadadri TPS	270x4	65%
27		Singareni Collieries TPS	2x600	67%

In SR following stations are Pit head station, which are less than 25km from coal mines and dedicated conveyor belts.

a. Ramagundam (2600MW) Coal mines are at singareni (12km) through conveyor built and 76.62% PLF (Yr21-22).
b. Talcher stage 2 (2000MW) Pit head plant PLF is 84.18% (Yr 21-22).

c. In Neyveli Complex which lignite based and Mines are located.The units are operation and PLF (2021-22).

SL.No	Name of the Plant	Plant capacity	PLF(2021-22)
1	Neyveli TS -II	1470MW	74.74%
2	Neyveli TS-1 Exp	420MW	88.78%
3	Neyveli TS-2 Exp	500MW	46.37%
4	NNTP	1000MW	70.54%
5	TPSZ(IPP)	250MW	70.24%

SLDC, Kerela informed that there is no pit head thermal plant in Kerala. Only NTPC Kayamkulam naphtha based plant, but not in operation and on RSD due to high variable cost. NTPL (1000MW) import indigenous coal from Talcher through Paradip Port. During high wind season (June to Sep) wind generation is high during night hours and some states like Karnataka, Tamil Nadu & Andhra Pradesh, the wind generation is mostly available during the day time along with solar hours. Hence, requisition for thermal plant was less and thermal plants are kept in technical minimum and in Reserve shutdown which also impact the PLF of thermal plant. Few plants of IPPs in SR were blended with imported coal and the VC was increased and hence during the blending period, requisition from the plant was not fully given and thereby reducing the PLF approx 70.13%

After detailed deliberation the following points may be noted:

- SR States follow Merit Order which their Management/SERC/Audit is monitoring. They follow a combined merit order list of all PPAs (Central/Stat/IPPs.

- There are planned outages and forced outages of the units. Some of pit head stations are very old but performing well but margins have to give for proper Maintenance and forced outages.

- As per CEA's Report on Optimal Generation Capacity Mix for the year 2029-30, PLFs are in the range of 75% to 85%. Nuclear and RE cannot be backed down.

- With more solar coming to meet evening peak more units have to be kept on bar that means during solar hours thermal generation will be backed down.

- The states are mandated to keep reserves and reserves have to be distributed among generators due to ramp restrictions.

- The ISGS scheduling is done 7-8 Time Blocks ahead so in between 7-8 time blocks and real time any event is to managed by State Generators and it may violate Merit Order.

- STOA/Collective transactions on day of operation cannot be rescheduled.

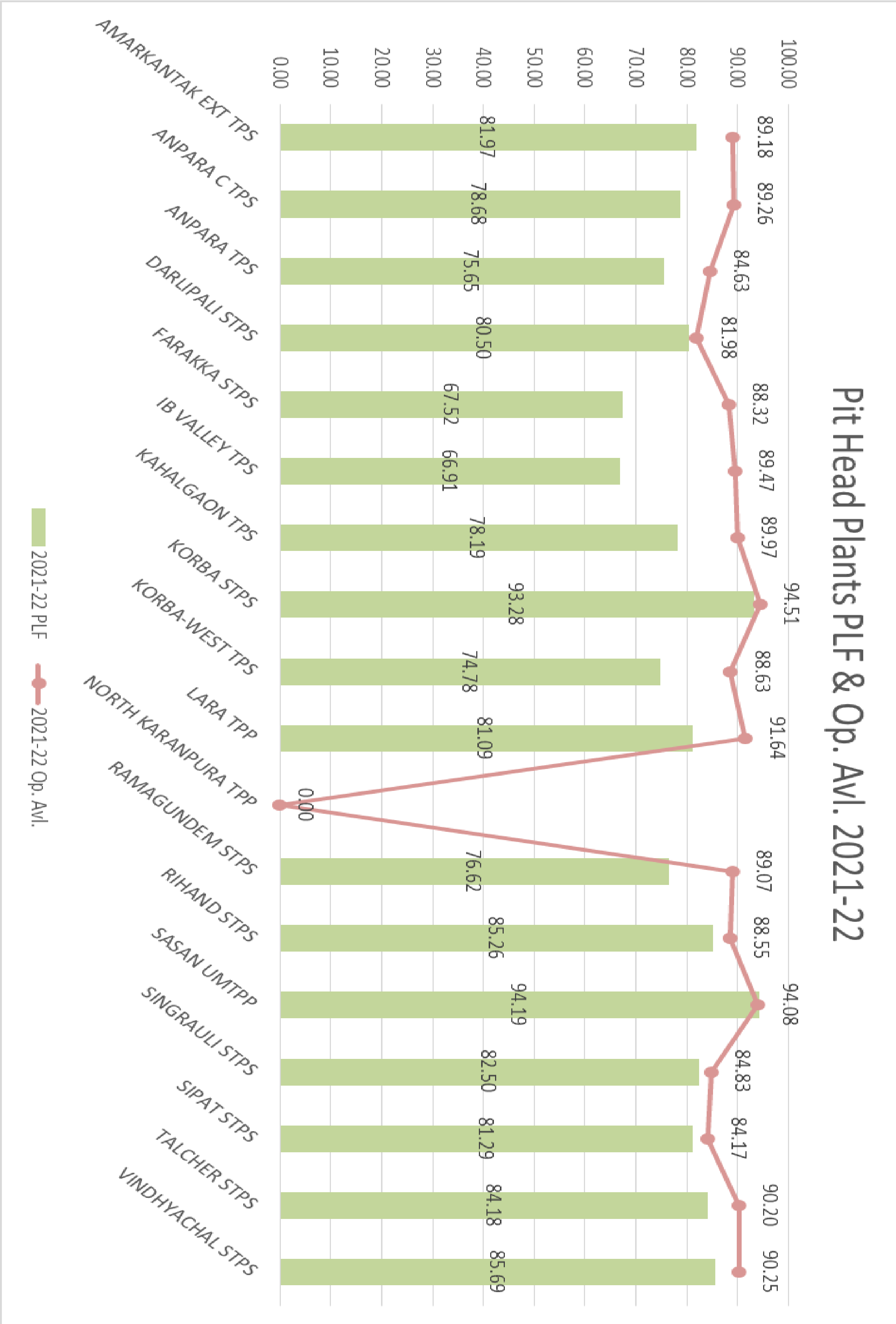
- LTA/MTOA also have some contractual limitations which limit their backing down.

