सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

No: NRPC/Comml/220/General/2018/1018-35 **Dated:**30.08.2018

To,
As per list attached.

विषय: - उत्तर क्षेत्रीय विद्युत समिति की DISCOMs से संबंधित मुद्दों पर पहली बैठक का कार्यवृत।
Minutes of 1st Special meeting on issues related to DISCOMs.

उत्तर क्षेत्रीय विद्युत समिति की DISCOMs से संबंधित मुद्दों पर पहली बैठक 30.07.2018 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://www.nrpc.gov.in पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर दे सकते हैं I

1st meeting of Special meeting on issues related to DISCOMs was held on 30.07.2018. The Minutes of this meeting have been up-loaded on the NRPC web-site http://www.nrpc.gov.in. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्न: उपर्यक्त / Enclosures : As above.

भवदीय
Yours faithfully

हेमंत पांडे 30/8/18

(हेमंत कुमार पाण्डेय)
(Hemant Kumar Pandey)
(अधीक्षण अभियंता)
Superintending Engineer

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State	Name	Fax No.	Address
Rajasthan	Discom AVVNL Rajasthan	0145-2644550 (Director Finance)	Managing Director, Ajmer Vidyut Vitran Nigam Ltd. Vidyut Bhawan, Makarwali Road, Makarwali, Ajmer-305004
	Discom JdVVNL Rajasthan	291-2517896	Managing Director, Jodhpur Vidyut Vitran Nigam Ltd. New Power House, Industrial Area, Jodhpur-342003
	Discom JVVNL Rajasthan	0141-2740253	Managing Director, Jaipur Vidyut Vitran Nigam Ltd. 51/256, Tonk Rd, Sanganer, Sector-5, Pratap Nagar, jaipur - 302033
Delhi	Discom BRPL Delhi	011-29564400	CEO, BSES Rajdhani Power Ltd. BSES Bhawan, Nehru Place, New delhi-110019
	Discom BYPL Delhi	011-26419833	CEO, BSES Yamuna Power Ltd. Shakti Kiran Building, Ground floor, Main Road, Karkardooma, Delhi-110092
	Discom TPDDL Delhi	011-27468042	CEO, Tata Power Delhi Distribution Ltd. NDPL House, Hudson Lines Kingsway Camp Delhi-110009
Uttar Pradesh	Discom DVVNL	0562-2605465	Managing Director, Dakshinanchal Vidyut Vitran Nigam Ltd. Urja Bhawan, Nh-2 (Agra- Delhi bypass Road), Sikandra, Agra-282002
	Discom MVVNL UP	0522-2208769	Managing Director, Madhyanchal Vidyut Vitran Nigam Ltd. Head Office 4-A,Gokhale Marg, Lucknow, Uttar Pradesh-226001
	Discom PuVVNL UP	0542-2319439	Managing Director, Purvanchal Vidyut Vitran Nigam Ltd. PuVVNL, DLW Bhikharipur, Varanasi-221004
	Discom PVVNL UP	0522-2287827 (Chairman)	Managing Director, Pashchimanchal Vidyut Vitran Nigam Ltd. Urja Bhawan, PVVNL, Victoria Park, Meerut-250001
	Discom KESCL UP	0512-2530890	CEO, Kanpur Electric Supply Co. Ltd Electricity Vidyut Board, Civil Lines, KESA House, Kanpur... Uttar Pradesh
Haryana	Discom DHBVNL Haryana	2601827/2605465 (Head Office)	Managing Director, Dakshin Haryana Bijli Vitran Nigam Vidyut Sadan, Vidyut Nagar, Hisar-125005.... Gurgaon, Faridabad
	Discom UHBVNL Haryana	0172-2563094	Managing Director, Uttar Haryana Bijli Vitran Nigam Ltd. Vidyut Sadan, Plot No. C16, sector-6 Panchkula, Haryana
J&K	Discom PDD J&K	0191-2549335	Development Commissioner, Power Development department, Civil Secretariat J&K
Punjab	Discom PSPCL Punjab	0175-2213244 (Director Finance)	Managing Director, Punjab State Power Corporation Ltd. PSEB Head Office, The Mall, Patiala
Uttrakhand	Discom UPCL Uttrakhand	0135-2763821	Managing Director, Uttrakhand Power Corporation Ltd. Corrporate Head Quarter-Victoria Cross Vijeyta Gabar Singh Urja Bhawan, Kanwali Road, Balliwala Chowk, Dehradun-248001
Himachal Pradesh	Discom HPSEB HP	0177-2801675	Managing Director, Vidyut Bhawan, HPSEB Ltd., Shimla-171004
Chandigarh	Discom U.T. Chandigarh	0172-2740505	Superintending Engineer, 4th Floor, UT Secretariat, Sector-9, Chandigarh

NORTHERN REGIONAL POWER COMMITTEE

Minutes for Special Meeting on Issues Related to DiscomsHeld on 30.07.2018 at NRPC, New Delhi.

A special meeting to discuss issues related to distribution companies was held on 30.07.2018 at NRPC, New Delhi. List of Participants is enclosed at **Annexure-A.**

Member Secretary, NRPC welcomed the participants and expressed hope that such meeting would be organized regularly to resolve the issues specially related to distribution companies.

He mentioned that as per mandate NRPC may from time to time, agree on matters concerning the stability , smooth operation of the integrated grid and economy & efficiency in the operation of the power system in the Northern Region. He added that members of NRPC include one of the state distribution companies as nominated by the State Government from each of the states in the region and one Distribution Company by alphabetical rotation out of the private distribution companies functioning in the region.

Highlighting the vital role of Discoms he stated that it had been observed that representation of Distribution Companies(Discoms) in NRPC was not as desired. Since there are many issues in which the opinion of Discoms is vital, it was felt that meeting may be arranged specially for Discoms to ensure their participation in decisions affecting them directly or indirectly. He urged all the Discoms to actively participate in these meetings so that the quality power can be supplied to ultimate consumer with reliability and at optimum cost.
He once again thanked all the representatives of Discoms & SLDCs and requested them to bring issues to the kind notice of NRPC for amicable resolution .

1: Mismatch in slot wise drawl data provided by NRPC and data indicated by SLDC website and other issues related to scheduling:

1.1. Representative of UHBVN stated that there was significant mismatch in the slot wise drawl data as provided by NRPC and as that recorded by SLDC website. There was no particular trend in the above mismatch and it was random in nature. Comparison for the data for 28.06.18 was attached at Annexure- 1.1 of the Agenda. He added that Discoms rely upon SLDC data for scheduling. Any mismatch in data results in deviation from schedule with financial implications.

1.2. Representative of UHBVN further stated that during the period RTUs remain suspected; their values are not replaced resulting in incorrect scheduling. This period sometimes is more than 24 hours as damaged fiber optic cable requires significant time for detection and jointing. This leads to incorrect display of drawl data and hence incorrect imposition of UI charges. There is no intimation from NRLDC regarding the time from when the suspected RTUs have been set right.

1.3. Representative of Haryana, SLDC informed that whenever there is suspected data reported the information is forwarded to NRLDC to resolve the issue. He further added that for mismatch there are number of reasons and purpose of SCADA and SEM are different. He

stated that SCADA data is not for commercial purpose , but it is for real time monitoring only. He informed that SLDC, Haryana had planned for regular meeting with Discoms to settle such type of issues. Representative of NRLDC stated that Discoms may install customized screen to view the SCADA data and make decision regarding their scheduling which is one of the important requirement of Smart Grid.

1.4. Member Secretary, NRPC stated that this issues has been discussed at various forum and as well as in CERC.He opined that a Standard Operating Procedure (SoP) should be made to report and resolve such telemetry issues. As these issues have a huge financial implication an early action should be taken to resolve the issue.

1.5. Representative of NRLDC stated that they always pursue POWERGRID to resolve the telemetry issues. He further stated that mismatch in data on a particular day which was given in the Annexure of the agenda was due to problem in RTU at Bahadurgarh and the same has been resolved. NRLDC requested all utilities to be vigilant and should pursue with the respective utility for removal of mismatch at the earliest.

1.6. SE(C), NRPC stated that non-availability of telemetry is a major issue. He stated that after implementation of provisions regarding communication system availability as per CERC Regulations and procedures being developed by CEA the situation is anticipated to improve. He also informed that a group of experts was constituted by NRPC Secretariat in June, 2015 to identify the reasons in SEM and SCADA data in Uttar Pradesh. The group had suggested various measures to minimize the difference in two sources of data. He added that the report of the recommendations of the group are relevant for other states also. The States may take action as per recommendations of the group and send issues to NRPC Sectt. and NRLDC for further action .Report of the group is enclosed at **Annexure-B**.

1.7. Representative of UHBVN raised the issue of time difference in up-dation of schedules on the WRLDC & NRLDC website resulting in adverse operational/commercial implications. Representative of NRLDC stated that with the help of their new WBES software such problems would not occur. He informed that data up dation by both the RLDC will happen in every middle of the block and this feature will be enabled from 1st August, 2018.

1.8. Representative of UHBVN stated that the day ahead revision (R1) is received normally at 2300 Hrs or even after that for the next day, which often leads to incorrect scheduling during the period 00:00 to 01:00 Hrs. Therefore, the main revision for day ahead schedule should be uploaded/ posted before 23:00 Hrs on regular basis to enable proper day ahead scheduling. Representative of BRPL endorsed views of UHBVN representative. Representative of NRLDC stated that since there is no provision for gate closure for DC revision in the present regulations , they had to entertain DC revision application even after 23:00hrs, however, they would endeavor to avoid such revision of DC after 23:00hrs.

SE(C), NRPC opined that utilities may submit their views to CERC for gate closure of DC revision by Generators, which would resolve many such issues.

1.9. Representative of UHBVN stated that during the event of load crash arising out of weather disturbance, NRLDC should get the backing down/ surrender of powers before 4 time slots in order to contain the excessive under drawl in relatively shorter period for CGS powers of other regions.

1.10. SE(C) opined that during load crash NRLDC asks the generators for backing down and SLDC for managing the load. But normally the load is cut in large chunks with indiscriminate shutting down of 11 kV feeders , which make the load-generation balance a

challenging task . He added that ,as decided earlier, it is the responsibility of the DISCOMs to identify and open only the vulnerable 11 kV feeders during weather disturbance instead of tripping large number of feeders. He urged all the Discoms to identify the 11 kV feeders which are sensitive from safety point of view and send the list to respective SLDC, NRLDC and NRPC Secretariat within 2 months i.e. by September,2018.

1.11. NRLDC representative called for immediate action for better load & generation forecasting including weather forecasting data from IMD and other possible sources**.**

1.12. Representative of UHBVN stated that Powers viewed under the URS head on the NRLDC website by the Discoms are different for SLDC control room leading to incorrect raising of URS requisitions. SE(C), NRPC stated that URS amount changes very frequently due to recall by original beneficiary that might be the reason behind this.NRLDC representative suggested that DISCOMs may use NRLDC website as there might be some delay in update on SLDC website.

1.13. Representative of UHBVN stated that units of NTPC Aravali seldom give status update in the availability of their units (after tripping/ shutdown) and information regarding their light up/ synchronization schedule which poses problem in economic power planning. This updation of unit status is therefore essential and should be emailed on real time basis.NRLDC Representative said that according to regulations , requisition will be given by UHBVN through SLDC which will then be summed up and told to the GENCO.

1.14. Representative of UHBVN stated that there have been several instances where boxing up message given to NTPC Aravali units are not complied with leading to merit order violation and subsequent audit objections.There is a need for clear cut guidelines for boxing up of NTPC Aravali units and their bringing on bar, which should be adhered to.SE(C) opined that the issue will be taken up by NTPC, Aravali.

1.15. Representative of UHBVN stated that the recently drafted DSM amendment dated 29.06.2018 may not be adopted till the time real time SEM meter data is made available to the Discoms as otherwise the levy of UI settlement charges payable or receivable would be based on data which is not made available to the Discomson real time basis.

All the utilities were advised to send their views to NRPC Sectt. for onward transmission to CERC of they should send the comments directly to CERC with a copy to NRPC Sectt. IT was informed by MS, NRPC that views of the utilities would be sent to the Commission for consideration.

2: Agenda points by PSPCL, Punjab:

2.1. **Status of FGD installation vis-à-vis installation plan at identified TPS.**

MS, informed that this agenda is being taken up regularly in OCC meetings, wherein the status can be discussed.

2.2. **Automatic Demand Management System Status.**

PSPCL representative informed that they had action plan for implementation of ADMS by 2020, however, he added that remote tripping of feeders from SLDC has been implemented.

MS, NRPC emphasized the importance to ADMS and urged all the Discoms to implement the scheme at the earliest. He added that this agenda is also being taken up regularly in OCC meetings, wherein the status can be discussed.

2.3. **Requirement of Data for the GIS based Energy map being developed by Energy division ofNITI Aayog. (Data relates to 33 kV & 66 kV Substations under DISCOMs)**

MS, NRPC requested all the Discoms and SLDCs to provide data by 31st August, 2018.

2.4. **Schedule of FGD Installation in thermal plants & its tariff impact. (PSPCL's GeneratingStations/IPPs having PPAs with PSPCL)**

It was deliberated that this issue is being dealt by thermal wing of CEA and any information may be sought from CEA.

2.5. **Reactive power response of generating stations. (PSPCL's Generating Stations/IPPs havingPPAs with PSPCL)**

It was deliberated that this matter is being discussed regularly in OCC meetings , wherein any specific issue may be brought for discussion and decision..

2.6. **Identification of 11 kV feeders that can remain connected during thunderstorm/wind storm. (PSPCL's Generating Stations/IPPs having PPAs with PSPCL)**

It was decided that the data by all the Discoms is to be provided to NRLDC and NRPC Sectt. as well as respective SLDCs by 30th Sep,2018.

2.7. **FRC Response of generators. (PSPCL's Generating Stations/IPPs having PPAs with PSP)**

It was deliberated that this matter is being discussed regularly in OCC meetings , wherein any specific issue may be brought for discussion and decision. PSPCL was advised to look into the issue of no FRC response from it's RSD generating station.

3. Pilot Project on 05-Minute Scheduling, Metering, Accounting and Settlement forThermal/Hydro, and on Hydro as Fast Response Ancillary Services (FRAS)

A presentation was made by NRPC Sectt. covering the background, highlights of main points in the CERC order Petition No. 07/SM/2018 dated 16.07.2018.

All the Discoms and SLDCs were requested to give their comments to NRPC Sectt. by 17th Aug,2018.

4. Discrepancy in computation of PAFM for Hydro Plants :

BRPL representative informed that there was substantial difference in PAFM of some hydro stations between their computation and the figures in REA. mentioned the desat there is a substantial variation in declared capacity (DCs) & PAFM of some of the hydro plants for the month of April-18, May-18 & June-18.

He mentioned that as per CERC Tariff Regulations, 2014-19 , Declared capacity (in ex-bus MW) for the ith day of the month is the MW , which the station can deliver for at least three

(3)hours, as certified by the nodal load dispatch centre after the day is over . He added that BRPL had computed the DC of hydro plants for ith day of month on the basis of DC declared by them for **continuous 3 hrs.** andPAFM was computed considering this DC for the month of April-18 & May-18. Substantial difference was noted in few power plants like Bairasul, Parbati 3, Salal and Tanakpur HEP. saccordingly their where BRPL has observed some mismatches in PAFM as per REA issued by NRPC.

He further mentioned that as per Regulation 6.4 (17) of the Grid Code, except in case of Run of the River (with up to three hour pondage) hydro stations, the ISGS shall ensure that the declared capability during peak hours is not less than that during other hours. Considering this provision BRPL had computed the DC of hydro plants for ith day of month on the basis of **DC decaled by them during continuous 3 peak hours** as specified by NRLDC. With this DC, PAFM was computed for the month of April-18, May-18 & June-18, where BRPL had observed some mismatches in PAFM as per REA specially for Parbati 3, Salal and Tanakpur HEP.

NRLDC representative stated that in the Regulations there is no provision for considering continuous hours for calculating DC. He further informed that NRLDC determines DC based on average of MW during peak hours.

Some of the Discom representatives opined that DC should not be taken as average. It was suggested that since the word "atleast" is mentioned while defining DC in CERC Tariff Regulations, the minimum MW during peak hours should be taken as DC.

After deliberation, it was decided that the issue would be discussed in next Commercial sub-committee meeting. The Discoms and SLDCs were requested to send their views on the issue to NRPC Sect. by 20th Aug,2018.

5. Mismatch in Energy scheduled as per REA and Average DC

BRPL representative stated that Hydro plants are must run plants and Energy scheduled by any plant should be equal to Average DC of plant. He stated that based on this principal BRPLwas verifyingthe schedule energyto BRPL from Hydro Plants. Average DC was considered and being a must run plant, average DC of the plants had been considered as the scheduled energy for that day. However, there was mismatch inPlant wise calculated MUs, based on average DC and Scheduled energy as per REA.

It was noted that the major difference was in NathpaJakri HEP during the month of Apr & May,2018. It was observed that this difference was due to restriction of schedule, on several days during this period, by NRLDC up Ex-bus generation capability(1482 MW), whereas higher DC, considering overload capacity (1605 MW) was given by the generator. It was also deliberated that DC and schedule may not match due to restriction on schedule for keeping reserve, as per CERC directions.

After deliberations it was concluded that the schedule may differ from average DC due to different reasons. However, total schedule from the generating station to all the beneficiaries for any day will match with the total energy provided by the generator to NRLDC in the schedule for that particular day.

6. Request for compensation Statement by NRPC (agenda by BRPL)

BRPL representative raised the issue in delay of issuing compensation statement by NRPC.

NRPC Sectt. informed that the statements for FY 2017-18 would be issued within a week.

7. Request for review of need for compensation Mechanism:

BRPL representative informed that as per regulation 8 of CERC tariff regulation FY 2014-19, generating companies have been conducting true-up of controllable operational parameters for sharing gains. BRPL had observed that despite the fact that plants were operating below 85% PLF they had managed to achieve GHR, AUX & SFC considerably better than the normative values. However, he added that there had been a drastic reduction in credits provided by generating companies on account of true-up of controllable parameters in FY17-18.

Since Generators were not present in the meeting, it was decided that the matter will be discussed in next Commercial Sub-committee meeting.

8. Capping of operational parameters at their normative values while truing of controllable parameters :

BRPL representative stated that as per regulation 35 of CERC tariff regulation 2014-19 generating companies are mandated to recovery energy cost as per operational norms specified in CERC tariff regulation FY 2014-19. He added that it needs to be clarified that whether generating companies can use value of GHR, Aux & SFC higher than normative value while truing up of operational controllable parameters. He mentioned that while calculating the actual ECR for true-up of controllable parameters the generating companies should not be allowed to consider GHR, AUX & SFC values higher than normative values.

Since Generators were not present in the meeting, it was decided that the matter will be discussed in next Commercial Sub-committee meeting.

9. Compensation charge levied by APCPL for the period during which BRPL has no allocation from the plant :

BRPL representative stated that during 3rd September 2017 to 31st March 2018 BRPL's allocation of power from APCPL was reduced to Zero, however, APCPL has billed an amount of about Rs 11 Cr on account of compensation charges to BRPL for the stated period.

