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**SOUTHERN REGIONAL POWER COMMITTEE**  
**BENGALURU**

**AGENDA FOR THE 34<sup>th</sup> TCC & 35<sup>th</sup> SRPC MEETINGS TO BE CONDUCTED ON 1<sup>st</sup>  
and 2<sup>nd</sup> FEBRUARY 2019 AT GOA**

**1. INTRODUCTION**

1.1 The 34<sup>th</sup> Meeting of the TCC & 35<sup>th</sup> Meeting of Southern Regional Power Committee would be conducted on 1<sup>st</sup> February & 2<sup>nd</sup> February 2019, respectively at Goa. M/s Adani Power Ltd (UPCL) has kindly agreed to host these Meetings.

**2. CONFIRMATION OF THE MINUTES OF THE 33<sup>rd</sup> TCC & 34<sup>th</sup> SRPC MEETINGS OF SRPC**

2.1 Minutes of the 34<sup>th</sup> Meeting of SRPC held on 11<sup>th</sup> August 2018 was circulated vide letter dated 29<sup>th</sup> October 2018.

2.2 Minutes of the 33<sup>rd</sup> Meeting of TCC held on 10<sup>th</sup> August 2018 was circulated vide letter dated 4<sup>th</sup> October 2018.

2.3 Minutes of the Meetings may kindly be confirmed.

**3. SUPPORT OF RE GENERATORS FOR REACTIVE COMPENSATION**

3.1 In earlier Meetings, the following had been noted:

- Solar / Wind generators have controllable reactive injection / absorption capability, which are not getting utilized fully, on account of PPA provisions / penalties etc.
- Contribution of RE generation towards active and reactive power support cannot be overlooked, especially since they are contributing significantly towards the demand met.
- SRPC vide letter dated 24<sup>th</sup> May 2018 had taken up the issue of reactive power support by the generating stations, including RE with Hon'ble CERC.
- To verify the technical capability of RE generators, MVAR capability testing had been carried out at Urvakonda (Wind Pooling Station) in AP on 25<sup>th</sup> and 26<sup>th</sup> July 2018 and also at Pavagada (Solar Pooling Station) in Karnataka on 2<sup>nd</sup> and 3<sup>rd</sup> August 2018 with encouraging results.
- Way forward in this regard had been agreed in principle by all constituents and is given below:
  - Policy intervention for appropriate reactive energy billing to aid system operation.
  - Classification by KPTCL of invalid VAR (injection during high voltage and absorption during low voltage) is in line with grid operation requirements. However, MVAR interchange should solely be dependent on voltage and not on power factor alone.
  - Billing of reactive interchange presently is with respect to drawal of MVAR, irrespective of Voltage/ grid requirement, which needs review.
  - Surcharge for injection of VAR at voltages greater than 103 % and drawal of VAR when voltages are less than 97% needs to be implemented.
  - Incentivization for absorption of VAR at voltages greater than 105 % and injection of VAR at voltages less than 95% may also need to be considered.
  - SPDs/Wind Developers to be advised to absorb during night time also ( as had been demonstrated by M/s Adani).

- Transformer Tap position to be optimized to help improve voltages at 400 kV.
- Centralized SCADA operational control needs to be in place for reactive / scheduling requirements.
- SPDs/Wind Developers need to support the grid, as per the set points advised by SLDC/RLDC.
- Voltage based tariff provisions for VAR exchange needs to be introduced.

3.2 The following is the status update as discussed in Meetings of Sub-committee:

- AP: Note under circulation for modification of commercial terms and conditions. Issue had also been appraised to staff of SERC.
- TS: Recommended to ERC based on the SRPC recommendations. Incentive/penalty clauses had already incorporated in the Draft State Grid Code. It was also mentioned that reactive power interchange needs to be carried out based on SLDC instruction. ERC would decide on the Rates for reactive interchange.
- KER: Will put up a detailed note to State Electricity Regulatory Commission. A Meeting is being scheduled with existing RE generators in this regard. An internal note had also been circulated.
- KAR: A note already had been submitted to Higher Management. A Committee had been constituted to look into the TOR.
- TN: MVAR interchange commercial mechanism for solar implemented in TN, supports absorption of MVAR at high voltages (along with payment receivable by SPDs). TANTRANSCO had been requested to kindly follow up this issue with the concerned so as to ensure that billing is in accordance with the SERC approved framework. SRPC vide letter dated 05.09.2018 (**Annexure-I**) had taken up the issue of reactive interchange for Wind and Solar in TN. TN had been kindly requested to look into this and ensure that billing for solar is as per available provisions. Further, TN had been suggested to approach Hon'ble TNERC for suitable amendments in respect of reactive billing for wind.
- In the 147<sup>th</sup> OCCM (10.09.2018), NIWE had made a presentation on reactive capability of RE generators. It was pointed out that RE was as grid friendly as other conventional power and can support the grid in FRT, reactive power support, active power support and other requirements such as frequency response and as reserve also. Enabling mechanism through proper compensation incentive need to be adopted. New concept of Virtual Power Plant (VPP) could be adopted by SR.
- Issue regarding compliance at WTGs / Inverter terminal (of applicable requirements) and at interconnection point had been taken up by SRPC with CEA vide letter dated 20.09.2018 (**Annexure-II**).

#### **4. RAMP RATES/TECHNICAL MINIMUM**

4.1 As can be kindly appreciated, Ramp up and ramp down rates are assuming significance with higher level of RE penetration, sudden changes in load, sudden PX schedules etc. Details of ramp rates of RRAS stations are enclosed at **Annexure-III**.

Regulation 7(4) of CEA (Technical Standard for Construction of Electrical Plant and Electrical Lines states, *'the design shall cover adequate provision for quick start up and*

*loading of the unit to full load at a fast rate. The unit shall have minimum rate of loading or unloading of 3% per minute above the control load (i.e. 50% MCR)'.*

4.2 The following had been deliberated in earlier Mmeetings:

- NTPC, NLC, NTPL and NTECL had agreed to discuss the matter with their engineering division, so as to try and improve the ramp percentages.
- SLDCs also to ensure enhanced ramp rates from the state generators. All units irrespective of control area jurisdiction/ownership need to contribute with higher ramp rates.
- CEA had informed that both in technical specifications as well as Regulations, it had been mentioned that ramp rates of 3% needs to be ensured. These Regulations are applicable to units of Central and State and also the IPPs.
- NPC had pointed out that units need to meet requirements specified for TE clearance and also specified in the Regulations, subsequently. Further, forum could consider possibility of a mechanism that could be in place for self-improvement in ramp rates by generators.
- SRLDC had pointed out that demand variations and the RE injection/withdrawal was within order of 3,000 MW/block. But, once SR touches 4,000 MW of variation/block, present ramp rates may not suffice. Higher ramp rates in both the direction was very much essential.
- In the 33<sup>rd</sup> meeting, TCC had concluded that the ramp rates needs to be increased considering high level of RE penetration. State sector / IPP generators were requested to improve ramp rates and SLDCs were kindly requested to implement the same. This had been noted by the SRPC.
- In the 34<sup>th</sup> Meeting, SRPC had agreed on a suggestion by TCC that provisions with regard to ramp requirement as specified in various Regulations / specifications could be looked into by a Committee.

4.3 The following had been deliberated in the Meetings of Subcommittee:

- NTPC Simhadri had improved the ramp rates to 0.66 %/min.
- NLDC vide letter dated 04.09.2018 (**Annexure-IV**) had taken up issues of ramp rate, technical minimum and startup time of generator with CEA.
- SRPC vide letter dated 06.09.2018 (**Annexure-V**) had also taken up the matter with Hon'ble CERC.
- SRPC vide letter dated 14.08.2018 (**Annexure-VI**) addressed to NTPC, Kudgi and NLCIL had taken up the issue of cold startup time of more than 8 hrs. It had been pointed out that this may not meet the intended operation performance requirement from thermal stations.

4.4 In line with the decision taken in SRPC, a Meeting on ramp rates, technical minimum and start up times from cold/warm/hot has been scheduled to be conducted on 21<sup>st</sup> January 2019.

## **5. USE OF POLYMER INSULATORS IN TRANSMISSION LINES – DIRECTION BY REGIONAL POWER COMMITTEES**

5.1 Letter dated 28<sup>th</sup> November 2018 received from Power System Engineering and Technology Development Division of CEA is enclosed as **Annexure-VII**. It had been stated that there

are no specific provisions regarding use of porcelain and polymer insulators. It has been sought to be known whether decision for use of polymer insulators in place of porcelain insulators had been taken for some particular lines or locations. It had also been suggested to discuss this matter and adopt a balanced approach in respect of all future lines.

5.2 This issue had been discussed in Special SRPC Meeting held on 17<sup>th</sup> December 2018 (MoM available at SRPC website). In the Meeting the following had been noted:

- SR-I and SR-II, PGCIL had informed that in respect of new lines being commissioned, generally only in highly polluted areas, coastal areas, railway and road/power-line crossings, polymer insulators were being utilized. In other locations, porcelain/polymer insulators are being used on a need basis. Thus, there is no blanket consideration for usage of polymer insulators at all locations. In existing lines, at specific locations only, porcelain is being replaced with polymer, on need basis. Some insulators in the North Chennai, Gazuwaka and Tuticorin areas had been changed with polymer ones. This had resulted in considerable reduction in the number of line trippings with improved transmission availability/reliability.
- Total percentage of polymer insulators used in the Southern Region by POWERGRID currently, works to around 11.55%.
- In the Special SRPC Meeting, it was concluded that earlier decision taken in the 28<sup>th</sup> SRPC Meeting to use CLR insulators for upcoming lines was in view of better reliability and other advantages displayed. States stated that grid reliability consideration and other advantages that polymer insulators exhibited at that point of time had led to that decision. In the 33<sup>rd</sup> SRPC Meeting, utilities had already been suggested to kindly consider the CPRI prepared Pollution Map, during the design.
- However, keeping in view the present scenario, the following modified decision was recommended for adoption in the Special SRPC Meeting :  
*‘All transmission utilities would use suitable insulators as per technical requirements, keeping in view provisions of CEA Regulation, other codes, reliability, economics, pollution mapping report etc.’*
- Chairperson, SRPC vide letter dated 19.12.2018 to Chairperson, CEA (**Annexure-VIII**) had furnished these details.
  - It was noted that transmission utilities are also mandated to reduce number of line trippings and also ensure reliable power supply. Economics also needs to be kept in mind during the entire process.
  - Proper Quality Checks for polymer and porcelain insulators also (quality had deteriorated) could be ensured through proper specifications/codes, accredited testing facilities etc.
  - It had also been recommended that provisions in the CEA (Technical Standards for Construction of Electrical Plants & Electric Lines) Regulations 2010 with regard to insulators may need to be kindly reviewed. This Regulation may need to promote new technology and also be technology neutral.

## **6. IMPLEMENTATION OF AUTOMATIC METER READING IN SOUTHERN REGION**

In the 24<sup>th</sup> Meeting of SRPC held on 15<sup>th</sup> March 2014, SRPC had approved implementation of the AMR scheme by POWERGRID. POWERGRID was to firm up appropriate technology for implementation, based on experience in other regions/utilities. Tentative cost of the scheme was around Rs 13.5 crores. It had been agreed that coordination, operation & maintenance would subsequently be looked after by the respective utility.

Need for AMR scheme had been felt keeping in view high RE ingress, amendments in DSM Regulations, SCADA related issues etc.

Status update with regard to the proposed scheme may kindly be briefed by POWERGRID.

## **7. SUPPLY FOR RAILWAY TRACTION SUB-STATION FOR RAILWAY ELECTRIFICATION PROJECTS**

Ministry of Power vide letter dated 22<sup>nd</sup> November 2018 had stated that expeditious implementation, as requested by Railway Board regarding construction of various 132 kV transmission lines and railway traction sub-stations be facilitated. The status in respect of all the states in the region was to be furnished on an urgent basis. A report in this regard was to be submitted to the Ministry of Power in a time bound manner (by 22<sup>nd</sup> December 2018).

The progress had been reviewed in the Special SRPC Meeting held on 17<sup>th</sup> December 2018 (MoM available at SRPC website). The status had been communicated to MoP by SRPC vide letter dated 18.12.2018 (**Annexure-IX**). All states had also been requested to highlight any major issues at senior government level, to facilitate time bound implementation. For instance, in Karnataka this matter could be taken up in the monthly review Meeting being chaired by the Chief Secretary, Government of Karnataka. All states had agreed to appropriately appraise their higher management (at Government level) for expediting the highlighted projects.

The following issues in respect of Railways which had been highlighted by the states in the Special SRPC Meeting had been communicated to MoP:

- Railway is availing electricity connection for their traction loads in two phase system. This two phase traction load of railway is causing unbalance in EHV system and affecting upstream power system elements and grid operation. There are reported incidents of feeder tripping taking place consequent to such sudden inrush of starting current. Railways need to avail 3 phase supply or other appropriate means to balance the traction loads (Earlier Scott Transformers had been suggested).
- To avoid tripping, Railways seek to raise the relay settings upwards beyond the provisions of supply code, instead of enhancing the contract demand. Railway need to enhance contract demand allocation, to resolve relay setting issues.
- States have several requirements of their transmission / distribution lines to cross railways lines/cables and permissions are required, as per rules. Despite requests and

procedures been compiled from utility side, inordinate delay is seen happening, stalling some of the important projects of utilities. Railways may kindly consider faster process to approve sanctions in respect of requests of states for distribution / transmission lines/ cables crossing railway lines.

- While RVNL/CORE take up the transmission elements in areas where much RoW issues are not envisaged, state utilities are approached to take up works in areas where severe RoW issues exist. Subsequently, State utilities are held accountable for the delays in implementation, in such difficult RoW environment.

States may kindly expedite/facilitate commissioning of the transmission lines and railway traction sub-stations as discussed in the Special SRPC Meeting.

## **8. TERMS OF REFERENCE FOR RENEWABLE INTEGRATION – TASK FORCE**

8.1 Chairperson, SRPC vide letter dated 12.12.2017 addressed to MNRE had proposed that certain specific studies could get initiated under IGEN – GEC Project being implemented by GIZ in India on behalf of the German Federal Ministry of Economic Cooperation and Development (BMZ).

8.2 It is for kind information that the scheme on ‘*Dimensioning of Control Reserves in Southern Region Grid States*’ has been awarded to M/S DNV-GL by M/s GIZ. A kick-off meeting was conducted on 05<sup>th</sup> December 2018 with participation from M/S DNV-GL, M/s GIZ, SRLDC & SRPC.

8.3 The Terms of Reference (TOR) covers the scope and deliverables to develop the methodology for reserve dimensioning and actual dimensioning of different types of reserves for each of the State in southern India (barring the Union Territory of Puducherry) by 2022. The following are the main tasks of this assignment:

- a) Identification of types of reserves required at southern State and/or regional level
- b) Detail out a methodology for reserve dimensioning
- c) Reserve dimensioning using appropriate simulation method for 5 southern Indian States
- d) Investigate the reserve sharing potential by southern region States

8.4 The scheme ‘*Controlling power generation and ancillary services from RE (Wind and Solar) generators*’ has been awarded to German company “Energynautics” by M/s GIZ. The following is the TOR of the scheme:

### **Work Package 1: Technical Survey of existing wind and solar generators**

Under this work package four main tasks are needed to be performed:

- a) Identification of technical capabilities of existing solar and wind generators for controlling power output.
- b) Study technical capabilities of existing solar and wind generators for providing ancillary services.
- c) Study retrofitting options available for enabling power generation control and ancillary services.



- d) Study existing communication infrastructure for implementing generation control and ancillary services from wind and solar generators.

**Work Package 2: Policy and regulatory framework on power generation control and ancillary services from wind and solar generators:**

Under this work package three main tasks are needed to be performed:

- a) International best practices on policy framework and grid codes for controlling power output and providing ancillary services from wind and solar generators.
- b) Suggestion on regulatory, grid code related interventions required for implementing power control from solar and wind generators.
- c) Suggestion on regulatory, grid code related interventions required for implementing ancillary services from wind and solar generators.

A kick-off meeting was conducted on 20<sup>th</sup> December 2018 with participation from M/S Energynautics, M/s GIZ, SRLDC & SRPC.

- 8.5 Support and cooperation of all entities is kindly sought for furnishing the required inputs/data, effective interaction etc enabling timely execution of both these schemes.

**9. MONITORING OF SCHEMES FUNDED FROM PSDF**

- 9.1 Status of schemes in SR as on 30<sup>th</sup> November 2018 is as given below:

State / Entity	Sanctioned	Grant sanctioned (Rs. Crores)	Grant disbursed (Rs. Crores)
Andhra Pradesh	4	314.53	29.55
Karnataka	3	205.06	44.97
Kerala	6	581.8	166.15
Tamil Nadu	4	459.39	41.03
Telangana	5	247.72	49.93
Puducherry	2	13.19	0.95
PGCIL-SR	1	378.04	37.80
SRPC	2	30.59	19.84
Total	27	2210.99	390.22

In the earlier Meetings the following had been noted:

- NPC had informed that procedure had been finalized to handle and process requests for time extension. All entities had been requested to kindly furnish any time extension request within 15 days as per this procedure.
- It had been suggested that a senior Officer in each state may act as a Nodal Officer and monitor the progress of PSDF funded schemes regularly, for better and effective implementation.
- SRPC had noted that periodical monitoring of PSDF funded schemes needs to be undertaken at Senior Management level in each state.

- 9.2 In the 149<sup>th</sup> Meeting of OCC, APGENCO and other constituents had expressed concern over non-disbursement of PSDF installments and difficulties being faced in making payments to contractors. This issue was further discussed in the 8<sup>th</sup> Meeting of NPC held on

30<sup>th</sup> November 2018. Chairperson SRPC vide letter dated 13.12.2018 (**Annexure-X**) addressed to CMD, POSOCO had brought to attention that even though all necessary documentation had been completed and submitted, PSDF installments were not being disbursed. There was defined time line to release payments to the contracting agency (ies). PSDF disbursements may hence be kindly expedited to avoid any breach of contractual terms and conditions and also to facilitate smooth and timely completion of the identified projects / activities.

## **10. TRANSMISSION CHARGES / SHARING RELATED ISSUES**

10.1 The following issues in respect of Transmission charges / sharing had been discussed in the SRPC and its Subcommittees:

- Determination of Relinquishment Charges by Hon'ble Commission (Petition No 92/MP/2015) would help relieve the financial stress on DICs.
- Transmission charges related with RE projects - issues involved in implementation of policy regarding waiver of transmission charges for solar/wind evacuation under POC mechanism. This issue had been referred to the Task Force by CERC.
- Recovery of Transmission Charges for delay in commissioning of SPDs.
- Issues associates with sharing of transmission charges by IPPs

10.2 As agreed in the 34<sup>th</sup> Meeting of SRPC, a Special Meeting was convened at Hyderabad on 31<sup>st</sup> August 2018 to discuss transmission charges and other matters (MoM available on SRPC website). In the Meeting the following had been noted:

- Forum had felt that information of LTA/ part LTA operationalization/ made effective needs to be in public domain and displayed on CTU website. CTU had assured that the same would be displayed on its website.
- There needs to be a clarity on commissioning of transmission elements, operationalization of LTA/part LTA relinquishment etc for these projects. CTU had agreed to furnish the information in this regard in respect of CEPL, IL&FS, Ind Bharath etc.
- APTRANSCO had stated that NLDC (Implementing Agency) in its POC computations needs to clearly bring out the waiver component of transmission charges separately.
- For Ultra Mega Solar Projects, LTA/ part LTA operationalization was required with the commissioning of transmission elements, in a timely manner, so as to comply with CERC Regulations/ Orders.

10.3 In the 39<sup>th</sup> CCM (29.10.2018), Implementing Agency (NLDC) had furnished their input, wherein it was informed that, '*The data of RE generators exempted from ISTS charges and losses would be summarized in PoC data to the extent available.*' The issue of segregation and accounting of waiver of transmission charges and transmission losses for wind and solar generators had been taken up with CMD, POSOCO by Chairperson, SRPC vide letter dated 13.12.2018 (refer **Annexure-X**).

10.4 Issue regarding operationalization of LTA was also discussed in 1<sup>st</sup> Meeting of SRSCT held on 07<sup>th</sup> September, 2018. In the Special Meeting (held on 31<sup>st</sup> August, 2018) at Hyderabad, CTU had stated that as regards part operationalization of LTA, they would need to approach the Standing Committee on Transmission. In the 1<sup>st</sup> SRSCT Meeting it had been noted, *‘After deliberations, it was agreed that in future, CTU would conduct system studies and shall operationalize full or part LTA as per relevant CERC Regulations/detailed procedures without bringing the proposal before the Standing Committee on Transmission. CTU may however, consult CEA before such operationalization.’*

10.5 In its Order dated 05.11.2018, in respect of Petition No: 12/SM/2017 along-with I.A. No. 54/2017, Hon’ble CERC had passed the following Order:

*“16. The present suo motu Petition was initiated against CTU for non-compliance of the provisions of the Sharing Regulations and the directions of the Commission. CTU has expressed constraints in fully complying with the direction and has sought directions of the Commission in respect of operationalization of LTA in cases of abandonment of project by generators, long delays in commissioning of projects or in cases where the project is in abeyance. We have already stated that taking decision on these aspects is not within purview of this petition and that the CTU should take action as per provisions of the Regulations. However, we take note of the fact that CTU is facing difficulty in operationalization of LTA in certain cases. At paragraph 12 of this Order, the CTU has furnished details of LTAs granted, relinquished LTAs and LTAs pending operationalization. In view of details furnished by CTU and the fact that the non-operationalization of LTAs is not in disregard to Orders of the Commission rather it is due to difficulties being faced by it. Therefore, we do not find merit in continuing with this petition and accept the plea of the CTU to discharge the notice under Section 142 of the Act against it and drop the present proceedings.”*

## **11. OPTIMUM HARNESSING OF RE IN SOUTHERN REGION**

### **11.1 Follow up of MoP meeting -SAMAST**

11.1.1 The following had been noted in earlier Meetings with regard to SAMAST:

- APTRANSCO had informed that sanction had been received on the Report.
- TSTRANSCO had informed that DPR for Rs. 87 Crores had been submitted and the matter was being followed up.
- TANTRANSCO had informed that PO had been placed on 13.12.2017; and the project was moving ahead.
- KPTCL had informed that they had placed the Order for meters which are adjustable to 0-60 minutes. DPR for Rs. 43.3 Crores had been submitted on 08.12.2017. Reply to observations would be furnished.
- NPC had informed that the SAMAST schemes were being considered favorably for enhanced approvals, (50 % for communication and >50 % for other project aspects).

## 11.2 Pump Storage Plants

11.2.1 The following is the status of upcoming Pump Storage Plants in SR:

State	PSP Scheme	Status
Andhra Pradesh	Sileru (6 x150 MW)	Recommended to MoEF&CC for granting Environmental Clearance
Tamil Nadu	Kundah (4 x125 = 500 MW)	42 <sup>nd</sup> SCPSR : 2020-21
	<b>33<sup>rd</sup> TCC:</b> All the statutory clearances required for the project have been obtained. EPC contracts for establishment of packages I & II of phase I of this project relating to Civil and Hydro mechanical works have been awarded on 15.02.2018. Due to no response for the tenders floated for Package-III of Phase-I, Phase II & Phase III (E & M works) retendering is being processed. <b>This Project is expected to be commissioned in 2021-22.</b>	
	Sillahalla-I (4x250 = 1000 MW)	42 <sup>nd</sup> SCPSR : 2023 onwards
	<b>33<sup>rd</sup> TCC:</b> The First Stage (1000 MW) with the proposed Sillahalla reservoir as upper Reservoir and a new reservoir below the existing Kundah Paalam & Kundah Power House I as lower reservoir is to be taken up. Tender for Consultancy services towards preparation of DPR for the Stage –I of this project has been floated. Preliminary works are under progress. <b>The project is expected to be commissioned in the year 2024.</b>	
	Sillahalla-II (4x250 = 1000 MW)	42 <sup>nd</sup> SCPSR : 2023 onwards
	<b>33<sup>rd</sup> TCC:</b> To be taken up later.	
	4 projects on existing sites	
<b>33<sup>rd</sup> TCC:</b> <b>Manalar PSHEP (500 MW) and Kodayar PSHEP (500 MW) are in preliminary investigation stage.</b> The other two PSHEPs are found to be not much suitable. Further investigations are under progress.		
Karnataka	Sharavathy (2000 MW)	PFR submitted to MoEF
	Varahi	
Kerala	Sholayar-I (810 MW)	Survey and investigation (S&I)/implementation could not be taken up for want of forest clearance
	Sholayar-II (390 MW)	
	Poringalkuthu(80 MW)	

11.2.2 In line with the decision taken in 34<sup>th</sup> Meeting of SRPC, Chairperson, SRPC vide letter dated 14<sup>th</sup> December 2018 (**Annexure-XI**) had taken up with Secretary, MoEF&CC to facilitate approval of Environmental Clearance for the 6 x 150 MW Pump Storage Project in Sileru basin, on a priority basis, keeping in view, real time system operation requirements.

## 12. ISSUES WITH OA CONSUMERS

12.1 This issue had been discussed in Subcommittee Meetings and subsequently in the 34<sup>th</sup> Meeting of SRPC.

12.2 As agreed in the 34<sup>th</sup> Meeting of SRPC, the issues raised by constituents in respect of Open Access Consumers had been kindly taken up with Secretary (Power), MoP by Chairperson, SRPC vide letter dated 14th December 2018 (**Annexure-XII**).