- ISGS stations generally follow 55 % TM while older units of states still follow higher TM (70%) and still it will take time to come to 55% and 40%. So in absolute terms the scheduling of state generators will be higher even if its VC is higher.

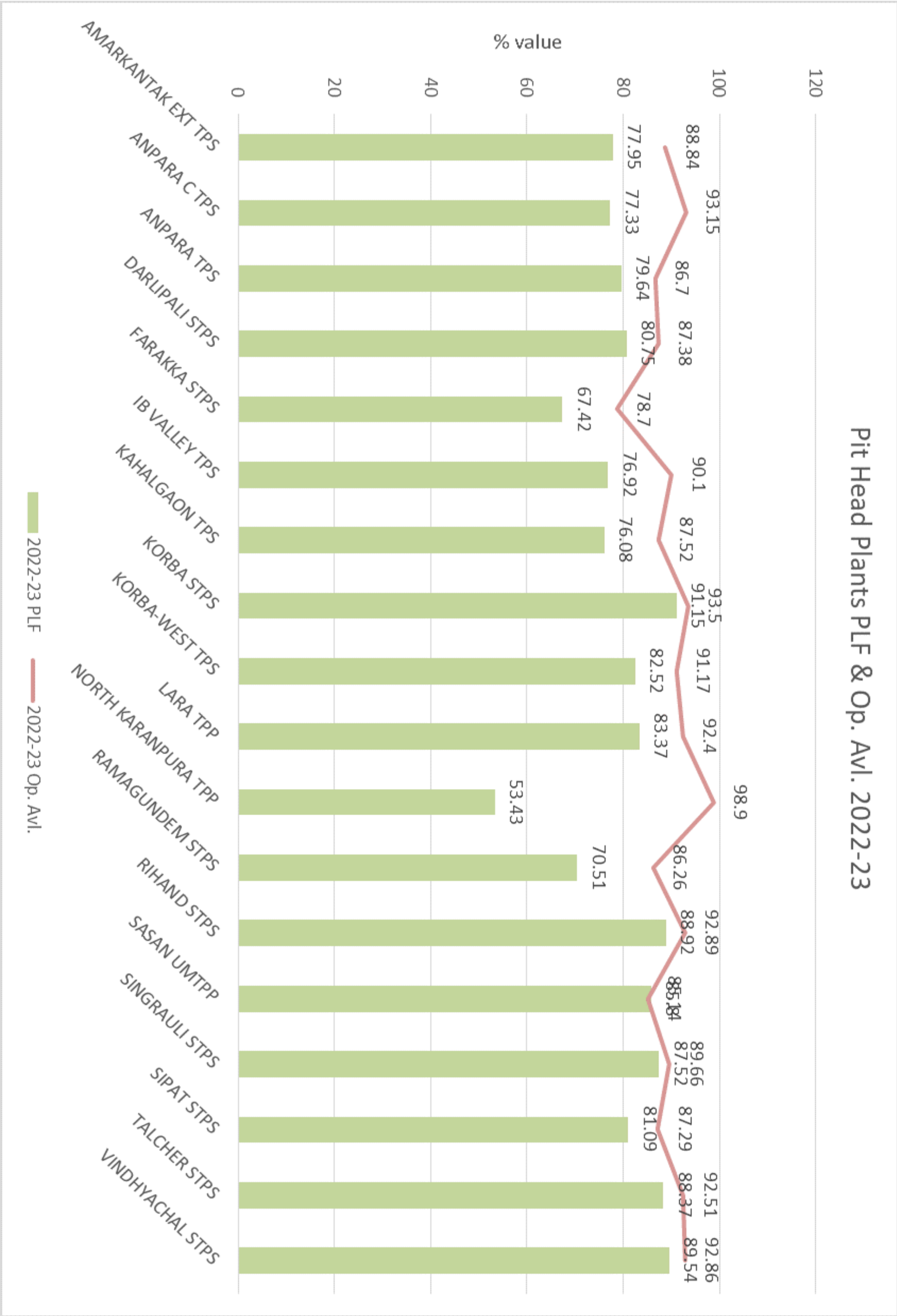
- Sometimes VC of Pit Head Stations also becomes more and they fall down in Merit Order.

Therefore it is suggested that Pit Head Stations meeting 85% PLF is reasonable considering the RE integration (Present and Target). It can be decreased by 1% or 1.5 % /Annum to facilitate more RE. However PAF must be above 90% (Considering Planned and Forced Outages).

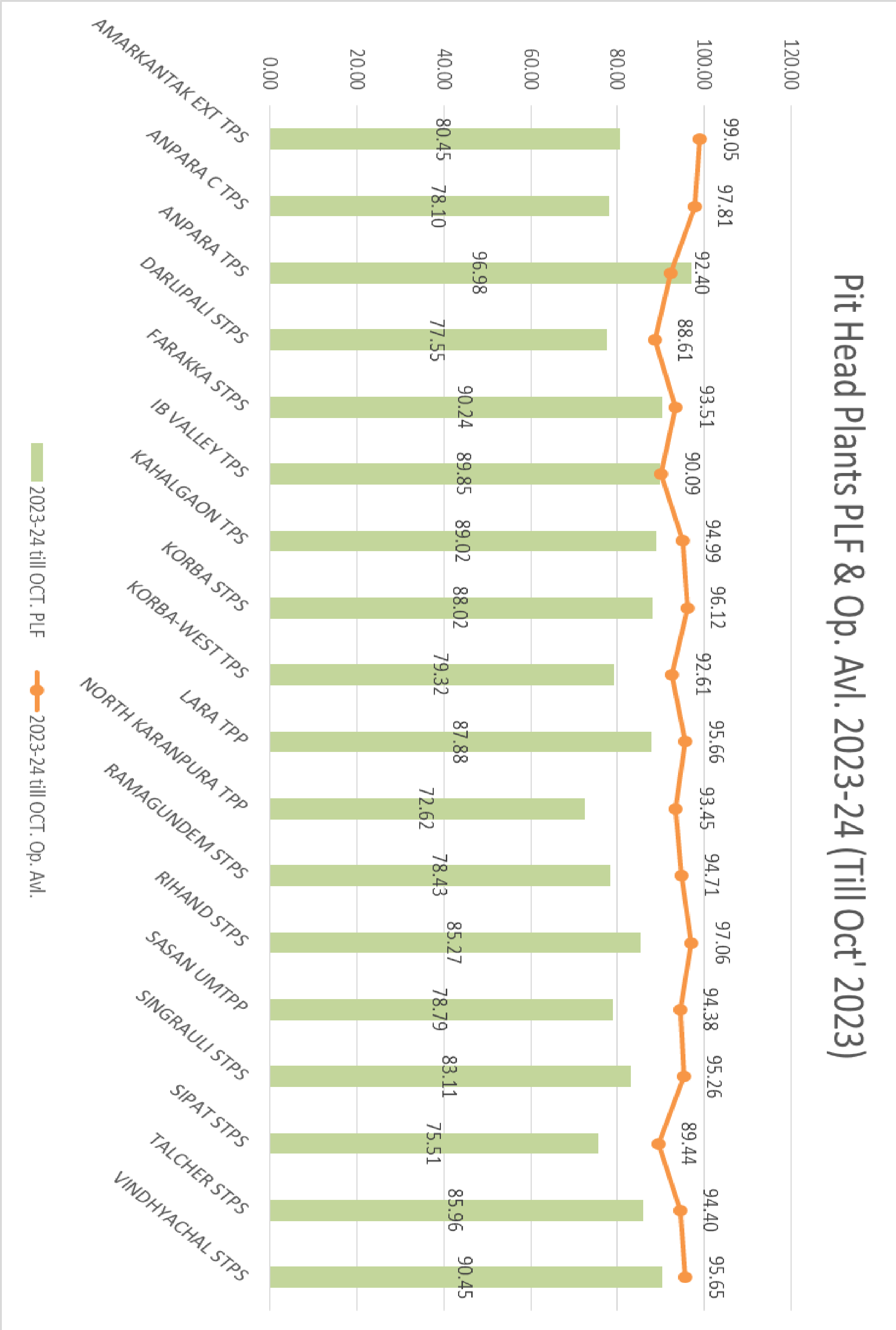
ANNEXURE-III(A)