SLDC, Delhi representative informed that SLDC has not shown any allocation to BRPL from APCPL during this period. It was decided that BRPL should take up the issue with APCPL. If the issue is not resolved then it may be brought to the Commercial Sub-Committee Meeting.

10. TDS deduction in STOA bills raised by POSOCO (Agenda by BRPL)

BRPL representative informed that POSOCO raise the STOA bills on beneficiaries under its name. As bills are raised by the POSOCO, BRPL is deducting the entire TDS amount under POSOCO PAN only. However, NRLDC is insisting BRPL to deduct TDS separately under the PAN of POSOCO, POWERGRID, STUs and SLDCs.

He added that BRPL has to deduct TDS under the PAN number of the party which has raised the bill in-line with income tax rules and this has already been communicated to POSOCO.

Representative of BRPL stated that declaration from NRLDC that TDS is to be deducted under the PAN of above mentioned parties, in the bill, they may be able to make TDS deduction as per POSOCO request.

Representative of NRLDC was agreed to provide the same.

11. Genco/Transco Investment Proposal (Agenda by BRPL)

Representative of BRPL stated that any proposal with respect to additional capital expenditure, renovation of old plants, extension of useful life etc. by the

generators/transmission companies should be put in the NRPC meetings to appraise the beneficiaries. There should be an appraisal process on case to case basis members with adequate opportunity of representation by beneficiaries and stakeholders. There after it should be taken before the appropriate commission.

MS, NRPC stated that any large investment in transmission is discussed in Standing Committee as well as in NRPC , where State representation is there. However, normally representation of Discoms are not there . To ensure Discom representation the representative from State either from STU or form any other state utility must take views of Discoms of that State, while providing Stae's view.
It was also mentioned that NRPC Sectt. is trying to increase Discoms' participation and this meeting was an important step in that direction.

12. Bill data to be provided in standard Excel format :

Representative of BRPL stated that Generating/transmission companies should provide their bill data in standardized excel format, in addition to the original bills in PDF format, for speedy verification of bills & availing the benefit of rebate scheme.

Member Secretary, NRPC stated that this issue was deliberated in Commercial Sub-committee meeting and members had agreed to provide bill data in excel format.

13. Issue of accounts for Delhi Discoms (Agenda by BRPL)

Representative of BRPL stated that in the prevailing scenario Delhi is being recognized as a single entity. He requested NRPC Secretariat to publish the bifurcation amongst Delhi Discom for all the above mentioned accounts.
SE(C), NRPC stated that as per present regulatory provisions NRPC sectt. prepares account only in respect of regional entities and bifurcation for Discoms may be done by SLDC, Delhi.

14. Guidelines and Best Practices for Ease of obtaining electricity connection by consumers

A presentation was given by CEA representative. Copy of the same is enclosed at **Annexure-C.**

15. Designing and standardizing Toolkit for Discom Staff (Presentation to be given by CE, DP&R division, CEA)

A presentation was given by CEA representative. Copy of the same is enclosed at **Annexure-D.**

16. AT&C losses in respect of Discoms:

Member Secretary, NRPC stated that as per the data available on the UDAY portal, many states of NR have very high AT&C losses .

He mentioned that the main factors contributing for high technical losses are overloading of existing lines and substation equipments, non-up-gradation of old lines and equipment, low HT:LT ratio and poor maintenance of equipments. Similarly, the main factors contributing to high commercial losses are theft, pilferage and tampering of meters, absence of energy accounting and auditing through IT intervention, low accountability of employees etc. He called for action on following points by distribution utilities in NR for reduction of AT&C losses:

(i) Augmentation of overloaded distribution system.

(ii) Designing of distribution system to achieve high HT/LT ratio.

(iii) Scheduled repairing and maintenance of lines, transformers &Sub-stations.

(iv) Replacement of all consumers meters with static meters, improving metering, billing and collection efficiency.

(v) Metering of all 11 kV feeders &distribution transformers for energy auditing.

(vi) Implementation of High Voltage Distribution System(HVDS)

(vii) Use of Aerial Bunched Cable (ABC) in theft prone areas.

(viii) IT initiative like SCADA, GIS, AMR, etc.

(ix) Segregation of rural &agriculture feeders.

(x) Implementation of stringent anti-theft measures.

Representative of BRPL, BYPL and Tata Power DDL stated that the AT&C losses in their DISCOMs are 9.4%, 10.41% & 8.3% respectively.

Representative of Punjab said that his AT&C losses are majorly due to non-payment of subsidy by the Govt.

All the Discoms were advised to analyse the specific reasons for high AT&C losses and make action plan to reduce it. The action plans may be submitted to NRPC Sectt. for monitoring and to facilitate the implementation of action plan.

17. Implementation of DMS and ADMS

Member Secretary, NRPC mentioned that in view of the growing demand and shortage of power in the NR and intermittency of RE power, peak load needs to be managed by adopting suitable demand side management. DISCOMs in NCT-Delhi are already taking various measures in the regard. He added that the DISCOMs in Uttar Pradesh, Haryana and Rajasthan also need to take the necessary steps to adopt/implement the DSM and reduce the peak demand.

All the Discoms were requested to submit action taken/action plan for DMS and ADMS in their system, within a month.

18. Implementation of Smart Grid

Member Secretary, NRPC stated that at present, the level of preparedness of distribution sector to adopt smart grid is in a very preliminary stage and every DISCOM has to prepare a clear road map for implementing automation and smart grid in their area of operation along with the financial requirement and sources for the funding to roll out the plan in coming years.

SLDCs/Discoms were requested to submit steps taken / action plan for implementation of SmartGrid in their system to NRPC Sectt. within a month.

19. Islanding Scheme for Major Cities/Towns

While highlighting the necessity of Islanding scheme , Member Secretary, NRPC mentioned that NCT-Delhi has been prepared the scheme and the same was under implementation. He urged that islanding schemes for respective sub regions of Haryana, Rajasthan and Uttar Pradesh should be prepared by the concerned states. He stated that Discoms/SLDCs may provide details of Islanding Schemes in their respective control areas for discussion in the NRPC.

Delhi, SLDC representative mentioned that due to closure of BTPS, the Islanding Scheme of Delhi is to be reviewed.

Member Secretary, NRPC impressed upon utilities to implement islanding scheme in major cities.

20. Presentation on draft "Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Fourth Amendment) Regulations, 2018"

Presentation was made by NRPC Secretariat.

Discoms and SLDCs were requested to submit their views to CERC and NRPC Sectt.

21. Presentation on consultation paper on "CERC, Terms and Conditions of Tariff Regulations (2019-24)" and other regulatory developments.

Discoms and SLDCs were requested to submit their views to CERC and NRPC Sectt.

22. Promotion of Renewable Energy in NR.

Member Secretary described the potential and challenges of renewable generation in NR. The Electricity Act, 2003 has radically changed the legal and regulatory framework for the renewable energy sector.

He stated that NR has a huge potential for tapping solar energy either through PV (Photovoltaic) using the free space on rooftop or ground mounted solar. PV system or through CST (Concentrated Solar Thermal), which can help in cutting down the load demand from grid, saving on T&D infrastructure. He added that the cost of solar power has shown decreasing trend during past few years and possibility of large scale solar application in the long run in the country would further bring down the cost of generation of solar electricity.

He suggested that taking into consideration the shortage of fuel for conventional power and importance of renewable energy in the NR area, SERCs of the constituent states may consider putting in place the necessary regulations for development of renewablepower in the respective states in order to encourage and facilitateexpeditious development of off grid/grid connected renewable power generation.

He urged DISCOMs to take initiative in roof top solar and net metering. He also requested Discoms to provide details of such activities to NRPC Sectt. so that it can be shared with other utilities for benefit of all.

23. Presentation on issues related to discoms

NRLDC representative briefly described the main issues and stated that a presentation would be made in next meeting.

24. Investment in Distribution & Improving the Financial Health of the DISCOMs

Member Secretary, NRPC emphasized the need for augmentation of the existing distribution system to match the demand increase of NR and to provide reliable and quality power to the consumers.Various possible measures for improving the financial health of DISCOMs e.g. Rationalization of tariff to reduce gap between ARR and ACS.,), Real time energy

accounting and auditing,timely payment of subsidy & gradual reduction of the same and Sound financial restructuring plan etc. were discussed.

Discoms were requested to share their experiences and action taken/planed in next meetings for the benefit of other utilities.

AA1. Presentation on best practices being followed in distribution.

Copy of the Presentation made by TPDDL is enclosed **at Annexure-E.**

AA2. Post facto Correction of Implemented Schedule:

TPDDL representative informed that there had been instances of post facto changes in the schedule , which led to imposition of penalties on TPDDL. He added that was facing lot of difficulty in intra-day scheduling due to arbitrary adjustment in implemented schedule by energy account at the time of REA and DSM bill.

Representative of SLDC, Delhi and NRLDC stated that such incidents happen rarely. They assured to look into the issue to avoid such incidents.

AA2.1. Non-Communication of Delhi SLDC operation team and energy accounting team

TPDDL representative mentioned that on some instances, on account of grid security, utilities have co-operated with each other with URS power, their own entitlement power sharing etc. during real time. However, the information was not properly conveyed to energy accounting team, as result effort of real time power management goes into vein when the same is not reflected in respective book of accounts.

Delhi SLDC, representative assured to take care of this issue.

AA2.2. Methodology of adjustment in real time schedule

TPDDL representative stated that the methodology of adjustment in real time schedule during finalizing implemented schedule for REA and DSM account should be discussed with the DISCOMs and proper guidelines should to be prepared. He opined that no entity should be allowed to change the final drawl schedule issued at the end of the day. If the same is desired due to unavoidable circumstances then necessary approval of the beneficiary should be availed. He mentioned that this issue was already discussed in 112th OCC held on 13th July, 2015, wherein, NRLDC representative had stated that this issue would be resolved once the centralized revised scheduling software comes into operation. He had assured that till such time the centralized revised scheduling software comes into use, NRLDC will take steps to avoid repetition of such instances.

NRLDC representative stated that after commissioning of new software such incidents had reduced and he assured that he would take steps to avoid such instances.

AA3. *Real time scheduling of CCGT Bawana through web-based scheduling (Agenda by)*

TPDDL representative stated that Haryana and Punjab do not update their schedule in the software regularly. This results in forced/incorrect scheduling to Delhi and subsequently to Tata Power-DDL. The schedule is usually corrected by Delhi SLDC energy accounting team while generating final implemented schedule (which comes after 1-2 months) in excel manually. Manual post facto correction of schedule needs to be avoided as this is affecting real time power scheduling.

Delhi SLDC, representative informed that they were working to resolve the issue.

AA4. SOP to Handle Contingency

TPDDL representative stated that Delhi was facing sudden load crashes due to weather changes. He suggested to have SOP to tackle this issue.

It was decided that TPDDL would prepare SOP and send to Delhi SLDC for further discussion and finalisation.

AA5. *Discipline in adherence to time line as per IEGC*

TPDDL representative stated that as per the IEGC regulations, from the time of initiation, four time blocks are given for actual implementation of any change in schedule. He added that ,while going through the acceptance procedure of NRLDC and Delhi SLDC, the message reaches the DISCOMs just one time block before the actual implementation. The DISCOMs then proceed to ramp-up other generators which again take four time blocks. In the entire process, the DISCOMs suffer a penalty for around 8 time blocks which is irreversible.

He suggested that the concerned RLDC/SLDC may take control during these 8 time blocks and schedule power under ancillary/RRAS or schedule other generators as per the Merit Order Dispatch. Once the revised information is received by the concerned beneficiary, he can the revise the requirement after 4 time block.

Representative of Delhi, SLDC and NRLDC stated that they were working as per present Regulations. It was also informed that this issue would be resolved after implementation of gate closure for revision by generators.

AA6. *Integration of SCADA system of SLDC with DISCOMS through ICCP*

TPDDL representative informed that first phase of integration of Delhi SLDC-SCADA system with DISCOMs was successfully commissioned in January 2015, but Phase 2 & 3 of ICCP integration includes the remaining ISGS generating status; CB status etc. was awaited.

It was decided to discuss this issue in next TeST sub-committee meeting.

AA7. Backing down of ER Plants:

BYPL representative stated that when Delhi Discoms submit their back down request from ER stations to NRLDC through Delhi SLDC, it had been observed that ERLDC first backs down the stations on request of ER states and informs Delhi Discoms that the back down capacity has already been utilized and there is no further scope for back down. The back down should be on the request of each Discom as per their allocation.

It was decided that NRLDC will may take up the matter with ERLDC for resolving the issue and inform NRPC Sectt..If issue is not resolved, then it will be taken up by NRPC Sectt. with concerned.

AA8. *System Study for Capacitor Requirement in NR for the year 2019-20*

SE (O), NRPC stated that as decided in OCC/TCC /NRPC meetings the formats for the submission of data was made available on NRPC website (https://bit.ly/2zcIwLU) for collection of data from respective utilities.

All utilities were requested to submit the data in the excel file provided at seo-nrpc@nic.in and manoharsingh@cpri.inbefore 15.08.2018. It was also informed that for any clarification at the time of data collection, utilities may directly contact Dr. Manohar Singh, CPRI (manoharsingh@cpri.in, +91-96329 40855).

TPDDL representative stated that they were in process of preparing the data and they will provide it to NRPC Sectt., but it would be take some more time.

ANNEXURE - A

List of Participants of the Special Meeting on Issues Related to DISCOMs held on 30.07.2018 at NRPC, New Delhi.

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21	Shri Sanyay Srivastav	AVP	BRPL	9312147045	sanjay.sribastav@relianceada.com
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23	Shri Pradeep Aggarwal	Sr.Manager	BRPL	9313554167	pradeep.aggarwal@relianceada.com
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38	Shri Vikrant Singh Dhillon	AEE(O)	NRPC		seo-nrpc@gov.in
	Shri Anil Kumar Gautam	AEE(O)	NRPC		akg9282@gmail.com
39	Shri Manish Maurya	AE(C)	NRPC		sec-nrpc@gov.in

Report of the Group of experts to identify reasons for difference in SEMs / Interface Meters and SCADA Data readings in Uttar Pradesh

1.0 Background

1.1 Based on request by UPPTCL, a group was constituted to analyse reasons for mismatch between drawl of Uttar Pradesh calculated from SCADA and interface meters (popularly known as Special Energy Meters or SEMs) and to suggest suitable measures for minimizing this difference.

1.2 Following are members of the group:

Sh. KNM RAO (NRPC Secretariat)

Sh. Sunil Kumar, Asst. GM (LD&C) (POWERGRID)

Sh. S P SINGH, Dy. Manager (NRLDC)

Md. Irfan Alam, S.E. (SCADA & IT) (UPPTCL)

Sh. Peeyush Shukla, E.E. (UP SLDC)

Sh. Narendra Kumar Meena, Sr.Engr (POWERGRID)

Copy of the letter dated 16.06.2016 regarding constitution of the group is enclosed as **Annex-I**

2.0 Meetings

2.1 The group met at SLDC Lucknow on 18th &19th June 2015. UPPTCL submitted details of drawl data of both Interface Meters and SCADA and RTU availability in May 2015 at 101 locations (78 locations of UP and 23 locations of central sector).

2.2 After review and detailed analysis of documents provided by UPPTCL, it was decided to compile the following information:

- List of interface points for UPPTCL system.
- Comparison of SCADA & Interface Meters data for one month for UPPTCL.
- List of UPPTCL interface points where SCADA telemetry is not available
- %age telemetry for UPPTCL interface points

The committee had gone through the SCADA and Interface Meters data for the month of May'15 to arrive at conclusion and make recommendations on the subject.

(SUNIL KUMAR) (IRFAN ALAM) (P. SHUKLA) (N K MEENA) (SP SINGH) (KNM RAO)

3.0 Process of drawal calculation through Interface Meters and SCADA

Before analysing reasons for differences in Interface Meters and SCADA, it is worthwhile to go through the process of drawal calculation in each of these two methods.

3.1 Drawal calculation using Interface Meters

3.1.1 The drwal calculation done through Interface Meters data is carried out after receipt of data from various interface points. The metering philosophy is governed by Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006. Notified on 17th March 2006. The details are also compiled in NRLDC SEM Handbook available on NRLDC website except the interface points which have updated and attached with this report.

3.1.2 **Meter Data Collection:**

The Interface Meters stores different information like 15 minutes average active and reactive energy, frequency for the tie lines. The Interface Meters data thus stored in the meters is collected through DCD locally for a week and transmitted to RLDCs over e-mail. This data as received at RLDC is then processed. The processing includes verification of the data by comparing with the check meters and zero bus injection method. In case of errors or non-availability of reading, the values are replaced with check meter data.

A project on Automatic meter data recording & collection (AMR) is under implementation where the meter data is collected automatically over dedicated communication system based on GPRS system on weekly basis. The transfer of information is not on real time basis and hence the communication failure does not affect the collection as the total information could be transmitted as and when the communication is available.

3.1.3 **Data Checking and Validation:**

Before proceeding with computation of Energy Accounting, it is very important to carry out data checking and validation. Through this process it can be established whether the Interface Meters are recording data correctly. In case of any discrepancies observed, corrective action has to be taken, like say, intimation to concerned agency for replacement of meters, use of alternate meters for computation of energy in case main meter is showing incorrect data, etc.

Identification of any metering error can be done through the three broad categories of checks:

a) **Net Bus of Sub-Stations**: Summation of all incoming / outgoing energy for the sub-station (should be ideally close to zero

b) Net bus of Generating Stations: **Difference between total injection and total export through all feeders/ICTs should be ideally close to zero.**

c) **Pair check (End1 – End2 of lines)**: Pair check of back to back meters connected at two ends of transmission lines

d) **Check for time drift and voltage failure condition:** Checks are also carried out to ascertain time drift in the meters with reference to a Master meter. Validation process also includes check to find out voltage failure condition in any meter during any time-block.

3.1.4 Calculation of net Drwal/Injection:

The net injection by ISGS and net drawl of the Utilities are calculated considering the details below:

i. The sign convention of power flow recorded by meters is positive for flow out of bus-bar and negative for power flow into the bus-bar. However, for meters on LV/HV side of Generator Transformers, the meters have actually been connected so as to read positive for power flow into the HV bus-bar.

ii. Net injection/drawl at any location is algebraic sum of meters (including sign) on all feeders/ICTs/GTs listed with that location.

iii. Net drawl of State Utilities would be algebraic sum of drawls at all the locations listed for that utility.

iv. Multiplying factor to be applied with standby meters is to compensate for transmission/transformation losses & would depend upon voltage level (1.5 % for 400 kV, 3% for 220 kV lines & 4% for 132 & below lines) as agreed by Commercial Committee of NREB in its 105th meeting held on 08.03.2001.

v. State Utilities would also be required to send daily readings of the Existing Conventional Meter (ECM) along with time of outages of some LV feeders listed with respective states to NRLDC on a weekly basis. (Interface Meters on these feeders have not been installed in view of negligible/ constant power flows).

3.2 Data Captured through SCADA

3.2.1 RTU/SAS

RTU/SAS are installed at different substation/Generating station for transfer of real time data to the control Centre. The real time information in collected through the power system interface (CT/PT) with the help of transducers. The collected information is then transferred over communication to Master stations. The data up-dation rate depends upon the configuration at the Master stations which in turn depends upon the scan rate. Real time information as collected is updated periodically based on the scan rate.