### **13. PREPARATION FOR MEETING REVISED ENVIRONMENT NORMS AS PER ENVIRONMENT (PROTECTION) AMENDMENT RULES, 2015**

13.1 Revised water consumption and emission norms for existing as well as new thermal units ( installed from 01.01.2017 onwards) as per Environment (Protection) Amendment Rules, 2015 had been notified by Ministry of Environment, Forest & Climate Change (MOEF & CC) (Gazette Notification dated 07.12.2015). MOEF guidelines had classified thermal generators into three categories with different norms. The three classes were prior to 31<sup>st</sup> December 2003, 1<sup>st</sup> Jan 2004 to 31<sup>st</sup> December 2016 and beyond 1<sup>st</sup> January 2017. Existing as well as new plants were required to meet standards by the stipulated time lines. Preparedness and action plan in order to comply with revised norms had been discussed in SRPC as well as Subcommittee Meetings

13.2 The following had been noted in earlier Meetings:

- SRPC had noted the requirements for necessary compliance.
- MoP vide letter dated 30.05.2018 had finalized '*Mechanism for implementation of New Environment Norms for Thermal Power Plants (TPP) supplying Power to distribution licensees under concluded long term and medium term Power Purchase Agreement (PPA)*'. In the Mechanism, it has been stated, '*After considering all aspects and with due regard to the need for safeguards against environmental hazards and accordingly to ensure timely implementation of new environment norms, the Central Government has declared that –*

5.1 *The MoEFCC Notification requiring compliance of Environment (Protection) Amendment Rules, 2015 dated 7<sup>th</sup> December, 2015 is of the nature of Change in Law event except in following cases:*

- a) *Power Purchase Agreements of such TPPs whose tariff is determined under Section 63 of the Electricity Act, 2003 having bid deadline on or after 7<sup>th</sup> December 2015, or*
- b) *TPPs where such requirement of pollutions control system was mandated under the environment clearance of the plant or envisaged otherwise before the notification of amendment rules.*

5.2 *The additional cost implication due to installation or up-gradation of various emission control systems and its operational cost to meet the new environment norms, after award of bid or signing of PPA as the case may be, shall be considered for being made pass through in tariff by Commission in accordance with the law.*

5.3 *The respective TPPs may approach the Appropriate Commission for approval of additional capital expenditure and compensation for additional cost on account of this Change in Law event in respect of the Power Purchase Agreement entered under Section 62 or Section 63 of the Electricity Act, 2003*

5.4 *For the TPPs that are under the purview of the Central Commission, the Commission shall develop appropriate regulatory mechanism to address the impact on tariff and certainty in cost recovery on account of additional capital and operational cost, under*

*concluded long term and medium term PPAs for this purpose.*

- It had been noted that units need to necessarily comply with norms as per CPCB timelines (enclosed as **Annexure-XIII**).
- This is a monitored activity by Hon'ble Supreme Court and also by Government. Hence regular updates need to be communicated, please. The timelines of CPCB also need to be strictly adhered.

#### **14. PROPOSAL OF NLDC ON NATIONAL ENERGY ACCOUNTING**

NPC vide letter dated 18.12.2018 have informed that in the 8th Meeting of NPC held on 30th November 2018, it had been decided that the proposal of NLDC on National Energy Accounting be discussed in all RPCs and the observations be furnished to NPC Secretariat. Letter dated 18th December 2018 of NPC enclosing this proposal on National Energy Accounting is enclosed as **Annexure-XIV**. It was proposed to discuss this Agenda Item on National Energy Accounting in the Special Meeting scheduled to be held on 11th January, 2019 in SRPC, Bengaluru. The deliberations / recommendations will be put up to SRPC for further directions in the 35th Meeting.

#### **15. COAL ISSUES**

- 15.1 A number of thermal power stations in the Region had faced critical coal stock situation in the past period.
- 15.2 In the 33<sup>rd</sup> TCC, it had been noted that less than three days of coal stock could be considered as fuel shortage conditions. ISGS need to ensure that in case average DC is less than ex-bus (normative) over a day, then DC would need to be maximized during 6-9 hours and also during 18-21:30 hours, while appropriately reducing DC during other hours.

#### **15.3 Coal Supply Issues**

##### **NTPC-Talcher stage-II**

- NTPC had raised coal quality issues. GCV had deteriorated by 1 to 2 grades because of which station is unable to generate full load. Since, situation is likely to continue for some time, station had started procuring imported coal which would partly improve the generation. Recently, they had received permission for import of coal.
- MCL had informed that earlier NTPC was picking 2 rakes from Ib siding which had been stopped in July 2018. They can take 10 rakes/day from Lingaraj mines, instead of 7-8 rakes/day at present. NTPC needs to supplement by taking additional rakes from ECL, and this would ensure higher generation levels also. The unloading time at station may be reduced to make this possible. The quality of coal had improved from October 2018 and now there were no issue w.r.t coal quality
- Ministry had recommended/issued guidelines for coal transportation through road to pithead stations within 60 -80 km limits. NTPC Talcher had been requested to kindly consider coal transport through road.

##### **NTPC-Simhadri**

- NTPC Simhadri requirement was around 10 rakes/day for sustained operation of the units (7 rakes from MCL (Talcher) , 2 rakes from MCL (Ib) and 1 rake from ECL). They

were going ahead with contract for RCR mode (Rail Cum Road) for 5 LT as discussed in the High Level Meeting and it was likely to be finalized within a week (20.11.2018).

#### **APGENCO**

- MCL had informed that power stations had been requested to avail some coal through Vizag Port. Parallel channels need to be utilized so as to ensure that requirements are met. New Sardega siding (in SER) at MCL had been added and around 5-6 rakes/day could also be loaded from there. Generators were requested to have agreement with SE Railways (HQ Kolkata) for enhanced rake movement towards Damra and Haldia Ports.
- MCL had stated that APGENCO needs to coordinate with Railways for enhanced materialization of raw and washed coal. Linkage is for 24,000 LT/day in which 11,000 LT is through Washery mode and the rest through railways for which four rakes are required. But railway is allotting lesser number of rakes.

#### **KPCL**

- KPCL had requested for 9-10 rakes/day for the enhanced generation requirement at Raichur/ YTPS/BTPS as the demand had picked up significantly.
- MCL had informed that KPCL needed to take up the issue with Railways. KPCL must take some coal through RCR mode to tackle the present situation. Proper mix of ARR and RSR should be ensured by KPCL and it should be practical. Most of the stations were requesting more coal from Talcher which may not be possible and thus other options of getting coal from Ib etc needs to be exercised.

#### **TANGEDCO**

- 13 rakes/day from MCL and 3 rakes/day from CCL/ECL were required.
- MCL had informed that additional supply of coal of 0.5 MTPA (earlier being supplied by WCL) had been formalized for TANGEDCO. TANGEDCO was already having multiple avenues; coal was being taken through ARR for Mettur and through Paradip, Vizag and Haldia Ports. Vizag Port in the meeting held in April 2018 had assured of package (merit order benefit, discount etc) to the power plants which could be availed.
- TANGEDCO had observed that due to manual unloading, cost of unloading at Vizag Port was much higher compared to Paradip Port so they are not able to divert their coal to Vizag Port.

#### **NTECL**

- In the 34<sup>th</sup> SRPC Meeting, NTECL had stated that they were willing to avail more coal from Sardega siding of MCL, but there were some issues regarding weighment.
- NTECL had informed that they would also firm up the contract for RCR-Sea mode for 5 LT on similar lines to Simhadri. NTECL had requested MCL to ensure supply of 6 rakes/day.

#### **NTPL**

- NTPL had informed that they were getting good support from MCL.

#### **MCL**

- MCL had stated that the utilities (APGENCO, APPDCL and NTPL) availing coal through Washery mode should ensure that the Washery operators pickup sufficient raw coal in time. Lifting of coal by Washery has been poor. Utilities could take up the issues with the Railways for lifting washed coal from Washery.
- Most of the South bound stations taking coal through Paradip Port should also consider

increasing off take at Damra and Vizag Ports to improve materialization.

- MCL had appraised that coal from MCL is mainly of lower grade ie G13 and G14. For better yield some coal of higher grade from other coal companies may be procured and blended. MCL had requested all the power plants to take some coal by Road and RCR mode as railways capacity is almost fixed. MCL had suggested that the generating companies could procure rakes which would enhance materialization.

#### **149<sup>th</sup> OCC Meeting**

- NTPC would free 2 MGR rakes at the earliest, which could be utilized for Simhadri/Vallur.
- Stations would try to supplement through RCR route for enhanced materialization.
- All stations would coordinate with respective Railway Authorities for enhanced rake allocation.
- All stations would try to supplement additional good grade coal for improved generation needs. Additional coal requirements would be put up to coal companies/railways in an optimized manner.

#### **15.4 Grade Slippage Issues**

- APGENCO had raised the issue of 2 to 3 Grade slippages between loading end of SCCL and unloading end (from Manuguru and Rudrampur mines).
- NTPC had stated that there were 2 Grade slippages at Ramagundam. Auto sampler had not been installed/not working at SCCL.
- MCL had informed that the Grade slippage was getting addressed and only 27 % of the supply was getting downgraded while 73% supply was being upgraded. Even the 27% issue would be looked into and rectified.
- NTPL had informed that grade slippages were being observed in ECL supply (invoice for G11 while the supply was G15).
- TANGEDCO had observed that reports by CIMFR need to be expedited to ensure payment curtailment , in a timely manner. The advance quantum would also get reduced considerably.
- Coal companies needed to come out with a transparent mechanism, besides third party sampling. Importance of Third party sampling at unloading point could also be examined. Cameras and representatives could be allowed to improve the confidence levels of the stations towards quality and quantity. SCCL and other coal companies could take the lead from MCL on addressing the Grade slippage issues which could be discussed in the next meeting. CIMFR officials could also be invited in the next Meeting.

Chairperson, SRPC vide letter dated 24.08.2018 (**Annexure-XV**) had taken up the pertinent issues regarding grid slippage, auto sampler and transparent mechanism towards quality and quantity with CMD, SCCL.

#### **15.5 Railway issues**

##### **Railways**

- It had been informed by Railways that a large number of BOXN wagons were being inducted (8,000 to 10,000 wagons) in the current financial year which would improve BOXN rake availability.



- Railways have close coordination with MoP and MoC and they are meeting nearly on a daily basis. For stations featuring in super critical / critical coal stock, special arrangements were being made to improve the coal supply. In addition, there was a fortnightly Meeting between Secretary (P), Secretary (C) and Member (Traffic) and issues are discussed with Power Plants and Zonal Railways. Critical coal stock stations come on radar and issue is resolved on priority. Stations don't release the wagons in a timely manner and the issues of sticky coal, CHP getting jammed etc lead to lesser rake availability.
- Preferred movement from Sardega siding of MCL was towards Damra and Haldia and not towards Paradip.
- Railways had assured the forum that they were in touch with all utilities on a day-to-day basis and issues are being resolved.

#### **NTPC-Talcher, Kaniha**

- Railways had informed that presently around 10 rakes/month were coming, and as and when ECL loading picks up, the supply would increase.

#### **NTPC - Simhadri**

- Railways had stated clarified that supply to Simhadri would be a combination of BOXN and BOBR rakes. Loading of 8 rakes/day for Simhadri could be done, provided adequate availability of coal in sidings is ensured by coal companies.

#### **NTPC-Kudgi**

- Railways to supply 2 rakes/day from SCCL.

#### **APGENCO**

- APGENCO had informed that requirement was of 3.2 rakes/day (2 from BBMT siding) for Dr. NTPS (Vijayawada TPS), 1.33 rakes/day for Rayalaseema TPP and 2 rakes/day for Rayalaseema Stage-IV.
- Railways had informed that Kondapalli (Vijayawada) has added advantage that they can unload BOBR rakes. At BBMT siding 2 -3 rakes/day were being loaded. More number of BOXN wagons was required as at RyTPP the unloading facility for BOBR wagons was not there.
- Railways had stated that the complete requirement of washed coal could not be met only from Spectrum Washery due to capacity constraints in the layout of the siding and hence movement should be planned for other washery sidings also. Railways assured of higher availability of rakes for Kondapalli as Kondapalli was good releasing point for Railways.

#### **KPCL**

- KPCL informed that 18 rakes per day were required for FY 2018-19. Additionally, 2 to 3 rakes per day were required for fly ash movement.
- Railways had requested KPCL to furnish the source-wise breakup of 18 rakes/day. It was informed that KPCL gets significant portion from SCCL. KPCL was requested to furnish the details of fly ash movement and the type of wagons required, whether BCCW (special wagon for fly ash) or BOXN.

## **TANGEDCO**

- Railways informed that overall supply to TANGEDCO stations was more than trigger level.

## **NTECL**

- NTECL had informed that coal movement from Talcher to Paradip Port was quite less than the requirement of 3 rakes/day. Further, there were some issues in coal movement from Ib to Paradip and Damra and the realization is poor. NTECL was requesting around 25 rakes to Damra which was not being allocated.
- Railways had informed that there were no issues for movement between Talcher to Paradip Port and the allocation would be optimized.
- NTECL had requested Railways to ensure 1 rake/day from SCCL.

## **TSGENCO**

- SCCL had informed that TSGENCO was commissioning 800 MW unit and 2 rakes/day were being supplied to them, as it was under FSA.

Chairperson, SRPC vide letter dated 24.08.2018 (**Annexure-XVI**) had taken up the issues such as higher deployment of BOXN rakes to SR, wagon allocation to SR from new wagons, maintaining adequate supply for SR stations etc with the Chairman, Railway Board.

### **15.6 Unloading facility issues**

- SCCL had pointed out that some of the stations don't have facility of unloading BOBR rakes which needs to be developed, to provide flexibility in supply of rakes. This affects coal supply to Muddanur, Raichur, Bellary, Kudgi etc. Major coal plants need to have multiple type of unloading facility.

### **15.7 Issues on CEA's methodology for monitoring coal stock**

- As discussed in the 34<sup>th</sup> Meeting of SRPC, the issues in respect of new methodology for monitoring of coal stock in coal based power thermal plants were taken up with Chairperson, CEA by Chairperson, SRPC vide letter dated 20.11.2018 (**Annexure-XVII**). The issues raised by NTECL & NTPL etc had been highlighted in the letter.

15.8 The following had been noted in the OCCM:

- In 1<sup>st</sup> week of November, about 4,400 MW capacity units were hand tripped on account of coal shortage in SR.
- Loss of DC for November 2018 was around 2,229 MW.

## **16. STATUS OF DC/GENERATION IN ISGS**

16.1 Issue regarding low DC/Generation at NLC TS -II Expansion, NTECL, Kudgi & MAPS had been deliberated in earlier Meetings of SRPC. Level of generation of some ISG stations is given below:

Station		Aug-18	Sep-18	Oct-18	Nov-18
NTECL, Vallur	DC %	61.15	60.22	53.80	60.06
	PLF (on Actual) %	41.27	53.74	50.33	50.92
NLC TS II Exp	DC %	24.52	37.31	60.61	43.86
	PLF (on Actual)	23.90	36.96	61.11	43.34
MAPS	PLF (on Actual)	50.77	49.83	43.40	28.85

16.2 The following had been noted in earlier Meetings:

- NLC had informed that major modification had been carried out in Unit II of TS II Expn and unit brought back in June 2018. Unit I would be brought back by 15<sup>th</sup> August 2018 and after that, above 90 % DC was expected.

## **17. ROADMAP TO OPERATIONALISE RESERVES IN THE COUNTRY**

17.1 In the 29<sup>th</sup> Meeting of SRPC it had been noted that Hon'ble CERC vide Order dated 13.10.2015 on Petition No. 11/SM/2015 in the matter of Roadmap to operationalize Reserves in the country had stated as follows:

*(b) (ii) The Central Commission advises the State Commissions to issue orders for intra-state generators in line with this timeline as AGC is essential for reliable operation of India's large inter-connected grid.*

.....

*(d) In the long term, however, a market based framework is required for efficient provision of secondary reserves from all generators across the country. For this, NLDC/POSOCO is directed to commission a detailed study through a consultant and suggest a proposal to the Commission for implementation by 1<sup>st</sup> April, 2017, giving due consideration to the experience gained in the implementation of Spinning Reserves w.e.f. 1<sup>st</sup> April, 2016.*

17.2 In earlier Meetings, the following had been noted:

- Hon'ble CERC in Petition No. 79/RC/2017 had passed Order dated 6<sup>th</sup> December, 2017 in the matter of 'Automatic Generation Control (AGC) pilot project'.
- A Meeting on AGC issues had been conducted at SRPC on 28<sup>th</sup> March 2018 (MOM available on SRPC website).
- NLDC had informed that States need to take action as per the Regulations/Orders. Simhadri AGC may be in place by mid-September, for Mouda (WR), Barh (ER) & Bongaigaon (NER) tender specification had been rolled out and tender would be floated by end of August 2018. Detailed road map for Phase I & Phase II had been submitted to Hon'ble CERC. For other Pilot Projects, approval of CERC would be sought shortly. NLDC SCADA is being upgraded with AGC software to include Stations for which tariff is determined by the Commission and NLDC would be approaching Commission for approval.
- In the 34<sup>th</sup> Meeting of SRPC it had been agreed that Pilot Project on AGC would be implemented in all the states. It had been agreed that a Committee with participation

from State SLDCs, GENCOs, SRLDC and NLDC would be firmed to facilitate Pilot Project Implementation in the states.

- Subsequently, a Meeting on implementation of AGC in SR states was held on 19<sup>th</sup> September 2018 at SRPC, Bengaluru (MOM available on SRPC website). SRPC vide letter dated 20.09.2018 had taken up this issue with all the states.
- AGC at Simhadri Stage II had been made operational in both the Units from 15:17 hours of 16<sup>th</sup> November 2018.

17.3 The issue was further discussed in the Special SRPC Meeting held on 17.12.2018 wherein the following was noted:

- KPCL had informed that Work Order had been placed for Varahi and Sharavathy AGC. OEMs M/s ABB and M/s Andritz are taking up integration works at the generating stations. AGC at 10 MW Solar plant at Sivasamudram was not being envisaged as a response was only upto 1 MW.
- NTPC, Simhadri had been suggested to take up the issues raised (schedules going below technical minimum, ramp violations, schedules exceeding the restricted schedules (margins kept for RGMO), schedules exceeding the DC etc ) with NLDC with a copy to SRLDC & SRPC by 17.12.2018.
- AGC meeting at Vijayawada had been scheduled on 27.12.2018 with participation from APSLDC, Krishnapatnam, other AP generators, NLDC, SRLDC & M/s Siemens on request of APSLDC. (which was subsequently postponed and scheduled for 08.01.2019)
- AGC meeting at NCTPS (TANGEDCO) had been scheduled on 28.12.2018 with participation from TNSLDC, Mettur Stage-III, other TN generators, NLDC, SRLDC & M/s Siemens on request of TNSLDC.
- In AP, Krishnapatnam STPS had been identified. Hydro unit under identification.
- KPTCL / PCKL had informed that trial operation of AGC at Sharavathy and Varahi was now planned during July-September 2019. AGC for thermal stations (Bellary and Yermarus) would be considered after gaining experience from these projects.
- KSEBL had informed that technical specifications at SLDC/Kuttiadi/Idukki were being prepared and the AGC implementation may commence from December 2019 after the upgradation works are over.
- TANTRANSCO / TANGEDCO had informed that a meeting with M/s Siemens was scheduled on 20.12.2018 to discuss the technical requirements etc. Further, a Meeting at NCTPS was also scheduled on 28.12.2018. A visit to Simhadri Stage-II was also planned during 1<sup>st</sup> week of January 2019.
- TSTRANSCO / TSGENCO had informed that one unit at Kothagudem E (500 MW) had been identified for Pilot project under AGC. Other hydro / thermal projects would be identified after gaining experience on AGC from this project. Other technical specifications etc were being worked out. They had requested that AGC for the states could be taken jointly and funded through PSDF.
- It was pointed out that AGC was to be implemented by the states as per CERC Order / Regulation. NPC/NLDC had been highlighting the paucity of funds in PSDF and thus it would be prudent to take the AGC Pilot project in the states through their own funds.

- It was noted that AGC Pilot project in Karnataka was being funded through USAID. However, NLDC would be appraised whether the AGC Pilot project for AP, TS, TN and KER could be taken up jointly to reduce the cost implications and have uniformity in all the states.
- AP and TS had been requested to kindly join TN in the visit to Simhadri-II in the 1<sup>st</sup> week of January 2019 (dates would be confirmed by NTPC, Simhadri / TN).

## **18. TTC/ATC**

### **18.1 TTC/ATC enhancement – Operational guidelines issued by NRCE**

- NLDC vide letter dated 31.08.2018 (**Annexure-XVIII**) had requested NPC to take up with Powergrid, STUs and other Transmission Licensees to furnish terminal equipment ratings at all transmission lines at 400 kV and above to ensure that there is no gap in security assessment. NPC letter dated 20.09.2018 in this regard, is given at **Annexure-XIX**. SRPC vide E-mail dated 24.09.2018 had requested all transmission utilities and states to furnish the required information by 01.10.2018 for onward transmission of consolidated data wrt SR to POSOCO.
- The details are awaited from all the entities despite regular follow up.
- SRPC vide letter dated 25.09.2018 had taken up the issues with NLDC regarding the reassessment of transfer capability. Some of the issues are given below:
  - Why similar information for other lines had not been sought (April 2015) and presently data in respect of all the lines including STU lines had been sought.
  - Dynamic line rating was to be implemented within one month as per Order dated 05.08.2015 of Hon'ble CERC in Petition No.009/SM/2015 (CAC Sub Committee on Congestion in Transmission).
  - For achieving the objective in a time bound manner, it had been suggested that confirmation can be obtained on priority/terminal equipment of such transmission lines affecting the transfer capability in the present condition.

### **18.2 Releasing additional margins for STOA / PX based on LTA / MTOA utilization**

In the 149<sup>th</sup> Meeting of OCC, it had been noted that there were frequent market split for Southern Region states though the schedules were well below the ATC. Earlier, POSOCO was releasing additional margin for STOA / PX based on LTA / MTOA utilization. The same needed to be continued for economic operation and to bridge the gap between the schedules and the ATC. As suggested by OCC, SRPC vide letter dated 06.12.2018 (**Annexure-XX**) had taken up the pertinent issue with NLDC. In the same letter, the issue regarding reduced availability by LTA Regional Generators during peak hours was also taken up with NLDC.

### **18.3 TTC increase to SR**

In the Operational Feedback for July to September 2018 released on 25.10.2018 by POSOCO, it has been noted that on 4<sup>th</sup> August 2018, 400 kV Srikakulam - Mardam (Garividi) D/C was charged for first time and power flow started. Accordingly, it was observed from simulation studies that SR import transfer capability was now limited by

overloading of 2x315 MVA, 400/220 kV Garividi ICTs under N-1 contingency of these ICTs. Therefore, in order to enhance the transfer capability towards Southern Region, augmentation of transformation capacity at Garividi could be explored.

## **19. ISSUE OF PREVAILING OVER VOLTAGES IN SR GRID**

19.1 Number of nodes in SR are facing high voltage problems. PGCIL had pointed out that these over voltages lead to over stress of substation equipment including ICTs, Reactors, CVTs, CTs etc. Life span of equipment was also affected adversely leading to early failures.

19.2 In the operational feedback for the quarter (July -Sep 2018), POSOCO had highlighted high voltage nodes. 25 lines were opened for voltage regulation at least 23 times with total no of hrs outage more than 500 hours. List of lines which were opened by real time operators to control over voltage in the grid were also displayed.

19.3 Details of nodes of high voltage coupled with MVAR injection during August 2018 to November 2018 are given below, please:

<b>Nodes with MVAR injection during V &gt; 103%</b>			
<b>AP</b>	<b>KAR</b>	<b>TN</b>	<b>TS</b>
Kurnool	Nelamangala	Tiruneveli	Maheshwaram
Vijayawada	Raichur	Alamathy	Hyderabad
Gazuwaka	Hoody	Karaikudi	Malkaram
Chittoor		Pugalur	Gajwel
Vemagiri		Kalavinthapattu	Mehaboobnagar
		S V Chatram	Khammam
			Warangal
			Dichipally

19.4 The following had been deliberated in earlier Mmeeting:

- APTRANSCO, KPTCL, TANTRANSCO and TSTRANSCO had agreed to look into this issue and come out with short term and long term measures to address the same.
- SRLDC had assured that the lines would be taken out proactively considering N-1 reliability. Further, pro-active action would be considered in case of known trends of increase in voltages and lines would be opened at voltages less than 430 kV. In case of double circuit, one line would be taken out on sustained basis (7 days) to avoid frequent switching operations.

### **19.5 MVAR interchanges by Generators**

Performance of SR generators had been analyzed in the Special Meeting held on 26.09.2018, wherein the following had been recommended:

- Many of the stations had not furnished MVAR interchange details and therefore, a comprehensive exercise could not be carried out. The SRLDC controlled stations response would be analysed in the OCC meeting. The state embedded generators need to furnish their response to the SLDCs (with a copy to SRLDC/SRPC) and unit-wise / station-wise analysis would be carried out.

- There were still some margins available as per Capability Curve and generators could consider improving the MVAR interchange.
- Few units were not keeping the Vref to nominal and were changing it manually to control / restrict the MVAR interchange. This was to be discontinued.

## **20. ISSUES IN RESPECT OF NPCIL**

The following are the issues in respect of NPCIL stations:

### **20.1 Balance dues from Beneficiaries**

Issue of outstanding dues to NPCIL of Southern Region beneficiaries had been discussed in the 34<sup>th</sup> Meeting of SRPC. All beneficiary states had assured of early settlement of the dues. The issue was further discussed in 39<sup>th</sup> CCM (29.10.2018) wherein NPCIL had raised the following issues:

- Non Payment of DPC bills by State Electricity Boards (SEB's).
- Non Payment of Energy bills by SEBs.
- Non Payment of bills for the energy supplied from Unit 2 by M/s. KSEBL
- Non Submission of Letter of Credit by M/s. HESCOM, M/s. PEB, and TSPCC.