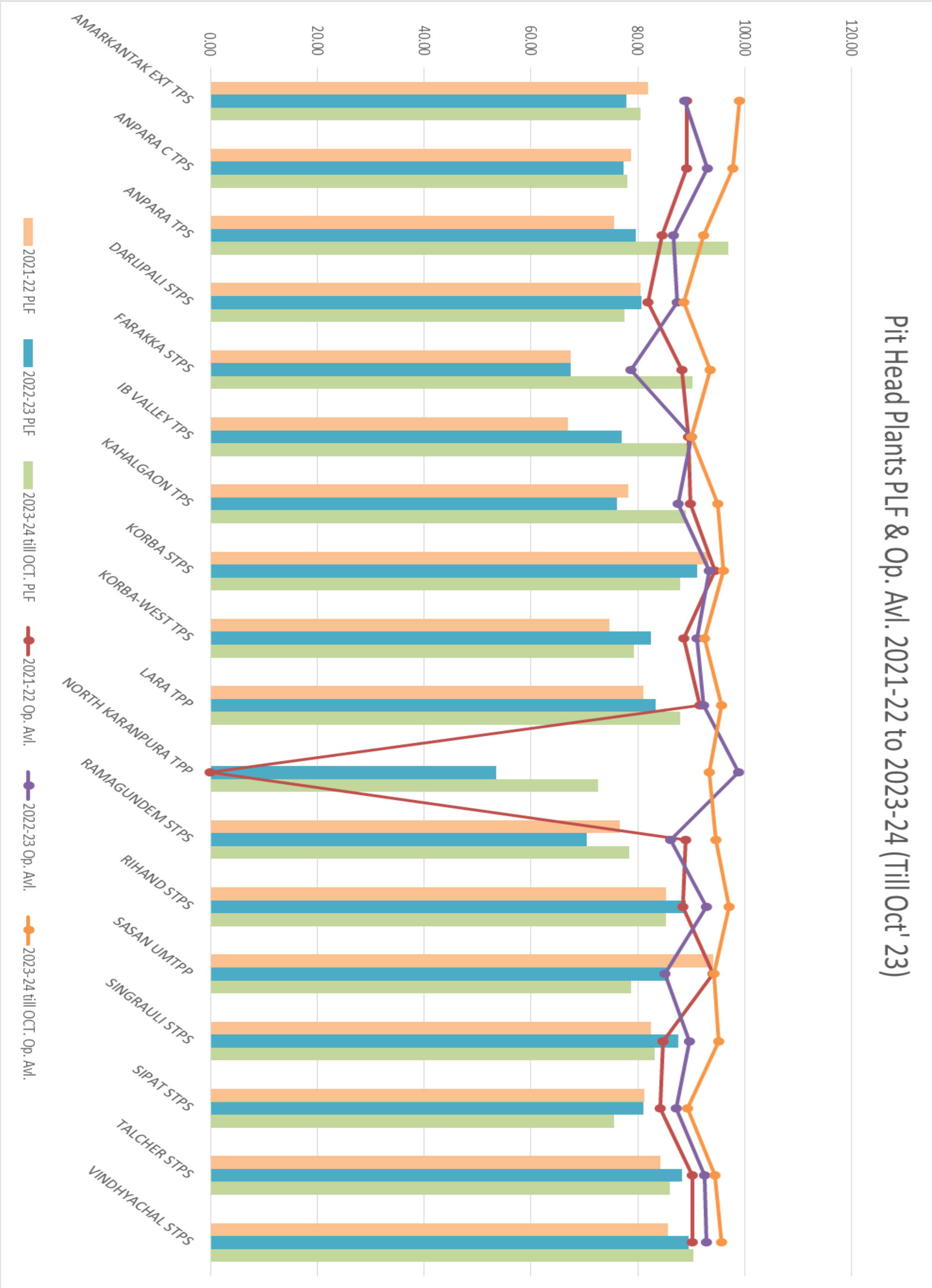
ANNEXURE-III(B)



ANNEXURE-III(C)



ANNEXURE-III(D)



From Annexure-III(D), it was found that following plants have shown decline in PLFs with increase in operating availability from 2021-22 to 2023-24 (till October):

1. Amarkantak Ext TPS
2. Anpara C TPS
3. Darlipalli STPS
4. Korba STPS
5. Korba West STPS
6. Rihand STPS
7. Sasan UMTPP
8. Singrauli STPS
9. Sipat STPS
10. Talcher STPS