3.2.2 Telemetry

Telemetry is the process of collecting the real time information of the process under monitoring to the central control centre with the help of different system interface and communication link. Real time information means the latest status of the process under monitoring and control.

4 Possible reasons for deviations in SCADA & Interface Meters

4.1 Inherent or non-controllable factors

4.1.1 Data accuracy

The accuracy class of the recording instruments in Interface Meters and SCADA is also different. While the accuracy class of SCADA is 0.5S, the accuracy class of the Interface Meters data is 0.2S which is more accurate.

4.1.2 Scan Rate of parameters

While comparing the two sets of data, it is pertinent to access the data source of the two sets of data. While the SCADA is the real time data, the Interface Meters data being compared is received post facto for comparison. While the energy meters records the energy in 15 mins interval with faster scan rate, the SCADA records active power in 10 sec interval. The comparisons are made through conversion of any one of them either Interface Meters data (MWH) to MW or SCADA data (MW) to energy and hence while looking at the comparison, the basic difference while recording are to be considered.

4.2 Controllable factors

4.2.1 Errors at the source

There may be error in the measurement of power flow for SCADA at the source itself due to following reason:

- RTU failure / database corruption in SAS / RTU
- PT fuse failure
- Faulty transducers

Similarly, Interface Meters may read wrongly due to following reasons:

i. Time drifting of Interface Meters clock
ii. PT fuse failure

4.2.2 Communication failure

Telemetry works with the help of communication which may be of different types like PLCC, wideband (fibre optic / Micro wave), dedicated link (MPLS), VSAT communication, GPRS (internet based) communication. RTU communicates with the master stations installed in the control centre based on the availability of communication links. In case the link is faulty / noisy, no data communication is possible, RTU/SAS is not able to communicate the data collected from field by RTU/SAS to the Master Stations. Once the communication is restored the data communication also restored However, the data is lost for the period when the communication was not available.

4.2.3 Computation of Data

The computation of drawl is done on real time basis and as already mentioned is affected due to telemetry failures. There is no possibility of removal of errors on real time except through manual substitution at frequent intervals. Hence SCADA data is inclusive of errors either due to telemetry failure or due to non-availability of telemetry. So far there was no way to correct such errors. However, in the new system there is facility available for redundant data source, which are under implementation, which is expected to reduce this type of error.

On the other hand, the Interface Meters data points are checked on post facto basis and hence the bad data either due to non-updation or other reasons like faulty wiring, PT fuse failure are removed from the computation and substituted through check meter/stand-by meter data and hence are free from such errors.

Generally, facilities are provided in SCADA to manually override the data in case of telemetry failure. However, the manual override needs to be removed after the restoration of the telemetry otherwise the same shall continue with the manually overridden data leading error also after restoration of telemetry. In new SCADA system, in case of telemetry failure, value could be manually overridden which is

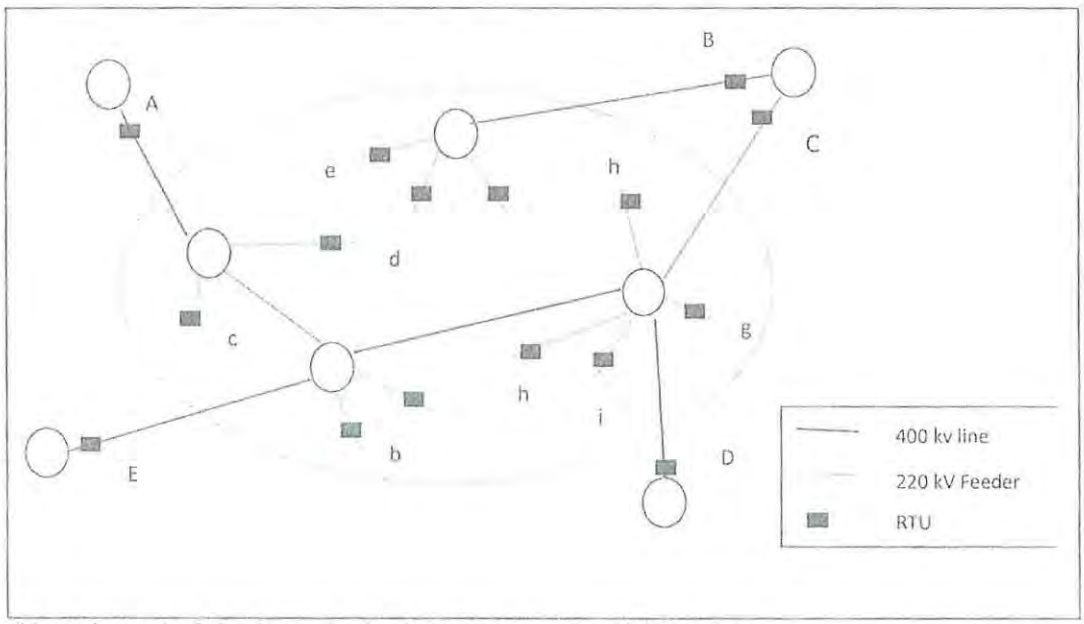
automatically removed on restoration of telemetry except the manual substitution is done by applying tag i.e. forcefully blocking the telemetry.

4.2.4 Updation of Drawl Points

SCADA, being of real time nature, a database maintenance procedure is being followed to keep the computation valid. It is not possible to incorporate changes on continuous basis and hence the database is updated on monthly basis through maintenance of a common Regional Master for whole Northern Region. All the Utilities update their changes including the change in interfaces which are made online on specific dates agreed mutually by all the constituents. The interface points are generally incorporated in anticipation so that the calculation is updated as when power flow is commenced through that interface. However, sometimes it has been observed that the interfaces are not incorporated properly in advance in case of any network changes especially in case of LILO. These changes are subsequently added through general calculation Utility which is a local feature leading to different recordings at different control centre.

4.2.5 Selection of data points

Calculation of drawl by a state can be made by algebraic sum of power flow at suitable data points. In fact, it is possible to have more than one such combination of data points to arrive at drawal by the state. In ideal condition, when all RTUs are functioning properly and there is no issue in telemetry, all such combinations of data point will give same figure of drawl by the state. The example can be seen from the exhibit below showing data points for a hypothetical system.



Now drawal of the hypothetical system can be obtained as:

Drawl= A + B +C + D + E (5 data points)

Or

Drawl = a + b + c + d + e + f + g + h (8 data points)

However, depending on which locations have RTU or telemetry issues, these combinations may give different drawls.

5 Major factors for mismatch in Interface Meters vs SCADA data of UP drawls

5.1 Telemetry issues

The recordings for UPPTCL drawl in SCADA & in Interface Meters were analysed by group. It is observed that the minimum deviation was observed on 1st May, 2015 whereas the maximum deviation was observed in 5th May, 2015. The Figure - I shows the block-wise difference of SCADA / Interface Meters recordings of UPPTCL drawl from the grid for 1st May, 2015. %age deviation for the day in energy is 0.24% whereas the difference in energy is 0.268 MU when Interface Meters recorded higher than the SCADA. The plot validates the calculation done is in real time SCADA system.

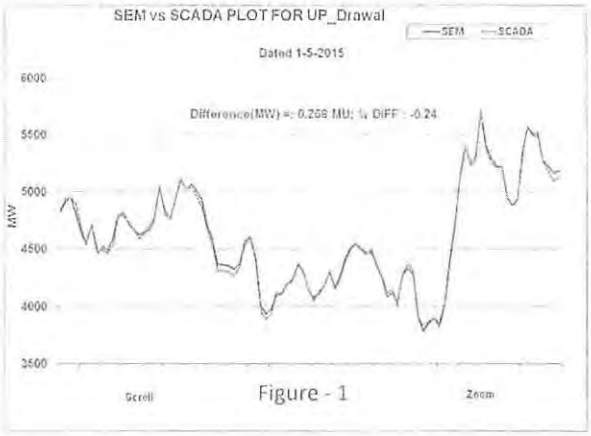


Figure - 1

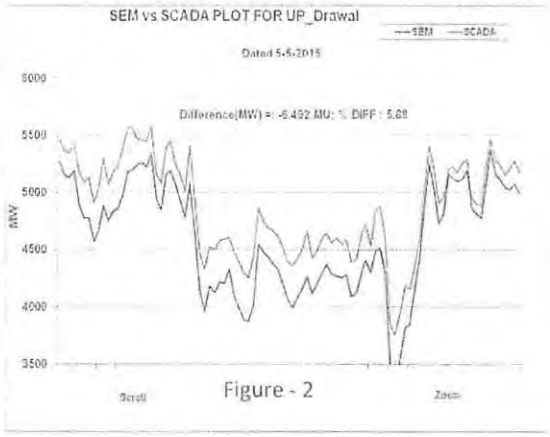


Figure - 2

5.0

The figure - 2 shows the block-wise difference of SCADA / Interface Meters of UPPTCL drawal from the grid for 5th May, 2015. The % age deviation for the day in energy terms is 5.88% whereas the difference in energy is 6.492 MU. On this day the SCADA was recorded more than Interface Meters in contrary to 1st May, 2015. Since, no change in calculation was required during this period is clear that the deviation is mainly attributed to telemetry failure.

There are total 101 locations relevant for calculation of drawal of UP 78 locations belong to UPPTCL (400KV -29, 220KV -29 and 132KV-20) and 23 locations are of

central sector (400KV -18 and 220KV -5). Out of these, telemetry is not available at 21 locations of UPPTCL (400KV-1, 220KV- 3 and 132KV- 17) and 3 locations of POWERGRID (400KV -3). Further, poor telemetry was observed at 12 feeders of UPPTCL (400KV-9 and 220kv-3) and 12 feeders of central sector (400KV -9 and 220KV-03). Details as per Annexure-II

Due to non availability of telemetry UP drawl real time data as per SCADA reported a difference from -100 MW to +100 MW at some feeders resulting errors in total drawls at real time.

NRLDC/UPSLDC has informed that they are correcting drawl data in the system in case of telemetry failure/ non availability at all individual locations as per authorisation of SIEMENS SCADA and communicating the same to NRLDC. There may a scope for difference if NRLDC does not incorporated same changes at NRLDC level. NRLDC informed that since August 2015 calculation is being done at UP end using same interface points as are used in SEM and values are taken on ICCP. This minimises the scope for difference in display. However, this practice needs to be deliberated in the TeST sub-committee meeting before adopting it for all the states.

5.2 Healthiness of RTUs and Interface Meters

5.2.1 Even when availability of telemetry is 100%, it has been observed that for some locations there is large mismatch of data between Interface Meter and SCADA. This mismatch may be due to faulty transducers in RTUs or suspect data generated from database corruption in SAS / RTU or due to CT ratio calibration mismatch of interface meters. Data difference up to 50% was observed even with high availability of telemetry at 400/220KV stations Gorakhpur (ICT-1&2), Allahabad (ICT-3), Lucknow (ICT2) and Mainpuri (ICT-1&2), Meerut (ICT-4) of POWERGRID. Such type of mismatch was observed at UPPTCL sub- stations also namely 400KV Sarnath, Lucknow, Gorakhpur sub-stations and 220KV stations Muzaffarnagar, Orai, Simbhaoli, Panki, Chinhat, Atrauli, Khurja, Bareilly, Fatehpur sub- stations. Hence it is necessary to take remedial actions at above stations after verification of healthiness of RTUs and interface meters.

5.3 Non-availability of telemetry

As per drawl report of May 2015 submitted by UPPTCL, telemetry was not available form 4 numbers ICTs (400/220 kV) of POWERGRID and 17 numbers 132 kV

feeders of UPPTCL. Although, the quantum of drawal at these locations is not significant, this nevertheless is source of error.

5.4 Difference in combination of drawal points considered by NRLDC and UPPTCL for drawal calculations in SCADA

It was observed that while UP SLDC was using a combination of 84 data points for calculation of drawal while NRLDC was using combination of 60 data points for such calculation. As mentioned earlier, the combination per se would not make a difference if there are no errors at source or no issues in telemetry. However, it does create ambiguity.

UP SLDC had proposed drawal calculation in the SCADA based on all UP interface points used in drawal calculation using Interface Meters UP SLDC is of the opinion that it is easier to compare and take remedial measure if drawl calculation in SCADA is also made based on Interface Meter points.

List of UP Interface Meter points are enclosed in annexure III

6 Recommendations

6.1 Improving communication for reliable telemetry

Optical fibres provide best medium to telemeter the data from RTUs to control centres. If required PLCC can provide enough reliability to transmit data to nearest location with optical fibre connectivity of only one or two hops are involved. To achieve desired level of reliability, there is need to have alternate paths with optical fibre.

6.1.1 UPPTCL and POWERGRID should work together so as to achieve redundant paths with optical fibre at all data points.

(Action: UPPTCL and POWERGRID, Time Frame: 2 years)

6.1.2 UP SLDC may prepare a priority list of locations based on drawal at various locations.

(Action: UP SLDC, Time Frame: 1 month)

6.1.3 Listing of interface points available on NRLDC website needs to be done state wise .Also main, check, stand by and loss meter of each interface points needs to be shown in adjacent neighbourhood. Readings of main check, standby and loss meter to be mentioned in weekly data published by NRLDC to verify discrepancies in energy flow on a particular element and also for checking difference between SEM and SCADA data.

(Action: NRLDC-Time Frame: 1 month)

6.2 **Providing RTUs/telemetry facilities at all locations**

As mentioned earlier, 4 numbers ICTs (400/220 kV) of POWERGRID and 17 numbers 132 kV feeders of UPPTCL do not have RTUs/telemetry facilities. Unless all the data points are provide with RTUs and telemetry, there will always be some error depending on quantum of drawal inferred from these data points.

6.2.1 The data points at which RTUs and telemetry is not available at present should be equipped with these facilities.

(Action: POWERGRID and UPPTCL, Time Frame: One month for stations at 400KV & above, 3 months for 220KV and 6 months for 132KV stations)

6.2.2 To comply with regulatory provisions, Control Centres should not allow energization of a transmission element without RTU and telemetry

(Action: NRLDC and UP SLDC, Time Frame: Immediate)

6.2.3 RTU availability report needs to be published timely by NRLDC so that timely matching of data can be done and action taken accordingly .

(Action: NRLDC, Time Frame: Immediate)

6.3 **Philosophy of manual substitution in case of telemetry failure**

Whenever data is not getting telemetered at Control Centres due to telemetry issues, such data is replaced by operators at Control Centres with the prevailing value ascertained from the field. Presently, SLDCs substitute the value for locations under the control of State Sector and NRLDC substitutes the value for Central Sector locations. Since these substituted values significantly affect the drawl calculation of the state, it is essential that NRLDC and SLDCs are alert about change in values and revise the substituted values periodically.

(Action: NRLDC and UP SLDC, Time Frame: Immediate)

6.4 **Philosophy of selection of data points for calculation of drawal**

As mentioned earlier, algebraic sum of power flow for more than one combination of data points can lead to drawal of the state. Any one combination may give less or more error than other combinations depending of points affected by RTU or telemetry errors. However, NRLDC and SLDC of concerned state should adopt same combination to avoid confusion on this account. There is need to arrive at philosophy for selection of data points to be adopted by all control centres.

(Action: TeST sub-committee, Time Frame: 3 months).

6.5 **Quick rectification of Interface Meter errors**

Although, difference in drawal calculation by SCADA and Interface Meters is mainly attributable to issues in former, errors in Interface Meter data cannot be totally ruled out. To avoid errors due to Interface Meters, there are enough provisions in the Central Electricity Authority (Installation and Operation of meters), Regulations 2006 and subsequent amendments, such as:

- To verify the correctness of metered data is responsibility of CTU
- When difference between Main and Check meter for any month is more than 0.5%, following steps shall be taken:

(i) Checking of CT and VT connections;

(ii) Testing of accuracy of interface meter at site with reference standard meter of accuracy class higher than the meter under test.

If the difference persists, the defective meter shall be replaced with a correct meter.

- In case of conspicuous failures like burning of meter and erratic display of metered parameters and when the error found in testing of meter is beyond the permissible limit of error provided in the relevant standard, the meter shall be immediately replaced with a correct meter.
- In case where both the Main meter and Check meter fail, at least one of the meters shall be immediately replaced by a correct meter.
- Readings recorded by Main, Check and Standby meters for every time slot to be analyzed, cross checked and validated by the Appropriate Load Dispatch Centre (LDC).
- The discrepancies, if any, noticed in the readings shall be informed by the LDC in writing to the energy accounting agency for proper accounting of energy.
- LDC to also intimate the discrepancies to the Appropriate Transmission Utility or the licensee, who shall take further necessary action regarding testing, calibration or replacement of the faulty meters in accordance with the provisions laid down.
- Mandatory testing at the time of commissioning.
- Testing at least once in five years or whenever abnormal or inconsistent (with adjacent meters) recording.
- Whenever there is unreasonable difference between the quantity recorded by Interface meter and the corresponding value monitored at the billing center via communication network, the communication system and terminal equipment shall be tested and rectified.

——There is need to comply these regulatory provisions strictly.