The following had been noted in the CC Meeting:

- TANGEDCO had stated that energy bills up to June, 2018 had been paid and the bill for the month of July 18 would be paid by 31.10.2018. Director (Finance) had written to KKNPP seeking exemption of delayed payment charges and had invited KKNPP for discussion in this regard.
- PCKL had informed that a meeting with DISCOM and generators was convened to resolve the pending payment issue. Based on the decisions of the Meeting, DISCOMs were releasing payment on monthly basis. One more meeting of the DISCOMs with Additional Chief Secretary, Government of Karnataka would be arranged to resolve the issue.
- TSPCC had stated that the pending payment issue would be taken up with the management.
- Puducherry had assured that payment would be made by next week.
- KSEBL had stated that they had taken a stand that since synchronization of 2nd unit in July, 2018 and injection beyond 1,000 MW was against the directions & decisions of SRPC, SRLDC & requests of beneficiaries, the charges for injection beyond 1,000 MW is disputed. There had been high rainfall in Kerala, and thus normal clause as per the PPA is not applicable to KSEBL regarding the payment. Hence the KKNPPs argument on the non-eligibility for rebate to KSEBL is not valid and has to be treated separately. It was also to be noted that discussion to revisit PPA is going on. Till a final decision is made in this regard, the bill may be kept as disputed. The matter may be escalated to the next higher level committee.
- SRPC had reminded defaulting beneficiaries about the directive from Ministry of Power to clear the outstanding dues to CGS.( especially more than 60 days)
- TSPCC had stated that there was no subsisting PPA with KKNPP and banker was insisting for PPA to issue LC. However, since the allocation was done by MoP, the issue would be resolved and LC would be submitted.

(Figures in Crores)

Sl. No.	Entity	MAPS	KKNPP	
			Bill Amount	Delayed payment charges
1	TNEB	-	330	138
2	HESCOM (Karnataka)	-	180	25
3	Telangana	-	1	2
4	GESCOM (Karnataka)	-	65	4
5	CESCOP (Karnataka)	-	22	3
6	APTRANSCO	12.4	1	0.67
7	PED (Puducherry)	-	11	2
8	BESCOM (Karnataka)	-	-	
9	KSEBL	-	0.85	

## 20.2 Part load operation/Reserve shutdown/frequent changes in revival of KKNPP units

- With higher RE penetration, NPCIL units need to offer some degree of flexibility (seasonal, part load, reserve shutdown etc) which was need of the hour.
- SR constituents had suggested that only one unit of KKNPP could be in service during July to September each year and refueling needs to be planned accordingly. During the peak demand months (Feb to Apr) both the units at KKNPP need to be in service.
- NPCIL had reiterated that there was no compensation for backing down/reserve shut down and as per PPA, entire power is to be absorbed by beneficiaries. The units are base load stations and daily flexibility cannot be provided.
- In the 34<sup>th</sup> Meeting of SRPC after discussions, it had been agreed that PPA may need to be revisited and TANTRANSCO would kindly take the lead in this regard. Flexibility, two part tariff, compensation for backing down etc were issues to be discussed. It was agreed that Chairperson SRPC would be requested to take up the pertinent issues with MoP.
- Flexibility could be considered in future PPAs of NPCIL units.
- Chairperson, SRPC vide letter dated 09.10.2018 (**Annexure-XXI**) addressed to CMD, NPCIL had brought to attention issues of part load operation / reserve shutdowns / frequent changes in the revival of KKNPP units, PPA clauses and had requested participation of NPCIL in the meeting scheduled to re-visit the PPA clauses.
- A Special Meeting was convened at Chennai on 24<sup>th</sup> October 2018 (MoM at **Annexure-XXII**) to discuss the issues wrt flexible operation of NPCIL Units and revisiting of PPA etc. in which representative from NPCIL HQ had also participated. It was noted in the Meeting that NPCIL Units could provide flexibility and operate at constant power levels. NPCIL was to come back on the technical minimum of the units, intervals between two load adjustments etc and other limiting constraints. TANGEDCO was to come up with likely clauses in PPA to facilitate flexibility in NPCIL Units and take care of compensation to NPCIL etc.
- In the 149<sup>th</sup> OCCM, KKNPP had highlighted various constraints in providing flexibility. It had been informed that the issue was under deliberation at the Management level. They would revert back on the outcome after deliberations with their OEM/Board.
- Draft guideline to regulate generation of NPCIL units in SR and NPCIL's comments on the draft guideline were communicated to TANGEDCO vide SRPC letter dated



13.12.2018 (**Annexure-XXIII**).

- Issue regarding flexibility from nuclear stations was taken up by Chairperson, SRPC with Secretary (Power), MoP vide letter dated 14<sup>th</sup> December 2018 (**Annexure-XXIV**) in which the following matter had been requested to be examined:
  - Assessment of technical capability of nuclear stations to provide certain degree of flexibility to the system operators/Discoms, within safe and secure parameters of nuclear technology.
  - Changes in the tariff structure, amendments in the existing PPA clauses etc also need to be kindly examined.
  - Flexibility needs to be considered in future plants of NPCIL and thus suitable clauses may need to be incorporated in these PPAs.
  - NPCIL stations in SR need to coordinate and avail outages as per the outage plan of SRPC so as to ensure that outages are availed during the lean period (June to December each year).

### **20.3 Black Start Mock Drill at Kaiga GS and MAPS**

- Black start mock drill at MAPS was completed on 28.11.2018.
- Black start at Kaiga GS was scheduled during shutdown of Unit-1.

### **20.4 PSS tuning / SRT**

- In the Meeting held on 22.06.2018, Kaiga GS had agreed for PSS Tuning of unit during BSD of Unit 1 & III respectively.
- MAPS Unit – I & II PSS tuning/SRT is to be completed.

### **20.5 Prolonged outage of MAPS Unit-1 / Unstable generation from NPCIL units**

- Unit-1 of MAPS is out since January 2018 and there is no firm revival date by MAPS / NPCIL. In the generation target for 2019-20 also, no generation had been specified (it has been stated that it would be furnished later).
- TANTRANSCO vide letter dated 02.10.2018 (**Annexure-XXV**) had taken up the issue of reduced generation from KKNPP Unit-II (reduced availability of around 840 MW) and other units in SR. NPCIL vide letter dated 05.10.2018 (**Annexure-XXVI**.) had assured that they were closely monitoring the progress of works at all the units and would maximize the generation.
- In the interest of system operation/grid requirement, OCC had suggested MAPS, to take out Unit-II only after Unit-I is brought back (Unit-II was proposed to be taken out for BSD works w.e.f. 20.11.2018 for 54 days). It was also noted that there were strategic loads of IGCAR in that area which cannot afford any interruptions. In this context, MAPS had been requested to take up this matter earnestly with their Regulator, so that system operation was not impaired in any respect.
- MoP had convened a Meeting on 1<sup>st</sup> October, 2018 which was chaired by Chief Engineer (OM & RR) to review the Outage of Nuclear Power Stations (Minutes of the Meeting at **Annexure-XXVII**). The following had been recommended:
  - ✓ NPCIL would communicate to field to ensure that the revival dates are more practical and are adhered to.

- ✓ Revival dates be communicated to POSOCO (RLDC/NLDC) in a time bound manner to be correctly reflected in the Daily Outage Report (there was discrepancy in the report furnished by NPCIL and in POSOCO's Outage Report)
  - ✓ Since Unit-I of MAPS is out till March 2019, shutdown of KKNPP Unit II should be planned after MAPS Unit I is revived.
  - ✓ Planned shutdown of Kaiga GS unit should be after revival of both units of KKNPP
  - ✓ Shutdown of all units should be planned during June to December each year. This has to be carried out in close coordination with beneficiaries, SRPC & SRLDC.
- Chairperson, SRPC vide letter dated 08.10.2018 (**Annexure-XXVIII**) addressed to CMD, NPCIL had taken up the issues of coordinating the outages at KKNPP, MAPS and Kaiga GS considering the LGB and line constraints etc in the interest of smooth grid operation.
  - TANTRANSCO vide letter dated 15.10.2018 (**Annexure-XXIX**) had taken up the issue of simultaneous outage of MAPS units and critical line loading issues in that area and had suggested that BSD of Unit-II may be taken only after Unit-I is brought back.
  - TANTRANSCO vide letter dated 14.12.2018 (**Annexure-XXX**) had taken up the issue of simultaneous outage of MAPS units despite the request of TANGEDCO to keep atleast one unit on bar. It was stated that the same had been highlighted in the High level Coordination Committee Meeting headed by the Energy Secretary. Further, MAPS was feeding strategic loads of IG CAR and with both units under outage, number of network configurations were resorted to affecting the reliability in that area. Further, MAPS had been advised to revive the units (Unit-1 by March-April 2019 and Unit-2 by 05.01.2019) as committed in the 2<sup>nd</sup> Coordination Committee.

## **20.6 Other issues**

- Kaiga GS would extend support for insulator replacement in Kaiga complex. Once concurrence is received from Kaiga GS by SR-II, the works would be completed within 3-4 months as new work order had to be placed.
- KKNPP had informed that 2<sup>nd</sup> reactor would be completed by May 2019.
- With regard to A/R implementation on MAPS lines, NPCIL had informed that the new CVTs were provided in all the three phases (R & B phases, CVTs were replaced and Y ph CVT was provided) of Line-1,2 & 4. Replacement of CVTs in line-3 is in progress. Each phase CVT supply was extended to Main 1 & Main -2 relays. Bus PT supply is extended for Sync.Check.
- Time Delayed Auto Reclose (TDAR) scheme with Sync. Check, is being worked out and would be implemented for the four lines, on by one, before 31-03-2019.

## **21. UPCOMING TRANSMISSION SYSTEM**

### **21.1 1<sup>st</sup> Meeting of Southern Region Standing Committee on Transmission (SRSCT)**

Minutes of Meeting of 1<sup>st</sup> Meeting of Southern Region Standing Committee on Transmission (meeting held on 07.09.2018) had been issued and are available on CEA web site).

### **21.2 Following up actions on the recommendations of CAC Sub-Committee on Congestion in Transmission**

In Petition No. 009/SM/2015 in matter of 'Following up actions on the recommendations of CAC Sub-Committee on Congestion in Transmission', Hon'ble CERC had issued the following Order :

**Summary of our Findings**

- a. CEA is requested to expedite formulation of technical standards for "Communication System" as per Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017.
- b. NPC to expedite formulation of Standards for Protection System for Indian Power system.
- c. CTU is directed to take up the issue of matching ISTS with State Systems at Standing Committee of Transmission Planning in coordination with CEA to ensure coordinated action for implementation of both ISTS and associated intra-state system. CTU is directed to submit 6 monthly exception reports in case of mismatch to CEA and Commission.
- d. The importance of matching systems at State level to be raised at Forum of Regulators so that necessary action may be taken at their level also.
- e. CTU is directed to carry out a nationwide study to assess the requirement of SPS and dynamic control mechanism including SVCs, STATCOMs, etc., including within the State Sector and its proposed funding mechanism and submit a report within 6 months of issue of this Order to CEA and Commission.
- f. CTU is directed that the agenda of transmission capacity enhancement in the existing systems (Central as well as State Sector) to be taken up at next Standing Committee and submit a report to the Commission within 6 months of issue of this Order. Further the issue of up-gradation shall be taken up in each Standing Committee and report to this effect be filed with NRCE by CTU within 1 month of Standing Committee meeting. CTU is also directed to carry out studies with regards to methods of up-gradation of existing system, introduction of new technology in consultation with CEA and CERC within 3 months of issue of this Order.
- g. NRCE is directed to submit suggestions on changes required in methodology of calculation of ATC/TTC based on recommendations of the consultant within 3 months of this order. NRCE is also directed to consider the aspect of loop flows and counter flows also while submitting its report to the Commission.
- h. CTU is directed to conduct workshops on TTC/ATC for States at regular intervals and submit a 6 monthly report to NRCE in this regard. NRCE to submit yearly exception report to Commission.
- i. CTU is directed to make available the long term studies carried out by it while calculating ATC/TTC on their website for stakeholders.
- j. CTU is directed to file a report on respect of pattern of utilization of transmission system developed for integration of renewable power into the grid within 6 months of issue of this order.
- k. CTU to submit comprehensive study jointly with CEA and NLDC for sitting, sizing and implementation prioritization of Phase Shift Transformer (PST) within 3 months of the issue of this order.
- l. CTU to deliberate along with CEA on the issue of MILP based transmission planning or any other formal optimization methodology to be used for network planning along with POSOCO, STUs and other stakeholders at RPCs and CTU to file the conclusions at RPC providing suggestion on optimization tool for network planning to used in the Indian context within 6 months of date of issue of this order.

*m. NPC to explore the use of probabilistic based load forecasting in Indian context and submit a report to the Commission within 6 months of issue of this Order.*

*n. Improvements with regards to availability of data and its format to be discussed at NRCE and report in this regard is to be submitted Commission within 6 months of issue of this Order.*

*o. NRCE is directed to discuss the implementation framework for hourly declaration of ATC/TTC and submit a 6 monthly progress report to Commission.*

*p. NRCE should ensure the implementation of dynamic line rating within six months of the date of issue of this Order and submit a report to the Commission within 15 days thereafter.*

*q. POSOCO to file the referred "Ready Reckoner on transfer capability to manage contingency situations in the grid in real-time to effect faster revisions of transfer capability in real-time" within 15 days of issue of this Order.*

*r. The reliability percentage of a SPS Scheme to be considered while calculating TTC shall be discussed at RPC forum. Effective measures should be taken to expedite ISTS and associated intra-State Transmission System to reduce dependency on SPS for safe and reliable system operation.*

*s. RPCs should ensure the reassessment and implementation of identified islanding schemes after deliberation with stakeholders on the recommendations of the consultant. RPCs to identify additional islanding schemes, as required, periodically.*

*t. RPCs are directed to ensure that periodic audit of relays/protection system is being carried out and file 6 monthly exception reports to Commission. RPCs are directed to bring out a protocol for checking the relay setting, ensuring healthiness of existing protection system and periodicity of carrying out this exercise and file compliance report in this regard within 3 months of issue of this order. RPCs to take up the issue of protection audit and relay setting in transmission system/distribution system within States. The issue should also be raised at Forum of Regulators so that necessary action may be taken at their level also. RPCs should re-assess the existing SPS in consultation with stakeholders at RPC Forum.*

SRPC had furnished the status update to Hon'ble CERC vide letter dated 19.12.2018 (**Annexure-XXXI**) as had been sought.

- In compliance of Commission's order dated 26.03.2018 in Petition No.9/SM/2015, SRLDC would furnish details of ISTS SPSs while SLDCs to furnish for other intra-state SPSs (number of correct operations of SPSs, number of mal-operations of SPSs, along with relief details, generation backing down etc). Information is to be submitted along with OCC details on a monthly basis.
- Islanding schemes in SR (Ramagundam, Chennai, Neyveli and Kudankulam) had been revisited and finalized considering addition of new generation & transmission elements. SRPC vide letter dated 14.12.2018 had requested for implementation of the revised Islanding Schemes. Subsequently Simhadri Islanding scheme had been worked out and is under discussion
- Detailed reply with regard to point (t) had been furnished.

Subsequently draft Islanding scheme for Simhadri (including Vijayawada) is under finalization.

## 21.3 Upcoming inter-regional transmission schemes

21.3.1 Updated status is furnished below please:

S.No.	Transmission Element	Remarks
a)	WR-SR 6000 MW HVDC Bipole Link [Raigarh (Chhatisgarh) - Pugalur-Trichur (TN/KER)]	<b>PGCIL (November 2018):</b> November 2019 Pugalur – Trichur : expected by Apr 2020
	<b>33<sup>rd</sup> TCC:</b> Progress in Tamil Nadu very slow due to RoW issues. Issue taken up with State administration and project is under review by PMO under PRAGATI.	
b)	765 kV Angul - Srikakulam PS D/C Corridor	Main corridor commissioned. Other associated elements by July 2018.
	<b>Srikakulam PS and Garividi- Srikakulam PS commissioned in Aug 2018</b>	
c)	Additional inter-Regional AC link for import to Southern Region, i.e., Warora - Warangal - Hyderabad-Kurnool 765 kV link	<b>TBCB, PFCCCL- BPC</b> Transmission Licensee : Warora-Kurnool Transmission Limited (WKTL)
	<b>32<sup>nd</sup> TCC:</b> There was a Meeting held to consider preponing of Hyderabad-Kurnool line. It was concluded that further study may be required before concurring for this preponement. One more Meeting was to be held. <b>CEA (Nov 2018): Nov 2019.</b> <b>PGCIL (Nov 2018): Bay works at Hyderabad (Maheshwaram), Kurnool and Warangal expected by Nov 2019.</b>	
d)	System strengthening within SR for transmitting power beyond Vemagiri	<b>TBCB- RECTPCL-BPC</b> Project has been awarded to PGCIL under TBCB, and was expected by April 2019.
	<b>PGCIL (Nov 2018):</b> April 2019 <b>CEA (Nov 2018):</b> April 2019 <b>POSOCO's Operational feedback for the quarter July to Sep 2018</b> The import capability of Southern Region can be increased and need to be expedite: a)765 kV Vemagiri – Chilkaluripeta D/C	

21.3.2 Updated detailed status of upcoming inter regional scheme is furnished at **Annexure-XXXII**.

## 21.4 Pending transmission elements in WR and SR for proper utilization of 765 kV Raichur- Sholapur line (Out of planned 18 elements)

21.4.1 Updated status of pending transmission elements in WR and SR for proper utilization of 765 kV Raichur - Sholapur lines (out of planned 18 elements) is furnished below please:

Sl. No	Name of Transmission Element
1	<b>400 kV Tumkur-Yelahanka D/C line ; PGCIL (131 Ckm)</b>
	<b>PGCIL (Nov 2018): Mar 2019; Severe ROW in Karnataka. Issues are being</b>

	resolved with State District Administration. <b>CEA (Nov 2018): Dec 2018;</b> Severe ROW in Karnataka. Issue are being resolved with the help of administration. <b>33<sup>rd</sup> TCC : Expected completion: Dec'18</b>
2	<b>220 kV Tumkur – Antharasana Halli D/C ;KPTCL;</b> LOA placed on 18.03.15 with 18 months completion schedule 33 <sup>rd</sup> TCC: Partly commissioned on 12.01.2018. 7 Locations pending. KIADB to acquire land and hand it over KPTCL.
3	<b>220 kV Tumkur (400 kV) S/S – 220 kV Tumkur S/S D/C;</b> KPTCL; LOA placed on 18.03.15 with 18 months completion schedule 33 <sup>rd</sup> TCC: 202/209 stub concreted, 202/209 towers erected, 83.6/88.962 CKms stringing completed. 7 Locations pending. KIADB to acquire land and hand it over KPTCL.
4	<b>220 kV Yelahanka (400/220 kV) S/S- 220 kV Yelahanka S/S D/C Cable;</b> KPTCL (11.75 Ckm) Declared on COD wef 14.09.2018 by KPTCL

## 21.5 Status of important Transmission Systems

21.5.1 Updated status of associated links is furnished below please:

Transmission Elements	
1	<b>765 kV S/C Salem PS (Dharmapuri) - Madhugiri P S line</b> (initially charged at 400 kV) ; 243 ckm; PGCIL <b>COD wef 01.11.2018</b>
2	<b>Salem New – Madhugiri 765 kV S/C line;</b> 219 ckm ; (PNMTCL) (A subsidiary of PGCIL) <b>PGCIL (Nov 2018):</b> Severe RoW being faced in Karnataka, issue highlighted to PMO level. ROW being resolved with the help of state administration. <b>CEA (Nov 2018): Dec 2018;</b> severe ROW being faced in Karnataka portion. Issue highlighted to PMO (Prime Minister Office) level. ROW getting resolved with the help of administration. <b>Operational Feedback (July –Sep 2018):</b> Will decrease loading on 400 kV lines at Kolar-Hosur-Salem and improve reliability of power transfer between S1-S2 corridor.
3	<b>Transmission evacuation system for HNPCL (1,040 MW) Power Plant</b> APTRANSCO ; 400 kV TM D/C Kamavarapukota – Vemagiri; 185 ckm 31 <sup>st</sup> TCC: Alternate options being explored, would be taken up with the Standing Committee.
4	<b>Transmission System required for evacuation of power from Kudgi TPS (3x800 MW in Phase-I) of NTPC Limited</b> KPTCL : 220 kV D/C line to Vajramatti: CEA (Nov 2018): Feb 2019 220 kV D/C line to Bijapur:
5	<b>Transmission System for evacuation of power from Singareni Collieries Generating Project (2 x 600 MW)</b> TSTRANSCO : STPP, Jaipur – Jagityal; 139 ckm ; 33 <sup>rd</sup> TCC : August 2018 TSTRANSCO : Jagityal – Nirmal; 148 ckm; 33 <sup>rd</sup> TCC : August 2018

	<p>33<sup>rd</sup> TCC: Sub-station is charged on 07.07.2018 with 2 x 315 MVA PTRs. 3rd PTR is programmed for charging in August'18.</p> <p>400/11 kV Sundilla LI SS is charged on 18.07.2018 by making LILO of ckt-I of 400 kV STPP, Jaipur - Nirmal QMDC line</p> <p>STPP-Sundilla Feeder Bay-1 is charged on 18.07.2018 and STPP-Sundilla Feeder Bay-2 is programmed for charging in August'2018.</p>
6	<p><b>Damaracherla TPP Evacuation</b></p> <p>TSTRANSCO: 400 kV Damacherla TPP – Choutuppal D/C : Sep 2018, 400 kV Damacherla TPP – Dindi D/C : Sep 2018, 400 kV Damaracherla TPP – Jangaon D/C : Sep 2018, 400 kV Damaracherla TPP – Maheswaram (TS) D/C : Sep 2018</p> <p>33<sup>rd</sup> TCC: TSTRANSCO have acquired the land acquisition for construction of 400/220/132 kV Choutuppal SS and the survey works of connected 400 kV lines are under process.</p>
7	<p><b>Bhadradri TPP (Manuguru) (4x270 MW), TSGENCO</b></p> <p>TSTRANSCO: 400 kV Julurupadu SS - Manuguru TPP D/C: 2018-19 (33<sup>rd</sup> TCC: All foundation works completed. Erection and stringing at 3 Nos. locations is held up due to severe ROW issues).</p> <p>400 kV Julurupadu (QM) - Suryapet S/S D/C : Commissioned in Jan 2018</p> <p>Julurupadu S/S 2x 315 MVA : PTRs commissioned in July 2018</p>
8	<p><b>Kothagudem TPS St-VII (1x800), TSGENCO</b></p> <p>TSTRANSCO:</p> <p>400 kV Julurupadu – Jangaon D/C : 33<sup>rd</sup> TCC : 69/175 Kms stringing completed and programmed for charging in Nov'2018</p> <p>Jangaon SS: 33<sup>rd</sup> TCC : Feb 2019</p>
9	<p><b>Transmission system of KPTCL for evacuation of power from Yermarus TPS (2 x 800 MW)</b></p> <p>KPTCL : Gulbarga 400/220 kV substation- 2 x 500 MVA, 33<sup>rd</sup> TCC: DPR approved on 09.03.2018 (to be tendered), Yermarus TPS - Gulbarga 400 kV D/C line (QM), 33<sup>rd</sup> TCC: DPR approved on 09.03.2018 (to be tendered)</p> <p>400 kV SS at Chikkanayakanahalli – 2 x 500 MVA (39<sup>th</sup> SC), 33<sup>rd</sup> TCC: Land identified acquisition of land under progress.</p> <p>LILO of Nelamangala – Talaguppa 400 kV D/C at CN Halli, 33<sup>rd</sup> TCC: Land identified acquisition of land under progress.</p> <p>Termination of 400 kV D/C of Hassan from Nelamangala – Talaguppa at CN Halli 400 kV, Bellary PS - C.N.Hally 400 kV D/C line QM, 33<sup>rd</sup> TCC: The work is split into three parts: (a) 400 kV line from BPS to Rampura Limit : Line work completed, (b) 400 kV line from Rampura limit to Jagalur : Line work is under progress (c) 400 kV line from Jagalur to Chikkanayakanahalli : To be tendered</p> <p>De-link 400 kV S/C RTPS-BTPS-JSW-Guttur with JSW Bus</p> <p>400 kV BTPS-Guttur D/C (QM), 33<sup>rd</sup> TCC: Estimate under preparation.</p>
10	<p><b>Transmission System for Rayalaseema TPS (600 MW)</b></p> <p>APTRANSCO: 400/220 kV, Kalikiri S/S – 2 x 315 MVA: 2018-19: PO is placed in Nov-15. Site handed over on 23.06.2016</p> <p>LILO of Rayalaseema IV-Chittoor 400 kV D/C at Kalikiri: 2018-19</p>
11	<p><b>400 kV Somanahalli- Dharmapuri PS; 243 ckm; PGCIL</b></p>