ANNEXURE-IV

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2021	USA	211412.1	Coal	991560.895	54%
		0	Crude oil	0	..
		31819.5	Oil products	36125.345	13%
		493975.9	Natural Gas	1634090.104	38%
		95546.4	Nuclear	811551.478	97%
		103015.5	Hydro	253478.62	28%
		136929.1	Geotherm. Solar, etc.	557901.379	47%
		12966.6	Biofuels & waste	69350.989	61%
		1344.5	Heat	0	0%
		1087009.6	Total	4354058.81	46%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2020	USA	217527.8	Coal	855770.162	45%
		0	Crude oil	0	..
		31174.7	Oil products	37410.921	14%
		487912.9	Natural Gas	1680143.002	39%
		96500.6	Nuclear	823149.528	97%
		103038.6	Hydro	287139.473	32%
		122797.5	Geotherm. Solar, etc.	484843.32	45%
		13530.5	Biofuels & waste	70513.651	59%
		1363.7	Heat	0	0%
		1073846.3	Total	4238970.057	45%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2019	USA	230855	Coal	1069527.142	53%
		0	Crude oil	0	..
		35005.7	Oil products	35790.187	12%
		478999.3	Natural Gas	1639825.254	39%
		98119	Nuclear	843330.055	98%
		102649.5	Hydro	289798.538	32%
		107983.7	Geotherm. Solar, etc.	419116.315	44%
		13732.4	Biofuels & waste	73600.614	61%
		1358.3	Heat	0	0%
		1068702.9	Total	4370988.105	47%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2018	USA	245027.9	Coal	1272150.124	59%
		0	Crude oil	0	..
		35822.6	Oil products	42927.742	14%
		471901.8	Natural Gas	1519217.51	37%
		99432.9	Nuclear	841328.625	97%
		102800.1	Hydro	295501.065	33%
		98718.9	Geotherm. Solar, etc.	385064.813	45%
		14256.5	Biofuels & waste	77745.878	62%
		1357.1	Heat	0	0%
		1069317.8	Total	4433935.757	47%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2017	USA	258923.1	Coal	1321420.731	58%
		0	Crude oil	0	..
		33304.4	Oil products	32411.571	11%
		456013.9	Natural Gas	1337703.377	33%
		99628.9	Nuclear	838861.365	96%
		102703	Hydro	302362.244	34%
		91838.7	Geotherm. Solar, etc.	352399.086	44%
		14523	Biofuels & waste	78518.277	62%
		2040.8	Heat	0	0%
		1058975.8	Total	4263676.651	46%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2021	Japan	54628.01	Coal	321904.036	67%
		..	Crude oil	797.599	..
		32084.452	Oil products	38656.532	14%
		80759.131	Natural Gas	359420.384	51%
		33083	Nuclear	70805.099	24%
		50008.664	Hydro	78792.228	18%
		4748.5	Geotherm. Solar, etc.	116517.507	280%
		3580.388	Biofuels & waste	52983.581	169%
		0	Heat	0	..
		258892.145	Total	1039876.966	46%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2020	Japan	54643.53	Coal	311076.746	65%
		..	Crude oil	964.108	..
		31330.749	Oil products	30660.751	11%
		84278.127	Natural Gas	394333.782	53%
		33083	Nuclear	38751.685	13%
		50032.694	Hydro	78807.418	18%
		4606.125	Geotherm. Solar, etc.	107969.364	268%
		2875.053	Biofuels & waste	45980.106	183%
		0	Heat	0	..
		260849.278	Total	1008543.96	44%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2019	Japan	52618.32	Coal	326916.381	71%
		..	Crude oil	714.82	..
		32077.804	Oil products	34041.165	12%
		84057.686	Natural Gas	385124.185	52%
		33083	Nuclear	63778.976	22%
		50032.934	Hydro	79993.481	18%
		4431.985	Geotherm. Solar, etc.	98690.663	254%
		2489.964	Biofuels & waste	42228.449	194%
		0	Heat	0	..
		258791.693	Total	1031488.12	45%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2018	Japan	50727.54	Coal	332490.565	75%
		..	Crude oil	2123.681	..
		36314.412	Oil products	42542.163	13%
		84421.536	Natural Gas	406092.666	55%
		38042	Nuclear	64929.104	19%
		50036.886	Hydro	80968.394	18%
		3970.729	Geotherm. Solar, etc.	91688.025	264%
		4242.783	Biofuels & waste	39038.328	105%
		0	Heat	0	..
		267755.886	Total	1059872.926	45%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2017	Japan	52642.292	Coal	348958.493	76%
		..	Crude oil	5831.533	..
		38318.03	Oil products	54966.065	16%
		82297.051	Natural Gas	425374.636	59%
		39132	Nuclear	32911.743	10%
		50014.125	Hydro	83795.41	19%
		3954.298	Geotherm. Solar, etc.	84694.531	245%
		3817.547	Biofuels & waste	37042.827	111%
		0	Heat	0	..
		270175.343	Total	1073575.238	45%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2021	South Korea	42897.002	Coal	208339.216	55%
		0	Crude oil	0	..
		3291.543	Oil products	8166.103	28%
		42996.4	Natural Gas	190199.981	50%
		23250	Nuclear	158015.23	78%
		6541.335	Hydro	3054.502	5%
		1979.166	Geotherm. Solar, etc.	31715.597	183%
		923.732	Biofuels & waste	8585.288	106%
		742.753	Heat	103.755	2%
		122621.931	Total	608075.917	57%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2020	South Korea	42412.502	Coal	206455.944	56%
		0	Crude oil	0	..
		3378.413	Oil products	7294.374	25%
		42964.71	Natural Gas	163074.485	43%
		23250	Nuclear	160183.721	79%
		6505.768	Hydro	3877.23	7%
		1900.805	Geotherm. Solar, etc.	25195.362	151%
		799.688	Biofuels & waste	9242.414	132%