(Action: NRLDC, POWERGRID, Time Frame: Continuous activity)

Annex-I

Letter dated 16.06.2015 issued by NRPC secretariat (enclosed)

फोन-26511211 , 26868681
फैक्सFax :26865206
ई मेल e- mail: seo-nrpc@nic.in
वेबसाईटWebsite : www.nrpc.gov.in

भारत सरकार
उत्तर क्षेत्रीय विद्युत समिति
18-ए, श.जीत सिंह मार्ग, कटवारिया सराय,
नई दिल्ली- 110016
Government of India
Northern Regional Power Committee
18-A, S. Jeet Singh Marg, Katwaria Sarai,
New Delhi-110016

उ. क्षे. वि. स./प्रचालन/108/04/2015/H/5611-19 दिनांक 16.06.2015
No. NRPC/ OPR/108/04/2015 Dated: 16.06.2015

सेवा में

कार्यकारी निदेशक (एन. आर.-I)
पावरग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड,
B9, कुतुब इंस्टीट्यूशनल एरिया, नई दिल्ली - 110016
फैक्स नंबर: 011-26853488

To

Executive director NR-I
Powergrid corporation of india ltd,
B9, Qutub institutional area, New Delhi-110016
फैक्स नंबर: 011-26853488

महाप्रबंधक,N.R.L.D.C,
18-ए, शहीद जीत सिंह मार्ग,, नई दिल्ली -110016
फैक्स नंबर: 011-26852747

General Manager, N.R.L.D.C,
18-A, Shaheed Jit Singh Marg,
Katwaria Sarai,
NEW DELHI – 110 016
फैक्स नंबर: 011-26852747

मुख्य अभियंता (UPSLDC),
उत्तर प्रदेश पावर Trnasmission Compeny लिमिटेड,शक्ति भवन, 14 अशोक मार्ग,
लखनऊ-226001
फैक्स नंबर: .(Fax 0522-2287880)

Chief Engineer (UPSLDC),
UP Power Trnasmission Compeny Ltd,
Shakti Bhawan ,14 Ashok Marg,
Lucknow-226001
फैक्स नंबर: .(Fax 0522-2287880)

विषय: " उत्तर प्रदेश मे स्काडा और इंटरफ़ेस मीटर रीडिंग UPPTCL में अंतर के लिए कारणों की पहचान करने के लिए एक समूह का घटन

Subject:- Constitution of a group to identify reasons for difference in SCADA and interface meter readings in Uttar Pradesh

महोदय/ Sir,

Based on request by UPPTCL , It has been decided to constitute a group consisting experts from NRLDC, UPPTCL, POWERGRID and NRPC secretariat to analyze the issue raised by UPPTCL and suggest remedial measures. The group will have following members. This group will have their first meeting at UP(SLDC) Lucknow and it will submit it's report by by 30th June 2015

UPPTCL द्वारा अनुरोध के आधार पर यह UPPTCL द्वारा उठाए गए मुद्दे का विश्लेषण और उपचारात्मक उपाय सुझाने के लिए NRLDC, UPPTCL, पावरग्रिड और NRPC सचिवालय के विशेषज्ञों से मिलकर एक समूह गठित करने का फैसला किया गया है। समूह निम्नलिखित सदस्य होंगे। इस समूह में उत्तर प्रदेश (SLDC) लखनऊ में अपनी पहली बैठक होगी और यह 30 जून 2015 द्वारा यह रिपोर्ट प्रस्तुत करेगा

1) Sh. R P SINGH Dy. Manager (NRLDC)
2) Md. IRFAN ALAM EE(Scada &IT) (UPPTCL)
3) Sh. Peeyush Shukla EE(SLDC) (UPPTCL)
4) Sh. Sunil Kumar , Asst. GM(LD&C) (POWERGRID)
5) Sh. Narendra Kumar Meena Sr.Engr(POWERGRID)
6) Sh. KNMRAO (NRPC secretariat)

भवदीय /Yours faithfully,

16.06.2015

(अजय तलेगॉवकर/ Ajay Talegaonkar)

अधी. अभि.(प्रचालन) / SE (Operation)

)

Copy to all members of the group

1) Sh. R P SINGH Dy. Manager (NRLDC)
2) Md. IRFAN ALAM EE(Scada &IT) (UPPTCL)
3) Sh. Peeyush Shukla EE(SLDC) (UPPTCL)
4) Sh. Sunil Kumar , Asst. GM(LD&C) (POWERGRID)
5) Sh. Narendra Kumar Meena Sr.Engr(ULDC) (POWERGRID)
6) Sh. KNMRAO (NRPC secretariat)

Annex-II

LIST OF INTERFACE POINTS (SEM) WHERE SCADA TELEMETERY IS NOT AVAILABLE((NA)/POOR RTU AVAILBLITY(POOR)

POWERGRID

Sl.No.	*NAME OF FEEDERS OF SUBSTATION*	*STATUS OF TELEMETRY*
1	ICT-1(400 /220 kV) 315MVA at Sohwal-PG	NA
2	ICT-2(400/220 kV) at Sohwal-PG	NA
3	ICT 1 & 2 (400/220 kV) at SHAHJAHANPUR	NA
4	400 kV Parichha(UP)-II at Mainpuri-PG	POOR
5	ICT-1(400 kV) at Fatehpur-PG	POOR
6	ICT-2(400 kV) at Fatehpur-PG	POOR
7	ICT-1(400 kV) at Lucknow-PG	POOR
8	ICT-2(400 kV) at Lucknow-PG	POOR
9	220kV side of 220/132 kV ICT-1 at Raibarely-PG	POOR
10	220kV side of 220/132 kV ICT-2 at Raibarely-PG	POOR
11	220kV side of 220/132 kV ICT-3 at Raibarely-PG	POOR
12	ICT-1 (400 kV) at Allahabad-PG	POOR
13	ICT-2 (400 kV) at Allahabad-PG	POOR
14	ICT-3 (400 kV) at Allahabad-PG	POOR
15	220KV UPCC—1&2 AT AURAIYA CCPP	POOR

UPPTCL

Sl.No.	*NAME OF FEEDERS OF SUBSTATION*	*STATUS OF TELEMETRY*
1	132 KV BHAGWANPUR AT 132 AMBALA ROAD-UPPTCL S/s	NA
2	132 KV LAXMI SUGAR MILL AT 132 KV GANGALKHERI-UPPTCL S/s	NA
3	132 KV KHATIMA AT 132 KV PILIBHIT-UPPCL S/s	NA
4	132 KV SITARGANJ AT 132 KV PILIBHIT-UPPCL S/s	NA
5	132 KV KICHHA AT 132 KV RICHHA-UPPTCL S/s	NA
6	132 KV KASHIPUR AT 132 KV THAKURDWARA-UPPTCL S/s	NA
7	132 KV KALAGARH AT 132 KV DHAMPUR-UPPTCL S/s	NA
8	132 KV KALAGARH AT 132 KV AFZALGARH-UPPTCL S/s	NA
9	132 KV MANGLORE AT 132 KV KIRATPUR-UPPTCL S/s	NA
10	132 KV LAKSAR AT 132 KV CHANDAK-UPPTCL S/s	NA
11	132 KV CHILLA AT 132 KV NAJIBABAD-UPPTCLS/s	NA
12	132 KV KOTDWAR AT 132 KV NAJIBABAD-UPPTCL S/s	NA
13	132 KV KARAMNASA AT 132 KV CHANDAULI-UPPTCL S/s	NA
14	132 KV MORWA AT 132 KV BEENA-UPPTCL S/s	NA

15	132 KV RAJGHAT AT 132 KV LALITPUR-UPPTCL S/s	NA
16	132 KV SINGRAULI AT 132 KV RENUSAGAR-UPPTCL S/s	NA
17	132KV KALAGARH –DHAMPUR	NA
18	220KV GAZIPUR-DV at NOIDA UP	Poor
19	220KV NARORA AT ATRAULI UP	Poor
20	220KV KANPUR PG AT ORAI UP	Poor
21	400KV MAINPURI PG 1&2 AT 400KV PARICHHA UP	Poor
22	220KV PATPARGANJ AT SAHIBABAD UP	POOR
23	220KV BADARPUR AT NOIDA UP	POOR
24	220KV RAIBARELLY PG AT CHINAT UP	POOR
25	400KV SINGRAULI ANPARA –UP	POOR
26	400KV SASARAM AT SARNATH –UP	POOR
27	400KV GORAKHPUR PG2 AT GORAKHPUR –UP	POOR
28	400KV ALLAHABAD PG AT SARNATH UP	POOR
29	400KV LUCKMOW PG AT LUCKNOW SULTANPUR UP	POOR
30	400KV BAREILLY PG AT 400 KV LUCKNOW UP	POOR
31	400KV KANPUR PG 1&2 AT 400KV PANKI UP	POOR
32	400KV ROORKEE PG at MUZAFFERNAGAR -UP	POOR
33	400KVMEERUT PG AT MUZAFFERNAGAR UP	POOR

Annex-III

UP SEM POINTS

Sr. no.	Name of Meter	Loc Code	
1	400kV Dadri at Muradnagar-UPPCL	UP-01	-1*UP-01
2	400kV Roorkee-PG at Muzaffarnagar-UPPCL	UP-82	-1*UP-82
3	400kV Meerut at Muzaffarnagar-UPPCL	UP-83	-1*UP-83
4	220kV Roorkee-PG at Muzaffarnagar-UPPCL	UP-07	-1*UP-07
5	220kV Khodri-1 at Saharanpur-UPPCL	UP-10	-1*UP-10
6	220kV Khodri-2 at Saharanpur-UPPCL	UP-11	-1*UP-11
7	132kV Laxmi Sugar Mill at Gangalkheri-UPPCL	UP-12	-1*UP-12
8	132kV Bhagwanpur at SRE Ambala Road-UPPCL	UQ-28	-1*UQ-28
9	132kV Khatima at Pilibhit-UPPCL	UP-14	-1*UP-14
10	132kV Sitarganj at Pilibhit-UPPCL	UP-15	-1*UP-15
11	132kV Kichcha at Richha-UPPCL	UQ-27	-1*UQ-27
12	400kV Kashipur at Moradabad-UPPCL	UP-08	-1*UP-08
13	400kV PG Bareilly1-at Moradabad-UPPCL	UQ-11	-1*UQ-11
14	400kV PG Bareilly 2-at Moradabad-UPPCL	UQ-16	-1*UQ-16
15	132kV Kashipur at Thakurdwara-UPPCL	UQ-14	-1*UQ-14
16	132kV Kalagarh at Afzalgarh-UPPCL	UQ-45	-1*UQ-45
17	132kV Kalagarh at Dhampur-UPPCL	UQ-17	-1*UQ-17
18	132kV Chandak at Laksar-UPPCL		
19	132kV Manglore at Kirtarpur-UPPCL	UQ-25	-1*UQ-25
20	132kV Chilla at Nazibabad-UPPCL	UQ-24	-1*UQ-24
21	132kV Kotdwar at Nazibabad-UPPCL	UP-25	-1*UP-25
22	220kV Pantnagar at Baikanthpur(Bareilly)-UPPCL	UP-26	-1*UP-26
23	220kV Patparganj at Sahibabad-UPPCL	UP-02	-1*UP-02
24	220kV Gazipur(DTL) at Sec-62 Noida-UPPCL	UQ-26	-1*UQ-26
25	220kV BTPS at Sec-20 Noida-UPPCL		
26	220kV BTPS at Noida-UPPCL(Meter/panel dismantUPPCL)	UP-04	UP-04*0.0
27	220kV Auraiya-1 at 220kV Agra-UPPCL	UP-28	-1*UP-28
28	220kV Auraiya-2 at 220kV Agra-UPPCL	UP-29	-1*UP-29
29	220kV Bharatpur at 220kV Agra-UPPCL	UP-30	-1*UP-30
30	220kV UPPC – 1 at Auraiya CCPP	AU-03	AU-03
31	220kV UPPC – 2 at Auraiya CCPP	AU-04	AU-04
32	220kV NAPS-1 at Khurja-UPPCL	UP-68	-1*UP-68
33	220kV NAPS-2 at Khurja-UPPCL	UP-69	-1*UP-69
34	220kV NAPS at Atrauli-UPPCL	UQ-01	-1*UQ-01
35	220kV NAPS at Simbhauli-UPPCL	UP-71	-1*UP-71
36	220kV NAPS at Sirshi-UPPCL	UQ-32	-1*UQ-32
37	220kV Tanakpur at CB Gunj-UPPCL	UP-41	-1*UP-41
38	220kV PG Sitarganj at CB Gunj-UPPCL	UP-42	-1*UP-42
39	220kV Kanpur(PG) at Mainpuri-UPPCL	UP-63	-1*UP-63
40	220kV Kanpur(PG) at Naubasta-UPPCL	UP-64	-1*UP-64
41	ICT-1 (400 kV) 315 MVA at Sohwal-PG	NS-23	NS-23
42	ICT-2 (400 kV) at Sohwal-PG	NS-24	NS-24
43	ICT-3 (400 kV) at Sohwal-PG		
44	400kV Singrauli at 400kV Lucknow-UPPCL	UP-34	-1*UP-34
45	400kV Bareily(PG) at 400kV Lucknow-UPPCL	UP-35	-1*UP-35
46	400kV Lucknow(PG) at 400kV Lucknow-UPPCL	UQ-20	-1*UQ-20

47	220kV Raebareilly at 220kV Lucknow-UPPCL	UP-59	-1*UP-59
48	400kV Lucknow(PG) at 400kV Sultanpur-UPPCL	UQ-21	-1*UQ-21
49	400kV Kanpur-1 at 400kV Panki-UPPCL	UP-36	-1*UP-36
50	400kV Kanpur-2 at 400kV Panki-UPPCL	UP-37	-1*UP-37
51	220kV Kanpur-1 at 220kV Panki-UPPCL	UP-60	-1*UP-60
52	220kV Kanpur-2 at 220kV Panki-UPPCL	UP-61	-1*UP-61
53	220kV Raibareilly-PG at Chinhat-UPPCL	UP-65	-1*UP-65
54	220kV Unchahar-1 at Fatehpur-UPPCL	UP-66	-1*UP-66
55	220kV Unchahar-2 at Fatehpur-UPPCL	UP-67	-1*UP-67
56	400kV Singrauli at Anpara-UPPCL	UP-31	-1*UP-31
57	400 kV sasaram at Sarnath-UPPCL	UP-20	-1*UP-20
58	400 kV Allahabad at Sarnath-UPPCL	UP-21	-1*UP-21
59	220kV Sasaram at Sahupuri-UPPCL	UP-38	-1*UP-38
60	132kV Karamnasa-2 at Sahupuri-UPPCL	UP-40	-1*UP-40
61	132kV Karamnasa at Chandauli-UPPCL	UP-46	-1*UP-46
62	132kV Singrauli at Renusagar-RTPS-UPPCL	UQ-22	-1*UQ-22
63	132kV Morwa at Anpara-UPPCL	UP-32	-1*UP-32*0.0
64	132kV Morwa at Bina-UPPCL	UP-33	-1*UP-33
65	132kV Sonenagar at Rihand HPS-UPPCL	UP-44	-1*UP-44
66	132kV Garwa at Rihand HPS-UPPCL	UP-45	-1*UP-45
67	132 kV Lalitpur at Rajghat-WR	WR-19	WR-19*0.96
68	ICT-1 (400 kV) at Allahabad-PG	NR-61	NR-61
69	ICT-2 (400 kV) at Allahabad-PG	NR-62	NR-62
70	ICT-3 (400 kV) at Allahabad-PG	NU-08	NU-08
71	ICT-1 (400 kV) at Fatehpur-PG	UQ-35	UQ-35
72	ICT-2 (400 kV) at Fatehpur-PG	UQ-37	UQ-37
73	ICT-1 (400 kV) at Meerut-PG	NR-51	NR-51
74	ICT-2 (400 kV) at Meerut-PG	NR-52	NR-52
75	ICT-3 (400 kV) at Meerut-PG	NR-53	NR-53
76	ICT-4 (400 kV) at Meerut-PG	NU-06	NU-06
77	400 kV Agra PG-1 at Agra-UPPCL	UP-72	-1*UP-72
78	400 kV Agra PG-2 at Agra-UPPCL	UP-73	-1*UP-73
79	220kV Pithoragarh at Baikanthpur(Bareilly)-UPPCL	UP-57	-1*UP-57
80	220kV Dhauliganga-2 at Baikanthpur(Bareilly)-UPPCL	UP-58	-1*UP-58
81	400kV PG Bareilly-1 at Baikanthpur(Bareilly)-UPPCL	UP-80	-1*UP-80
82	400kV PG Bareilly-2 at Baikanthpur(Bareilly)-UPPCL	UP-81	-1*UP-81
83	400/220 kV ICT-1(400 kV side) at Greater Noida-UPPCL	UP-86	UP-86
84	400/220 kV ICT-2(400 kV side) at Greater Noida-UPPCL	UQ-04	UQ-04
85	400/220 kV ICT-3(400 kV side) at Greater Noida-UPPCL	UQ-29	UQ-29
86	400/220 kV ICT-4(400 kV side) at Greater Noida-UPPCL	UQ-46	UQ-46
87	Lucknow(PG)-1 at 400kV Unnao-UPPCL	UP-90	-1*UP-90
88	Lucknow(PG)-2 at 400kV Unnao-UPPCL	UP-91	-1*UP-91
89	Gorakhpur(PG)-1 at 400kV Gorakhpur-UPPCL	UP-92	-1*UP-92
90	Gorakhpur(PG)-2 at 400kV Gorakhpur-UPPCL	UP-93	-1*UP-93
91	400kV Balia-1 at Mau-UPPCL	UQ-02	-1*UQ-02
92	400kV Balia-2 at Mau-UPPCL	UQ-03	-1*UQ-03
93	220 KV Orai at Kanpur PG	UQ-24	UQ-24
94	ICT-1 (400kV) at Gorakhpur-PG	UP-94	UP-94
95	ICT-2 (400kV) at Gorakhpur-PG	UP-96	UP-96
96	ICT-3 (400kV) at Gorakhpur-PG		
97	ICT-1(400 kV) at Lucknow-PG	UP-88	UP-88

98	ICT-2(400 kV) at Lucknow-PG	UQ-39	UQ-39
99	ICT-1(220 kV) at Mainpuri-PG	UP-77	UP-77
100	ICT-2(220 kV) at Mainpuri-PG	UP-78	-1*UP-78
101	220kV side of 220/132 kV ICT-2 at Raibarely-PG	UQ-12	UQ-12
102	220kV side of 220/132 kV ICT-3 at Raibarely-PG	UQ-18	UQ-18
103	220kV side of 220/132 kV ICT-1 at Raibarely-PG	UQ-33	UQ-33
104	400kV Lucknow PG at ROSA TPS-UPPCL	UQ-41	-1*UQ-41
105	400kV Bareilly PG at ROSA TPS-UPPCL	UQ-42	-1*UQ-42
106	400 kV Parichha(UP)-I at Mainpuri-PG	UQ-43	UQ-43
107	400 kV Parichha(UP)-II at Mainpuri-PG	UQ-44	UQ-44
108	ICT-1 (400 KV) Shahjahanpur-PG	NU-10	NU-10
109	ICT-2 (400 KV) Shahjahanpur-PG	NU-12	NU-12

(N.K.Meena)
POWERGRID

ANNEXURE - C

Guidelines & Best Practices for Ease of obtaining Electricity Connection by Consumers

By-
Vandana Singhal
Chief Engineer(DP&R), CEA
e-mail: cedpr-cea@gov.in

Introduction

- World Bank ranks 190 economies on various parameters.
- "Getting Electricity" - one of these parameters.
- During the past two years, India has made several reform initiatives because of which India's ranking has improved from 99 in the report 2015 to 26 in the report 2017.
- For "Getting Electricity", World Bank measures the performance on 4 parameters:
  - Number of procedures
  - Time for obtaining electricity connection
  - Cost for obtaining electricity connection upto 140kVA
  - Reliability of power supply.
- On the basis of consultation with various Discoms, draft Guidelines have been developed.

Step no 1: Submission of application to utility and conduct site inspection

Application Form

- Licensee shall make appropriate arrangements for filling and accepting the application by the applicant
- Both the options of hard copy as well as online submission through Mobile App/website to be made available by Licensee.
- Applications for new connection for 50 kVA and above, unless any other lower value as may be notified by the Commission from time to time, shall be submitted through online system only.

Documents required for submission with application form

- Identity proof
- Proof of address/ownership or legal occupancy over the premises for which new connection is being sought

- **Processing Application Form**

- In case of submission through Hard Copy, Licensee shall verify the application on the spot and if found in order, acknowledge through dated receipt.
- In case of online submission, a system generated acknowledgement to be issued forthwith.
- In case of any deficiency in the application, the same shall be intimated to the applicant within 2 days of the receipt of the application.
- In case the Licensee fails to intimate the applicant about any deficiencies in his application on the spot or within the stipulated 2 days, the application shall be deemed to have been accepted by the Licensee on the date of receipt of the application.