	<p><b>PGCIL (Nov 2018): Dec 2018;</b> Severe ROW problem faced in Karnataka. ROW issues are being resolved with the support of the State Government.</p> <p><b>CEA (Nov 2018): Dec 2018 -</b> Severe ROW problem faced in Karnataka. With the support of state Govt. ROW issues are being resolved.</p> <p><b>Operational Feedback (July –Sep 2018) :</b> Will decrease loading on 400 kV lines at Kolar-Hosur-Salem and improve reliability of power transfer between S1-S2 corridor.</p>
12	<p><b>400 kV Mangalore (UPCL) -Kasargode-Kozhikode;</b> 33<sup>rd</sup> TCC: NCT in its 1<sup>st</sup> meeting had approved the scheme through TBCB.</p>
13	<p><b>400 kV Edamon-Kochi; 297 ckm; PGCIL</b></p> <p>Being monitored under PRAGATI.</p> <p><b>PGCIL (Nov 2018): Feb 2019</b> (Approved schedule Sept 2019): severe ROW problem. Problem being addressed progressively as per latest Revised G.O. of 30.07.15. Progress also effected also due to heavy rainfall.</p> <p><b>CEA (Nov 2018): Dec 2018 -</b> Severe ROW problem (long pending). Problem being addressed progressively as per latest Revised G.O. of 30.07.15 (compensation to be done on land value, to be finalized by concerned DC with the support of State Govt.). Work is being done with the help of Police protection.</p> <p><b>Operational Feedback (July –Sep 2018) :</b> Would help in relieving 220kV North - South corridor of Kerala</p> <p><b>33<sup>rd</sup> TCC: Expected completion: Mar’19</b></p>
14	<p><b>400 kV Hiriyur – Mysore line; 412 CkM; PGCIL</b></p> <p><b>PGCIL (Nov 2018): Mar 2019;</b> ROW problem affecting the progress</p> <p><b>Operation Feedback (July-Sep 2108) :</b> Will relieve 400kV Hiriyur –Nelamangala D/C line.</p>
15	<p><b>400 kV Pavagada – Devanahalli D/C line; (139.30 D/C and 13.20 M/C); PGCIL</b></p> <p><b>PGCIL (Nov 2018): Feb 2019;</b> progress being affected due to ROW</p> <p><b>33<sup>rd</sup> TCC: Mar’19 – Slow progress due to ROW issues</b></p>
16	<p><b>FSC at Pavagada; PGCIL</b></p> <p><b>PGCIL (Nov 2018):</b> Sept 2019</p>
17	<p><b>2 x 500 + 1 x 500 MVA ICTs at Pavagada; PGCIL – Phase-II (Part-A)</b></p> <p>PGCIL (Nov 2018): Feb 2019</p>
18	<p><b>400 kV Madakkathara (Trichur) – Areakode (Kozhikode) - Kasaragode</b></p> <p>KSEBL :</p>
19	<p><b>Telangana STPP - I (2 x 800 MW) Power Evacuation Scheme</b></p> <p>400 kV NTPC Common Point - Sircilla (Schedule I) QM DC Line :2018-19</p> <p>400 kV Sircilla NTPC Common Point - Narsapur (Schedule II) QM D/C: 2018-19</p> <p>400 kV Gajwel - Ramadugu Ckt 1: 2108-19</p> <p>400 kV Telangana STPP (NTPC) - Ramadugu QM DC Line: 2018-19</p>

## 21.6 Associated Transmission Evacuation Schemes in Tamil Nadu

Updated status of the following stations, evacuation schemes finalized in the 37<sup>th</sup> SCSPSR, which were modified in the following Standing Committee Meetings, is given below:



<b>Generating Station</b>	<b>Likely COD</b>	<b>Evacuation Status</b>
Ennore TPS Expansion – 1 x 660 MW	33 <sup>rd</sup> TCC: 2021	
Ennore SEZ (NCTPS Stage-IV) – 2 x 660 MW	33 <sup>rd</sup> TCC: 2019-20	
NCTPS Stage III – 1 x 800 MW	<b>1<sup>st</sup> SRSCT: Aug 2019</b>	<b>1<sup>st</sup> SRSCT:</b> Contingency measure i) LILO of Manali – Alamathy 400 kV line at North Chennai 765/400 kV Pooling station. ii) This LILO arrangement would be made by utilizing a portion of 765 kV North Chennai PS – Ariyalur D/C line.
Ennore TPS Replacement – 1 x 660 MW	33 <sup>rd</sup> TCC: 2022-23	<b>41<sup>st</sup> SCPSPSR: 2020</b>
SEPC (1x525)	October 2018	<b>41<sup>st</sup> SCPSPSR: Require start up power for its Auxiliaries by April 2018.</b>
SEPC-Thennampatty 400/230/110 kV	<b>41<sup>st</sup> SCPSPSR : April 2018</b>	<b>SEPC- Ottapidaram 400kV (Regular evacuation)</b>
765/400 kV, 2 x 1500 MVA Ariyalur SS	31.3.2019	Work awarded to M/s BHEL on 31.03.2017.
765/400 kV, 3 x 1500 MVA North Chennai PS (GIS)	<b>CEA (Nov 2018): March 2020</b>	Work awarded and under progress. Site grading under progress. Piling for compound wall and retaining wall in progress. Casting of pile for 765 KV GIS building in progress.
765/400 kV, 2 x 1500 MVA Coimbatore SS	2020-21	Administrative approval accorded. Alternate land is to be identified.
765 kV Ariyalur – Thiruvalem (PG)	CEA (May 2018): June 2018	Work awarded to M/s Transrail. Works are under progress
765 kV North Chennai PS - Ariyalur	CEA (May 2018): Sep 2019	Work under progress.
400 kV Ennore SEZ-North Chennai PS	CEA (Nov 2018): Mar 2019	Work awarded to Transrail on 13.08.18 and 2 loc excavation is under progress. One loc concrete under process.. Check Survey in Progress. Excavation one number under progress
400 kV Ennore SEZ- Ennore to ETPS Expn	CEA (Nov 2018): Apr 2019 (Original schedule)	Work awarded to Transrail on 13.08.18 2 loc excavation is under progress. One loc concrete under process. Check Survey in Progress.

		Excavation one number under progress.
400 kV ETPS Expn – North Chennai PS	CEA (Nov 2018): Sep 2018	Work awarded to Transrail on 13.08.18. Check Survey in Progress. Excavation one number under progress.
Interconnection from common point of SEZ – ETPS Expn to NCTPS Stage-II and LILO of NCTPS-II – SV Chatram 400 kV MC between location No.21 & 22		

## 21.7 Status of Implementation of downstream network by State utilities associated with ISTS substation of POWERGRID

Sl. No	Name of Substation	MVA Capacity	220kV Bays	Expected Schedule of Substation	Remarks
1	Tumkur (Vasantnarsapur)	2 x 500	6	Commissioned	Construction of downstream T/L for 6 Nos 220 kV bays to be expedited by KPTCL.
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR :</b> 4 Nos 220kV downstream links i.e. Tumkur-Anthranasahalli 220kV D/C line & Tumkur- Madhugiri-II 220kV D/C line expected by Sep'18. Balance 2 Nos 220 kV downstream links yet to be taken up. <b>33<sup>rd</sup> TCC: Anthranasahalli 220 kV D/C line &amp; Tumkur- Madhugiri-II 220 kV D/C line expected by Sep'18. Balance 2 Nos 220 kV downstream links yet to be taken up.</b>				
2	Yelahanka	2 x 500	10	Commissioned	Construction of downstream T/L for 10 Nos (6 bays under ISTS) 220 kV bays to be expedited by KPTCL.
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 2 Nos 220 kV downstream T/L cable to Yelahanka DG plant expected by Jun'18. Balance 4 Nos 220 kV downstream links yet to be planned.				
3	Bidadi	2 x 500	6	Commissioned	Construction of downstream T/L for 4 Nos 220 kV bays to be expedited by KPTCL.
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 2 Nos 220 kV downstream links i.e Bidadi – Magadi 220 kV D/C line expected by Mar'19. 2 Nos 220 kV downstream Link Bidadi-Kumbalgodu expected by Mar'20.				
4	Hiriyur	2 x 315	6	Commissioned	Construction of downstream T/L for 2 Nos 220 kV bays to be expedited by KPTCL.
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 2 Nos 220 kV downstream links i.e. Hiriyur-Hiriyur (KPTCL) 220 kV S/C line & Hiriyur-Chitradurga 220 kV S/C line expected by Mar'19.				
5	Hassan	2 x 315	6	Commissioned	Construction of downstream T/L for 2 Nos 220 kV bays to be expedited by KPTCL.
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 2 Nos 220 kV downstream T/L i.e. LILO of Hassan(KPTCL) – Nittur S/c expected by Mar'19.				
6	Kolar	2 x 500	6	Commissioned	Construction of downstream

					T/L for 2 Nos 220 kV bays to be expedited by KPTCL.
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 2 Nos 220 kV downstream links Kolar-Gollahalli 220kV D/C line expected by Mar'19.				
7	Karaikudi	2 x 315	4	Commissioned	Construction of downstream T/L for 1 Nos 230 kV bay to be expedited by TANTRANSCO
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 1 Nos 230 kV downstream T/L Karaikudi – Sembatty 220 kV S/c line expected by May'18.				
8	Hosur	3 x 315	6	Commissioned	Construction of downstream T/L for 2 Nos 230 kV bays to be expedited by TANTRANSCO
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 2 Nos 230 kV downstream T/L Hosur -Shoolagiri 220 kV D/C line expected by Jul'18.				
9	Kozhikode	2 × 315 + 1 x 500	4	Commissioned	Construction of downstream T/L for 1 No 220 kV bay to be expedited by KSEBL
	<b>Deliberations in 42<sup>nd</sup> SCPSPSR:</b> 1 Nos 220 kV downstream T/L to Kozhikode(KSEB) expected by Mar'19.				

The issue was again noted in 1<sup>st</sup> SRSCT held on 07.09.2018.

## 21.8 Operational Feedback

21.8.1 NLDC vide letter dated 25<sup>th</sup> October 2018 (available on NLDC website) had highlighted following transmission constraints as part of Operational Feedback for the quarter July–September 2018, in respect of SR:

### a) Talcher-Kolar Bipole capacity

NLDC vide letters dated 02.02.2019 & 21.09.2018 (**Annexure-XXXIII**) had communicated regarding maintaining the healthiness of HVDC Talcher- Kolar by pole for operation at maximum rated capacity. SR-II vide letter dated 09.10.2018 (**Annexure-XXXIV**) had informed that the system can be operated on extended mode of operation or emergency loading upto 2,500 MW subject to system constraint as already being followed. It was requested that the link capacity may be used optimally to have enhance / longer life of the major equipments of the system.

### b) Transmission Line constraints:

- 400 kV Nellore Pooling Station -Nellore D/C line
  - *1<sup>st</sup> SRSCT: SRLDC requested to expedite the commissioning of bypassing arrangement for establishment of Nellore PS – Thiruvallam 400 kV quad D/Cline.*
  - *SRLDC vide letter dated 05.12.2018 had requested SR-I to initiate action in this regard. SR-I vide letter dated 28.12.2018 had informed that the interim arrangement by opening the Main Circuit Breakers of both lines of 400 kV Nellore substation can be implemented on receipt of SRLDC code on SOS basis (Copy of letters at **Annexure-XXXV**).*
- 400 kV Udumalpet- Palakkad D/C line
  - *KSEBL had stated that there was no constraint on this line. SRLDC stated that they would examine the matter.*

- *1<sup>st</sup> SRSCT: POWERGRID may expedite the commissioning 400 kV Edamon-Cochin D/C line for relieving the constraints.*
- 400 kV Hiriyur-Nelamangala D/C line
  - *400kV CN Halli – Mysore D/C & 400kV Hiriyur – Mysore D/C would relieve the line loading of 400 kV Hiriyur – Nelamangala D/C. The same may be commissioned at the earliest as it would relieve the line-loading problem.*
  - *1<sup>st</sup> SRSCT: SRLDC requested KPTCL to expedite the implementation of Transmission system planned for Evacuation of YTPS generation.*
- 400 kV NLCTS2 – Puducherry S/C Line
  - *During high wind season, the 400 kV NLC TS2 – Puducherry S/C is carrying more than 600 MW.*
- 220 kV Bangalore Metro Network
 

*33<sup>rd</sup> TCC: KPTCL informed that they had planned the following 220 kV sub-stations and lines which would provide relief to the existing congestion in the transmission network of Bengaluru:*

  - i. 2x500 MVA, 400/220 kV GIS sub-station at Peenya*
  - ii. 2x500 MVA, 400/220 kV sub-station at Devanahalli(Under 2000 MW Tumkur ultra-mega solar park scheme)*
  - iii. 2x500 MVA, 400/220 kV sub-station at Mylasandra.*
  - iv. 2x500 MVA, 400/220 kV sub-station at Dommasandra*
  - v. 2x150 MVA, 220/66kV GIS station at ITI*
  - vi. 2x150MVA, 220/66/11kV GIS station at Koramangala*
  - vii. 2x150MVA, 220/66/11kV substation at Kumbalgodu*
  - viii. 2x150MVA, 220/66/11kV GIS substation at Brindavan Alloys*
  - ix. 2x150MVA, 220/66/11kV substation at Exora*
  - x. 2x150MVA, 220/66/11kV GIS substation at HBR Layout*
  - xi. 2x150MVA, 220/66/11kV GIS substation at Sahakari Nagar*
  - xii. 2x150MVA, 220/66/11kV substation at Manyata Tech Park*
  - xiii. 2x150MVA, 220/66/11kV sub-station at Whitefield.*
  - xiv. 220/66/11kV Sub-Station at Nagarbhavi, Bangalore North Taluk*
  - xv. 2x150MVA, 220/66/11kV substation at Nelamangala.*
  - xvi. 220 kV DC line from Peenya to NRS in the existing corridor of 66 kV line.*
  - xvii. 220 kV DC line from Peenya to Somanahalli in the existing corridor of 220 kV SC line.*
  - xviii. 220 kV 1000 Sq.mm UG Cable from Bidadi to Vrushabavathi Valley via proposed 220kV Kumbalgodu.*
  - xix. Construction of 220 kV multi-circuit, multi-voltage line between 400/220 kV Somanahalli and 220/66 kV Subramanyapura s/s in the existing 66 kV line corridor.*

*1<sup>st</sup> SRSCT : KPTCL has to strengthen the 220kV Network in Bangalore metro area to meet future loads*
- Overloading of 230 kV Shoolagiri-Hosur (TN)-Yerrandahalli-Somanahalli S/C line
 

*33<sup>rd</sup> TCC: KPTCL informed that after commissioning of 400/220 kV Mylasandra, the loads of 220 kV Yerandanahalli sub-station would be taken on Mylasandra.*

*1<sup>st</sup> SRSCT : TANTRANSCO had informed that 230 kV Shoolagiri-Hosur 2<sup>nd</sup> Circuit is under tendering stage and they will expedite for early commissioning.*
- Constraints in Nagjheri PH evacuation
 

*1<sup>st</sup> SRSCT : The committee recommended for Re-conductoring of the lines with HTLS conductor.*
- Overloaded 230 kV Lines in Tamil Nadu

- 220 kV Hyderabad Metro Network

*1<sup>st</sup> SRSCT :TSTRANSCO informed that they are in the process of re-conductoring the highly loaded corridors*

#### c) **ICT Constraints**

- 400/220 kV 2 x 315 MVA ICTs at Gazuwaka
  - **41<sup>st</sup> SCPSPSR:** *After deliberations, members had agreed for an additional 400/220kV, 1x500 MVA ICT at Gazuwaka substation as ISTS.*
  - *1<sup>st</sup> SRSCT : The implementation of the same has been entrusted to POWERGRID in the 2<sup>nd</sup> Empowered Committee on Transmission held in Aug, 2018. It was also informed that the award activities of the same are under progress.*
- 400/220 kV 3 x 315 MVA ICTs at Vemagiri
  - **41<sup>st</sup> SCPSPSR:** *APTRANSCO had to look into the issue and may plan additional ICTs/ replacement of ICT by higher capacity.*
  - *1<sup>st</sup> SRSCT :APTRANSCO has to look into the matter and may plan for addition of ICTs.*
- 400/220 kV 3 x 500 MVA ICTs at Nelamangala
  - **33<sup>rd</sup> TCC:** *Devanahalli (under 2,000 MW Pavagada scheme) - Relieve loadings of 400/220 kV ICTs at Nelamangala, Hoody and Hiriyur sub-stations. Peenya & Hulyurdurga-- Relieve loadings of 400/220 kV ICTs at Nelamangala sub-station.*
  - *1<sup>st</sup> SRSCT :KPTCL was requested to expedite implementation of 220kV evacuation/transmission lines from 400/220 kV Tumkur (Vasantnarsapur), 400/220 kV Yelahanka and 400/220kV Bidadi to relieve transformer loadings at Nelamangala SS, Somanahalli SS and Hoody SS*
- 400/220 kV 3 x 500 MVA ICTs at Hoody (In the special meeting held on 09.07.2018 to discuss pending issues in respect of Karnataka, KPTCL had informed that with the commissioning of Yelahanka S/S, the loading was likely to come down)
  - **33<sup>rd</sup> TCC:** *Devanahalli (under 2000 MW Pavagada scheme) - Relieve loadings of 400/220 kV ICTs at Nelamangala, Hoody and Hiriyur sub-stations. Mylasandra - Relieve loadings of 400/220 kV ICTs at Hoody and Somanahalli sub-stations.*
  - *1<sup>st</sup> SRSCT :KPTCL was requested to expedite implementation of 220kV evacuation/transmission lines from 400/220 kV Tumkur (Vasantnarsapur), 400/220 kV Yelahanka and 400/220kV Bidadi to relieve transformer loadings at Nelamangala SS, Somanahalli SS and Hoody SS*
- 400/220 kV 2 x 315 MVA ICTs at Hiriyur
  - **33<sup>rd</sup> TCC:** *Devanahalli (under 2000 MW Pavagada scheme) - Relieve loadings of 400/220 kV ICTs at Nelamangala, Hoody and Hiriyur sub-stations. Jagalur- Relieve loadings of 400/220 kV ICTs at Guttur and Hiriyur sub-stations.*
- 400/220 kV 2x500 MVA ICTs at Kaiga
- 400/230kV 2X315MVA ICTs at Thiruvallam SS
  - *1<sup>st</sup> SRSCT : TANTRANSCO informed that 3<sup>rd</sup> ICT of 500MVA has already been agreed in 42<sup>nd</sup> meeting of Standing committee and the implementation activities are in progress.*

#### d) **Other issues:**

- Vallur TPS (1,500 MW) and NCTPS-II (1,200 MW) generation is connected at 400 kV Bus and no 230 kV path is available to give start up supply in case of Blackout. So there is a need to provide 230 kV path.
- Kudankulam Nuclear Power Station (2 x 1,000MW) generation is connected at 400 kV Bus and on 230kV side it has to depend on small Hydro generation for startup

supply in case of blackout. The same needs to be enhanced.

- National HVDC project of Lower Sileru-Barasoor line right of way has to be used for New inter connection between SR & NEW Grids.
- Due to non-commissioning of NGR bypass scheme, the conversion of line reactor into bus reactor is not possible in the following lines, unless line shutdown is taken and jumper rearrangement works are done which will take about 3 – 4 hours:
  - 765 kV Nagapattinam – Dharmapuri 1 & 2 (Charged at 400kV)
  - 765 kV Tuticorin PS – Dharmapuri 1 & 2 (Charged at 400kV)
- Presently one line each of 765 kV Kurnool-NPS DC and 765 kV Kurnool-Thiruvalam D/C are kept open due to high voltage. Some of the 765kV transmission lines in Southern Region are not fully compensated for Reactive power thus resulting in High Bus Voltages.
- 230 kV MAPS – Bhavini line (80 MVA) is used for only startup purpose is always kept open. 230 kV Acharapakkam – Villupuram is open to avoid over-loading of 230 kV Kalpakkam – Acharapakkam S/C line. 230 kV MAPS is left with only two sources i.e. 230 kV MAPS - Arni S/C & 230 kV MAPS - SP Koil D/C.

### 21.9 Rejuvenation and Parallel operation of 220 KV System on NEW-SR Corridor

NLDC vide letter dated 09.11.2018 (**Annexure-XXXVI**) had requested that the following lines be brought into service:

- 220 KV Chikkodi - Talangade Line
- 220 KV Chikkodi - Mudshingi Line
- 220 KV Upper Sileru - Balimela Line

Subsequently, a VC was held on 03.12.2018 and a study group meeting was also held on 24.12.2018 (MOM at **Annexure-XXXVII**).

### 21.10 FSC performance

With regard to FSC at Cuddapah, prolonged outage the following was noted in 34<sup>th</sup> SRPC:

- PGCIL had stated that the issue is being followed up with M/s Siemens to get it rectified and it can be brought back in service. Other issue was to handle the commercial implications in case the asset is decapitalized. Since this was less than 25 years there was some cost which was yet to be recovered. They were planning a meeting with M/s Siemens and would revert back.
- SRPC had observed that additional major expenditure was not recommended and PGCIL could take same into account while finalizing future course of action

In the POSOCO's Operational Feedback (July-Sep 2018) the following had been noted:

FSC	% Outage
400 KV-Gooty-Nelamangala-1 FSC @ Gooty	30%
400 KV-Gooty-Somanhalli-1 FSC @ Gooty	0.25%
400 KV-Cuddapah –N'Sagar PG-2 FSC @ Cuddapah	1%
400 KV- Cuddapah –N'Sagar PG-1 FSC @ Cuddapah	42%

## 22. SCHEDULING OF MACHKUND AND TB DAM

22.1 The issue regarding non-scheduling of Machkund and TB Dam power by APSLDC to Telangana from 11.06.2017 had been taken up with APTRANSCO by TSTRANSCO.

22.2 The following had been noted in the 34<sup>th</sup> Meeting of SRPC:

- CMD, APTRANSCO & MD, APGENCO had informed that they were willing to schedule these inter-state projects. However, TS Discoms should give categorical assurance and some comfort that payments due for these two stations would be made without linking with any other payment. For these two projects, there could be some sort of mechanism to ensure that payment comes on regular basis.
- Director (P & GO), TSTRANSCO had stated that the CMD, TSTRANSCO would be appraised in this matter and they would revert back.

22.3 TSTRANSCO vide letter dated 23.10.2018(**Annexure-XXXVIII**) had once again requested APTRANSCO to arrange to schedule the power from the above generating stations to TS Discoms immediately.

### **23. NEW PROJECTS OF NTPC, NLC, NPCIL, JOINT VENTURE & UMPP**

**23.1 Schedule of synchronizing/commissioning of the new projects of NTPC, NLC, NPCIL, and BHAVINI & UMPP is furnished below please:**

Station	Unit	Installed Capacity MW	Scheduled date of synchronizing / commissioning	Remarks
<b>NTPC</b>				
Kudgi Stage-I	TPS III	800	<b>Declared on COD on 15.09.2018</b>	
Telangana Phase I	STPP	2 x 800	<b>33<sup>rd</sup> TCC:</b> U-I CoD August 2020 (Synchronization by Mar 2020) U-2 CoD Nov 2020 (Synchronization by May 2020)	<b>33<sup>rd</sup> TCC:</b> MoP has allocated 85 % to Telangana and 15% retained as unallocated subjected to approval of competent Authority.
Pudimadaka	AP	4 x 1000	52 Months from Zero Date	Zero date yet to be finalized. AP had requested NTPC to firm up the zero date at the earliest.
		<b>31<sup>st</sup> TCC:</b> NTPC had informed that the domestic coal was yet to be tied up. Within two months, the status would be communicated. CTU informed that there was no connectivity / LTA application pending with them. <b>33<sup>rd</sup> TCC:</b> In response to GoK's information sought, NTPC had informed that MoP has allocated 50% to home state (AP) and balance allocation has to be made.		
<b>NLC</b>				
New Power Project	Thermal I	500	150 <sup>th</sup> OCC: Boiler Lighting up by	

			December 2018, Synchronization by Jan 2019 and COD by March 2019.	
	II	500	150 <sup>th</sup> OCC: Boiler Lighting up by March 2019 & COD by June 2019.	
<p><b>CEA (Nov 2018)/PGCIL (Nov 2018): NNTPS – Ariyalur – July 2019</b></p> <ul style="list-style-type: none"> <li>• SR-II vide letter dated 10.09.2018 had requested NLCIL to expedite the work and complete the bays at the earliest.</li> <li>• As LTA application for NNTPS is only for a quantum of 334 MW, SRPC vide letter dated 14.09.2018 had requested SRLDC to kindly intimate their views.</li> <li>• SRLDC vide letter dated 21.09.2018 had clarified that in Special cases and based on request come from beneficiary, appropriate adhoc action may be agreed among the associated agencies and SRPC in the interest of the grid. SRLDC may agree to such arrangements including scheduling of power by SRLDC which is in line with existing practice/Clause relevance to CERC orders.</li> <li>• Special meeting on 23.10.2018 and a VC on 09.11.2018 were held to deliberate on the issues w.r.t NNTPS (Minutes available on SRPC website).</li> <li>• NLCIL informed that the charging of the LILO is expected by 3<sup>rd</sup> week of December 2018. For reduction of Auxiliary Consumption quantum from approved LTA quantum (334 MW) NLCIL had stated that they would take up the issue appropriately.</li> <li>• SRPC vide letter dated 22.10.2018 (<b>Annexure-XXXIX</b>) had addressed to NLC and NLDC regarding the LTA quantum. The reply of CTU dated 14.11.2018 in this regard is at <b>Annexure- XL</b> Further, the issue of application of losses was taken up with NLDC vide SRPC letter dated 16.11.2018 (<b>Annexure-XLI</b>)</li> <li>• <b>In Petition No. 233/TT/2018 it was noted, ‘ The Commission desired to hear NLC before taking any decision with regard to the COD of the instant assets under proviso (ii) of Regulation 4(3) of the 2014 Tariff Regulations. Accordingly, the Commission directed NLC to file its reply especially on the petitioner’s prayer for approval of COD under the above said regulation.’</b></li> </ul>				
TPS –II 2 <sup>nd</sup> Expn	1& 2	2 x 660		42 <sup>nd</sup> SCSPSR: Seeking connectivity for 1320 MW w.e.f. 01.04.2021 147 <sup>th</sup> OCC: EAC had recommended for environmental clearance. All the SR constituents had



				signed the PPA. Works could be awarded in 3-4 months. <b>1<sup>st</sup> SRSCT:</b> In place of proposed 400 kV S/S at Neyveli, it was agreed to establish 400/230-110 kV substation by upgradation of the existing Cuddalore 230 /110 kV substation by TANTRANSCO.
<b>NPCIL</b>				
KKNPP	3 & 4	2 x 1000	<b>32<sup>nd</sup> TCC</b> <b>U3: 2023</b> <b>U4: 2024</b>	<b>41<sup>st</sup> SCPSPSR:</b> CTU had informed that they had not received any LTA application from NPCIL for Kudankulam - 3 & 4 units. Any system strengthening would be planned on receipt of the LTA application based on proper studies.
<b>BHAVINI</b>				
Kalpakkam (PFBR)	I	500	<b>33<sup>rd</sup> TCC: March 2019</b>	
	147 <sup>th</sup> OCCM: TANTRANSCO informed that Kanchipuram SS had been commissioned on 07.09.2018. Hon'ble CERC in its ROP (Date of hearing) in Petition No 99/TT/2018 Petitioner (PGCIL) had stated <i>He submitted that tariff for Asset-III: 230 kV DC Kalpakkam PFBR Kanchipuram transmission line was not allowed by the Commission in order dated 29.4.2015 and they have filed an appeal before Hon'ble APTEL and APTEL has remitted the matter to the Commission for fresh consideration.</i>			
<b>UMPP</b>				
Krishnapatnam		3960 (6 x 660)	<b>32<sup>nd</sup> TCC:</b> AP informed that after discussing with the beneficiaries, an Expeditious Petition was contemplated before Hon'ble Delhi High Court (before approaching Hon'ble Supreme Court). The petition was likely to be heard in the month of March 2018.	
Cheyyur		4000		New bids would be called
	<b>33<sup>rd</sup> TCC:</b> In line with GOI policy for using domestic coal in place of imported coal, the bidding documents are being revised and the bidding process will be commenced by Ministry of Power.			