		610.358	Heat	108.944	2%
		121822.244	Total	575323.53	54%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2019	South Korea	41429.906	Coal	246071.276	68%
		0	Crude oil	0	..
		3296.643	Oil products	9301.885	32%
		42701.848	Natural Gas	146094.889	39%
		23250	Nuclear	145909.669	72%
		6509.488	Hydro	2791.076	5%
		1749.319	Geotherm. Solar, etc.	18546.85	121%
		746.059	Biofuels & waste	9318.249	143%
		469.79	Heat	110.422	3%
		120153.053	Total	578033.894	55%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2018	South Korea	42245.2	Coal	258286.103	70%
		0	Crude oil	0	..
		3444	Oil products	13027.362	43%
		42550.644	Natural Gas	155542.415	42%
		21850	Nuclear	133505.261	70%
		6490.41	Hydro	3359.418	6%
		1675.33	Geotherm. Solar, etc.	14043.392	96%
		773.782	Biofuels & waste	8454.011	125%
		347.87	Heat	120.113	4%
		119377.236	Total	586217.962	56%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2017	South Korea	40532.752	Coal	255508.524	72%
		0	Crude oil	0	..
		3444	Oil products	11795.021	39%
		41663.759	Natural Gas	125946.98	35%
		22528.683	Nuclear	148426.725	75%
		6489.456	Hydro	2819.882	5%
		1469.932	Geotherm. Solar, etc.	11298.964	88%
		736.174	Biofuels & waste	6910.881	107%
		250.511	Heat	114.976	5%
		117115.267	Total	562706.977	55%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2021	Germany	47787	Coal	175006	42%
		0	Crude oil	0	..
		3453	Oil products	4581	15%
		36186	Natural Gas	95126	30%
		8113	Nuclear	69130	97%
		10844	Hydro	19658	21%
		123795	Geotherm. Solar, etc.	165898	15%
		11815	Biofuels & waste	53629.2	52%
		655	Heat	0	0%
		242648	Total	583028.2	27%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2020	Germany	51320	Coal	143699	32%
		0	Crude oil	0	..
		3567	Oil products	4694	15%
		32842	Natural Gas	96285	33%
		8113	Nuclear	64382	91%
		10808	Hydro	18721	20%
		115912	Geotherm. Solar, etc.	183475	18%
		10582	Biofuels & waste	57652	62%
		582	Heat	0	0%
		233726	Total	568908	28%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2019	Germany	53104	Coal	181807	39%
		0	Crude oil	0	..
		3869	Oil products	4776	14%
		33099	Natural Gas	90753	31%
		9525	Nuclear	75071	90%
		10733	Hydro	19731	21%
		109696	Geotherm. Solar, etc.	171961	18%
		10452	Biofuels & waste	56878	62%
		1011	Heat	0	0%
		231489	Total	600977	30%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2018	Germany	56851	Coal	238974	48%
		0	Crude oil	0	..
		2760	Oil products	5186	21%
		32563	Natural Gas	83425	29%
		10799	Nuclear	76005	80%
		10684	Hydro	17694	19%
		103914	Geotherm. Solar, etc.	155155	17%
		10006	Biofuels & waste	57860	66%
		368	Heat	0	0%
		227945	Total	634299	32%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2017	Germany	..	Coal	252823	..
		0	Crude oil	0	..
		..	Oil products	5571	..
		..	Natural Gas	87685	..
		10799	Nuclear	76324	81%
		11120	Hydro	20150	21%
		97905	Geotherm. Solar, etc.	146958	17%
		..	Biofuels & waste	58207	..
		368	Heat	0	0%
		120192	Total	647718	62%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2021	Australia	24986.3	Coal	140311.441	64%
		0	Crude oil	0	..
		3035.767	Oil products	4661.889	18%
		24329.686	Natural Gas	49782.928	23%
		0	Nuclear	0	..
		8523	Hydro	14760.54	20%
		36312.583	Geotherm. Solar, etc.	52252.32	16%
		871	Biofuels & waste	3346.182	44%
		0	Heat	0	..
		98058.336	Total	265115.3	31%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2020	Australia	24986.3	Coal	145522.372	66%
		0	Crude oil	0	..
		2908.317	Oil products	4509.2	18%
		24060.431	Natural Gas	55216.283	26%
		0	Nuclear	0	..
		8523	Hydro	14764.008	20%
		31045.177	Geotherm. Solar, etc.	41429.08	15%
		871	Biofuels & waste	3351.631	44%
		0	Heat	0	..
		92394.225	Total	264792.574	33%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2019	Australia	24954	Coal	154304	71%
		0	Crude oil	0	..
		3000.439	Oil products	4923	19%
		22721.705	Natural Gas	52775	27%
		0	Nuclear	0	..
		8523	Hydro	15602	21%
		24028.622	Geotherm. Solar, etc.	32559.937	15%
		864	Biofuels & waste	3496	46%
		0	Heat	0	..
		84091.766	Total	263659.937	36%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2018	Australia	24954	Coal	157711	72%
		0	Crude oil	0	..
		3035.905	Oil products	4838	18%
		22845.64	Natural Gas	53817	27%
		0	Nuclear	0	..
		8523	Hydro	15804	21%
		17774.229	Geotherm. Solar, etc.	25094.164	16%
		864	Biofuels & waste	3518	46%
		0	Heat	0	..
		77996.774	Total	260782.164	38%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (GWh)	PLF in %
2017	Australia	25150	Coal	161830	73%
		0	Crude oil	0	..
		3077.12	Oil products	5274	20%
		22127.188	Natural Gas	50460	26%
		0	Nuclear	0	..
		8271	Hydro	16037	22%
		12698.855	Geotherm. Solar, etc.	20668.512	19%
		864	Biofuels & waste	3501	46%
		0	Heat	0	..
		72188.163	Total	257770.512	41%