Field Inspection

- The date of inspection must be scheduled within two days from the date of receipt of application form.
- If the applicant wishes to have a different date and time for field inspection, which is beyond the stipulated date & time, the excess time taken by the applicant shall not be considered for computation of total time taken for release of connection.
- During the inspection, the licensee shall:
  - Fix the point of supply and the place where the meter and MCB etc. shall be installed, in consultation with the consumer
  - Record full address of the premises, if not provided in the application form, note down landmarks near the property and the pole number from where service connection is proposed to be given
  - Verify all other particulars mentioned in the application form

Field Inspection contd…

- On inspection, if the licensee finds any defect, licensee shall intimate the defects to the applicant on the spot under proper receipt in the prescribed format.
- The applicant shall get all defects removed within 30 days from receipt of intimation and inform the licensee. In case the applicant fails to remove such defects or fails to inform the licensee about removal of defects, the application form shall stand lapsed and the applicant will have to apply afresh.
- The date of re-inspection must be scheduled within 2 working days.
- If on re-inspection the defects pointed out earlier are found to persist, the application form shall stand lapsed and the applicant shall be intimated.
- If on inspection there are no defects found, or on re-inspection the defects noticed earlier are found to have been removed, the licensee shall issue a demand note, as per the load and type of connection within 2 days.

Step no 2: Load sanction, Demand Note generation and Payment

- Demand note shall contain following :
  - Details of sanctioned load
  - Details of works (including service line) to be undertaken for providing electricity supply
  - Charges for above mentioned works to be paid by the applicant as specified by the licensee and approved by the Commission from time to time
  - Amount of security deposit specified by the licensee and approved by the Commission from time to time.
- The applicant shall make the payment within 1 day of receipt of demand note.
- The applicant may request the Licensee for an extension of time for a maximum period of 15 days failing which the application form shall stand lapsed and the applicant shall be informed accordingly.
- Time taken by the consumer shall not be included in the overall timeline for releasing new electricity connection.

Total time taken for release of connection

S.No	Processes	Description	Time period
(1)	Submission of application to utility and conduct site inspection	Acceptance of Application	Zero date
		Field Inspection	Within 2 days of Acceptance of application
(2)	Load sanction, demand note generation and payment	Load Sanction and demand note	Within 2 days of Field Inspection
		Payment of demand note	Within 1 day of raising demand note
(3)	Utility extends connection and installs meter	Release of connection, where no RoW or road cutting permission is required	Within 2 days of receipt of payment
		Release of connection, where RoW or road cutting permission is required	Within 5 days of receipt of payment
		Total time for release of connection where no RoW or road cutting permission is required	Within 7 days of acceptance of application
		Total time for release of connection where RoW or road cutting permission is required	Within 10 days of acceptance of application

Connection where system augmentation is required in electrified areas:-

(i)	Where extension of line upto five poles is required	Within 15 days from the date of receipt of full payment against demand note.
(ii)	Where extension of lines or augmentation of DT capacityt, where peak load of transformer has reached 90% of its rated capacity	Within 2 months from the date of receipt of full payment against demand note.
(iii)	Where new Distribution Transformer is required	Within 4 months from the date of receipt of payment against demand note
(iv)	Where existing 11 KV network needs to be augmented	Within 6 months from the date of receipt of payment against demand note

- Where extension of supply requires erection and commissioning of new substation, the licensee shall submit to the Commission within 15 days of site inspection, a proposal for erection of such substation along with the time required for erection and commissioning of the same, and get the Commission's approval. The licensee shall commence electricity supply to the applicant within the time period approved by the Commission.

Best Practices of utilities

Tata Power DDL

- Reduced the number of steps involved in getting a new connection from 7 steps to 3 steps.
- Proactive augmentation of its network, institutionalization of preventive maintenance, implementation of State of Art technologies like SCADA, OMS,DMS.
- Simplification of documents through acceptance of self –certified declaration along with two document namely ownership/ rent proof.
- Electrical Inspectorate inspection not required for getting electricity connection upto 140 KW on LT.

BEST, Mumbai

- The consumers may pay the security money online along with the online application form.
- SCADA system in place to monitor outages.
- Stipulate Fixed cost estimate based on the KVA load of the customer upto 150 KVA load.
- Online application with no physical document to be accepted as part of obtaining electricity connection.
- Simplification of documents through acceptance of self –certified declaration along with two document namely ownership/ rent proof.

Distribution Policy & Regulations Division

Designing and Standardizing Toolkit for Discom Staff

By:-
Vandana Singhal
Chief Engineer(DP&R), CEA

INTRODUCTION

- As per the requirement of Ministry of Power, DP&R Division of CEA is preparing a document on “Designing and standardizing Standard Toolkit for Discom Staff.
- Purpose is to standardize the list of tools that form part of the **Toolkit** as well as the list of items that form part of **Personal Protective Equipment** (PPE) used by Discom staff.
- Toolkit - used by Discom staff when they go for attending to faults on a daily basis and for operation and maintenance of various equipment used in substation and electric lines.
- As per the discussions held in the meetings held at CEA and feedback received from Power Sector Skill Council, a draft document has been prepared.

Standard Toolkit

Standard tool kit shall include following items along with proper box for each tool set:

S.No.	Description of Tools	Applicable Standard	Units	Qty
1.	Mechanical Crimping tool (2.5 Sq mm to 25 Sq mm)		Nos	01
2.	Insulation Tester	IS 11994	Nos	01
3.	Discharge Rod for 11 kV		Nos	01
4.	Neon Tester	IEC 60855	Nos	01
5.	FRP ladder (Fiber Reinforced Plastic)	IS 3696	Nos	01
6.	Torch (3 and 5 cell type)		Nos	01

Standard Toolkit

S.No.	Description of Tools	Applicable Standard	Units	Qty
8.	Line Tester for LT		Nos	01
9.	Insulated Screw Driver (6" & 18") both way	IS 844	Set	01
10.	Insulated cutter/cutting plier		Nos	01
11.	Insulated Nose Pliers (6")		Nos	01
12.	Hammer 8 lbs.		Nos	01
13.	Hacksaw with Blades		Nos	01
14.	Chisel 8"		Nos	01
15.	Knife		Nos	01
16.	C headed Spanner		Set	01

Standard Toolkit

S.No.	Description of Tools	Applicable Standard	Units	Qty
17.	Ring Spanner		Set	01
18.	Adjustable Wrench 12” & 18”		Nos	01
19.	Fuse Wire			
20.	LT Tapes		Nos	01
21.	Rubber Mat/Sheet		Set	01
22.	Brass Chain		Set	01
23.	5 way sorting clip		Set	02
24.	Insulated Tool tray		Set	01
25.	D. E. Spanner		Set	01
26.	On Line Tester HT		Nos	01

Standard Toolkit

S.No.	Description of Tools	Applicable Standard	Units	Qty
27.	Tool Bag		Nos	01
28.	Allen Key Set(Complete)		Nos	01
29.	Box Spanner		Set	01
30.	Torque Wrench		Nos	01
31.	Rope for Pole Supporting-1 No. with B/D VAN		Nos	01
32.	Half Round File 12”		Nos	01
33.	Flat File 12”		Nos	01
34.	Manual Crimping Tool 1 No. (50 sq. mm to 300 sq mm.)		Nos	01
35.	Hand Held Hydraulic Crimping Tool (25 sq mm to 95 sq mm.)		Nos	01

Personal Protective Equipment (PPE)

S.No.	Description of Tools	Applicable Standard	Units	Qty
1.	Safety Helmet	IS 4151-1993	Nos	01
2.	Safety Shoes	IS 4128-1980	Set	01
3.	Hand Gloves	IS 4770-1991	Set	01
4.	Safety Belt/Full Body Harmer (Nylon Rope 12mm-dia)	IS 3521-1989	Nos	01
5.	Safety Goggles		Nos	01
6.	Fluorescent Jacket	IS 15809-2008	Nos	01
7.	Caution/Danger Plate/ Men at work Board /Barricading Tape		Nos	01
8.	Headband Torch		Nos	01
9.	Gum Boots	IS 3738-1975	Set	01
10.	Nose Mask	IS 9473-2002	Set	01
11.	First Aid Box		Set	01
12.	Ear Plugs	EN 352-2:2002		
13.	Rain Coat	IS 7016-III/10075	Set	01
14.	PVC Cone			

GENERAL CONSTRUCTION & TECHNICAL REQUIREMENTS

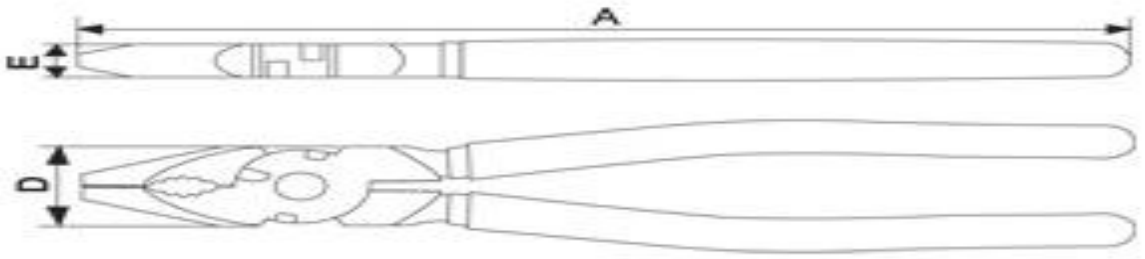
- The plier & stripper shall be free from pits, cracks, scale, seams, fins & other defects.
- The plier & stripper shall be made from high grade carbon or alloy steel, solid-forged to shape.
- The insulating material shall be PVC or higher grade insulating material.
- The insulation shall cover the whole of the handle including the outer ends.

GENERAL CONSTRUCTION & TECHNICAL REQUIREMENTS

- The jaws & cutting edges shall be differentially heat treated/ oil-hardened and tempered. Plier & stripper shall have fully polished head and shall be given anti corrosive treatment to avoid corrosion.
- Insulating material shall adhere firmly to the handles & shall be such that it does not easily splinter or get damaged. The handle shall be shaped & finished to afford a comfortable grip.
- Handle insulation shall have a guard to prevent slipping of hand towards conductive head. Insulation shall withstand a voltage of 2800 V (rms) ac or 4000 V dc for two mins, without breaking down of insulation

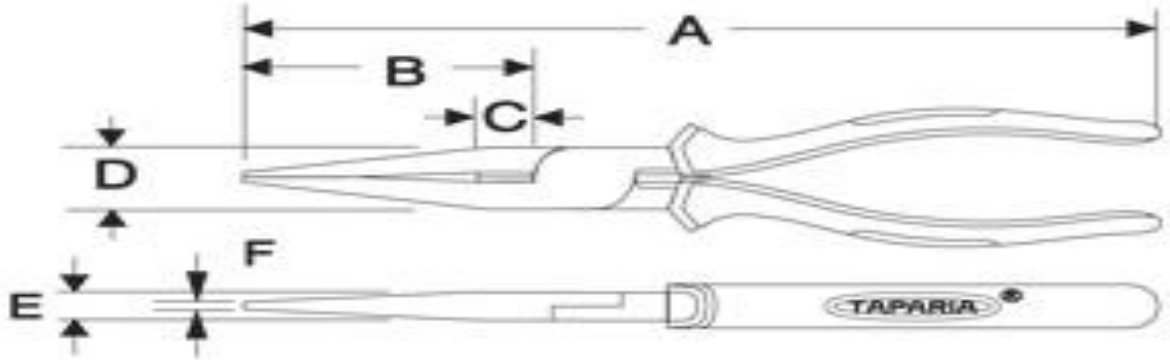
Combination Pliers :

- Conforming to IS 6149-1984 Grade II.
- The Pliers should made from high grade Steel, forged and differentially heat treated to give best performance.
- Fully insulated with quality plastic material sleeves ensures safe electrical working.



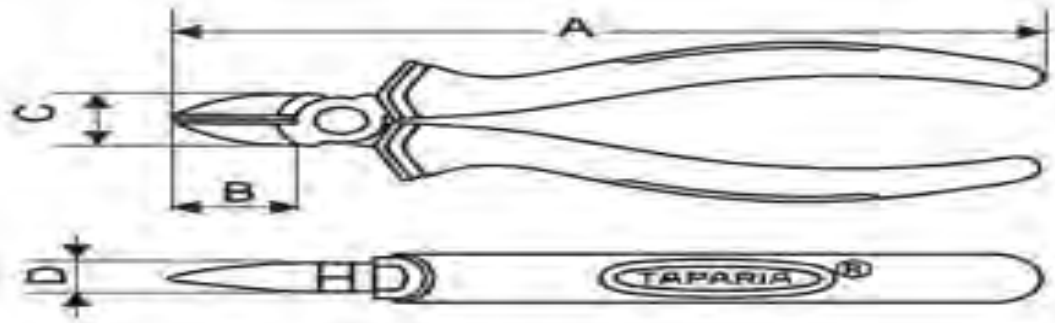
Long Nose Plier:

- Conforming to IS 3552-1989.
- Features accurately machined and heat treated jaws. Holds very thin wires and cuts fine wires with ease.



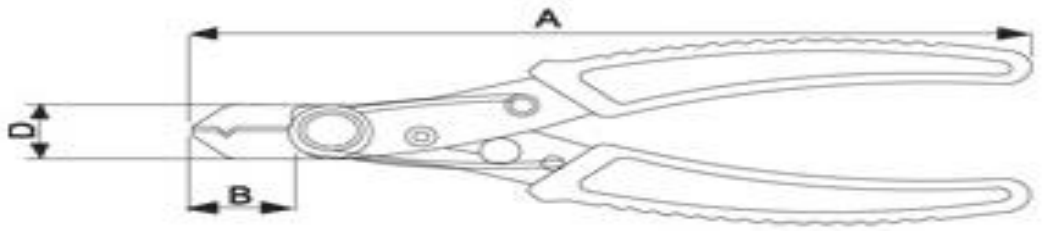
Side Cutting Pliers :

- Conforming to IS 4378-1990.
- Cutting edges should be sharp and precision machined to appropriate angle to cut thick and thin wires neatly with ease.



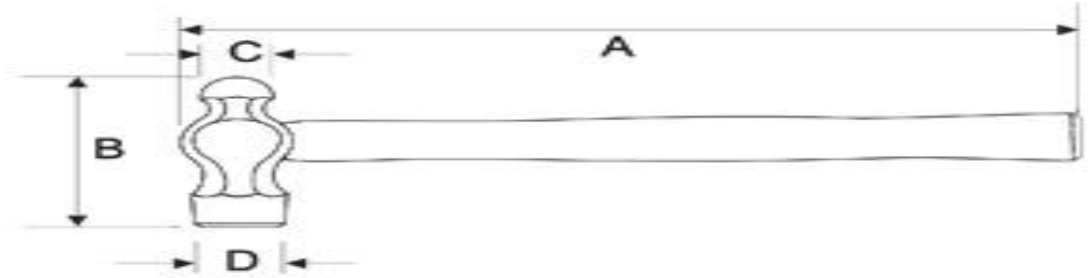
Wire Stripping Plier:

- Conforming to IS 5087-1969 Size, 6“



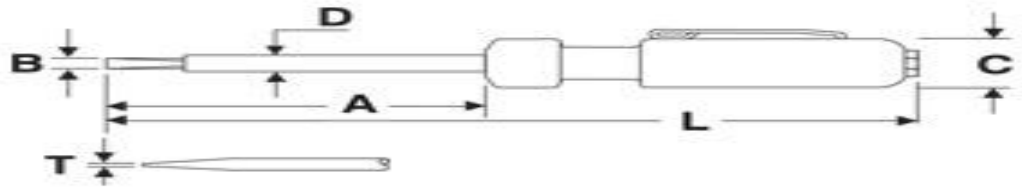
Hammer with Handle:

- Conforming to IS 841-1983.
- Drop forged from high grade carbon steel. Phosphated and painted to provide anti rusting properties..



Line Testers:

- Conforming to IS 5579-1985 **.**
- Line Tester should have high quality blade and cellulose acetate plastic Handle.
- Fully insulated blade ensures shock proof working. Distinct glow of Neon lamp identifies line ‘live

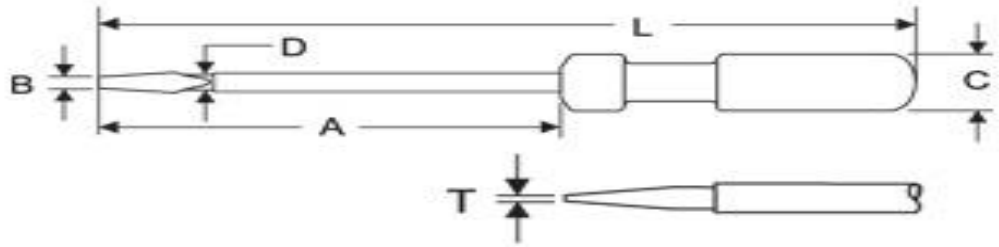


Screw Driver Sets with Neon Bulbs-

- Conforming to IS 844-1979

Insulated Screw Drivers:

- Conforming to IS 844-1979



Socket Set 1/4" Square Drive:

- Forged from high grade Chrome Vanadium steel.
- Scientifically heat treated to give maximum strength and wear resistance.
- Nickel Chrome plating finish to enable rust prevention.

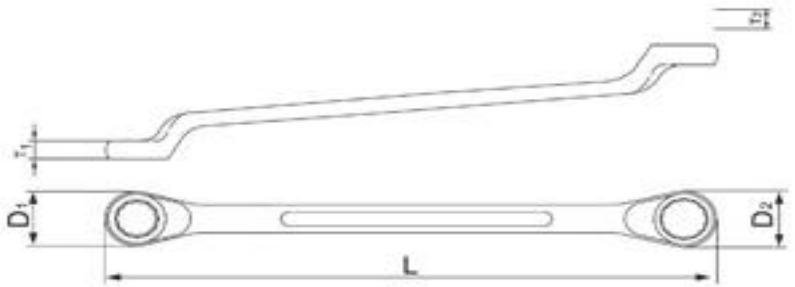
Allen Key Set (mm Sizes) Black Finish :

- Conforming to IS 3082-1988.
- Black Allen keys are made from Chrome Vanadium Steel.

Double Ended Spanners Set (Chrome Plated)

Ring Spanner Set:

- Conforming to IS 2029-1998.
- Drop forged from high grade Chrome - Vanadium steel. Heat treated to give maximum strength and wear resistance.



Adjustable Wrench:

- It is used to open and close nuts and bolts in case of proper size spinner not being available.
- Common size are 8” (inch)12”(inch).
- Adjustable wrench are designed to provide a wide range of capacity in a single tool and are a convenient service wrench for distribution lineman.

Measuring Tape:

- It is used to measure length of wires, cable and space.
- These are made of cotton or metal strips bearing size of 10’ (feet) to 100’(feet).

Pipe Wrench:

- It is used to open and close conduit, GI pipes and valves.
- Common size is 10 inch.
- The design of the adjustable Jaw allows it to lock in the frame, such that any forward pressure on the handle tends to pull the jaws tighter together.
- They are usually made of cast steel..

Chain Pulley:

- It is a Pulley with depressions in the periphery of its wheel or projections from it made to fit the links of a chain.
- The desired capacity chain pulley is good at center to lift heavy load for loading and unloading at site.