### 23.2 Establishing of Solar and Wind Hybrid Plant in place of Kudgi-II

PCKL vide letter dated 23<sup>rd</sup> November 2018 had stated that NTPC is planning to establish solar and wind hybrid plant in the Kudgi complex, instead of installing 2 x 800 MW thermal units. NTPC had sought in principle approval from the beneficiaries to go ahead with the proposals. Since all states of SR are having share from Kudgi NTPC station, this matter needs views/suggestions of all the beneficiaries.

The issue was discussed in Special SRPC meeting held on 17.12.2018 (MoM available at SRPC website. After deliberations, it was concluded that the states were passing through a transition phase and any requirement of additional thermal power could only be assessed and firmed up in the coming one to two years. There were several old thermal plants which were not likely to comply to new environmental norms and may be required to be phased out. Kudgi being a new plant would comply to new environmental norms. Also, flexible thermal plants would be required to address the variability and intermittency of RE generation targeted to come up in Southern Region. The constituent states also opined that any shifting of the hybrid in future may not be a viable option. Thus it was agreed that need for additional thermal power could only be assessed and firmed up in the coming one to two years. However, the states were not in favour of the Hybrid RE project that had been proposed. In this regard, copy of letter dated 26<sup>th</sup> December 2018 from MD, PCKL is enclosed as **Annexure-XLII**

### 24. NEW PROJECTS OF STATE SECTOR & IPP

24.1 Updated status of new projects of State sector is furnished below, please:

Sl No	Name of project	Located in	Capacity in MW	Commissioning Schedule /Remarks
1	Rayalaseema TPS ST-IV	AP	1 x 600	2018-19
2	Dr. NTPS, Vijayawada	AP	1 x 800	2018- 2019
3	Krishnapatnam Stage II (U3)	AP	1 x 800	
4	Polaki	AP	4000 (5 x 800 MW)	
5	Edlapur	KAR	1 x 800	
6	North Chennai Stage III	TN	1 x 800	<b>1<sup>st</sup> SRSCT : Aug 2019</b>
7	North Chennai Stage IV	TN	2 x 800	33 <sup>rd</sup> TCC: 2020-21
8	Ennore TPS Exp	TN	1 x 660	33 <sup>rd</sup> TCC: 2021
9	Ennore replacement	TN	1 x 660	33 <sup>rd</sup> TCC: 2022-23
10	Udangudi Stage I	TN	2 x 660	33 <sup>rd</sup> TCC: 2021-22
11	Udangudi Stage II	TN	2 x 660	33 <sup>rd</sup> TCC: 2023-24
12	Udangudi Stage III	TN	2 x 660	33 <sup>rd</sup> TCC: 2024-25
11	Uppur TPP (TBCB)	TN	2 x 800	33 <sup>rd</sup> TCC: 2021-22
12	Manuguru PPP	Telangana	4 x 270	33 <sup>rd</sup> TCC :

				U1: April 19 U2: June 19 U3: Aug 19 U4: Oct 19
13	Kakatiya TPP Stage III	Telangana	1 x 800	Not decided
14	Kothagudem TPS Phase VII	Telangana	1 x 800	Declared on COD wef 26.12.2018
15	Damaracherla (Yadadri)	Telangana	5x800	U 1 & 2: 33 <sup>rd</sup> TCC : Commissioning Oct 2020 U 3 – 5 33 <sup>rd</sup> TCC : Commissioning Oct 2021

24.2 Updated status of new projects of IPPs is furnished below please:

Sl No.	Name of project	Located in	Capacity in MW	Commissioning Schedule /Remarks
1	Meenakshi PH-II	AP	2 x 350	Unit 3 → Full Load on 15.04.2018, Unit 4 → Full Load on 05.07.2018 Untied: 640 MW
2	East Coast Energy Thermal	AP	2 x 660	2019-20 AP : 300 MW
3	Thermal Powertech (TPCIL) Unit-III	AP	1 x 660	2019-20
5	Godhna TPP, Janjir – Champa Dist, Chhattisgarh	For KAR	2 x 800	2019-20

## 25. REVIEW OF ULDC / SCADA/COMMUNICATION

25.1 Status of pending items is as follows:

Issues	Status update
<b>Backup Control Centre</b>	
<ul style="list-style-type: none"> <li>Backup SCADA functionality testing frequency needs to be done once in 6 months to ensure high availability of data/preparedness to operate from Back up CC in event of any contingency. Compliance report may be furnished to SRLDC. 33<sup>rd</sup> TCC: PGCIL would be floating new combined Open Tender for Backup SLDCs for AP (Tirupati), TS (Warangal) along-with few other states.</li> </ul>	Periodical testing was being carried out by SRLDC.
<ul style="list-style-type: none"> <li>Live Backup Control Center (BCC) operation of SRLDC from NRLDC had been successfully carried out from 13:30 hours to 15: 00 hours of 11.10.2018. All the display had been taken from SRLDC Control Room and all the normal operations of SRLDC including scheduling/report generation, switching operation etc had been carried out from Back Up control centre at NRLDC. URTDSM displays</li> </ul>	<ul style="list-style-type: none"> <li>TN had planned operation of TN SLDC from Madurai SLDC.</li> <li>KPTCL had also planned live operation from BCC.</li> </ul>

were also available. SRLDC officers were physically present at NRLDC.	
<ul style="list-style-type: none"> <li>• KSEBL had completed the exercise on 24.11.2018 from Backup LD facility at Thiruvananthapuram.</li> </ul>	
<b>ICCP with NTAMC</b>	
<ul style="list-style-type: none"> <li>• PGCIL had confirmed that due to cyber security concerns data would not be extended to SRLDC from NTAMC ICCP.</li> <li>• Functional requirement of the requisite data by SRLDC would remain, which needed to be ensured by PGCIL. SRLDC would furnish the list of telemetry points that have to be extended to PGCIL within 10 days, and within 1 month PGCIL would come out with a detailed plan to be completed within 6 months (October 2018)</li> </ul>	SR II : Additional data points had been received from SRLDC and action is being taken to extend the inputs by Oct 2018
<b>Modification of EMS package</b>	
<ul style="list-style-type: none"> <li>• TSTRANSCO had received estimate of Rs 47 lakhs and the contract was being firmed up.</li> </ul>	
<b>VC issues</b>	
<ul style="list-style-type: none"> <li>• Puducherry would take up VC requirement in the financial year 2017-18.</li> </ul>	
<b>OPGW connectivity to SRLDC from Hebbal</b>	
SRPC vide letter dated 08.10.2018 had communicated to ACS, GoK and had requested to take up the matter with BBMP for obtaining necessary work approvals, enabling Powergrid to complete the underground OPGW cabling in an expeditious manner for the 4 <sup>th</sup> link from Hebbal to SRLDC.	
<b>OPGW issues in KPTCL system</b>	
EDC to HAL section to be made fully operational	
HSR to NIMHANS section to be rectified	
EDC to NIMHANS section to be rectified	
For laying of UGOFC in NRS, KPTCL S/S (SR-II letter dated 25.09.2018), KPTCL had informed that the note had been put up for approval	
<b>Drawal Computation</b>	
Tamil Nadu had agreed to compute independent ISTS drawl which could be regularly verified with SRLDC drawl figures	

## 25.2 Signing of Agreement / MOU between Powergrid and Constituents for replacement/upgradation of RTUs

The following had been discussed in earlier Meetings:

- PGCIL (LD&C)/SR-II had proposed to replace CPU card in all the RTUs of POWERGRID stations (SR-II-13 no, SR-I-09 no).
- NLCIL had requested that their requirement may be covered along with SRII, PGCIL proposal and they would reimburse the amount.
- Other ISGS had also been requested to kindly furnish their concurrence/ requirement.

- PGCIL had informed that the replacement may not serve for long. Since the replacement of the cards and the new RTU was nearly costing the same, PGCIL would reconsider replacing the RTU, rather than replacing the cards. They would come out with a proposal shortly.
- It was agreed that POWERGRID would take a call on the matter.
- In the 148<sup>th</sup> OCCM (06.10.2018), PGCIL had informed that they are going for new RTUs. Earlier, NLCIL had furnished the consent for executing upgradation of the RTUs installed in TPS-II, TS-I Expn. and TS Expn. under ULDC scheme by PGCIL on payment basis. Communication from Kaiga GS, MAPS etc was awaited.
- SR-II on 18.12.2018 had placed LOA for replacement/upgradation of RTUs with a delivery schedule of four months from LOA.

### **25.3 Communication Availability**

Draft guidelines on Communication Availability were discussed in the 8<sup>th</sup> Meeting of NPC held on 30.11.2018. The approved guidelines by CERC would be notified.

NPC had sought comments on Draft Guidelines on Communication Availability vide letters dated 19.12.2018 as per the decision taken in the 8<sup>th</sup> Meeting of NPC held on 30.11.2018.

NMS control has to be provided by PGCIL at SRLDC. In the 147<sup>th</sup> OCCM (10.09.2018), PGCIL had agreed to look into these aspects.

## **26. URTDSM (PMU) PROJECT IN SOUTHERN REGION**

26.1 Southern Region was the first region to declare URTDSM Phase-I project under COD wef 28.09.2018.

26.2 A Special Meeting was conducted on 03<sup>rd</sup> October 2018 to discuss the pending issues in respect of URTDSM Phase I project.

26.3 In the OCCM the following had been noted:

- In the 148<sup>th</sup> OCC Meeting it was agreed that a group may be formed comprising of Members from all state SLDCs (two numbers each), RLDC and SRPC. This group would meet and decide exact modality for carrying out PMU data analytics so that PMU data can be put to proper use and help system operation. It was also agreed that CTU and generators may form part of this group. SRLDC would be main coordinator for the group.
- It was noted that PMU data has been successfully integrated with existing SCADA at SRLDC. It is used as alternate data source in case of failure of primary data source. Also angle (VPA) of each BUS is displayed in SR\_GRID display. All the states had been requested to integrate PMU data from URTDSM system with existing SCADA. KPTCL, TANTRANSCO and KSEBL had commenced the works and for some of the substations works have been completed. TSTRANSCO and APTRANSCO were yet to be initiate.

26.4 SRLDC vide letter dated 06<sup>th</sup> November 2018 had communicated the following pending works w.r.t URTDSM project:

- *Delivery of Auxiliary Power Supply System (APS) at SRLDC , AP & TS*
  - ❖ SR II had informed that ACDBs and cables of APS would be despatched by mid of December 2018.
- *Analytical applications – Meeting with IIT, Mumbai*
  - ❖ LSE, VADR, Supervised Zone-3 Distance protection, Linear Parameter Estimation, CT/CVT calibration & Control System for improving system security
  - ❖ Meeting with IIT Mumbai was scheduled for 07<sup>th</sup> January 2019.
- *Communication link between SRLDC and NLDC*
  - ❖ PGCIL had informed that main communication link between main NLDC (Delhi) and back up NLDC (Kolkata) and SRLDC to NLDC/back up NLDC has been established. Standby links would be established after commissioning of the PDCs.
- *OSM Training for SR constituents*
  - ❖ GE had conducted 3 day training on OSM application for SR constituents from 5<sup>th</sup> to 7<sup>th</sup> December 2018.

## **27. EMERGENCY RESTORATION SYSTEM (ERS)**

27.1 Requirement of ERS had been outlined in MoP letter dated 05.12.2014. The status was being monitored at higher level. Status update is given below please:

<b>Transmission Utility</b>	<b>Requirement as per MoP</b>	<b>Existing</b>	<b>Status/Remarks</b>
APTRANSCO	3	2	ERS III would be taken up through own funding. <b>33<sup>rd</sup> TCC: Under process</b>
TSTRANSCO	1		Tender floated; would be taken up for PSDF funding. <b>33<sup>rd</sup> TCC: Tendering under progress.</b>
KPTCL	2	2	
KSEBL	1		<b>33<sup>rd</sup> TCC: Agreed to take up through own funds</b> OCCM : Going ahead with ERS procurement
TANTRANSCO	2		As per Minutes of BLTC held on 03.01.2017, procurement is put on hold. Would require PSDF funding. <b>33<sup>rd</sup> TCC:</b> On clarification from NPC that PSDF funding would not be possible and as it was mandatory as per CEA regulation, TANTRANSCO stated that they would also take up providing ERS through own funding.
PED	Nil	Nil	

PGCIL	4 (2 Nos. Additional)	4 (SR I & SR II is having 2 no. Each)	765 kV ERS (one each for SR-I and SR-II) <b>33<sup>rd</sup> TCC: Under inspection. Expected by January, 2019.</b>
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## 28. PROGRESS OF BUS/LINE REACTORS TO BE COMMISSIONED IN SR

28.1 Status of implementation of Bus / Line Reactors / Dynamic Compensation approved in the Standing Committee / SRPC pending for commissioning by the SR constituents is furnished below please:

Entity	Bus Name	Status	REMARKS
KPTCL	Hoody	Reactor erected on platform.	2018-19
	Nelamangala	Reactor erected on platform	2018-19

Entity	Bus Name	Capacity in MVAR	Approved in	Type	Remarks
PGCIL	Yelahanka	2x63	40 <sup>th</sup> SC	Bus	PGCIL (Nov 18): Award placed in May 2018; expected by June 2019
	Cuddapah	50 to 125	39 <sup>th</sup> SC		Commissioned in Oct 2018
	Kurnool 765 kV	2 x 240			2 <sup>nd</sup> reactor commissioned on 31.10.2018
	Raichur 765 kV	2 x 240			2 <sup>nd</sup> reactor commissioned on 31.10.2018
	Nellore 765 kV				2 <sup>nd</sup> reactor commissioned on 31.10.2018
	Thiruvalem 765 kV	2 x 240			42 <sup>nd</sup> SCPSPSR. 27 months from April 2017.
	Pavagada	2 x 125			42 <sup>nd</sup> SCPSPSR.
	Nellore (PG)	2 x 50	42 <sup>nd</sup> SC	Line to Bus	
	Hosur	63 to 125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
	Madhugiri	63 to 125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
	Dharmapuri	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
	Hiriyur	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
	Pugalur	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
	Pugalur HVDC	2 x 125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
APTRANSCO	Vemagiri	125		Bus	December 2017 – LOA issued on 18.06.2017

	Kurnool	125	36 <sup>th</sup> SC	Bus	December 2017 – LOA issued on 18.06.2017
	Kalpaka	125		Bus	2018-19. PO issued on 18.06.2016
	Chittoor	125	39 <sup>th</sup> SC	Bus	APEREC approval awaited
	Vijayawada	125	39 <sup>th</sup> SC		It was noted that a separate reactor at Vijayawada in scope of AP had been identified. The exact location could be firmed up by APTRANSCO.
	Uravakonda	125	42 <sup>nd</sup> SC	Bus	
	Uravakonda	80			42 <sup>nd</sup> SCSPSR
	Jammalmadugu	80			42 <sup>nd</sup> SCSPSR
	Sattenapalli	125			42 <sup>nd</sup> SCSPSR
	Aspiri	2 x 125		Bus	
	Mylavaram (Kadapa)	125		Bus	
	Talaricheruvu (Ananthapuram)	125		Bus	
	Rachagunneri	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
	Hindupur	80 to 125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
<b>APGENCO</b>	VTPS Stage IV	125	39 <sup>th</sup> SC	Bus	Fresh tenders opened on 28.03.2016.
	Polavram HEP	2 x 125	42 <sup>nd</sup> SC	Bus	
<b>KPTCL</b>	Davanagere	125	39 <sup>th</sup> SC		<b>33<sup>rd</sup> TCC:</b> Approved in TCCM, estimate under preparation.
	Talaguppa	125	39 <sup>th</sup> SC		
	C N Halli	2 x 125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: KPTCL consent for the reactor implementation. <b>33<sup>rd</sup> TCC: C N Halli – Land identified. Jagalur – Work under progress.</b>
	Jagalur	2 x 125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
<b>KPCL</b>	Yeramarus	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Bellary	2 x 125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
<b>KSEBL</b>	Wayanad	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
<b>TANTRANS CO</b>	Almathy	125	39 <sup>th</sup> SC		Specification under process
	Manali	125	39 <sup>th</sup> SC		
	Kayathar	125	39 <sup>th</sup> SC		
	Kamuthi	2 x 80			42 <sup>nd</sup> SCSPSR
	Virudhnagar (765 kV)	2 x 330	42 <sup>nd</sup> SC	Bus	
		2 x 330	42 <sup>nd</sup> SC	Line	



	Coimbatore (765 kV)	2 x 240	42 <sup>nd</sup> SC	Line	
	Kayathar	125	42 <sup>nd</sup> SC	Bus	
	Kamuthi	125	42 <sup>nd</sup> SC	Bus	
	Thappagundu	125	42 <sup>nd</sup> SC	Bus	
	Kadaladi	125	42 <sup>nd</sup> SC	Bus	
	Parali	125	42 <sup>nd</sup> SC	Bus	
	Arni	2 x 125	42 <sup>nd</sup> SC	Bus	
	Velalividu	125	1 <sup>st</sup> SRSCT: agreed for implementation.	Bus	1 <sup>st</sup> SRSCT: agreed for implementation.
	Rasipalayam	63		Bus	2018-19
	Edayarpalayam	2 x 125		Bus	
<b>TSGENCO</b>	KTPP	125	1 <sup>st</sup> SRSCT: agreed for implementation.	Bus	
<b>TANTRANS CO/ TANGEDCO</b>	Mettur	125	39 <sup>th</sup> SC		2018-19. To be diverted from Palavadi and works to be taken up.
<b>TSTRANSCO</b>	Asupaka	80			42 <sup>nd</sup> SCPSPSR
	Suryapet	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	1 <sup>st</sup> SRSCT: agreed for implementation. TSTRANSCO may implement reactors at Tippapur, Kamalapuram, Manikonda and Yellampalli in first phase
	Raidurg	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Kamalapuram	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Narsapur	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Maheshwaram	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Tippapur	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Manikonda	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Jangaon	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Choutuppal	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
	Yellampalli	125	42 <sup>nd</sup> SC/1 <sup>st</sup> SRSCT	Bus	
<b>TSTRANSCO</b>	<b>2<sup>nd</sup> Reactor at Dindi in place Srisailam LB</b>	125	<b>1<sup>st</sup> SRSCT</b>	Bus	
<b>NPCIL</b>	Kaiga	2 x 125		Bus	One reactor by December 2019. 2 <sup>nd</sup> reactor soon after 1st reactor. Action had been initiated for the 2 <sup>nd</sup> 125 MVAR reactor.

UPCL	Udupi	2 x 125	39 <sup>th</sup> SC		41 <sup>st</sup> SCSPSR: It was informed that the requirement was assessed based on system studies, therefore, it was decided that the decision taken in 39 <sup>th</sup> SC Meeting may be implemented.
	In the OCCM, KPTCL had informed that Planning section had communicated to PCKL in this regard and PCKL would take a call.				
NLC	NLC TPS-II 2 <sup>nd</sup> Expansion	125	42 <sup>nd</sup> SC	Bus	

Entities are requested to kindly expedite commissioning of reactor, since high voltage was being observed on a sustained basis.

## 28.2 Dynamic Compensation (Approved in 36<sup>th</sup> SC)

Entity	Bus Name	SC MVA GVA / KA	Dynamic Compensation (STATCOM)	Mechanically Switched Compensation (MVAR)		Remarks
				Reactor	Capacitor	
PGCIL	Hyderabad	18.4/26.5	± 200 MVAR	2x125	1x125	PGCIL (Nov 2018): Mar 2019
	Udumalpet	19.4/28.0	± 200 MVAR	2x125	1x125	PGCIL (Nov 2018): Mar 2019
	Trichy	12.5/18.0	± 200 MVAR	2x125	1x125	

## 28.3 Reactive Power Planning

28.3.1 Status of Capacitor installation in Transco/Discoms is given below:

Utility	Reactive Power Planning	Voltage level	Remarks
APTRANS CO	Kadapa: 151.2 MVAR Vijayawada: 144 MVAR Visakhapatanam: 165.6MVAR	On 33 kV side	57.6 MVAR commissioned 21.6 MVAR commissioned 14.4 MVAR commissioned
APSPDCL	640 MVAR		24 MVAR commissioned
APEPDCL	234 MVAR		210 MVAR commissioned.
KPTCL	Bengaluru Tr. Zone: 784 MVAR	12.1 kV	0 MVAR commissioned
	Bagalkot Tr. Zone: 118.9 MVAR	12.1 kV	58 MVAR commissioned
	Hassan Tr. Zone: 75.4 MVAR		17.4 MVAR commissioned
	Mysore Tr. Zone: 29 MVAR		0 MVAR commissioned
	Gulbarga Tr. Zone: 81.2 MVAR		52.2 MVAR commissioned
	Tumkur Tr. Zone: 255.2 MVAR	12.1 kV	69.6 MVAR commissioned.
TSNPDCL	288 x 2 MVAR 110 x 1 MVAR		285 x 2 MVAR 110 x 1 MVAR commissioned
TSSPDCL	223 x 2 MVAR		111 x 2 MVAR

	48 x 1 MVAR		37 x 1 MVAR commissioned
KSEBL	360 MVAR	66 kV	Works will be taken up after approval.
		11kV	
TANGED CO	34 X 2.4 MVAR ,11 KV	11 kV	Work not yet completed. Court case is filed by the company (executing the works) vide WP No.25515 of 2018.
	16X 2.4 MVAR , 22 KV	22 kV	16 X 2.4 /22 KV - 16 Nos Commissioned
	11 KV 2MVAR - 94 sets	11 kV	IPDS - Tender opened on 29.08.18 and Price bid opened on 12.10.2018 and under negotiation
	13 X 24 MVAR , 110 kV	110 kV	PO placed on M/s Shreem Electric Ltd and under execution.
	11 kV 2MVAR - 78 sets	11 kV	DDUGJY - Tender opened on 06.09.18 and Price bid opened on 12.10.2018 and under negotiation
	82 Sets of 11 KV, 2.4 MVAR capacitor Bank in Coimbatore region	11 kV	Instead of 183 sets (82+101) quantity revised as 68 (67+1) as per NLDC remarks for Coimbatore and Erode Regions respectively. DPR submitted to PSDF, Delhi,
	11/22 kV 2.4 MVAR 101 sets - Erode region	11/22 kV	
	11/22 kV 2.4 MVAR 32 sets - Vellore region	11/22 kV	Quantity revised as 30 sets based on NLDC remarks. DPR submitted to PSDF, Delhi.
75 sets of 2.4 MVAR 11/22 kV- Trichy, Villupuram, TVL, MDU, CNI(S)	11/22 kV	Quantity revised as 49 sets based on NLDC remarks. DPR submitted to PSDF, Delhi.	

#### **28.4 PSDF – Funding of the schemes of the state utilities for installation of capacitors in the state network at transmission / distribution network**

SRPC vide letter dated 28.09.2018 (**Annexure-XLIII**) had communicated its input on the observations of TESC (PSDF) Meeting held on 28.08.2018.

## 28.5 Capacitor Requirement for 2018-19

SRPC in consultation with SRLDC had worked out the capacitor requirement for 2018-19 based on the maximum demand on 29.03.2018 at 15.15 hrs.