Source: *Electricity Information*, IEA, Paris, 2023.
Terms & Conditions: https://www.iea.org/terms
Documentation file: https://wds.iea.org/wds/pdf/Ele_documentation.pdf

Electricity Information, IEA, Paris, 2023 & World Energy Balances, IEA, Paris, 2023

ANNEXURE-IV

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (MU)	PLF in %
2021	USA	211412.1	Coal	991561	54%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (MU)	PLF in %
2021	Japan	54628.01	Coal	321904	67%
2021	Japan	80759.131	Natural Gas	359420	51%

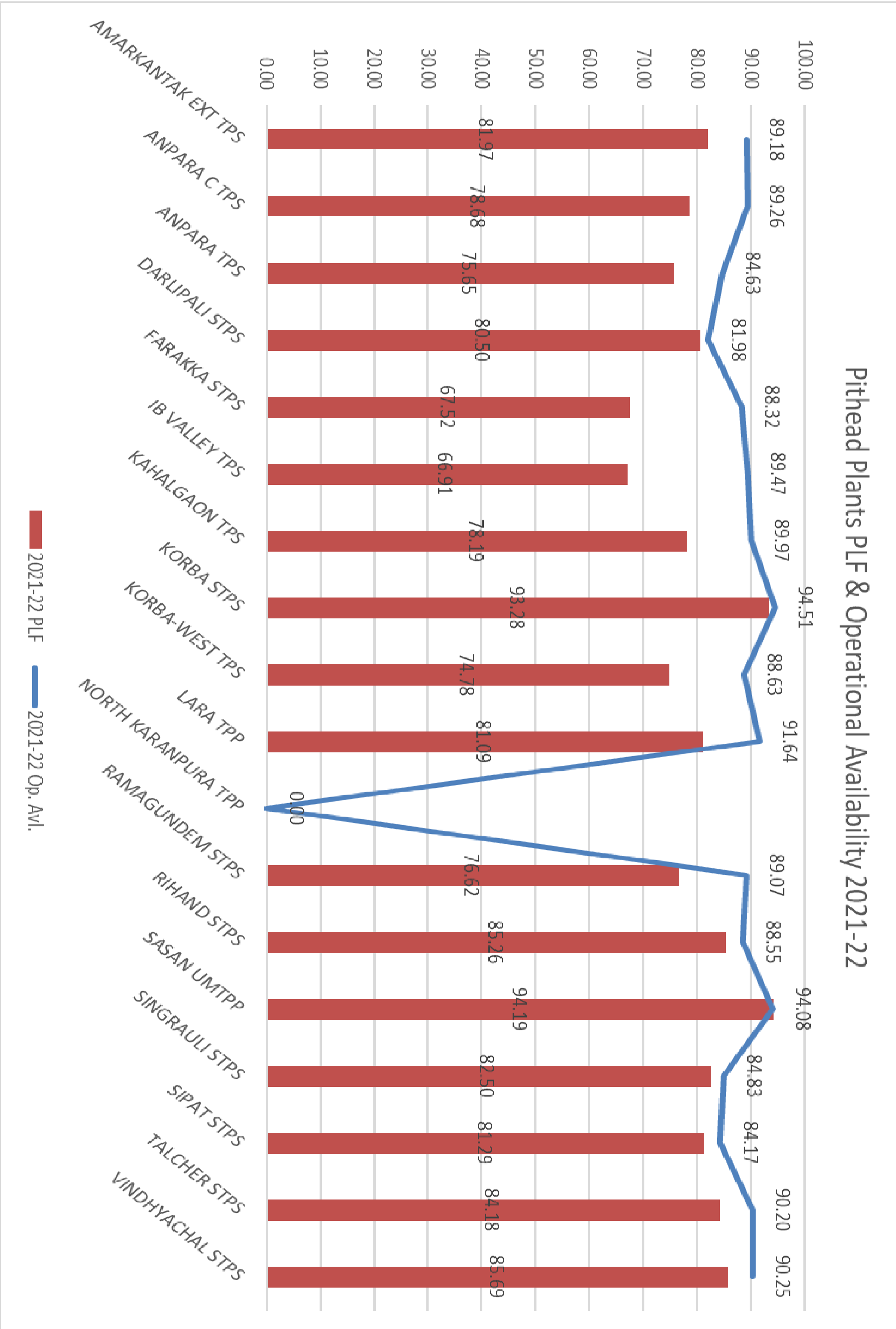
Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (MU)	PLF in %
2021	South Korea	42897.002	Coal	208339	55%
2021	South Korea	42996.4	Natural Gas	190200	50%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (MU)	PLF in %
2021	Germany	47787	Coal	175006	42%
2021	Germany	36186	Natural Gas	95126	30%

Year	Country Name	Installed Capacity (MW)	Fuel Type	Generation (MU)	PLF in %
2021	Australia	24986.3	Coal	140311	64%
2021	Australia	24329.686	Natural Gas	49783	23%

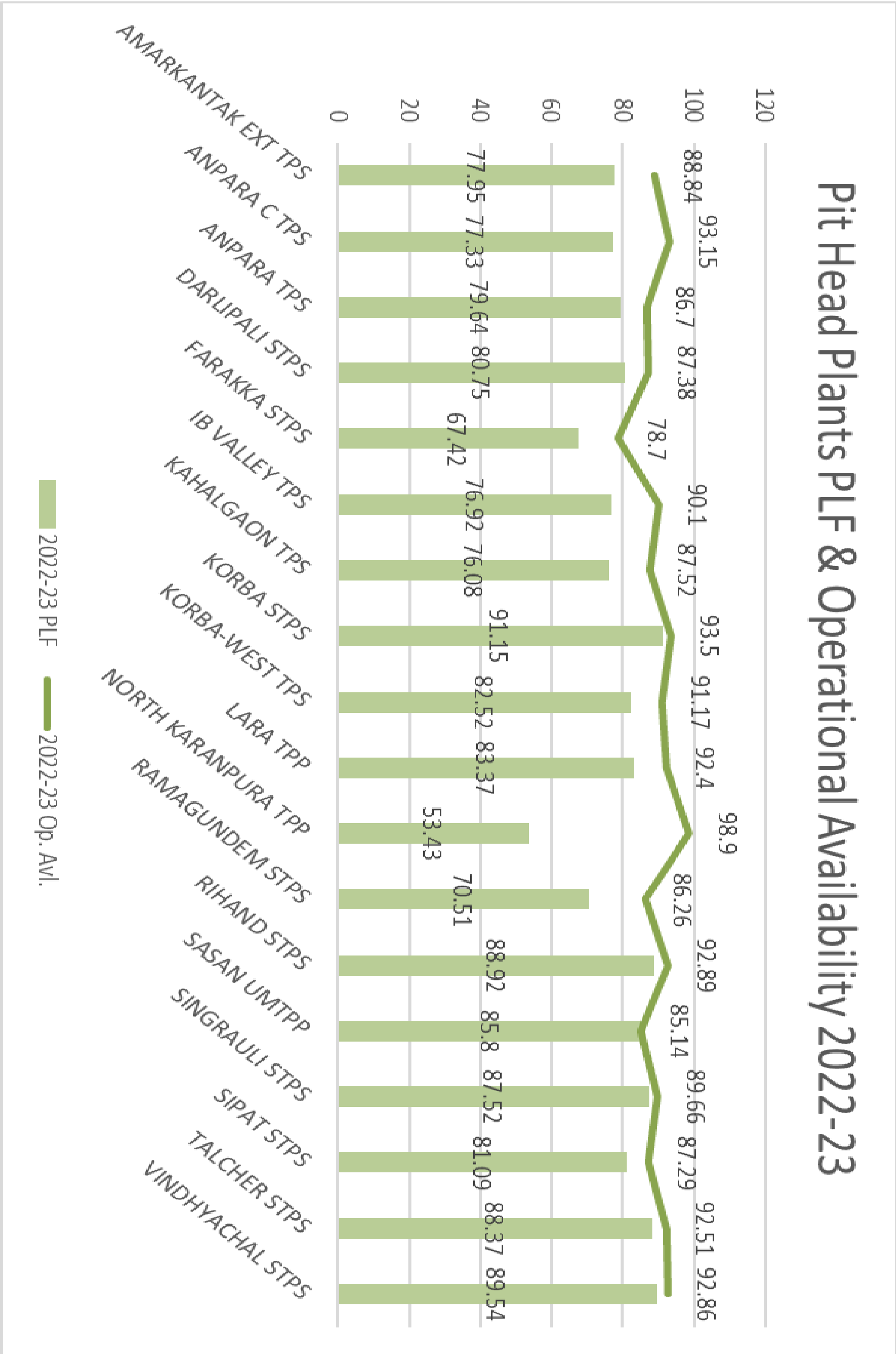
Source: *Electricity Information*, IEA, Paris, 2023.
Terms & Conditions: https://www.iea.org/terms
Documentation file: https://wds.iea.org/wds/pdf/Ele_documentation.pdf