Come along Clamp:

- It is used while laying of overhead lines.
- These are mainly used for holding conductors and ground wires in overhead transmission lines and various other industrial maintenance operations.
- These clamps are available in multiple diameters, weight and design that are ideal to use in electrical works.

.

GENERAL SAFETY REQUIREMENTS

- Pliers, strippers and hammer shall be manufactured and dimensioned in such a way that they protect the user from electric shock.
- When fully covered by insulating materials and used in the correct manner, minimize the risk of short-circuits between two parts at different potentials.
- The handle insulation of plier and strippers shall have a guard so that the hand is prevented from slipping towards the uncovered conductive parts of the head.

Dangers of Electrical Shock

- The severity of injury from electrical shock depends on the amount of electrical current and the length of time the current passes through the body e.g. 100mA of current going through the body for just 2 seconds is enough to cause death.

- For this reason, handheld tools that give a shock can be very dangerous. Usually, it takes about 30 mA of current to cause respiratory paralysis. Currents greater than 75 mA cause ventricular fibrillation (very rapid, ineffective heartbeat). This condition will cause death within a few minutes unless a special device called a defibrillator is used to save the victim.

TATA POWER-DDL

TATA POWER DELHI DISTRIBUTION LIMITED

A Tata Power and Delhi Government Joint Venture

POWER SCHEDULING AND LOAD FORECASTING

Presented By
P Devanand

with you Non-Stop

Content …

- Overview of Tata Power DDL
- Digitalization in Tata Power-DDL in operations
- Technology Overview – ADMS, Mobility, FFA
- Performance indices
- Power Management
  - Demand forecasting
  - Power Scheduling and Dispatching
  - Automatic Demand Response
  - Power Manager Solution
- Future Power Scenario
- Challenges for power distribution

TATA Power-DDL – BEST PRACTICES IN A SUCCESSFUL DISCOM

Government of National Capital Territory of Delhi

"To be the most trusted and admired provider of reliable, competitive power and services, and be the company of choice for all stakeholders"

TATA

TATA POWER

51:49 Joint Venture
of The Tata Power Company Limited (Tata Power)
and
the Government of Delhi
Formed on 1st July 2002

One of the Most Successful Private Power Distribution Utilities

License Area: North and North West Delhi (510 sq. km)
License Period : 25 years

TATA POWER-DDL

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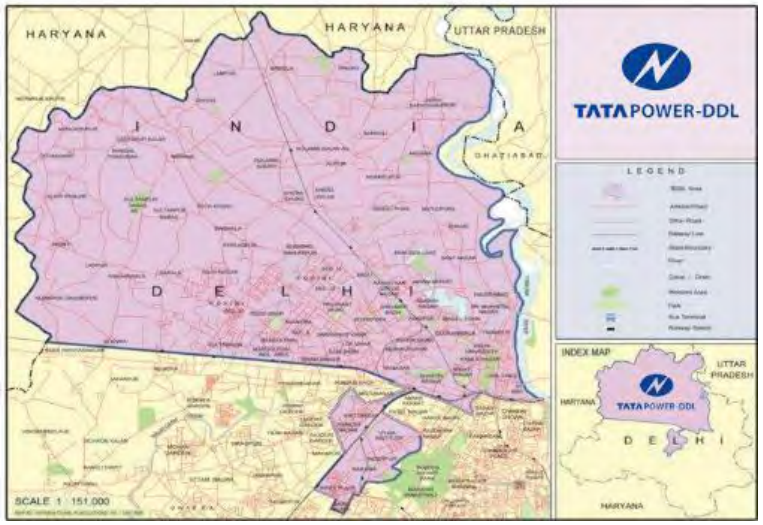
TRANSFORMATION AT GLANCE

we believe in ……..

MAKING A DIFFERENCE



One of the Most Successful Private Power Distribution Utility

License Area: North and North West Delhi (510 sq. km)

License Period : 25 years

Parameter	Unit	July '02	March'17*	% change
OPERATIONAL PERFORMANCE				
AT&C Losses	%	53.1	8.34	85%
System Reliability – ASAI -Availability Index	%	70	99.51	41%
Transformer Failure Rate	%	11	0.84	90%
Peak Load	MW	930	1965	111%
Length of Network	Ckt. Km	6750	15378	128%
Street Light Functionality	%	40	99.41	150%
CONSUMER RELATED PERFORMANCE				
New Connection Energization Time	Days	51.8	5	90%
Meter Replacement Time	Days	25	5	80%
Provisional Billing	%	15	0.86	94%
Defective Bills	%	6	0.13	98%
Bill Complaint Resolution	Days	45	4	91%
Mean Time to Repair Faults	Hours	11	1.50	87%
Call Center Performance - Service Level	%	-	95	
Payment Collection Avenues	Nos.	20	6725	33525%
Consumer Satisfaction Index	%	-	90	
OTHERS				
Capex (Cumm)	Mn USD	187	984	428%
Consumers	Count Mn	0.7	1.58	126%
Employees	Count	5600	3537	37%

* Present Figures for Load/AT&C

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Certifications : ISO 9001, 14001, 27001 ; SA 8000 ; OHSAS 18001
UN Global Compact Reporting

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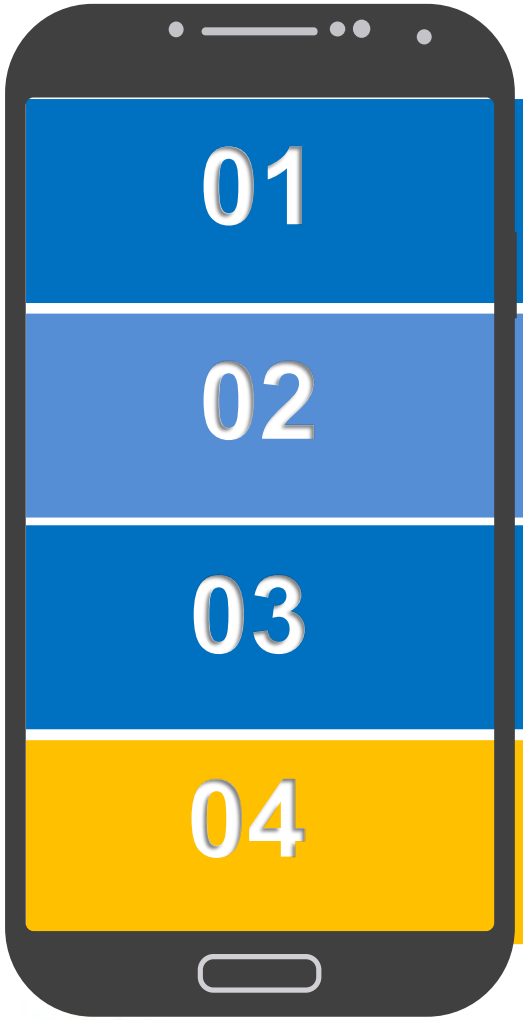
Digitalization @ Tata Power-DDL



01 Operating all unmanned grids through SCADA and OMS system

02 Integration SCADA-DMS-OMS (ADMS)

03 Implementation of Mobility, Online PTW authorization (Saksham)

04 Paperless Control room through ADMS and FFA . Gamefication of training , PPMS

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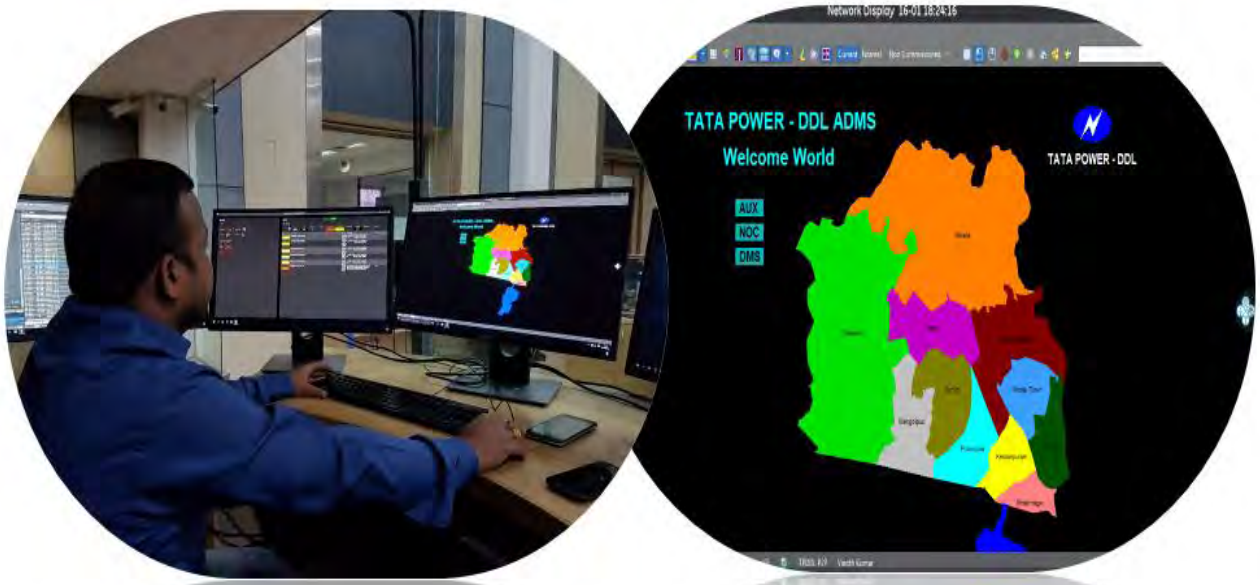
Advance Distribution Management System



TATA Power-DDL Proudly announces the deployment of ADMS

1st In WORLD

TATA POWER-DDL

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ADMS-Mobility system

Advance Distribution Management System

Single platform for Operation Management (SCADA/EMS/DMS/OMS)

Integrated ADMS-Mobility/FFA

Fully GIS-ADMS Integrated Network Solution

First Implementation of GIS-CIM-ADMS-SAP-CRM

Benefits:

- Consumer delight as faster restoration
- Employee Engagement through Skill Enhancement
- Accuracy in reporting and Safety in operation.
- Quality in operation.
- Smarter Utility

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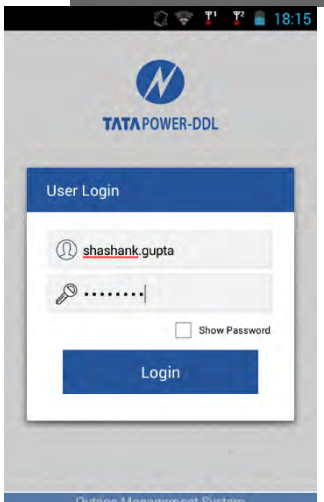

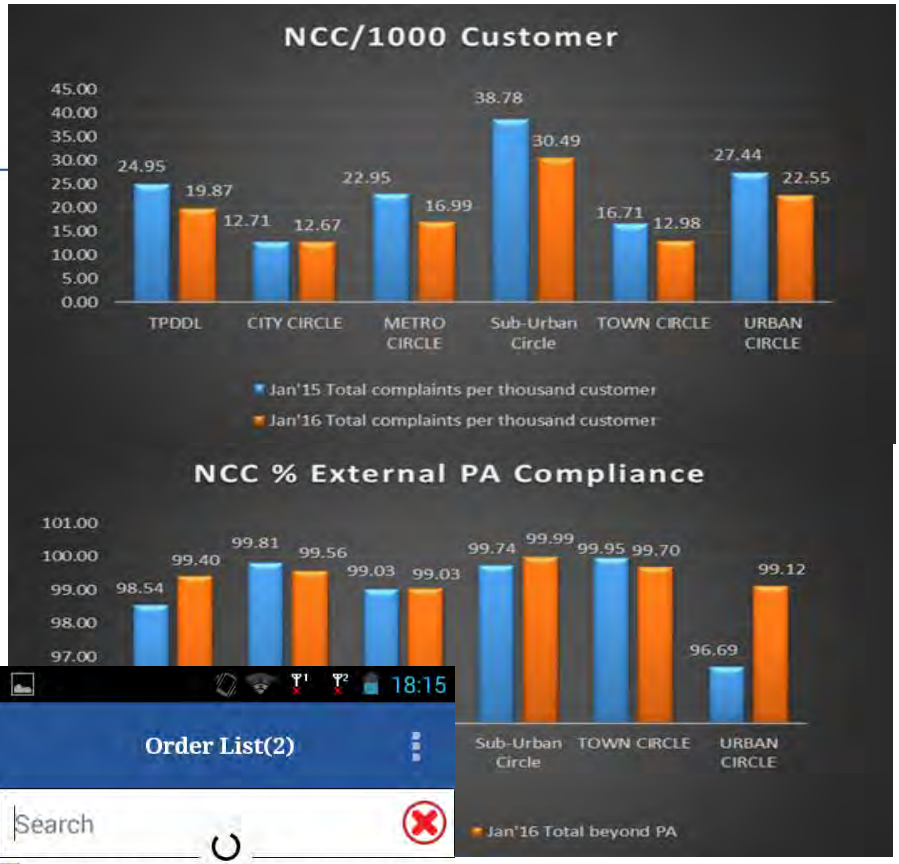

NA
Job No: 3213933-1 Pole : 416-3/13/2/10
House No 3/18 SUBZI MANDI BLK- C RANA PRATAP BAGH LANDMARK NEAR GOAL CHAKKAR
Ph No :
Date: 3/15/2016 4:47:58 PM
ETR: ETR Expired
Accepted

NA
Job No: 3213271-1 Pole : 416-6/7
House No 4 BARSATI FLOOR BLK- C-7 RANA PRATAP BAGH LANDMARK NR ARYA SAMAJ MANDIR
Ph No :
Date: 3/15/2016 12:21:24 PM
ETR: 20 mins
Accept

Queued List

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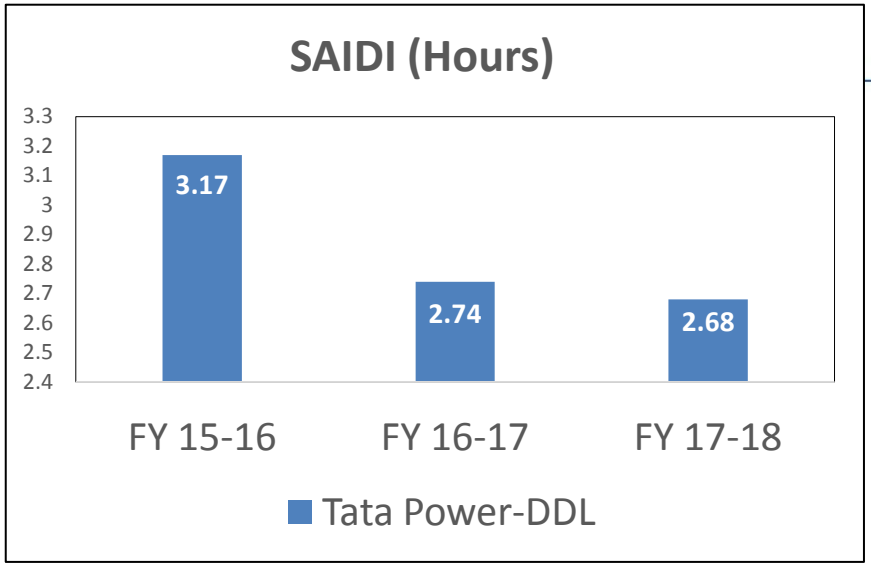
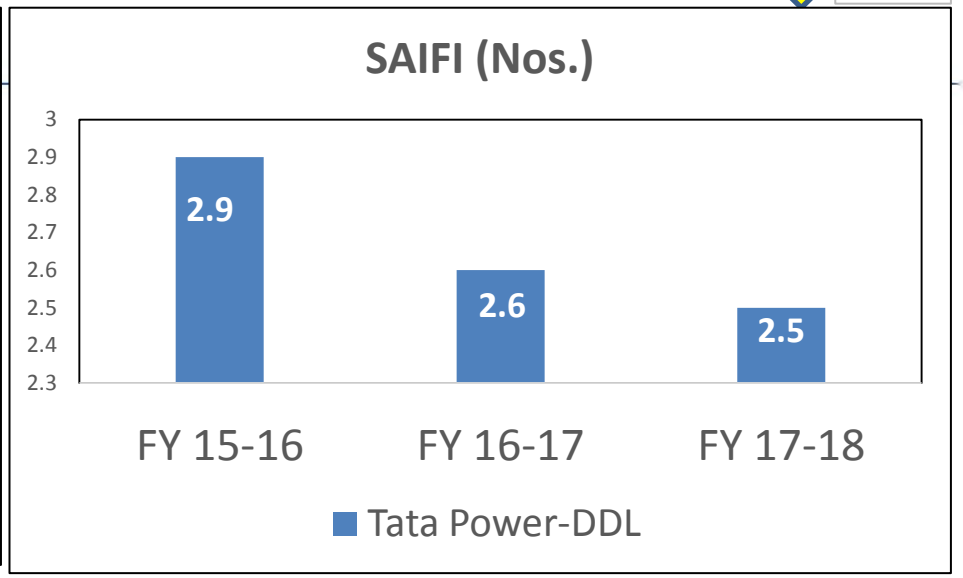
Reliability – SAIDI, SAIFI

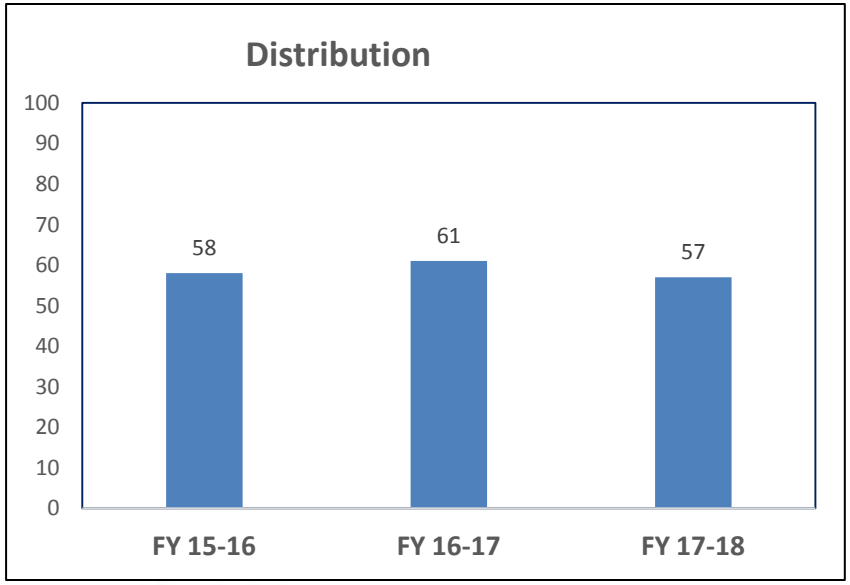
GOOD

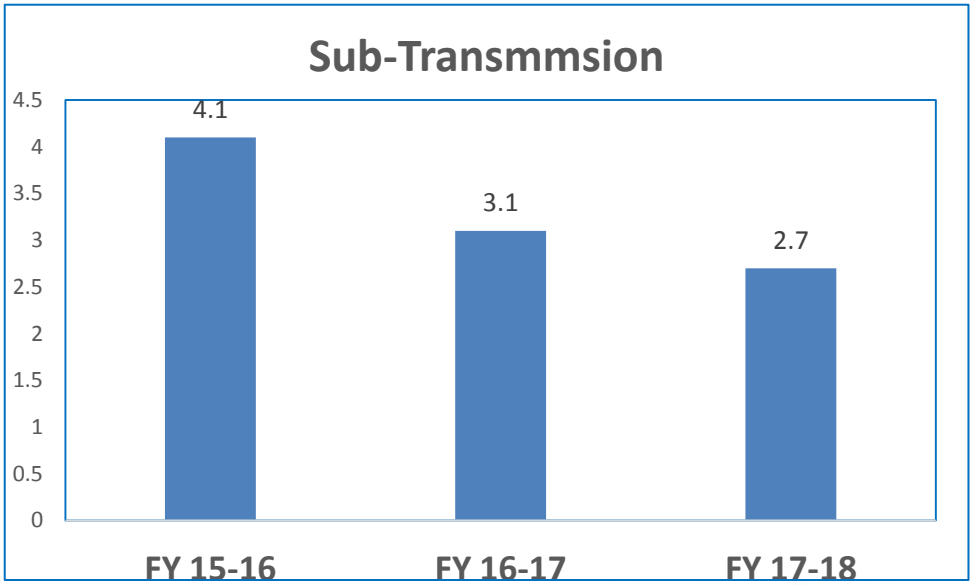




Reliability – MTTR Reduction

MTTR in Minutes





Real Time Power Management

Currently, India's **70% of power generation landscape has largely been dominated by Coal based generation** and this high dependency on the thermal plants poses a serious pitfall to energy security in terms of fuel availability, long-run economic viability and environment sustainability. Major bottleneck while operating with conventional generator is time taken for lighting/start up and close down the generator

Acknowledging the fact that the sector is to undergo a significant change in the coming years with the enhanced focus on integration of renewable energy into the grid. India has already laid Pathways to Integrate 175 Gigawatts of Renewable Energy into India's Electricity Grid by 2022. It will need paradigm shift in Indian regulations for power generators as well as distributors.