## 29. NON-AVAILING OF OCC APPROVED SHUTDOWN

29.1 In OCC Meetings, it had been noted with concern that at times, entities were not availing approved shut downs as per schedule. Details of availed outages against OCC approved shut downs (furnished by SRLDC) are given below please:

Entity	Aug-18	Sep-18	Oct-18	Nov-18
	<b>Availed % with respect to the OCC Approved Outages</b>			
<b>AP TRANSCO</b>	84	96	42	90
<b>KPTCL</b>	44	25	71	67
<b>KER</b>	-	100	100	100
<b>TANTRANSCO</b>	48	85	84	77
<b>TSTRANSCO</b>	70	80	100	94
<b>PGCIL, SR1</b>	85	82	59	89
<b>PGCIL, SR2</b>	80	40	29	75
<b>NTPC</b>	-	0	-	-
<b>NLC</b>	100	0	25	100
<b>NTECL</b>	-	-	-	-
<b>NPCIL</b>	-	75	-	100
<b>SGPL</b>	-	50	-	-
<b>PNMTC</b>	100	0	-	-
<b>KTL</b>	-	-	-	-
<b>MEPL</b>	-	-	-	-
<b>RSTCL</b>	-	100	-	-
<b>NTPL</b>	-	-	-	0
<b>UPCL</b>	-	-	-	0
<b>TOTAL</b>	<b>68</b>	<b>70</b>	<b>63</b>	<b>77</b>

## 30. COMPLIANCE STATUS OF PHASE-I AND PHASE-II OF PROTECTION AUDIT RECOMMENDATIONS

With reference to the Petitions filed by KSEB (88/MP/2016) and KPTCL (135/MP/2016) seeking further time-extension for completing their respective Protection Audit Recommendations (PAR), the final Order of Hon'ble CERC disposing of petitions was issued on 15<sup>th</sup> December 2016. In this Order, the Commission, apart from granting last-chance time-extensions to various SR-Constituents, had also directed SRPC to monitor status of completion of PAR regularly in PCSC Meetings and submit bi-monthly report to the Commission confirming completion of Phase-I and Phase-II of PAR of the Constituents of Southern Region. In this regard, based on the information furnished by various Constituents, a summary table showing the compliance status of various SR-Constituents as on 14.12.2018 is given below:

Sl. No.	Constituent	PAR (Phase-I) Activities	PAR (Phase-II) Activities	PAR (Ph-I & Ph-II) Compliance (%)	Remarks
		Stipulated Completion Date	Stipulated Completion Date		
1	APGENCO (Hydel)	31.12.2017	31.12.2017	93.33	Based on the status furnished, the <b>lone</b> pending recommendation is expected to be completed by <b>15.01.2019</b> .
3	APTRANSCO	31.03.2017	---	98.57	Based on the status furnished, the <b>lone</b> pending recommendation is expected to be completed by <b>31.12.2018</b> .
4	TSGENCO (Hydel)	31.03.2017	31.03.2017	91.18	Based on the status furnished, timeline for complying with the remaining pending recommendations ( <b>3 in no.</b> ) is <b>31.03.2019</b> .
5	TSTRANSCO	31.03.2017	31.03.2017	92.05	Based on the status furnished, timeline for complying with the remaining pending recommendations ( <b>7 in no.</b> ) is <b>31.03.2019</b> .
6	KPTCL	31.05.2017	31.05.2017	85.91	Based on the status furnished, timeline for complying with the remaining pending recommendations ( <b>10 in no.</b> ) is <b>31.08.2019</b> .
7	TANGEDCO	31.12.2017	31.12.2017	91.67	Based on the status furnished, timeline for complying with the remaining pending recommendations ( <b>3 in no.</b> ) is <b>31.03.2019</b> .
8	TANTRANS CO	31.12.2017	31.12.2017	77.27	Based on the status furnished, timeline for complying with the remaining pending recommendations ( <b>30 in no.</b> ) is <b>31.03.2019</b> .
9	KSEBL	30.11.2016	31.12.2017	97.4	Based on the status furnished, the <b>lone</b> pending recommendation is expected to be completed by <b>31.01.2019</b> .
10	NPCIL (MAPS)	31.01.2017	---	88.89	Based on the status furnished, timeline for complying with the <b>lone</b> pending recommendation is <b>31.03.2019</b> .

\* *Constituents - APGENCO (Thermal), TSGENCO (Thermal), KPCL, PGCIL (SR-I & SR-II), NTPC, NLC – have fully complied with the protection audit remarks given to their respective Stations.*

It may kindly be noted that the total compliance percentage of SR-Constituents including IPP's in completing Protection Audit Works as on 14.12.2018 stands at **91.23%**.

*All above SR-Constituents are requested to complete their respective pending PAR at the earliest. IPP's for whom there are pending PAR [viz., Spectrum PGL, Konaseema GPL, APGPCL Vijjeswaram (Stage-I & Stage-II), & LANCO-Kondapalli PL] are also requested to complete them at the earliest.*

**31. IMPLEMENTATION OF PROTECTION SUITE / PROTECTION MANAGEMENT SYSTEM (PMS) FOR SOUTHERN REGION**

Based on the approval of SRPC in the 26<sup>th</sup> Meeting held on 20<sup>th</sup> December, 2014, implementation of Protection Management System in Southern Region [*Web-based Management Software and Protection Setting Calculation Tool for Southern Region*] had been undertaken through PSDF funding. This project has been awarded through open bidding process to M/s PRDC Pvt. Ltd. (PRDC) on 09.08.2017. The execution period for the Project is about 18 months from the date of placement of LoA (also called “Effective Date”), and is followed by an Extended Technical Services period of 5 years.

The details of the project implementation including Milestone-wise status is given at **Annexure – XLIV** for kind reference.

Following are the highlights of this project implemented so far:

- 35 no. of Laptops & Licenses envisaged under the project were distributed to SR-Constituents in the 68<sup>th</sup> meeting of PCSC held on **26.10.2017**.
- Training on using various modules of Protection Setting Calculation Tool (PSCT) Software was imparted to SR-Constituents during **November- December, 2017**.
- Protocol on implementing & using Protection Management System and giving an integrated view of the project was circulated to all SR-Constituents vide SRPC letter dated **20.04.2018**.
- Automated Fault Analysis System (AFAS) envisaged under the project was successfully implemented for the 400/ 230 – 110 kV Palavadi SS (Pilot Station), and was put under service with effect from **18<sup>th</sup> April, 2018**. Closure of all outstanding pending features of AFAS was achieved in **December, 2018**.
- Site Acceptance Test (SAT) of the PMS project was successfully conducted in **July, 2018**. Pending SAT features of PSCT and PDMS were regularly followed, and the closure of the same is targeted to be achieved by **February, 2019**.
- User Manual of Data Modification Notification System (DMNS) [basically a web-application that allows Constituents to communicate changes that take place in the field w.r.t. network elements & protection elements to Data Modeling Team (DMT) of PRDC] was circulated to all SR-Constituents and was made operational from **September, 2018**. Creation of DMNS User Accounts of the various SR- Constituents is currently under progress.
- Data collection by physical field visits of all identified stations as per scope of the project (these are basically all 220 kV & above Substations including Wind/ Solar Pooling Stations and all 132/ 110/ 66 kV & above Generation Switchyards spread across southern region) is nearing completion (targeted to be completed by **January, 2019**), and in total 894 stations would be covered & modeled.

- State-wise Review meetings on PMS pending data had been conducted with concerned Utilities during **July – December, 2018** to ensure submission of pending protection data. These would be continued till **February, 2019**.
- For embedding 132/ 110 kV Network of various states in PMS database, conduction of state-wise Network Reconciliation meetings with concerned stake-holders (respective STU & PRDC & SRLDC & SRPC) is under way. So far the task had been completed for the states of Kerala & Telangana, and would be completed for the remaining states also by **January, 2019**.
- User Manual of Protection Data Management System (PDMS) [basically a web-application that allows SR-Constituents to handle life-cycle of various relay settings in their respective systems] was circulated to all SR-Constituents vide SRPC letter dated **18.12.2018**. Creation of PDMS User Accounts of various SR-Constituents would be taken up from **20.01.2019** after receipt of the details sought vide above letter.
- Training on using various modules of Protection Data Management System (PDMS) would be imparted to SR-Constituents during **February-March, 2019**.

☞ *The project is targeted to be made operational from 01 April, 2019 with a stabilization period of about two months.*

### **32. COMPLIANCE STATUS OF NEW PROTECTION AUDIT RECOMMENDATIONS**

As part of GSC (Task-II) under Package-A, protection audit check of **15** stations was carried out by M/s Tractebel Engineering (TE) in Southern Region during the period, **December, 2015 – July, 2016**. Subsequently, protection audit of various stations in SR is also being regularly conducted by SRPC teams in line with CERC Order dated 27.04.2015 in respect of APTRANSCO Petition No.95/MP/2015 and CERC Order dated 14.05.2015 in respect of TSTRANSCO's Petition NO:83/MP/2015. So far, protection audit of **15** stations have been carried out during the period **December, 2016 – December, 2018**.

List of Stations audited & % compliance of the recommendations is given below:

Sl. No.	Name of the Station	Period of Protection Audit	Compliance %
<b>APTRANSCO</b>			<b>51.31</b>
1	400/ 220 kV Narnoor SS	16–18 February, 2016	64.52
2	400/ 220 kV Uravakonda SS	5-6 April, 2018	38.10
<b>TSGENCO (Thermal)</b>			<b>62.41</b>
1 (i)	220 kV KTPS (O&M)	14-16 March, 2016	52.78
1 (ii)	220 kV KTPS (Stage-V)	14-16 March, 2016	40.91
1 (iii)	220 kV KTPS (Stage-VI)	14-16 March, 2016	93.55
<b>TSTRANSCO</b>			<b>28.13</b>
1	400/ 220 kV Shankarapally SS	20-21 March, 2017	81.82
2	400/ 220-132 kV Gajwel SS	30-31 October, 2018	00.00 (Yet to be informed)
<b>KPCL</b>			<b>36.23</b>
1	400 kV & 220 kV Raichur TPS	8-10 June, 2016	46.34
2	220 kV Nagjheri PH	14-16 July, 2016	54.84
3	220kV Sharavathy GS	30-31 October, 2017	43.75

4	400 kV Yermarus TPS	28-29 August, 2018	00.00 (Yet to be informed)
<b>KPTCL</b>			<b>40.85</b>
1	400/ 220 kV Guttur SS	4-6 May, 2016	79.07
2	400/ 220 kV Nelamangala SS	8-10 February, 2016	43.5
3	400 kV Bellary Pooling Station	27 August, 2018	00.00 (Yet to be informed)
<b>KSEBL</b>			<b>55.81</b>
1	220 kV Edamon SS	18-20 January, 2016	55.81
<b>TANTRANSCO</b>			<b>38.73</b>
1	400/ 230 kV Alamathy SS	4-6 January, 2016	51.61
2	230 kV Alundur SS	17 December, 2016	31.25
3	400/ 230 – 110 kV Palavadi SS	14-15 May, 2018	33.33
<b>Puducherry ED</b>			<b>08.79</b>
1	230/ 110 kV Villianur SS	10 July, 2017	9.68
2	230/ 110 kV Bahour SS	11 July, 2017	7.89
<b>PGCIL (SR-I)</b>			<b>48.57</b>
1	400 kV & HVDC Gazuwaka SS	28-30 December, 2015	50.00
2	400/ 220 kV Gooty SS	12 <sup>th</sup> , 13 <sup>th</sup> and 15 <sup>th</sup> February, 2016	50.00
3	765/ 400 kV Nellore PS	19-20 June, 2017	80.00
4	765/ 400 kV Maheshwaram SS	8-9 February, 2018	14.29
<b>PGCIL (SR-II)</b>			<b>63.75</b>
1	400 kV Hosur SS of PGCIL (SR-II)	9-11 December, 2015	25.00
2	400 kV Tirunelveli SS	8 <sup>th</sup> , 9 <sup>th</sup> and 11 <sup>th</sup> January, 2016	50.00
3	400 kV Alundur SS	16 December, 2016	100.00
4	400/ 220 kV Kozhikode SS	21-22 December, 2017	80.00
<b>NTPC</b>			<b>85.00</b>
1	400 kV Ramagundam STPS	18-20 February, 2016	85.00
<b>NPCIL</b>			<b>16.67</b>
1	220 kV Kaiga GS	4-6 April, 2016	33.33
2	400/ 230 kV Kudankulam NPP	10-11 December, 2018	00.00 (Yet to be informed)
<b>NLCIL</b>			<b>56.25</b>
1	400 kV NLC TPS-II Station	8-10 February, 2016	56.25

Details of stations protection audited during the period August, 2018 - December, 2018 are given below, please:

Sl. No.	Name of the Station Audited	Period of Protection Audit	Composition of Audit Team
1	400 kV Bellary Pooling Station of M/s KPTCL	27 August, 2018	SRPC, SRLDC & JSWEL
2	400 kV Yermarus TPS of M/s KPCL	28-29 August, 2018	SRPC, SRLDC & JSWEL
3	400/ 220-132 kV Gajwel Substation of M/s	30-31 October, 2018	SRPC, SRLDC & PGCIL (SRTS-I) &



	TSTRANSCO		TSGENCO (Thermal)
4	400/ 230 kV Kudankulam NPP of M/s NPCIL	10-11 December, 2018	SRPC, SRLDC & PGCIL (SRTS-II)

Remarks furnished by the audit teams for the above stations are enclosed at **Annexure – XLV** for kind reference.

*APTRANSCO, TSGENCO, TSTRANSCO, KPCL, KPTCL, KSEBL, TANTRANSCO, Puducherry ED, NTPC (RSTPS), NPCIL, NLCIL, PGCIL (SR-I) & PGCIL (SR-II) are requested to kindly take suitable action to comply with their respective pending remarks.*

### **33. Conduction of Protection Audit of various 220 kV & above Stations (Substations as well as Generation Switchyards) in Southern Region**

As per the recommendations of Enquiry Committee on Grid Disturbances of 2012 in Indian Grid, a third party protection audit (regional protection audit) in Southern Region was carried out for about 200 plus stations of various Utilities spread across all states & UT in SR by regional teams comprising Members from different SR-Constituents in 2012-13. That exercise covered all 400 kV & above level stations and important 220 kV level stations in operation. Main focus in those audits was to verify whether required protection systems had been put in place at those stations by concerned Utility, and to recommend suitable measures to provide for the same.

Compliance status of these protection audit remarks (PAR) is being regularly monitored by SRPC Secretariat, and a bi-monthly report is being furnished to Hon'ble CERC in line with Order dated 15.12.2016 in respect of Petitions filed by KSEB (88/MP/2016) and KPTCL (135/MP/2016).

However, since the total no. of stations (Substations as well as Generation Switchyards) in Southern Region connected at 220 kV & above voltage levels is of the order of 500 – 600, the necessity to carry out protection audit of the remaining stations had been pointed out by Ramakrishna Task Force and higher bodies. However, this exercise of undertaking large-scale protection audit of various stations has been delayed in view of the following:

- A. Pending Action plan for implementation of various recommendations given by the Consultant appointed in accordance with MoP Order dated 16.07.2014:** MoP vide Order dated 16.07.2014 had directed POWERGRID to appoint Consultants to follow-up certain recommendations of Task Force on Power System Analysis under Contingencies constituted in the aftermath of Grid Disturbances in July, 2012. Accordingly, M/s Tractabel Engineering had been appointed as Consultant for Package-A to carry out the following two Tasks:

**Task-I:** To study and review the status of implementation of Recommendations of the Enquiry Committee

**Task-II:** To study the protection audit report of 762 substations across the country carried out after grid failure of July 2012 and conduct on site Protection audit check of the works already carried out, for 10% (i.e. 76 nos.) of 762 Substations.

Under Task-II, the Consultant had been tasked with, among other things, the following:

- Review the practices being followed for relay settings (at the level of 220kV and above and 132kV and above in NER) by different utilities in the Indian grid and prepare guidelines based on best international practices on protection coordination;
- Evolve procedures and systems to carry out the relay settings. Consultant shall evolve procedures / formats for reporting that the relay settings have been carried out as per the laid procedures;
- Shall suggest the regulatory framework to ensure that relay settings have been carried out as per laid procedures and actions required to be taken in case of non-adherence to these procedures;

The final report submitted by the Consultant had been accepted by Grid Study Committee (GSC) constituted for coordinating Consultant's work in their 4<sup>th</sup> meeting held on 16.01.2018. The action plan for implementing various recommendations given by the Consultant is under finalization by CEA in consultation with CTU & POSOCO.

**B. Pending Notification of Reliability Standards for Protection System:** In line with CERC Order dated 05.08.2015 in respect of Petition 009/SM/2015, National Reliability Council for Electricity (NRCE) had constituted a Sub-Group for Preparation of Reliability Standards for Protection System and Communication system for Indian Power System. The Sub-Group after convening five Meetings had brought out a Draft Report in October, 2017 on Reliability Standards for Protection System for Indian Power System covering, among other things, the following:

- Protection System Mis-operation Reporting and Monitoring of Corrective Action:
- System Protection Scheme Review Procedure

Protection Coordination Sub-Committee (PCSC) representatives of SRPC had participated in all the Meetings of the Sub-Group, and contributed to development of procedures detailed under above topics that deal with co-ordination & review of Relay settings, and ensuring healthiness of protection systems in place.

Since the remarks given in any protection audit will be evaluated w.r.t. prevailing protection standards, necessary regulatory backup for the required protections should be available; hence, early notifying of the protections standards would be highly helpful.

**C. Implementation of Protection Management System (PMS) for Southern Region:** In pursuance of the recommendations of Task Force on Power System Analysis under Contingencies constituted in the aftermath of Grid Disturbances in July, 2012

regarding the need to maintain protection database at regional level, this project has been conceived by SRPC to accomplish the following tasks:

- Maintaining up-to-date Protection Database of all settings of all protection relays being used in the Power System Network;
- Maintaining up-to-date Power System Network modeled in Protection Setting Calculation Tool;
- Computing various settings for each protection relay modeled by creating an interface between Protection Setting Calculation Tool and Protection Database;
- Verifying and fine-tuning various settings for each protection relay by performing analysis of the faults/ disturbances simulated in the network modeled in Protection Setting Calculation Tool using the existing Protection Database relay settings.

This Project, which employs hierarchical Role-based access control to ensure accountability in carrying out above tasks, is also supported by built-in reporting procedures for relay settings. This project is presently under implementation, and is targeted to be made operation from 01 April, 2019 with a stabilization period of 2 months. ( as already mentioned above)

It may however be noted that notwithstanding above, regional level protection audit of various 220 kV & above Stations (Substations as well as Generation Switchyards) are being conducted, albeit at a small scale, by different SRPC Teams (comprising Members from different SR-Constituents) in line with CERC Order dated 27.04.2015 in respect of APTRANSCO Petition no: 95/MP/2015 and CERC Order dated 14.05.2015 in respect of TSTRANSCO's Petition no: 83/MP/2015.

In the mean time, Hon'ble CERC, vide Order dated 26.03.2018 in respect of Petition No. 09/ SM/ 2015, had directed SRPC to take up issue of protection audit and relay setting in transmission system/ distribution system within States with all concerned.

Since the adverted pending action plan, and notification of reliability standards for protection systems are going to happen sooner than later, and since stabilized PMS project would become available from June, 2019, the issue of conducting large-scale protection audit of remaining stations connected at the level of 220 kV & above was discussed in detail by the Protection Coordination Sub-Committee (PCSC) of SRPC in the 80<sup>th</sup> Meeting held on 20.12.2018. In the Meeting, the following three options had been considered as means to make way forward:

- (i) Engaging a reputed external agency for conducting protection audit
  - Issue: Financial implications for SR-Constituents for covering large no. of stations
- (ii) Ensuring conduction of protection audits by Utilities themselves either entirely on their own or by involving personnel from other SR-Utilities, and finalization of those audit reports by PCSC forum after detailed scrutiny.

- Issue: Apart from logistics issue, ensuring conduction of protection audit of all required stations (owing to their large number) in accordance with the extant standards & regulations will be a challenge.

(iii) Undertaking protection audit of all identified stations by regional teams drawn from Various SR-Constituents including SRLDC & SRPC.

- This, alternative, apart from being purely regional in character, is also cost effective, and allows all remaining stations (in the order of 250) to be covered in a period of two months.
- Issue: Ensuring availability of required no. of expert people at the disposal of SRPC for a period of about 2 months.

Of the alternatives, PCSC forum had preferred to go with the third one since similar exercise had already been conducted successfully in 2012-13. It was opined that in case all SR-Constituents put together contribute some 60 -70 Members, then by forming some 15 -20 regional groups each consisting of four Members, all identified stations in SR could be covered in a matter of two months by assigning each group the responsibility of conducting 2 audits per week. The contribution to be made by each Organization in this respect could be on the following lines:

<b>Organization/ SR-Constituent</b>	<b>Indicative Contribution</b>
APGENCO (4) and APTRANSCO (6)	10
TSGENCO (4) and TSTRANSCO (6)	10
KPCL (4) and KPTCL (6)	10
KSEBL	8
TANGEDCO (4) and TANTRANSCO (6)	10
PGCIL-SR1 (5) and PGCIL-SR2 (5)	10
NTPC (1), NLCIL (1), NPCIL (1)	3
Member IPP's (1 each)	5
SRLDC	5
SRPC	3

It was also agreed that these audits could be conducted using common formats such as the ones being presently used by SRPC teams, and in accordance with the extant standards/ regulations/ guidelines, and could take place under the overall supervision & co-ordination of SRPC Secretariat.

It was also decided to put forth this proposal to TCC/ SRPC for their kind consideration. If approved, the modalities and ways & means of conducting the above exercise in the second-half of 2019, preferably after the end of rainy season, could be worked out by SRPC Secretariat, and details shared/ furnished to all concerned for necessary action.

☞ Accordingly, proposal to undertake protection audit of all remaining stations of SR connected at 220 kV & above, for which protection audit is yet to be conducted, as described at Alternative (iii) is put forth for kind approval. It may be noted that if approved, the exercise would be taken up in the second half of 2019.

### **34. REVIEW MEETING ON COMPLIANCE OF PCSC RECOMMENDATIONS**

All trippings involving 220 kV & above system on account of mal-operation/ non-operation of protection systems in place are regularly discussed in the monthly held Meetings of Protection Coordination Sub-Committee (PCSC) meetings of SRPC with a view to identify their root cause and scrutinize correctness of operation of protection systems put in place by the concerned Constituents. In the process, appropriate measures required to be taken for system improvement are being suggested/ recommended for compliance by concerned Constituents.

These PCSC recommendations, which are yet to be complied with, are being circulated regularly, vide (i) Agenda & Minutes of PCSC Meetings, and (ii) mails. However, in view of delay in complying with them, review of the compliance status was undertaken in the 80<sup>th</sup> Meeting of PCSC held on 20-21 December, 2018 at SRPC Secretariat, Bengaluru to ascertain their current status of implementation by various Constituents.

Based on the deliberations held, the detailed status of pending implementation of PCSC recommendations had been compiled and is enclosed at **Annexure-XLVI** for kind reference. It is requested that concerned Utilities may kindly take concrete and definite action in complying with the pending PCSC recommendations.

In this regard, the following punch-points, which ensure healthiness of protection systems put in place, are brought to attention for kind implementation:

- Provision of Numerical Relays for protecting transmission lines, transformers, line/ bus reactors & bus bar at 220 kV & above voltage level, and generating units at all voltage levels
- Ensuring time-synchronization of various Protection Relays with GPS at all 220 kV & above stations
- Configuring Disturbance Recorder (DR) and Event logger (EL) for all requisite/ mandated protections & signals
- Ensuring multi-bus operation with zone-segregation at all 220 kV & above stations
- Ensuring healthiness of DC system (Protection & Communication)
- Ensuring proper maintenance of transmission lines and adopting best O&M practices
- Ensuring earth-mat integrity & removal of DC leakage in the switchyard
- Adoption of stipulated Over-Voltage gradings for all 400 kV & above transmission lines
- Ensuring protection philosophy followed is in line with the Ramakrishna Committee guidelines.
- Ensuring furnishing of tripping files (FIR/DR/EL/TR) within 24-hrs of the occurrence of a tripping event as per IEGC Regulation 5.2 (r) & regular attendance in PCSC Meetings.

### **35. COMMERCIAL COMMITTEE ISSUES**

35.1 Following issues are brought to the kind attention:

- **Transmission Charges pertaining to Kudgi STPS**
  - Chairperson, SRPC vide letter dated 22.03.2018 had taken up the issue of changing

LTA quantum from 2392.49 MW to 2262 MW with CMD, PGCIL. CTU vide letter dated 25.07.2018 had stated that NTPC is required to relinquish the LTA quantum of 130.49 MW as per CERC Connectivity Regulations, 2009.

- In the 34<sup>th</sup> SRPC Meeting the following had been noted:
  - ❖ CTU had clarified that till the quantum is relinquished or some Order is received from CERC, full LTA quantum would be continued to be billed.
  - ❖ SRPC had noted that NTPC would approach Hon'ble CERC for necessary clarification on this matter.
- SRPC vide letter dated 24.08.2018 (**Annexure-XLVII**) had taken up various issues in respect of LTA quantum and had pointed out that throughout the process the overload capacity was not to be considered for LTA which was the base for approved injection and on which sharing of transmission charges was to be undertaken. Further, after the amendments to the Sharing Regulation and with further clarity in SOR, the LTA quantum was required to be modified in line with the prevailing Regulations. Needless to mention that the 105% and 10% DP were for different purposes like RGMO/inadvertent deviations etc. NTPC had been requested to examine the issue in light of the above observations. NTPC vide letter dated 29.08.2018 (**Annexure-XLVIII**) had replied to the above letter and had stated that in this case, there is neither abandonment of installed capacity nor any change in the beneficiary /ies, it should not fall under the relinquishment. Instead, only LTA quantum is to be revised in line with the requirement of CERC (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010.
- Hon'ble CERC in its Order dated 06.11.2018 had passed the following :
  - a. The liability to pay charges towards Long term Access under Central Electricity Regulatory Commission (Sharing of inter-State Transmission charges and losses), Regulations, 2010 as amended from time to time shall be that of beneficiaries in view of Agreements entered into by them.*
  - b. The LTA needs to be operationalized from the date of declaration of COD of the transmission system irrespective of the CoD of the generator.*
  - c. Annual transmission charges of the associated transmission system (i.e in this case -Kudgi-Narendra, Narendra-Madhugiri and Madhugiri Bidadi and associated bays/ substation) as determined or adopted by the Commission shall be considered in PoC mechanism corresponding only to the units declared under commercial operation and the balance transmission charges shall be recovered from NTPC till the respective COD of remaining units.*
- Revised RTA in compliance to CERC Order dated 06.11.2018 in Petition No. 261/MP/2017 was brought out by SRPC on 22.11.2018.
- KSEBL vide letter dated 20.12.2018 (**Annexure-XLIX**) had referred to CERC Order dated 06.11.2018 in Petition No. 261/MP/2017 had pointed out the following:
  - ❖ Charges recoverable (Rs. 304.10 Cr) from NTPC for the periods August 2016 to September 2018 are to be reimbursed to the beneficiaries who had paid this amount originally.
  - ❖ PoC slab excluding rates revision for the period August 2016 to September 2018 excluding the charges of Kudgi ATS needs to be carried by NLDC. The benefit of this revision needs to be passed on to the SR beneficiaries as they had borne these charges.