ANNEXURE-V(A)

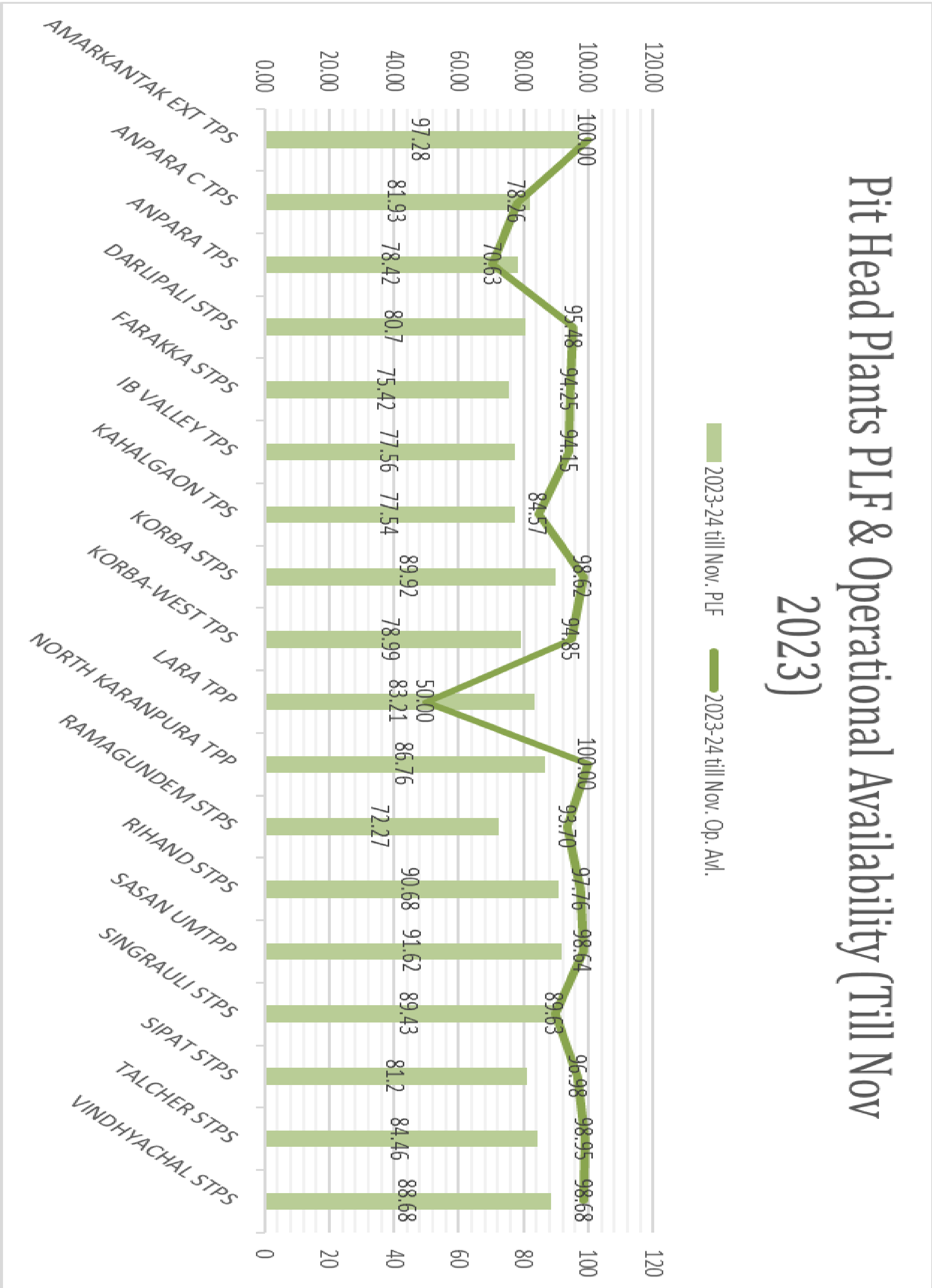


Pithead Plants PLF & Operational Availability 2021-22
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
AMARKANTAK EXT TPS 81.97 89.18
ANPARA C TPS 78.68 89.26
ANPARA TPS 75.65 84.63
DARLIPALI STPS 80.50 81.98
FARAKKA STPS 67.52 88.32
IB VALLEY TPS 66.91 89.47
KAHALGAON TPS 78.19 89.97
KORBA STPS 93.28 94.51
KORBA-WEST TPS 74.78 88.63
LARA TPP 81.09 91.64
NORTH KARANPURA TPP 0.00
RAMAGUNDEM STPS 76.62 89.07
RIHAND STPS 85.26 88.55
SASAN UMTPP 94.19 94.08
SINGRAULI STPS 82.50 84.83
SIPAT STPS 81.29 84.17
TALCHER STPS 84.18 90.20
VINDHYACHAL STPS 85.69 90.25
2021-22 PLF
2021-22 Op. Avl.