Green energy comes with its own challenges as solar, wind are most unreliable and unpredictable resources. Solar and wind generation forecast will play major role and weather parameters will be driving force for the forecast model.

Over 80% of the annual cost of any DISCOM is the Power Purchase Cost. It is the major challenge for distribution Company

Load Forecasting

OVER AND UNDER- ESTIMATION OF LOAD:

An underestimate could lead to under-capacity, which would result in poor quality of service including localized brownouts, or even blackouts. An overestimate could lead to the authorization of a plant that may not be needed for several years.

KEY REQUIREMENT:

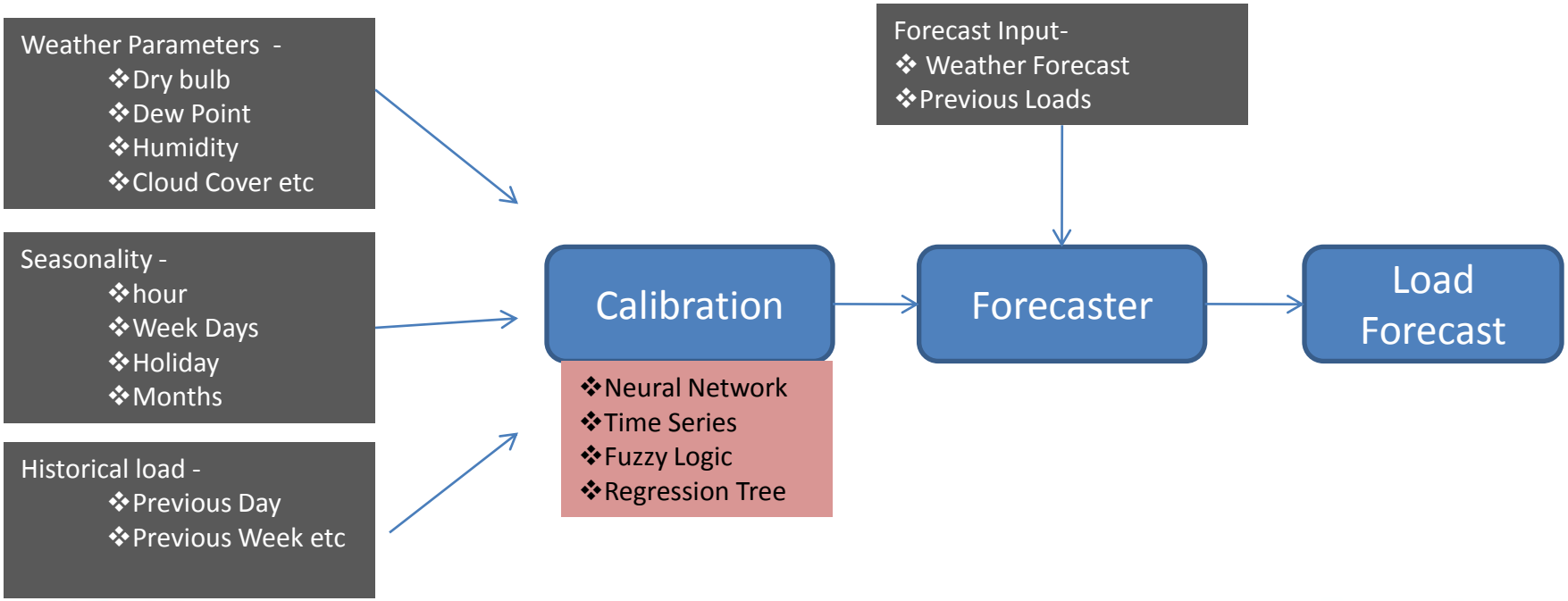
ACCURATE LOAD FORECASTS

Load Forecasting over different time span:

- Short Term Load Forecasting
- Medium-term Load Forecasting
- Long Term Load Forecasting

Hybrid Approach

- Complexity and dynamic nature of the problem doesn't lends itself to one solution fits all
- A smart hybrid method tries to address different aspect of the problem using different methods



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Tools Used In Forecasting Available in Market

Developed by social scientists at the University of Chicago, starting around 1968. Currently part of IBM Analytics Suite of Softwares.

SAS since 1968 by computational statisticians at North Carolina State University. It initially targeted the health sector, funded by the National Institute of Health. Today it has over 200 suites that cover a wide range of techniques.

A multi-paradigm numerical computing environment and fourth-generation programming language, intended primarily for numerical computing. Its Artificial Neural Network and Fuzzy Logic Toolboxes are very widely used by researchers and academics.

R was created at the University of Auckland, New Zealand. The project was conceived in 1992. An Open Source Project with currently over 7000 Libraries is hugely popular with researchers and academics.

Python is a widely used high-level, general-purpose, interpreted, dynamic programming language. Another Community Managed Open Source Project which has over 86,000 libraries available. The Python library archive offers many excellent libraries for machine learning and are widely used the world over.

POWER MANAGEMENT

FORECASTED DEMAND

Intra-Day Forecast Revision

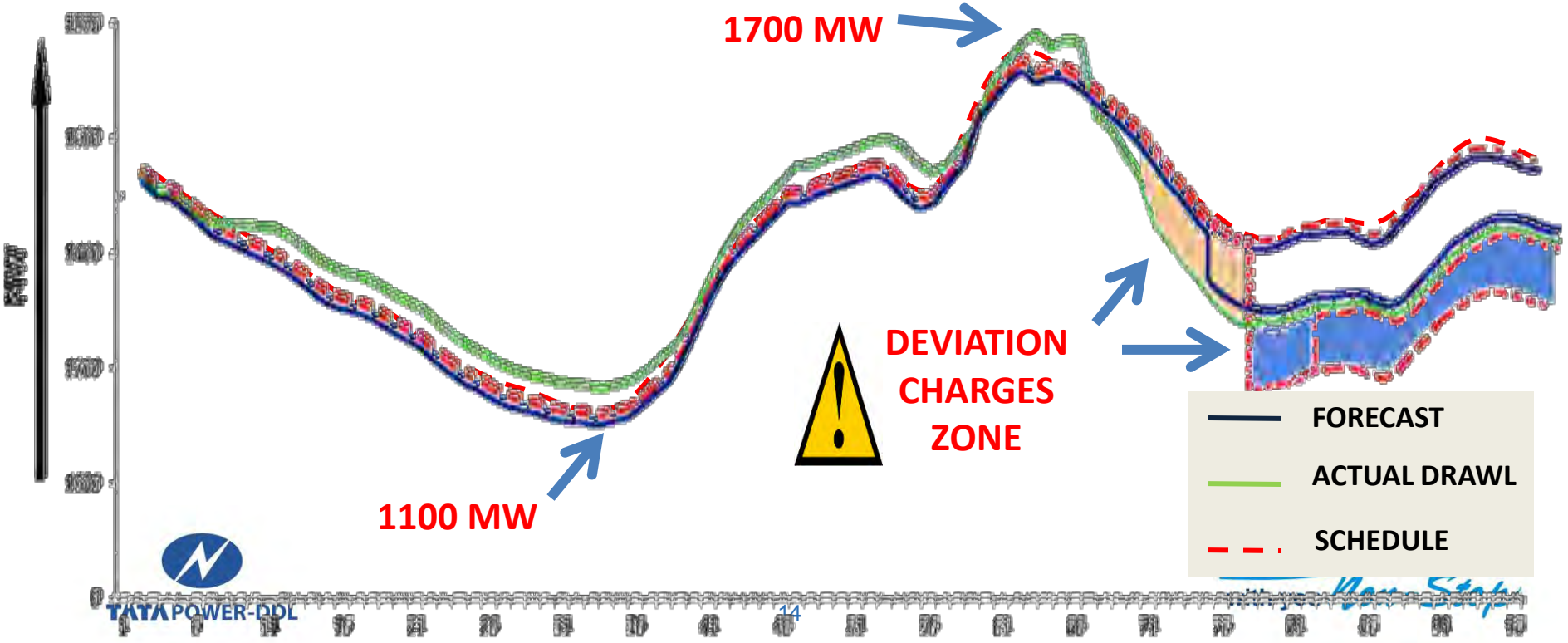
SCHEDULE

ACTUAL DRAWL

Revising Schedule

- Generation Loss due to tripping.
- Curtailment of Bilateral Power due to Transmission Constraints.

ndent on Weather Parameters
perature/ Humidity/ Wind-
l/ Rainfall



REAL TIME MONITORING- Power Manager Software

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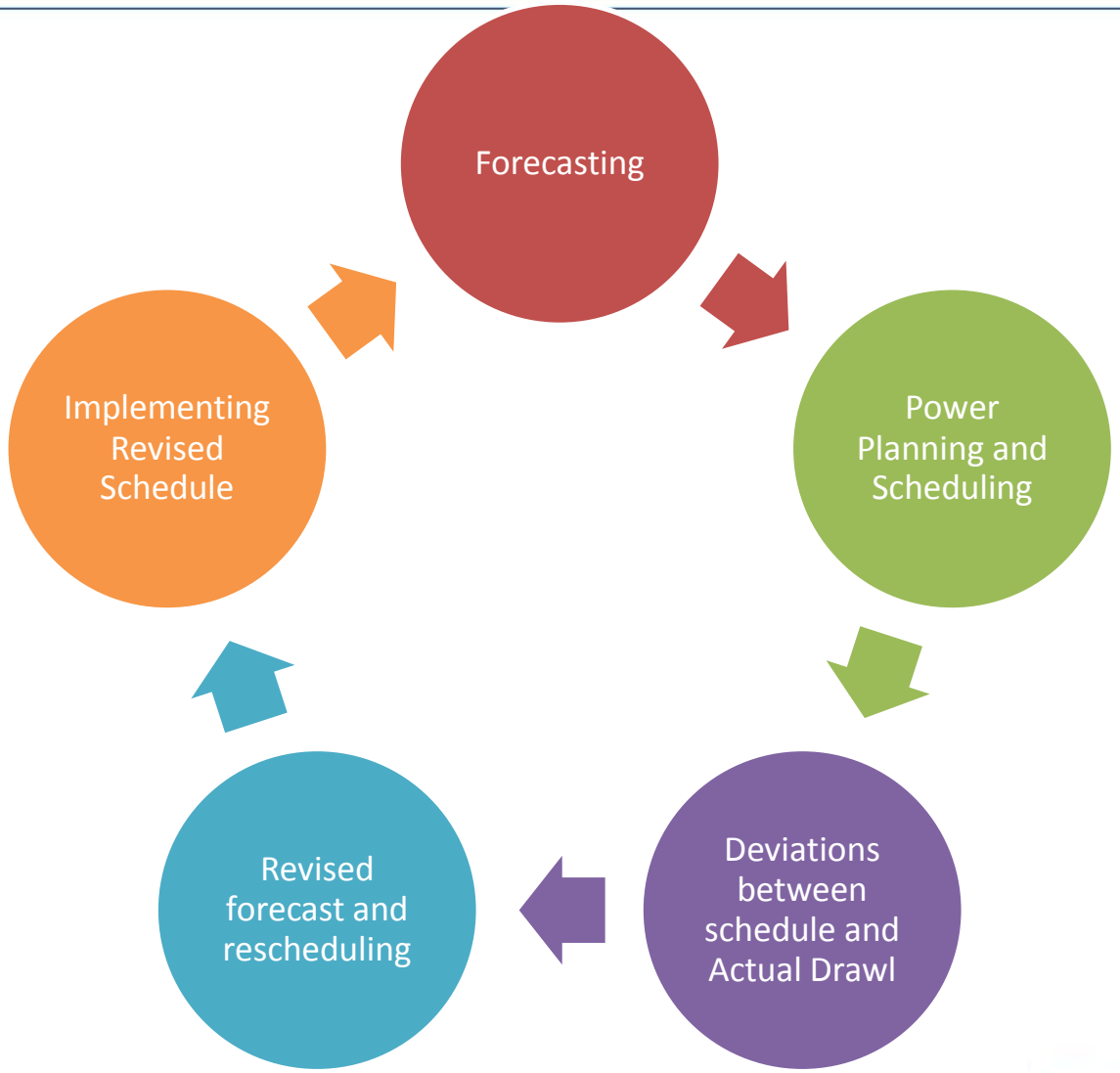
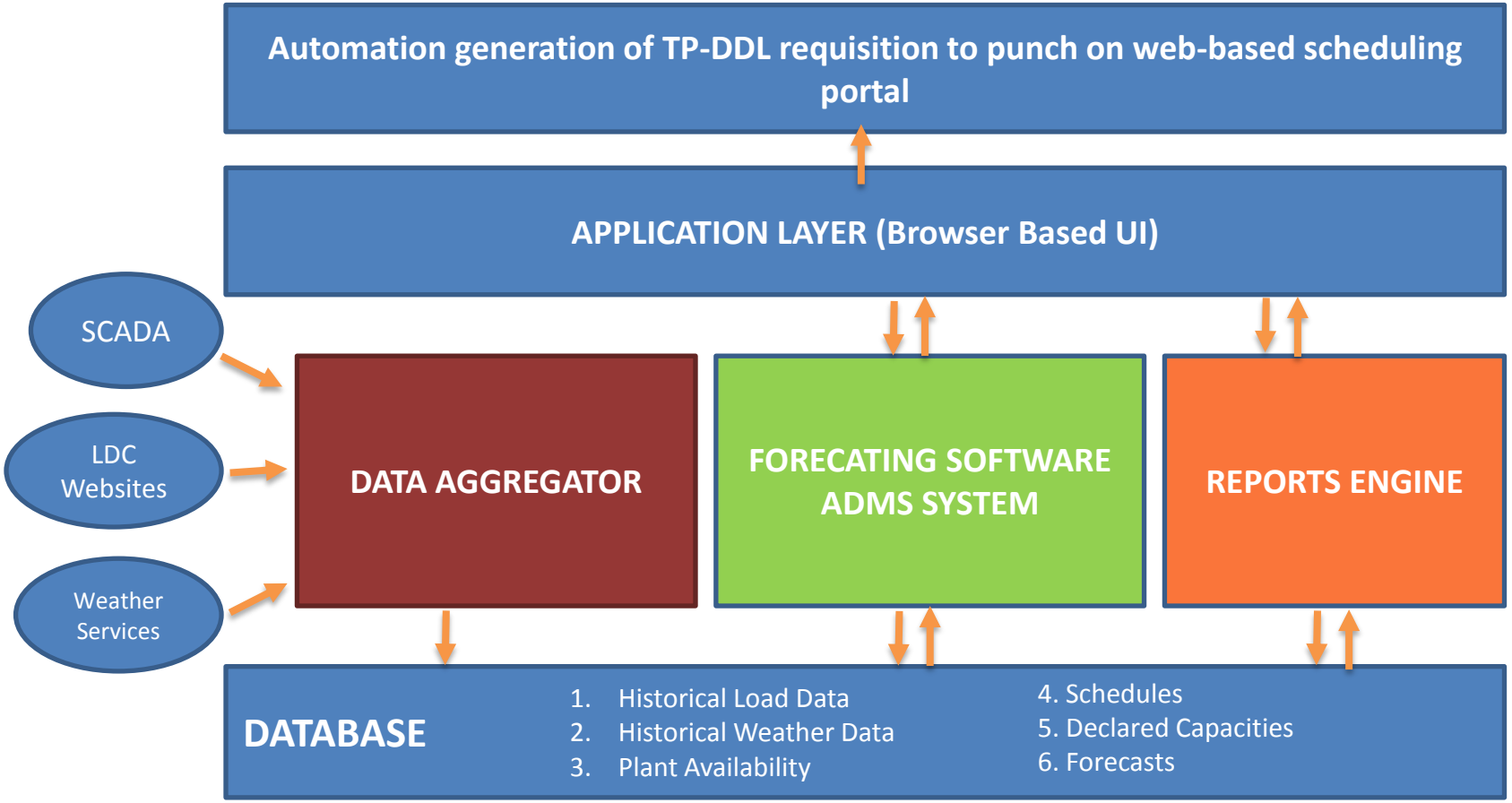
PPM Solution Business Process



System Architecture



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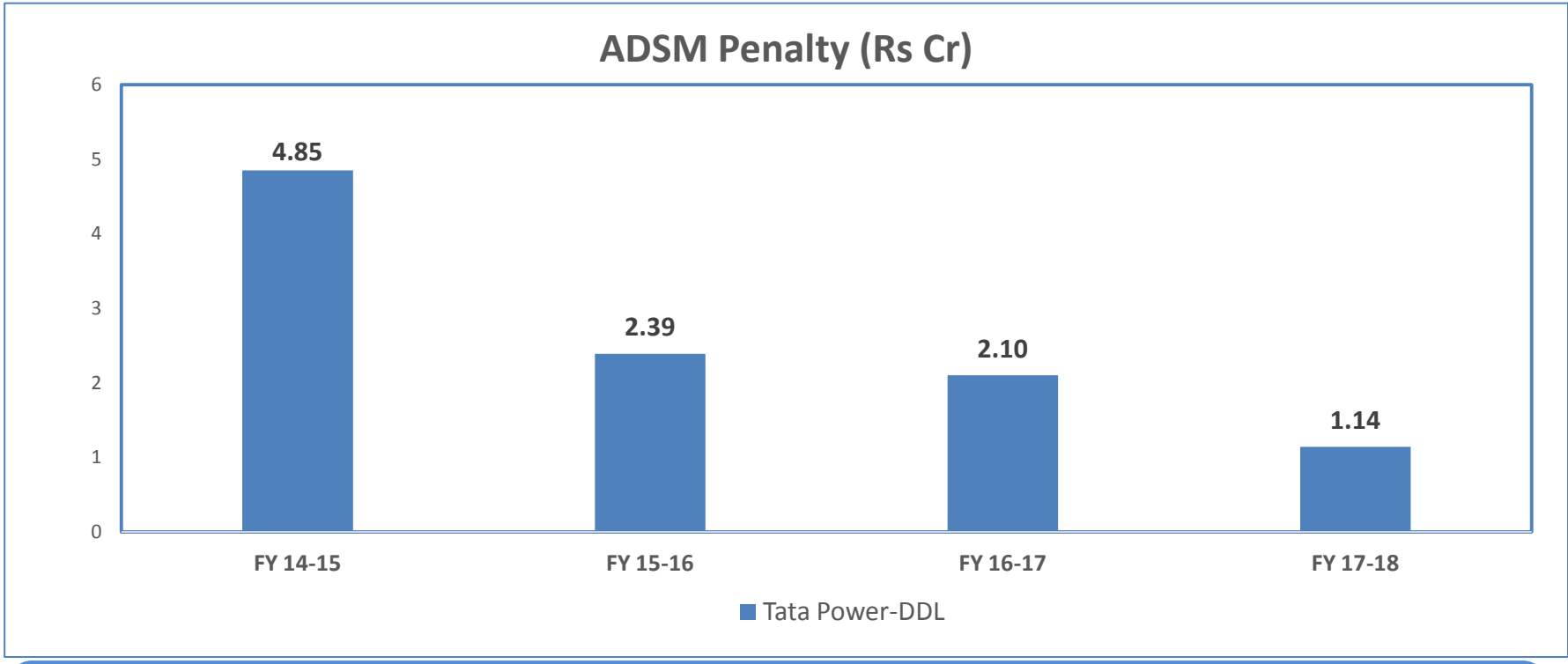
Automatic Demand Management System (As required by CERC regulation)

- To keep balance between demand and supply automatic demand response system is very much needed
- In case of load curtailment in emergency , trigger will be generated from PPM solution directly to ADMS system.
- The desired load curtailment with specified duration will be done through ADMS automatically and audible alarm will be received by operator
- Priority of feeders for load curtailment is defined in ADMS.