- **Pending payments between WR& SR Constituents as on 31.12.03.2018 are as follows:**

State	Receivable from		Payable to	
	Entity	Rs	Entity	Rs
Andhra Pradesh / Telangana	MPPMCL	1,21,76,270	MPPMCL	Nil
Karnataka	MPPMCL	13,27,208	GUVNL	Nil
Kerala	MPPMCL	1,21,47,260		
	CSPDCL	7,05,279		
Tamil Nadu	MPPMCL	1,17,17,268	CSPDCL	92,77,878

- This matter was further discussed in the 39<sup>th</sup> CCM held on 29.10.2018 wherein it was noted that MPPMCL had requested WRPC for conducting a joint Meeting of SR-WR constituents and OPTCL for settling the issue.
- **Payable amount to PGCIL (WRTS) by SR Constituents (as discussed in 39<sup>th</sup> CCM)**

SRTS-II, PGCIL had reported that all beneficiaries had refunded the amount

- **Pending payments of NTECL**

- In the 39<sup>th</sup> CCM (29.10.2018), NTECL had expressed concern on pending payments by beneficiaries and dues were as follows:

Sl. No.	Beneficiary	Outstanding dues for more than 60 days as on 04.10.2018
1	APPCC	Rs. 91.37 Cr.
2	TSPCC	Rs. 124.15 Cr
3	GESCOM	Rs. 17.14 Cr.
4	HESCOM	Rs. 78.62 Cr.
5	CESCORP	Rs. 10.17 Cr

- NTPC had stated that such outstanding amounts are so large for a standalone company like NTECL to bear and requested all beneficiaries to liquidate the dues.
- PCKL had stated that a meeting of DISCOMs would be convened to sort out the issue.
- TSPCC had conveyed that the management would be apprised about the dues to process the same.
- **Pending dues to PCKL**
  - In the 39<sup>th</sup> CCM, PCKL had informed that Rs. 23.63 lakhs and Rs. 88.06 lakhs payment towards reactive charges were pending from KSEBL and APPCC respectively.
  - KSEBL had stated that they had made a payment of Rs.12,76,15,196/- (Principle amount of Rs.9,06,03,742 + interest of Rs.3,70,11,454) on 12-8-2016 towards transmission & wheeling charges for the period from July 2011 to May 2016. As per the CERC order, YTC of interstate lines have been covered under PoC mechanism and hence these charges are reimbursable. PCKL cannot claim interest when substantial amounts were due from KPTCL/PCKL to Kerala, on account of the

wheeling charges already paid by KSEBL and interest on the same from the date of payment also need to be accounted.

- PCKL had sought details in this respect, to which KSEBL proposed a one-to-one meeting.
- APPCC had stated that the matter would be taken up with Finance Wing.

- **Pending dues to PCKL from APPCC**

- PCKL vide letter dated 20.11.2018 (**Annexure-L**) had stated that Rs. 75.10 lakhs is due from APPCC towards sale of energy.

- **Certification of SEM by CTU/PGCIL**

SRLDC had requested that meters used for apportioning the actual injection of ISTS power among regional entities, which are not directly connected to ISTS may be certified by PGCIL.

In the 39<sup>th</sup> CCM, after deliberation, the following had been agreed:

- Certification of meters of such Regional Entities would be carried by PGCIL.
- PGCIL had agreed to kindly carry out the certification (on payment basis).
- All such regional entities were requested to approach PGCIL for certification.

- CTU, Planning vide letter dated 03.10.2018(**Annexure-LI**) had informed that the balance LTA of 500 MW of Phase II & Phase III of the APSPDCL project (NP Kunta) is effective from 01.10.2018.

- CTU, Planning vide letter dated 03.10.2018(**Annexure-LII**) had informed that the balance LTA of 500 MW of Phase II & Phase III of the Pavagada Solar Park is effective from 01.10.2018.

### **36 IEGC RELATED ISSUES REQUIRING ATTENTION/ACTION**

#### **36.1 Automatic Demand Management Schemes**

36.1.1 In line with clause 5.4.2 (d) of IEGC, Automatic Demand Management Scheme was to have been provided by all constituents. Revised logic at 49.85 Hz, Min DSM violation for 15 minutes had been implemented by all the States/UT.

36.1.2 Number of incidents satisfying the existing logic is given below:

Month	Present settings as per IEGC						
	Frequency < 49.85 Hz for 15 Min. and OD = Min DSM limit						
	No of instances Meeting the freq. limit	No of instances applicable to states	No of instances applicable to states				
AP			Kar	Ker	TN	TS	
Aug-18	17	1	0	0	0	1	0
Sep-18	48	14	5	3	0	5	1
Oct-18	31	15	8	1	0	5	1
Nov-18	11	04	3	0	0	1	0

ADMS with proper logic should in place at all times.

In the OCCM, it had been noted that the ADMS relief identified is quite meager as compared to overdrawal quantum. After deliberations, it had been suggested that SRLDC may come up with a proposal for increase of ADMS quantum.



## 36.2 UFR and df/dt reliefs

36.2.1. Details of recommended, implemented, SCADA monitorable and actual relief being realized are shown in the Table below:

State			AP	TS	KAR	KER	TN	PUD	SR
Recommended	MW	A	2782	2965	3539	1173	4176	103	14738
Implemented	MW	B	2782	2978	3559	1207	4544	116	15186
	%	B/A	100	100	101	103	109	113	103
Mapped Quantum Aug 2018	MW	C	1771	2318	3575	1399	3666	100	12829
Average Visible Relief in Aug 2018	MW	D	1326	1720	1888	1006	2803	79	8821
Wrt monitorable	%	D/C	75	74	53	72	76	79	69
Mapped Quantum Sep 2018	MW	C	1771	2318	3575	1399	3666	100	12829
Average Visible Relief in Sep 2018	MW	E	1470	1798	1718	1217	2840	80	9123
Wrt monitorable	%	E/C	83	78	48	87	77	80	71
Mapped Quantum Oct 2018	MW	C	1771	2282	3575	1392	3666	100	12786
Average Visible Relief in Oct 2018	MW	F	1469	2394	2495	1162	2736	87	8787
Wrt monitorable	%	F/C	83	105	70	83	75	87	69
Mapped Quantum Nov 2018	MW	C	1771	2282	3575	1392	3666	100	12786
Average Visible Relief in Nov 2018	MW	G	1365	1857	2643	1161	2576	86	8020
Wrt monitorable	%	G/C	77	81	74	83	70	86	63

36.2.2 In earlier Meetings, the following had been noted:

- SCADA mapping was to be improved for AP, TS and TN.
- Visible relief to be improved for Karnataka and Tamil Nadu.
- Validation of mapping and reliefs is being taken up periodically and discussed in OCC.

36.2.3 NPC had sought views regarding the review of quantum of load shedding and stages of frequency. This issue had been discussed in 8<sup>th</sup> Meeting of NPC held on 30.11.2018 (Minutes awaited).

### 36.2.4 Review of UFR quantum and set points

- NPC Secretariat vide letter dated 30.05.2018 had furnished UFR quantum to be adopted by SR in the current Grid Environment, which was to be ratified by NPC. Further NPC secretariat had sought comments on retaining the same set points (**49.2 Hz, 49.0 Hz, 48.8 Hz & 48.6 Hz**) or enhancing the set points by 0.2 Hz (**49.4 Hz, 49.2 Hz, 49.0 Hz & 48.8 Hz**). The issue was discussed in 8<sup>th</sup> NPC Meeting held on 30.11.2018 (minutes awaited).

### 36.3 Restricted Governor Mode of Operation (RGMO)/FGMO of Generating Units

36.3.1 RGMO response is being analyzed in the Meetings of OCC. Special Meeting had been convened on 26.09.2018 at SRPC Bengaluru to discuss on FGMO/RGMO related issues (MoM available at SRPC website) .The following had been concluded in the Meeting:

- Inadequate response was needed to be taken up by SLDCs with respective SERC's in line with Hon'ble CERC Orders in respect of Petition No. 84/MP/2015 and 302/MP/2013.
- Non-performance of generators under SRLDC control should be taken up by SRLDC with the respective generators.
- It was noted that some of the generators were disabling RGMO without informing /concurrence from SLDC/SRLDC thus not complying with IEGC provisions.
- SLDCs had been suggested to ensure that schedules are restricted to normative ex-bus generation. Generators had been suggested not to resort to VWO and maintain generation as per the coal quality/ system/machine parameters and keep margins for RGMO / FGMO with MI at all instances.
- Need for testing of RGMO response at the field emerged since response was not meeting the requirements fully.

36.3.2 Performance of RGMO is being analyzed in the OCC forum. Summary for Southern Region (state-wise details are given in **Annexure-LIII**) is given in the Table below:

Sate	Hydro			Thermal			TOTAL		
	Possible (MW)	Actual (MW)	%	Possible (MW)	Actual (MW)	%	Possible (MW)	Actual (MW)	%
AP	46.6	8.5	18	152	84	55	198.6	92.5	47
ISGS	0	0	0	481.4	147.6	31	481.4	147.6	31
KAR	114.8	28.8	25	128.7	35.3	27	243.5	64.1	26
KER	42	11.5	27	0	0	0	42	11.5	27
TG	81	109	135	124.4	26.8	22	153.3	20.8	14
TN	29	0.2	1	174.3	114.5	66	203.3	114.7	56
SR	261.3	43	16	1060.8	408.2	38	1322.1	451.2	34

36.3.3 As per 5<sup>th</sup> Amendment to IEGC, gas stations above 50 MW Installed Capacity were also to come under RGMO/FGMO Operation w.e.f. 1<sup>st</sup> October 2017. Generators/SLDCs had been requested to take necessary action to comply with this Amendment.

36.3.4 FRC computations were also to be undertaken by the SLDCs in line with approved methodology of CERC.

#### 36.4 Testing of Primary frequency response of generators as per IEGC clause 5.2(g)

In compliance of IEGC (5<sup>th</sup> Amendment) Regulations 2017, Clause 5.2(g), NLDC on behalf of RLDCs has formulated a procedure for carrying out the primary response test. The regulation is as quoted below:

*“Provided that periodic checkups by third party should be conducted at regular intervals once in two years through agencies selected by RLDCs or SLDCs as the case may be. The cost of such tests shall be recovered by the RLSDCs or SLDCs from the generators. If deemed necessary by RLDCs or SLDCs the test may be conducted more than once in two years”*

NLDC had addressed a letter in this regard to Hon’ble CERC. As per Procedure a pre-bid Meeting was held at NLDC on 24.10.2018 with interested agencies. Generators had been identified in SR and communications had been sent to all generators. In the testing, SLDCs and RLDC would be involved. SLDCs were requested to kindly take appropriate action for generators in their control area.

**36.5 Demand Estimation for Operational Purpose (Clause 5.3 of IEGC)**

Load Forecasting tool meeting the regulatory requirement was yet to be developed by all utilities. The forecast was required for RRAS and Renewable Framework also.

States had been requested to break the state load into sub components like district wise/substation wise while carrying out the forecasting incorporating weather conditions etc.

**36.6 Sudden Change in Demand/Frequency Excursion (Clause 5.2 (j) of the IEGC)**

There were instances of sudden load changeover and State SLDC (AP & Karnataka) had been requested to take up with Discoms for staggering of load changeover. KAR & AP SLDCs had informed that the issue had been taken up with the Discoms. It was noted that the changeover needs to be analyzed by SLDCs for corrective action.

Necessary action is sought in respect of demand and generation management as well as power purchases, so that clause 5.2 (j) of IEGC Regulations is not violated.

States/generators are requested to kindly comply with IEGC provisions in this regard.

**36.7 Arranging of interruptible loads in four groups**

As per IEGC, to maintain the frequency within stipulated band and also ensure network security, interruptible loads are to be arranged in four groups of loads. This was for the purpose of scheduled power cuts/load shedding, loads for unscheduled load shedding, loads to be shed through UF relays, df/dt relays and loads to be shed under any SPS Scheme. These loads are to be grouped in such a manner that there is no overlapping between different groups of loads.

Existing schemes were not meeting Regulatory requirement fully and further action is required in this regard. Constituents had been requested to ensure necessary compliance.

States are requested to kindly comply with IEGC provisions in this regard.

**36.8 PSS Tuning**

6<sup>th</sup> Meeting of PSS tuning was conducted on 27<sup>th</sup> September 2018 and MoM is available at

SRPC website. PSS Study group had analyzed the Step Response Test Reports for the generators which had furnished the reports and recommendations had been finalized. It had been kindly requested that necessary action may be taken as finalized in the PSS Meetings. SRT of following units had been analyzed in the PSS Meetings. Necessary action has to be taken as per the Recommendations:

Entity	Generating Stations/Units
APGENCO	Rayalaseema TPS U1 to U5; VTPS U1 to U4 & U7; SDSPP U1&U2; Srisailam RB HEP U1 to U7; Lower Sileru HEP U1
AP IPP	HNPCL U1 & U2
TSGENCO	Nagarjunasagar HEP U1 to U8; Srisailam LB HEP U1 to U6; Kakatiya TPS U1 & U2; Kothagudem TPS U7 to U11 [U9 to U11: 22-12-18]; Singareni Collieries U1 & U2
KPCL	Raichur TPS U1 to U8 [U5: 24-11-18, U6 & U7: 17-12-18, U8: 19-11-18]; BTPS U1 to U3 [U1: 15-10-18, U2: 31-12-18]; Varahi UGPH HEP U1 to U4; Nagjheri HEP U1 to U6; Sharavathy HEP U1 to U10
KAR IPPs	UPCL U1 & U2 [U1: 04-10-18, U2: 23-10-18] ; JSWEL U1 to U3
KSEBL	
TANGEDCO	MTPS St-I U1 to U4; NCTPS St-I U1 to U3; Tuticorin TPS U1 to U5; NCTPS St-II U1, U2(U2 Report submitted for analysis); Kadamparai HEP U1 & U2, Mettur St-III
TN IPPs	
CGS	NTPC- Ramagundam U3, U4 & U7; NTPC-Simhadri U1 to U4; NTPC-Talcher STPS St-II U3 & U6; NTECL-Vallur TPS U1 to U3; NLC-Neyveli TPS II U4 to U7; NLC-Neyveli TPS II U1 to U3; NPCIL-KGS U2, U4( Full Report not submitted for U4); NPCIL-KKNPP U1 & U2; NLC-Neyveli TPS II Exp. U1 & U2; (NLC & TN JV) NTPL U1; NTPC-Kudgi U1 & U2
ISTS connected IPPs	TPCIL U1 & U2; Coastal Energen U1 & U2; IL & FS U1 & U2 [U1: 12-04-18]

- For the following Units, PSS is to be tuned and SRT to be carried out /information not available.

Entity	Generating Stations/Units
APGENCO	VTPS U5 & U6; Lower Sileru HEP U2 to U4
AP IPPs	
KPCL	Yeramarus TPP
KAR IPPs	JSWEL U4
KSEBL	Idukki HEP U1 to U6
TANGEDCO	Kadamparai HEP U3 & U4
TN IPPs	STCMS
CGS	NTPC-Ramagundam U1, U2, U5 & U6; NLC-Neyveli TPS I Exp. U1 & U2 (SRT reports not submitted) [U1: 12-10-18, U2: 05-11-18]; NTPC-Talcher STPS St-II U4, U5; NTPC-Kudgi U3; NPCIL-KGS U1, U3 [U3: 19-4-10]; NPCIL-MAPS U1 & U2 [U1: 11-01-09, U2: 03-08-06]

ISTS connected IPPs	Lanco Stage II & III; SGPL-Nellore; SEL U1 to U4; MEL U1 & U2
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- Note: In the above two tables the date [in “dd-mm-yy” format] mentioned in the brackets represents 3 years completion of PSS tuning of the AVR of the generating units upto December 2018. PSS tuning is to be again carried out for these units

In the 5<sup>th</sup> Meeting of Grid Study Committee held on 18<sup>th</sup> June 2018, it had been agreed that NPC would constitute a Committee for PSS Tuning at national level.

### 36.9 Relocation of SPS schemes

A comprehensive report on the SPSs to be relocated had been finalized in 77<sup>th</sup> Meeting of PCSC.

In the OCCMs, SR I/SR II had informed that the commissioning of DTPCs would be completed by end of December 2018. States had been requested to complete their scope of works by end of December 2018 .

### 36.10 RE Forecasting

In OCCM, the need for improved RE Forecasting had been highlighted. It had been decided to form a Group for carrying out RE forecasting and assessing the forecast with actuals. SRLDC would be the main coordinator for this group. As a regular requirement, all states to furnish the forecast and actuals for Wind and Solar by 5<sup>th</sup> of each month in respect of the past month.

It was also felt that NIWE and TANTRANSOCO should mutually discuss the issue with the objective of improving the forecast.

### 36.11 DC Optimization

It was noted that clause 6.4.16 of IEGC could be followed in letter and spirit, ‘.....During fuel shortage condition, in case of thermal stations, they may specify minimum MW, maximum MW, MWh capability and declaration of fuel shortage.’ OCC had noted that even during supercritical coal stock, fuel shortage was not being declared by some of ISGS stations. OCC suggested that less than 3 days coal stock need to be declared as fuel shortage. In the 34<sup>th</sup> SRPC meeting it was noted that ISGS need to ensure that in case average DC is less than Ex-bus (normative) over a day, then DC would need to be maximized during 06:00 to 09:00 hours and also during 18:00 to 21:30 hours, while appropriately reducing DC during other hours.

In the subsequent OCC meetings, generators had been suggested to optimize the DC during fuel shortage conditions. ISG Stations had been suggested to optimise the DC during morning and evening peak hours in compliance of the decision taken in the 34<sup>th</sup> SRPC Meeting/IEGC Provisions. States were also suggested to kindly optimize the DC for state generators during morning and evening peak hours.

### 36.12 Other Issues requiring kind attention of TCC / SRPC

Following issues which are being followed up in the Meetings of Sub-Committees of SRPC also merit kind attention:

- In the 149<sup>th</sup> OCCM, Director General, NIWE had presented the key outlines of Draft Indian Wind Turbine Certification Scheme (prepared in consultation with NIWE) notified by MNRE on 6<sup>th</sup> November 2018. IWTCS is envisaged to assist and facilitate OEMs, End Users, SNAs, Developers, IPPs, Owners, Authorities, Investors, Insurers, Certification bodies and testing laboratories.
- In the 149<sup>th</sup> OCCM, C-DAC had made a presentation on Open Power Solutions. Ampacimon, had made a presentation on Dynamic Line rating- Smart Solutions to manage a Dynamic Grid.
- In the PCSC Meeting held on 25.10.2018, it had been observed that many substations are being operated in single bus operation, reducing the reliability and operational flexibility of the system. As per CEA Transmission Planning Criteria, section-15, single bus operation is not allowed for 220 kV and above S/S. After discussions in the PCSC Meeting it had been decided that all constituents would furnish details of single bus operation at 220 kV and above level in their respective control area for taking necessary actions.
- Physical Regulatory measures were updated in respect of SR states.
- All states/entities to furnish the details of first time charging as per procedure well in advance. SRLDC had requested SLDC to direct RE generators (under RLDC scheduling) to approach RLDC for charging/ synchronization. The link to download is: <http://srldc.org/downloadAnnexures.aspx>
- Available Capacity (AvC) has significant impact in computation of Error (%). In the RE Framework it had been mentioned that a suitable procedure along with appropriate format shall be developed by the NLDC for submission of available Capacity by the wind and solar generators to the concerned RLDC. It was also noted in the CERC approved Procedure (dated 03.03.2017) that “*if a solar plant uses only smaller string inverters, then data may be provided at the plant level*”. SRPC vide letter dated 05.11.2018 (**Annexure-LIV**) had requested NLDC to update on the verification of these aspects at RLDC level.
- TSTRANSCO had informed that the copy of approved STOA is not furnished to states but submitted only to trader. It was requested that a copy of the approved STOA transactions by SRLDC be made available (by mail). SRLDC had agreed to look into this requirement.
- Powergrid had informed that for HTLS associated enhancement works at NLC, the agency had been identified. Works would be carried out through Hot line techniques.
- NLDC had organized a Workshop on 20<sup>th</sup> November 2018 on development of accurate dynamic simulation model for Indian Grid.
- BSRP workshop had been completed by SRLDC on the dates given below :  
Andhra Pradesh: 28.11.2018 (Krishnapattanam), Karnataka, 23.11.2018 (JSWEL),  
Telangana: 14.12.2018 (N’Sagar), Kerala: 14.12.2018 (SLDC, Kalamassery), Tamil Nadu: 21.12.2018 (Mettur).
- Wrt prolonged outage of SGPL-NPS line-1 (out from 14.11.2018 and restored on

01.12.2018) with entire generation being evacuated through one line, SGPL had informed that due to delay in arranging the spares for GIS, the restoration had been delayed. OCC had suggested that adequate spares should be procured and maintained by SGPL to avoid such reduced reliability operation in future.

- Black start study Workshop was proposed to be conducted from 21.01.2019 to 23.01.2019 to review and finalize SR BSRP Procedure 2019 with appropriate study. Representation from Railways had been requested on 23.01.2019 for updating procedure wrt traction supply.
- Black start Mock drill of Bhadravathi back to back was planned during 1<sup>st</sup> week of January 2019.
- Narnoor-Ghani I & II line crossing could be taken up by SR –I utilizing Hot Line facilities as requested by APSLDC.
- 400/230 kV, TELK make transformer had failed on 16.09.2018 at Puducherry in SR-II. It was replaced with ICT from Tirunelveli on 09.11.2018.
- All states had been requested to submit PoC PSSE case for the LGBR finalized in the validation committee meeting keeping in view the node wise load and generation for improved PoC computations.
- CEA vide letter dated 24.09.2018 (**Annexure-LV**) had requested that the information regarding any thermal unit being declared under Commercial Operation (COD) be intimated to Thermal Project Monitoring Division, CEA for necessary action at their end .
- CTU Planning vide letter dated 19.09.2018 (**Annexure-LVI**) had enhanced maximum exportable capacity of SGPL to 1254 MW.
- A Special Meeting was conducted on 31.07.2018 to discuss issues relating to ISTS transmission licensees (MoM available on SRPC website).
- Availability certification of natural inter-state lines and RPC certified intra-state lines had been initiated by SRPC & SRLDC for the lines for which the data is being communicated by the STUs. However, data for some of the lines (like lines between AP & TS etc) was awaited from the STUs.
- Ministry of Power vide Order dated 17.03.2017 had allocated 540 MW of power from Ratnagiri Gas and Power Private Limited (RGPPL) to Indian Railways. 35 MW MoP allocations to Railways (Karnataka) from RGPPL was operational from 25.10.2017. 50 MW & 100 MW to TSTRANSCO & TANTRANSCO was to be made operational.
- CEA vide letter dated 04.05.2018 had sought data required for development Geospatial Energy Map of India which is a part of initiative of Government of India, Niti Aayog. Data may kindly be arranged to be furnished ([cedpd-cea@gov.in](mailto:cedpd-cea@gov.in)).
- In Petition No. 180/MP/2017 to engage in other business for optimum utilization of transmission assets in its ROP for date of hearing 12.12.2108, Hon’ble CERC had directed *as follows*:

*“2. The Commission directed the Petitioner to **convene regional level meetings with the distribution companies** to discuss the matter and submit the outcome of meetings thereafter.*

*3. The Commission directed the **Committee constituted under the Chairmanship of Chief (Finance) of CERC** to finalize the report and share the same with the*

*beneficiaries within fifteen days who may file their comments on the report within fifteen days thereafter.”*

- In Petition No. 144/MP/2017 on Petition under CERC (IEGC) (Fourth Amendment) Regulations, 2016 and CERC’s DOP on Reserve shutdown and compensation mechanism dated 5.5.2017-seeking upward revision of the technical minimum fixed for schedule of operation of NLCIL lignite based generating stations (TPS I Expn. TPS II Stage 1 & 2, TPS II Expn) and other related issues in its ROP for date of hearing 11.12.2018 Hon’ble CERC had directed-  
*“The Commission directed the staff to share the report of CEA with the respondents. The Commission directed the respondents to file their response on the CEA report by 26.12.2018 with an advance copy to the Petitioner.”*

▪ Kerala flood experience

- ✓ Surplus management (due to load loss) was effectively managed by KSEBL.
- ✓ SRLDC was kindly requested to give a feedback in this regard to IMD (since they were having MOU) on granular forecast which would help the states in such type of disaster management.
- ✓ It was noted that the control room and backup supply / DG etc need to be on a higher elevation to function even in the event of flooding. DG, NIWE had suggested that the matter may be taken up with CEA in this regard and some directives/guidelines could be formulated for future.
- ✓ Communication facilities (main and backup) to substations, generating stations and control centres were effectively managed by KSEBL.
- ✓ Need for running the state system through backup SLDC (around 2-3 days in a month) was also suggested by the OCC. Highly experienced system operators need to be posted in Backup SLDCs so that in case of contingencies, they could act accordingly. The need for more experienced SLDC operators was also felt.