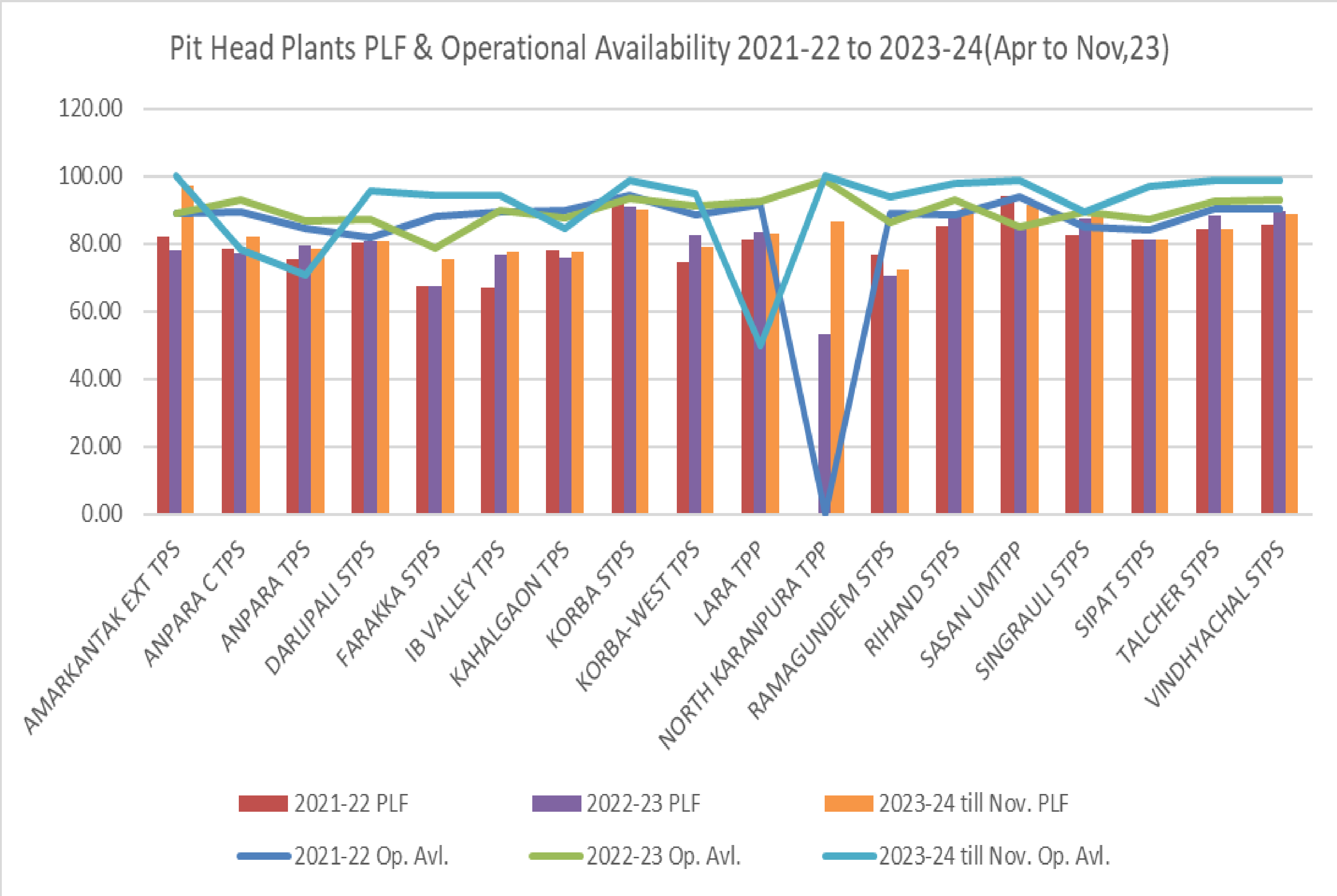
ANNEXURE-V(B)


Pit Head Plants PLF & Operational Availability 2022-23
0
20
40
60
80
100
120
AMARKANTAK EXT TPS
ANPARA C TPS
ANPARA TPS
DARLIPALI STPS
FARAKKA STPS
IB VALLEY TPS
KAHALGAON TPS
KORBA STPS
KORBA-WEST TPS
LARA TPP
NORTH KARANPURA TPP
RAMAGUNDEM STPS
RIHAND STPS
SASAN UMTPP
SINGRAULI STPS
SIPAT STPS
TALCHER STPS
VINDHYACHAL STPS
77.95
77.33
79.64
80.75
67.42
76.92
76.08
91.15
82.52
83.37
53.43
70.51
88.92
85.8
87.52
81.09
88.37
89.54
88.84
93.15
86.7
87.38
78.7
90.1
87.52
93.5
91.17
92.4
98.9
86.26
92.89
85.14
89.66
87.29
92.51
92.86
2022-23 PLF
2022-23 Op. Avl.

ANNEXURE-V(C)


Pit Head Plants PLF & Operational Availability (Till Nov 2023)
2023-24 till Nov. PLF
2023-24 till Nov. Op. Avl.
0.00
20.00
40.00
60.00
80.00
100.00
120.00
0
20
40
60
80
100
120
AMARKANTAK EXT TPS
97.28
100.00
ANPARA C TPS
81.93
78.26
ANPARA TPS
78.42
70.63
DARLIPALI STPS
80.7
95.48
FARAKKA STPS
75.42
94.25
IB VALLEY TPS
77.56
94.15
KAHALGAON TPS
77.54
84.57
KORBA STPS
89.92
98.62
KORBA-WEST TPS
78.99
94.85
LARA TPP
83.21
50.00
NORTH KARANPURA TPP
86.76
100.00
RAMAGUNDEM STPS
72.27
93.70
RIHAND STPS
90.68
97.76
SASAN UMTPP
91.62
98.64
SINGRAULI STPS
89.43
89.63
SIPAT STPS
81.2
96.98
TALCHER STPS
84.46
98.95
VINDHYACHAL STPS
88.68
98.68

ANNEXURE-V(D)


Pit Head Plants PLF & Operational Availability 2021-22 to 2023-24(Apr to Nov,23)
120.00
100.00
80.00
60.00
40.00
20.00
0.00
AMARKANTAK EXT TPS
ANPARA C TPS
ANPARA TPS
DARLIPALI STPS
FARAKKA STPS
IB VALLEY TPS
KAHALGAON TPS
KORBA STPS
KORBA-WEST TPS
LARA TPP
NORTH KARANPURA TPP
RAMAGUNDEM STPS
RIHAND STPS
SASAN UMTPP
SINGRAULI STPS
SIPAT STPS
TALCHER STPS
VINDHYACHAL STPS
2021-22 PLF
2022-23 PLF
2023-24 till Nov. PLF
2021-22 Op. Avl.
2022-23 Op. Avl.
2023-24 till Nov. Op. Avl.