Result:

GOOD

ADSM Additional Deviation Settlement Mechanism penalty



PRACTICALLY NO SIGNIFICIENT INCREASE IN PPC DESPITE

- INCREASE IN FIXED COSTS OF GENERATORS = 5%
- INCREASE IN INTER-STATE TRANSMISSION CHARGES = 6%
- INCREASE IN INTRA-STATE TRANSMISION CHARGES = 135%

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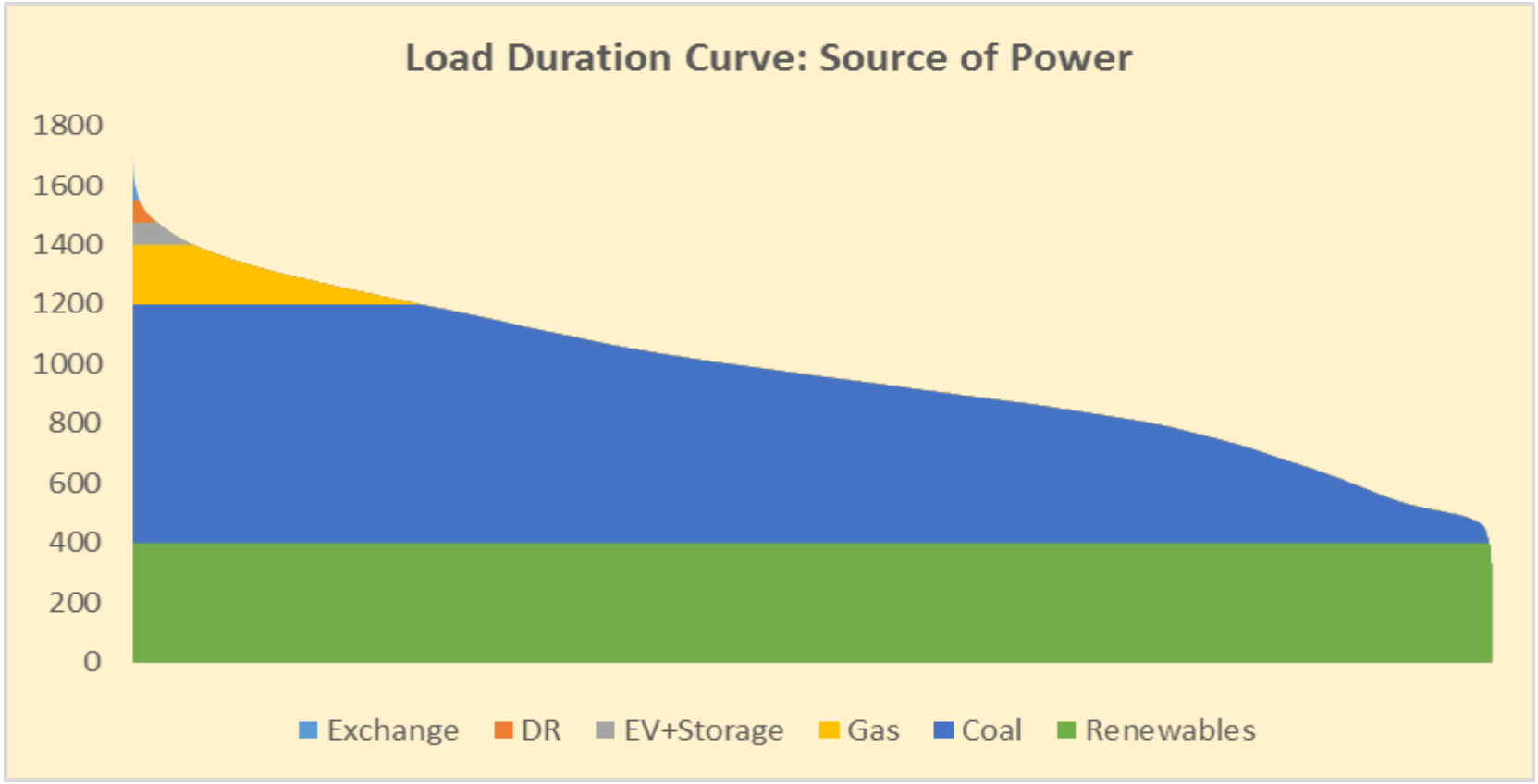
Business Results

Power management first project is under implementation in Haryana

Under discussion with utilities like Jharkhand,Odisha, Sikkim, Meghalya, Maharastra

Load Duration Curve with Sources of Power



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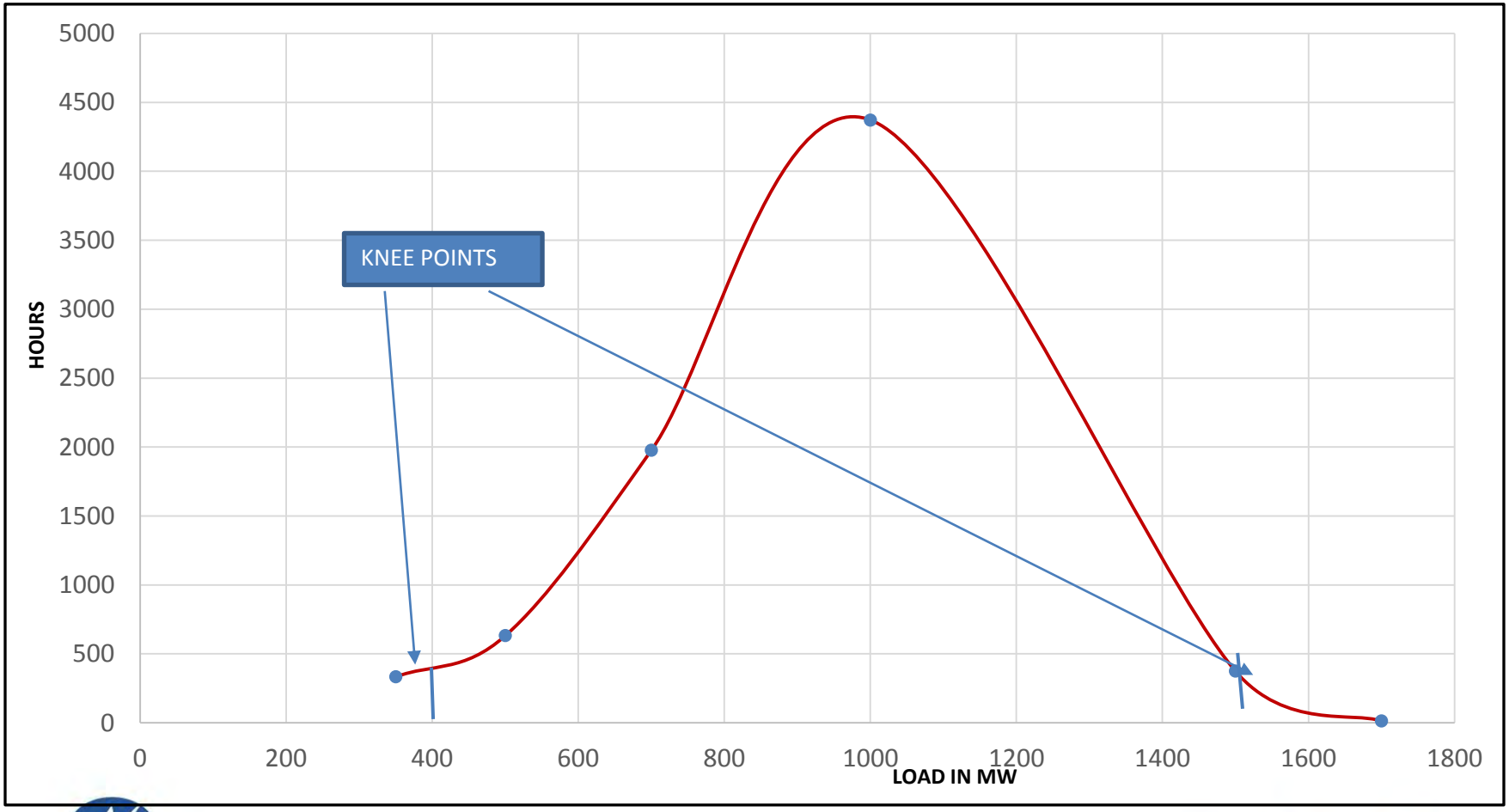
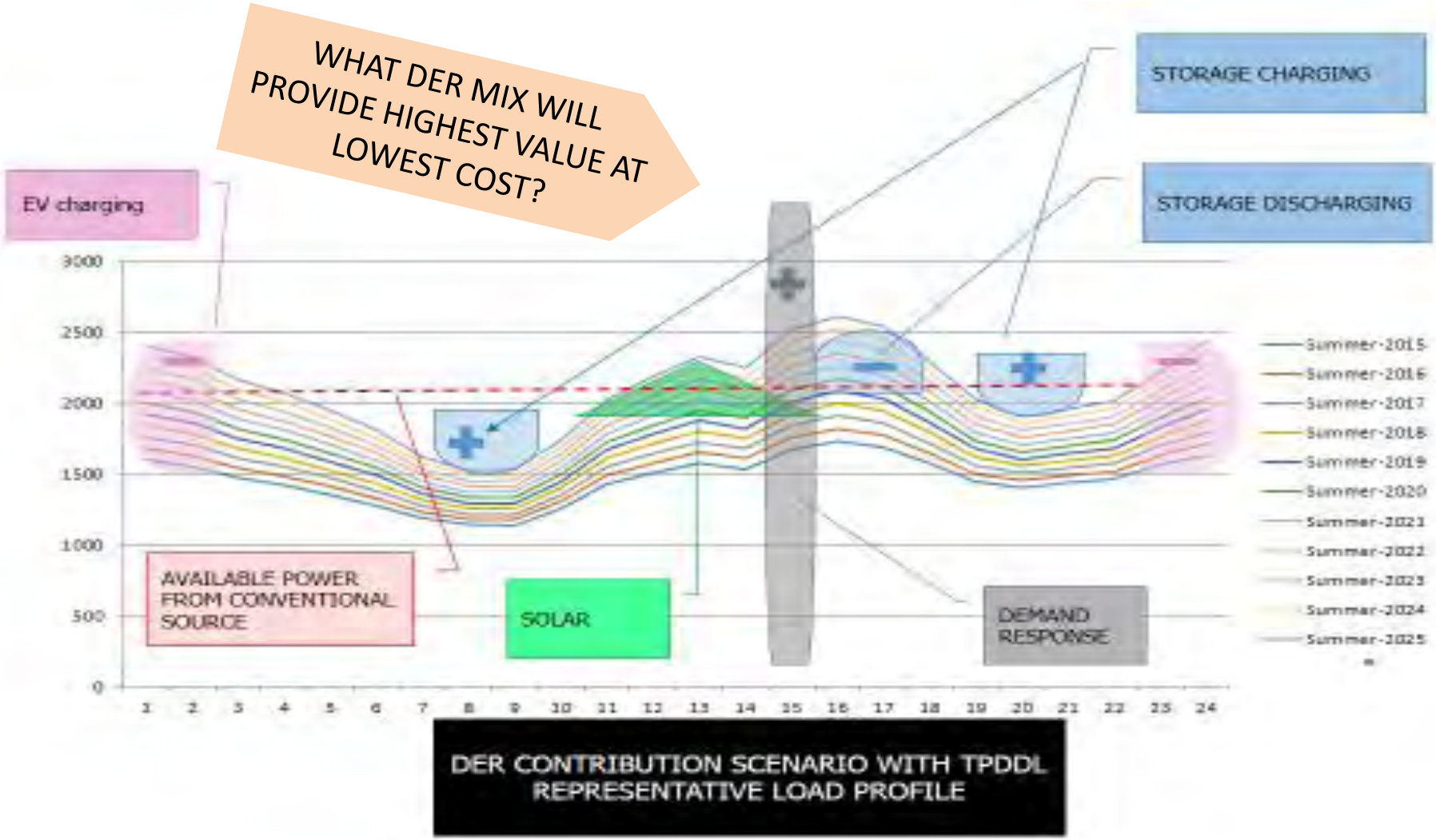
Distribution of Load

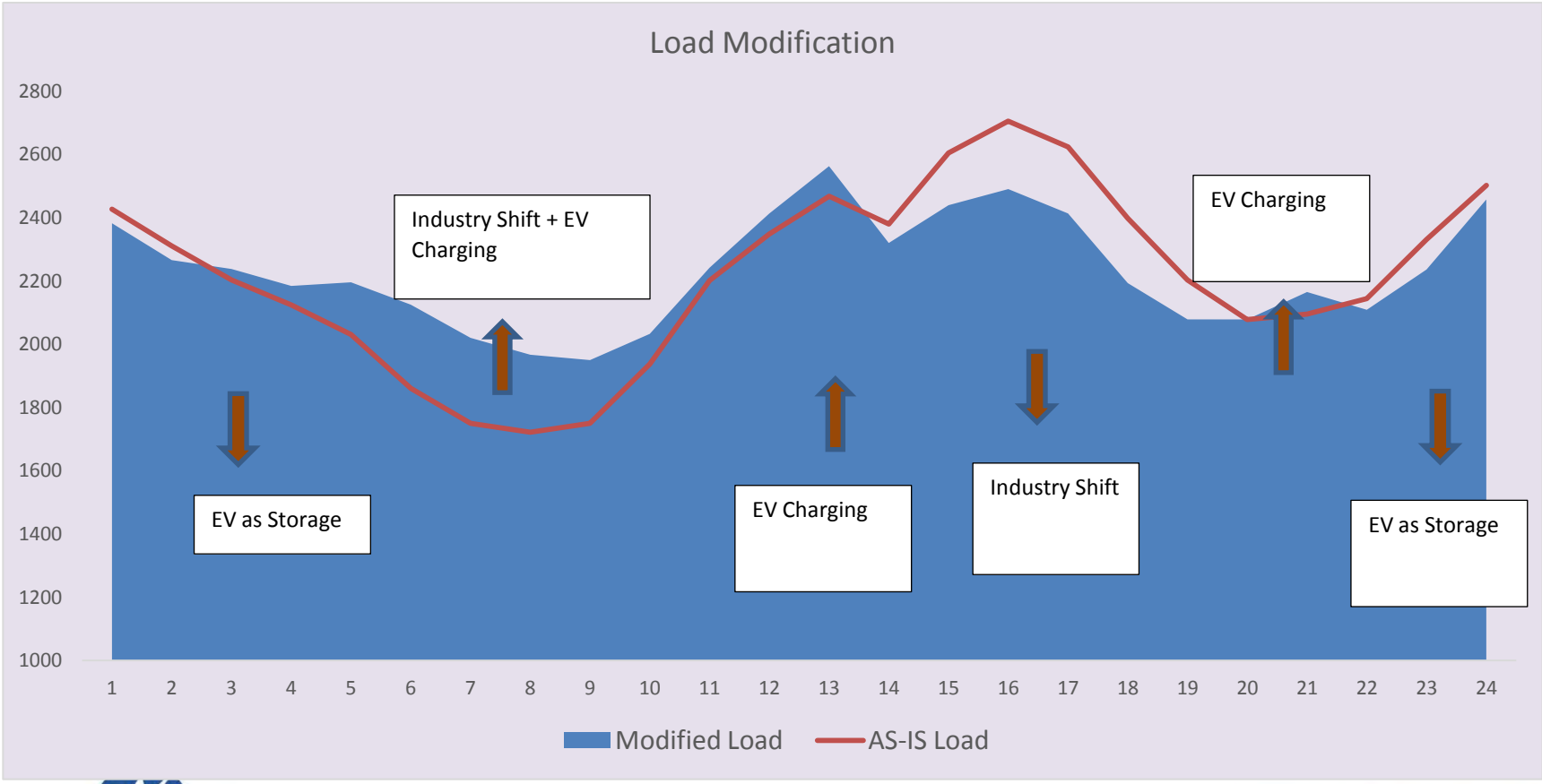
load duration curve below give a greater understanding of the problem. Any DISCOM experiences its peak loads for only a few hours.



Modified Long Term Summer Scenario



Modified Load Curve



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Challenges

Current challenges :-

- Allowed deviation limit is only 38 MW against peak load of 1965MW. Less than 2%
- Balancing demand & supply is a challenge due to Sudden MTL Scheduling ,Tripping of generating units, Low accuracy of Weather Forecasts
- No control on schedule from hydro and nuclear plants.
- Non-Provision of Intra State Ancillary Services
- SLDC/RLDC scheduling : All Schedule revisions through SLDC/RLDC with timed restrictions on one side
- Draft fourth amendment of CERC DSM Regulations.

Future challenges :-

- Price volatility
- Understanding Challenges of Load Forecasting for Utilities
- Demand Shifting by Time-of-Day Tariff
- Penetration of Solar Rooftop, EV, DER into the Grid , Renewable curtailment constraints