**37 COMPLIANCE OF ORDER OF HON’BLE CERC IN PETITION NO. 420/MP/2014 – IN RESPECT OF LVRT AND OTHER PROVISIONS OF CEA/CERC REGULATIONS**

- 37.1 Four Meetings had been conducted so far in compliance of Order of Hon’ble CERC (Petition No.420/MP/2014) in respect of LVRT and other provisions of CEA/CERC Regulations. Hon’ble Commission had specified time lines for a number of actionable points for various entities.
- 37.2 Quarterly reports of the SR constituents jointly validated by SRLDC/SRPC Secretariat were being communicated to Hon’ble CERC with regard to monitoring of the installation and performance of LVRT installed on existing WTGs as per the directives of Hon’ble CERC.
- 37.3 CEA had issued draft second amendment in CEA (Technical Standards for connectivity to the Grid) Regulations. The final notification is awaited.



## **38. GRID OPERATION**

### **38.1 Salient Achievements**

- Unit 1 of KGS in operation since May 13, 2016 surpassed the earlier world record of 940 days continuous operation held by Heysham-2 Unit 8 (UK) on December 10, 2018.
- AGC at Simhadri Stage II was made operational from 16<sup>th</sup> November 2018. Efforts of NTPC, NLDC, SRLDC and SRPC Secretariat were placed on record.
- Efforts of APTRANSCO, APSLDC, APDISCOMs and SRLDC were appreciated for revival of the system effectively in the aftermath of Titli and Pethai cyclones.
- Titli cyclone had hit East Coast including Andhra Pradesh on 10.10.2018. Talcher-Kolar and Srikakulam lines were affected along with several downstream lines and substations. Powergrid had carried out works on war footing in restoring the elements in an efficient manner.
- Efforts of TANTRANSCO, TNSLDC, TANGEDCO and SRLDC were appreciated for revival of the system effectively in the aftermath of Gaja cyclone.
- Efforts of KSEBL in handling the floods and all SR entities for readily supporting / joining in restoration was an excellent model for regional cooperation.
- Southern Region was the first region to commission first stage of URTDSM project
- Live Backup Control Center (BCC) operation of SRLDC from NRLDC had been successfully carried out on 11.10.2018.
- KSEBL had completed live operation from Backup LD facility at Thiruvananthapuram on 24.11.2018.
- KPTCL had agreed to provide one VSAT terminal along with data and speech channel for demonstration purpose in one of the substations in Meghalaya for period of 12 months for monitoring the performance of communication links through VSAT.
- On 15<sup>th</sup> August 2018, energy consumption of Tamil Nadu was around 253 MU of which 122 MU (48%) was met from RE.
- Till August 2018, NLCIL had traded around 1,000 MU of URS power after taking consent from the beneficiaries. About 95 % of surrendered quantum was sold.
- As a first time in history of Telangana grid, 400 /11 kV Medaram GIS lift irrigation S/S (underground) was synchronized with grid on 28.08.2018.
- All six units at Srisailem LB were put into continuous operation from 18.08.2018 to 02.09.2018 in Telangana grid.

### **38.2 Grid Highlights during July 2018**

- Highest ever Wind generation of 245 MU recorded on 20.07.2018 in SR
- 14.5 MW of WM & 53 MW of Solar in private sector were added in Andhra Pradesh.
- 49.5 MW of Solar was added in private sector in Telangana.
- 40.75 MW of WM was added in private sector in Tamil Nadu.
- 220 kV SS Brandix in Visakhapatnam district of existing 2 x 100 MVA was commissioned on 07.07.2018 by APTRANSCO with augmented capacity of 3 x 100 MVA.
- 400 kV Malkaram SS in Medchal district of existing 2 x 100 MVA was commissioned on 06.07.2018 by TSTRANSCO with augmented capacity of 1 x 160 + 1 x 100 MVA.

- 400 kV Shivarampally in Rangareddy district of existing 1 x 160 + 3 x 100 MVA was commissioned on 26.07.2018 by TSTRANSCO with augmented capacity of 2 x 160 + 2 x 100 MVA.

### **38.3 Grid Highlights during August 2018**

- 23 MW of Solar was added in private sector in Andhra Pradesh.
- 24 MW of WM & 12 MW of Solar were added in private sector in Karnataka.
- 220 kV D/C line from 400/220 kV SS Nellore Julurupadu I & II to 220/132/33 kV SS Kalluru in Khammam district of 83.228 Ckm was commissioned on 03.08.2018 by TSTRANSCO.
- LILO of 220 kV Dindi – Maheshwaram I & II D/C line in Rangareddy district of 6.4 Ckm was commissioned on 03.08.2018 by TSTRANSCO.
- 220 kV features at 132 kV Madgula PTR I & II SS in Mahaboobnagar district of 200 MVA capacity was commissioned on 03.08.2018 by TSTRANSCO.
- 220/132/33 kV SS Kalluru PTR I & II in Khammam district of 200 MVA capacity was commissioned on 03.08.2018 by TSTRANSCO
- 220 kV Mahaboobnagar (Boothpur SS) in Mahaboobnagar district of existing 2 x 160 + 1 x 100 MVA was commissioned on 02.08.2018 by TSTRANSCO with augmented capacity of 3 x 160 MVA.
- 200/132kV SS Bonguluru PTR II in Rangareddy district of capacity 100 MVA was commissioned on 08.08.2018 by TSTRANSCO.
- SR I, Powergrid had put 2 nos. of 400 kV line bays at Srikakulam for termination of Srikakulam Pooling Station – Garividi 400 kV (quad) D/c line under Commercial Operation wef 00:00 hrs of 07<sup>th</sup> August 2018.
- SR I, Powergrid had put 2 x 1500 MVA 765/400 kV ICTs at Srikakulam along with associated 765 kV & 400 kV bays at Srikakulam Pooling Station under Commercial Operation w.e.f. 00:00 hrs of 07<sup>th</sup> August 2018.

### **38.4 Grid Highlights during September 2018**

- 48 MW of WM & 50 MW of Solar in private sector were added in Andhra Pradesh.
- 19.8 MW of WM & 40 MW of Solar in private sector was added in Karnataka.
- 56.425 MW of WM in private sector was added in Tamil Nadu.
- TSTRANSCO met a demand of 10800 MW on 11.09.2018 which is maximum till date.
- TSTRANSCO met an energy consumption of 231 MU on 11.09.2018 which is maximum till date.
- 220 kV D/C line by making LILO of existing 220 kV NTTPS (VTS)-Kamavarapukota I & II line to the 220/132/33 kV SS Nuzivid in Krishna district of 26.272 Ckm was commissioned on 20.09.2018 by APTRANSCO.
- 220/132 kV SS at Nuzivid I & II in Krishna district of 200 MVA capacity was commissioned on 20.09.2018 by APTRANSCO
- 400 kV QMDC Sundilla - STPP II in Peddapalli district of 27.869 Ckm was commissioned on 25.09.2018 by TSTRANSCO.

- 220 kV TMDC line from 400/220/11 kV Sundilla SS to 220/11 kV Annaram I & II SS in Peddapalli district of 57.996 Ckm was commissioned on 14.09.2018 by TSTRANSCO.
- 220 kV TMDC line from 400/220/11 kV Sundilla SS to 220/11 kV Medigadda I & II SS in Jayashankar Bhoopalappalli district of 148 Ckm was commissioned on 29.09.2018 by TSTRANSCO.
- KSPDCL had informed that 2x150 MVA, 220/66 kV transformer substation-5 have been put under Commercial Operation at 18:40 Hrs on 17.09.2018
- SR II, Powergrid had charged the LILO of 230 kV Neyveli – Bahoor S/c line at 230 kV Karaikal S/s on 01st October 2018 by cross jumpering at dead end tower.

### 38.5 Grid Highlights during October 2018

- 2.10 MW of Wind Mill in private sector were added in Andhra Pradesh.
- 2 MW of Solar in state sector were added in Kerala.
- 10.75 MW of Wind Mill in private sector were added in Tamil Nadu.
- 400 kV TM D/C Podili to Sattenapalli I & II line of 214.796 Ckm was commissioned on 06.10.2018 by APTRANSCO.
- 400/220 kV Hindupur SS I in Ananthapur district of 315 MVA capacity was commissioned on 10.10.2018 by APTRANSCO.
- 400/220 kV Podili SS I in Prakasam district of 315 MVA capacity was commissioned on 28.10.2018 by APTRANSCO.
- 400 kV QM D/C line from Ramadugu I to Mydaram of 20.35 Ckm was commissioned on 31.10.2018 by TSTRANSCO.
- 500 MVA, ICT IV at Shankarapally SS in Rangareddy district was commissioned on 10.10.2018 by TSTRANSCO.
- SR I, Powergrid had put 765/400 kV Substation at Kadapa (GIS) along with 2 x 1500 MVA ICTs, LILO of Kurnool-Thiruvalam by 765 kV D/C line and 2 x 240 MVAR, 765 kV Bus reactors along with bays & equipment at 765/400 kV Kadapa GIS under Commercial Operation with effect from 00:00 hrs of 25th October 2018.
- SR I, Powergrid had put the following elements under Commercial Operation with effect from 00:00 hrs of 31st October 2018:
  - 1 no. 400 kV, 125 MVAR, Bus Reactor-2 at 400 kV Kadapa SS
  - 1 no. 765 kV, 240 MVAR, Bus Reactor-2 at 765/400 kV Nellore SS
  - 1 no. 765 kV, 240 MVAR, Bus Reactor-2 at 765/400 kV Kurnool SS
  - 1 no. 765 kV, 240 MVAR, Bus Reactor-2 at 765/400 kV Raichur SS

### 38.6 Grid Highlights during November 2018

- 160 MW of Solar were added in private sector in Telangana.
- 11 MW in state sector & 02 MW in private sector of Solar were added in Karnataka.
- LILO of Uravakonda - Jammalmadugu to the proposed 400/220 kV SS at Talaricheruvu 1.64 Length Ckm was commissioned on 30.11.2018 by APTRANSCO.
- 220 kV Malayalappally – Jagtial II in Karimnagar district of 58 Ckm was commissioned on 02.11.2018 by TSTRANSCO.
- 220 kV Shamshabad – Yeddumailaram and 220 kV Shadnagar – Shankarapally is made LILO at 400/220/132 kV Kethireddypally SS (13.748 Ckm) was commissioned on 14.11.2018 by TSTRANSCO.

- LILO of Circuit - I of Suryapet – Shankarapally QMDC Line to 400/220/132 kV Kethireddypally SS (20.56 Ckm) was commissioned on 14.11.2018 by TSTRANSCO.
- 220/33 kV features at existing 220 kV Nagaram in Warangal district of 315 MVA capacity was commissioned on 27.11.2018 by TSTRANSCO.
- 220 kV Medchal SS in Malkajgiri district of existing 2 x 160 + 1 x 100 MVA capacity was augmented to a capacity of 3 x 160 MVA and was commissioned on 22.11.2018 by TSTRANSCO.
- ICT I & II of 315 MVA capacity at 400/220/132 kV Kethireddypally SS in Rangareddy district was commissioned on 14.11.2018 by TSTRANSCO
- ICT IV of 315 MVA capacity at 400/220 kV Malkaram SS in Rangareddy district was commissioned on 22.11.2018 by TSTRANSCO

### 38.7 Demand Variation (Peak Vs Off-peak)

Issue regarding large variation between minimum and maximum demands has been under the consideration of TCC/SRPC. Issue is also being discussed in the monthly Meetings of OCC. Following was observed with regard to the period from August 2018 to November 2018:

Description	Minimum to Maximum Demand Variation %						
	Andhra Pradesh	Telangana	Karnataka	Kerala	Tamil Nadu	Puducherry	Southern Region
<b>August 2018</b>							
Highest	28.25	38.71	38.47	50.32	33.67	44.86	27.92
Date (Day)	08.08.2018 (Wednesday)	21.08.2018 (Tuesday)	13.08.2018 (Monday)	17.08.2018 (Friday)	16.08.2018 (Thursday)	18.08.2018 (Saturday)	17.08.2018 (Friday)
Lowest	16.65	19.03	17.55	28.53	10.46	16.76	11.27
Date (Day)	12.08.2018 (Sunday)	05.08.2018 (Sunday)	05.08.2018 (Sunday)	25.08.2018 (Saturday)	26.08.2018 (Sunday)	07.08.2018 (Tuesday)	05.08.2018 (Sunday)
Average	21.64	26.24	27.51	37.97	20.72	24.48	18.96
<b>September 2018</b>							
Highest	31.74	36.98	36.93	36.59	30.73	60.17	23.88
Date (Day)	10.09.2018 (Monday)	17.09.2018 (Monday)	27.09.2018 (Thursday)	24.09.2018 (Monday)	03.09.2018 (Monday)	16.09.2018 (Sunday)	18.09.2018 (Tuesday)
Lowest	14.35	18.03	17.42	26.74	12.59	16.87	11.03
Date (Day)	20.09.2018 (Thursday)	09.09.2018 (Sunday)	11.09.2018 (Tuesday)	20.09.2018 (Thursday)	09.09.2018 (Sunday)	02.09.2018 (Sunday)	23.09.2018 (Sunday)
Average	21.23	23.38	23.08	31.45	19.95	27.08	17.11
<b>October 2018</b>							
Highest	27.98	28.32	37.76	44.06	32.55	42.06	23.86
Date (Day)	15.10.2018 (Monday)	29.10.2018 (Monday)	16.10.2018 (Tuesday)	01.10.2018 (Monday)	09.10.2018 (Tuesday)	29.10.2018 (Monday)	19.10.2018 (Friday)
Lowest	13.11	12.95	23.76	23.27	11.15	18.18	13.15
Date (Day)	04.10.2018 (Thursday)	24.10.2018 (Wednesday)	27.10.2018 (Saturday)	13.10.2018 (Saturday)	14.10.2018 (Sunday)	01.10.2018 (Monday)	28.10.2018 (Sunday)
Average	21.48	20.85	28.29	32.86	23.03	29.24	18.29
<b>November 2018</b>							
Highest	29.22	31.48	38.89	39.10	38.50	70.93	27.27
Date (Day)	28.11.2018 (Wednesday)	30.11.2018 (Friday)	19.11.2018 (Monday)	12.11.2018 (Monday)	26.11.2018 (Monday)	16.11.2018 (Friday)	26.11.2018 (Monday)
Lowest	17.64	16.63	26.20	19.75	17.66	8.78	12.72
Date (Day)	18.11.2018 (Sunday)	02.11.2018 (Friday)	04.11.2018 (Sunday)	16.11.2018 (Friday)	11.11.2018 (Sunday)	24.11.2018 (Saturday)	11.11.2018 (Sunday)
Average	23.32	23.95	31.54	33.22	28.10	33.25	20.53

**Note:** Highest & lowest figures for the month have been computed based on the daily values.

### 38.8 Frequency of Operation of Southern Grid

Frequency of operation of the Southern Grid for the period under review is furnished below please:

Month	Percentage of time when frequency (Hz) was								Month Avg. freq.
	Less than 49.5	49.5 to 49.7	49.7 to 49.9	49.9 to 50.0	50.0 to 50.05	50.05 to 50.20	More than 50.20	Within IEGC range 49.9 to 50.05	
August 2018	0.00	0.00	12.99	55.23	23.95	7.82	0.01	79.18	49.98
September 2018	0.00	0.00	13.21	53.20	26.85	6.74	0.00	80.05	49.97
October 2018	0.00	0.00	11.63	51.32	28.17	8.87	0.00	79.49	49.97
November 2018	0.00	0.00	10.92	53.72	26.06	9.26	0.03	79.79	49.97

- During the period under review, caution / violation messages (**Annexure-LVII**) were issued to the constituents by SRLDC. Matter regarding overdrawal at low frequency by some of the constituents is being regularly deliberated in the OCC forum. Utilities were requested to kindly adhere to the Regulations in this regard. All the concerned entities were requested to take **appropriate action in real time** to curtail sustained UD/OD and UI/OI and on **violation messages** being issued by SRLDC and **report compliance**
- Deviation of SR regional entities of Zero crossing violation was also discussed in OCC meetings for improvement. In the 4<sup>th</sup> amendment to DSM Regulation, the zero crossing violation have been tightened with a limit of sign change after every time sixth time blocks with penal clauses for violation. The same had been appraised to all the regional entities in the 150<sup>th</sup> OCC Meeting held on 10.12.2018.

### **39. CERTIFICATION OF NON-ISTS LINE CARRYING INTER-STATE POWER FOR THE YEAR 2018-19**

As per provisions of CERC Regulations and as per the methodology approved in the 31<sup>st</sup> Meeting of SRPC, SRPC Secretariat in consultation with SRLDC is certifying the non-ISTS lines carrying inter-state power.

APTRANSCO vide letter dated 31.07.2018 had stated that as per CERC (Sharing of Inter-state Transmission Charges and Losses) (3<sup>rd</sup> amendment) Regulations, 2015, the cutoff 50 % has been removed. Hence, it was requested to remove the cutoff percentage for certification for certifying of non-ISTS lines carrying ISTS power.

It was noted that STU lines get constructed for evacuation of state power. When these lines are connected to ISTS, there would be incidental flows, as per laws of physics. One way to view the matter would be to consider whether the other states would be able to receive their power through ISTS lines if the state lines are taken out from studies. Considering these issues it makes sense to put some threshold (say 50%) to recover the YTC of intra-state lines

through POC. If a state over designs its system, then the other DICs may be burdened, in case no threshold is considered.

As agreed in the SRPC meeting a Special Meeting on the matter has been scheduled to be held on 11<sup>th</sup> January 2019.

**40. REIMBURSEMENT OF SRPC EXPENDITURE**

Statement showing net amount payable by Member Utilities of SRPC for the year 2018 -19, after adjustment of surplus/deficit for the previous period is furnished in **Annexure-LVIII**.

Members are kindly requested to ensure payment, wherever due.

**41. COMPLIANCE OF CEA REGULATIONS FOR GRID CONNECTIVITY OF RENEWABLE ENERGY SOURCES**

41.1 CEA vide letter dated 12.04.2017 and 08.05.2017 (enclosing MoP letter dated 06.04.2017) and in Special Meetings held on 28.06.2017, 11.09.2017, 25.10.2017 & 04.05.2018 had observed that it was obligatory for all grid connected renewable generators to provide necessary facilities for data communication and data storage and other parameters as may be stipulated. The following is updated status with regard to availability of RE SCADA:

State	SCADA availability as on 30.11.2018 Mapped I/C	Remarks
AP	Wind: 3908/4061 MW (96%) Solar: 2033/2591 MW (78%) Total: 5941/6652MW (89%)	Pending SCADA availability was for RE connected distribution level and for which action had been taken for compliance.
TS	Wind: 128.1/128.1 MW (100%) Solar: 3235/3479 MW (93%) Total: 3363/3608 MW (93%)	Action for balance SCADA availability at 33 kV and below was being followed up and notices had been issued.
KA	Wind: 4751/4795 MW (99%) Solar: 4602/5115 MW (90%) Total: 9353/9910 MW (94%)	
KE	Wind: 16/59.3 MW (27%) Solar: 93/116 MW (80%) Total: 109/175 MW (62%)	
TN	Wind: 8145/8312 MW (98%) Solar: 648/2366 MW (27%) Total: 8793/10677 MW (82%)	Notices had been issued for SS under 10(1) for SCADA availability. 100% SCADA availability of wind was likely to be ensured by December 2017. TANTRANSCO (Communication) and TANGEDCO (Metering) had jointly initiated action for Solar SCADA availability and was targeted to be completed by July 2018.

States are requested to furnish the information in a time bound manner.

41.2 In respect of REMC project (SRLDC, AP, Karnataka & TN) it had been noted that total commissioning is expected by Jan 19.

#### **42. SCHEDULING OF ANANTHAPURAMU ULTRA MEGA SOLAR PARK / PAVAGADA SOLAR PARK**

42.1 Scheduling for N P Kunta Solar by SRLDC had commenced from 01.10.2018.

42.2 SRLDC vide letter dated 29.08.2018 (**Annexure-LIX**) had requested constituents to revert back on the details regarding the commissioning cum COD status of RE parks /projects in their control area to SRLDC/SRPC). AP was to specifically revert back on Ghani and Uravakonda and TN on Kamuthi. It was noted that Ghani was an approved Solar Park under Solar Park Scheme of MNRE.

Meetings in respect of scheduling in respect of Pavagada Solar Park were held on 28.08.2018, 03.09.2018 with participation from KSPDCL, KAR SLDC, SRLDC and NTPC. Further, Meetings were held on 04.10.2018 & 02.11.2018 with SPDs to start scheduling by SRLDC.

Mock scheduling exercise was to be started from 15<sup>th</sup> December 2018, which was later postponed.

42.3 SRPC vide letter dated 12.12.2018 (**Annexure-LX**) had replied to queries of M/s Fortum on scheduling of SPD(s).

#### **43. KARAIKAL DRAWAL**

It was earlier noted that Karaikal would be drawing power through LILO of Neyveli-Bahour which is a PGCIL ISTS line.

LILO of 230 kV Neyveli-Bahour S/C at 230 kV Karaikal S/s had been charged on 01.10.2018. LILO line could not be terminated at Karaikal S/Y on account of non-readiness of Karaikal S/Y which is under the scope of M/s Puducherry ED. Later Karaikal S/S was charged on 20.12.2018. PED vide letter dated 18.12.2018 had stated the following

- Till NNTPS unit is commissioned or additional power is allocated by MOP, part of Karaikal region will continue to be fed from TN through 110 kV Sorakudi feeder and balance load of Karaikal would be fed from Karaikal Auto substation, as an interim arrangement. Action for ABT compliant SEM meters is underway for Sorakudi-Thiruvarur & TR Pattinam-Thiruvarur 110 kV feeders in coordination with PGCIL.
- In Petition No 170/TT/2018, Hon'ble CERC in its ROP ( date of hearing 23.10.2018) had noted, '2. *The Commission observed that it would like to hear Puducherry Electricity Department on the issue of non-commissioning of the Karaikal switchyard under its scope before approving COD and grant of AFC for inclusion in PoC charges.*'

#### **44. CERC, DEVIATION SETTLEMENT MECHANISM AND RELATED MATTERS (4<sup>TH</sup> AMENDMENT), REGULATIONS 2018**

CERC, Deviation Settlement Mechanism and related matters (4<sup>th</sup> Amendment), Regulations 2018 were notified on 20.11.2018 and implemented wef **01.01.2019**. Certain clarifications on implementation were taken up by SRPC vide letter dated 07.12.2018(**Annexure-LXI**)

with CERC on Inter Regional DSM, Deviation price for PGCIL, sign change every 6<sup>th</sup> or 7<sup>th</sup> time block & energy rates to be utilized. In the 150<sup>th</sup> OCCM, entities had raised issues regarding the veracity of SCADA and its implications on the DSM. It was clarified that each control area needs to have its own SCADA. It is a well established fact that operations are carried out based on SCADA while accounting is carried out on the SEMs. Persistent issues on SCADA, if any, need to be brought to OCC for timely addressing of the issues.

NLDC vide letter 21.12.2018(**Annexure-LXII**) had taken up the issue of settlement of IR & Cross-Border transactions and sign change time blocks (6<sup>th</sup> or 7<sup>th</sup>).

#### **45. UPCOMING RENEWABLE PROJECTS AND THEIR INTEGRATION WITH TRANSMISSION NETWORK**

45.1 In earlier Meetings it was noted that RE schemes are getting modified at times while some are getting dropped also. TCC had suggested that the RE Projects/evacuation schemes may kindly be reviewed and updated status communicated. It was observed that timely progress on these schemes needs to be communicated to SRPC Secretariat, being a critical issue monitored by various bodies.

#### **45.2 Evacuation of power from RE sources in Southern Region (Proposed Wind Energy Zone by MNRE)**

In the 1<sup>st</sup> SRSCT held on 07.09.2018, considering power potential & expected availability of generation, the following transmission system for evacuation of power from wind energy zones and phase-I of solar energy zones was agreed:

- A. Tirunelveli and Tuticorin Wind Energy Zone (Tamil Nadu)(500MW)
- B. Karur / Tiruppur Wind Energy Zone (Tamil Nadu)(2500MW)
- C. Koppal Wind Energy Zone (Karnataka) (2500MW)
- D. Kurnool Wind Energy Zone (3000MW) /Solar Energy Zone (AP)(1500MW)

The above transmission system is a broad master plan to serve integration of RE generation potential assessed in Tamil Nadu, Karnataka and Andhra Pradesh for period upto 2021-22. As such it was agreed that the scheme would be implemented as ISTS, consequent to grant of LTA by the CTU. Transformation capacity at various stations and certain elements could be required to be reviewed, based on LTA applications. Accordingly, this broad master plan would be implemented in stages to serve RE integration.

#### **46 PATROLLING / MAINTENANCE OF CRITICAL LINES AND SUBSTATIONS**

46.1 Insulator tracking had been observed in Transmission lines and Substations located in coastal and polluted areas. SRPC vide letter dated 05<sup>th</sup> May 2016 had communicated to the concerned in this regard. Transmission Lines and Substations in the most vulnerable terrain, coastal and polluted areas were to be categorized for monitoring to ensure that Patrolling and Maintenance is being carried out in accordance with Patrolling guidelines.



46.2 Concerned entities need to kindly initiate/continue necessary steps to ensure that Patrolling and Maintenance is carried out regularly as per the Patrolling Guidelines.

**47 ROSTER FOR HOSTING THE SRPC MEETINGS**

As per the Roster the SRPC Meetings are to be hosted in the following sequence:

(1) JSWEL (2) NPCIL (3) SGPL

**48 DATE & VENUE OF THE NEXT MEETING OF SRPC**

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