



भारत सरकार Government of India

विद्युत मंत्रालय Ministry of Power

उत्तर पूर्वी क्षेत्रीय विद्युत समिति

North Eastern Regional Power Committee

एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya



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No.: NERPC/COM/CC_Min/2016/3766-3812

Dated: 13th January 2017

To

1. Director (Distribution), MePDCL, Lumjingshai, Short Round Road, Shillong – 793 001
2. Director (Transmission), MePTCL, Lumjingshai, Short Round Road, Shillong – 793 001
3. Director (Generation), MePGCL, Lumjingshai, Short Round Road, Shillong – 793 001
4. Engineer-in-Chief (P&ED), Govt. of Mizoram, New Secretariat Complex, Khatla, Aizawl – 796 001
5. Chief Engineer (WE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Chief Engineer (EE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
7. MD, APDCL, Bijuli Bhawan, Paltan Bazar, Guwahati-781 001
8. MD, AEGCL, Bijuli Bhawan, Paltan Bazar, Guwahati-781 001
9. MD, APGCL, Bijuli Bhawan, Paltan Bazar, Guwahati-781 001
10. MD, MSPDCL, Secure Office Building Complex, 3rd Floor, South Block, Near 2nd MR Gate, Imphal – 795 001
11. MD, MSPCL, Keishampat, Imphal – 795 001
12. Chief Engineer (P&E), Department of Power, Govt. of Nagaland, Kohima – 797 001
13. Director (Tech), TSECL, Banamalipur, Agartala – 799 001
14. Director (Tech), TPGL, Banamalipur, Agartala – 799 001
15. ED, NERTS, PGCIL, Dongtiah-Lower Nongrah, Lapalang, Shillong -793 006
16. GM (LD&C), PGCIL, "Saudamini" Plot No. 2, Sector – 29, Gurgaon, Haryana – 122 001
17. General Manager, NERLDC, Dongtiah-Lower Nongrah, Lapalang, Shillong -793 006
18. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
19. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
20. ED (Commercial), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
21. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
22. GM (Comm), NTPC Limited, ER-II HQ, Plot No. N-17/2, Third Floor, Naya Palli, Bhubaneswar-751012
23. Group GM, NTPC Limited, Bongaigaon Thermal Power Project, P.O. Salakati, Kokrajhar-783369
24. MD, OTPC, 6th Floor, A Wing, IFCI Tower-61, Nehru Place, New Delhi-110019
25. Vice President, PTCIL, 2nd Floor, NBCC Tower, 15, Bhikaji Cama Place, New Delhi - 110066
26. AGM (BD), NVVN, Core 5, 3rd floor, Scope Complex, 7 Institutional Area, Lodhi Rd., N. Delhi-3
27. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
28. Chief Engineer, GM Division, CEA, Sewa Bhawan, R.K. Puram, New Delhi – 110066

Sub: Corrigendum to the minutes of the 31st CC meeting held on 06/12/2016 at Hotel Radisson Plaza, Mahipalpur, Delhi.

Sir,

With reference to the minutes of the 31st CCM issued vide our letter of even no. dated 27/12/2016, it is to state that following corrigendum is issued for your kind information:

In the first page, first para, "The 31st CC Meeting was hosted by ONGC Tripura Power Company Limited. The List of Participants in the 31st CC Meeting is attached at Annexure – I" **shall be replaced by** "The 31st CC Meeting was hosted by ONGC Tripura Power Company Limited. The List of Participants in

*the 31st CC Meeting is attached at **Annexure – I**. There was a ppt presentation by NERLDC on 'Reserve Regulation Ancillary Services (RRAS)' in the evening of 5th December, 2016. The detail of the presentation is attached at **Annexure-II**".*

The **annexure-II** to the minutes is enclosed herewith.

Encl.: As above

भवदीय / Yours faithfully,



लिंगखोइ / B. Lyngkhai)
निदेशक / Director/S.E (Comml)

Copy to:

1. SA to Member(GO&D), CEA, Sewa Bhawan, R.K. Puram, New Delhi – 110066
2. CGM (Comml), APDCL, Bijuli Bhawan, Paltan Bazar, Guwahati-781 001
3. Head of SLDC, SLDC Complex, AEGCL, Kahilipara, Guwahati - 781019
4. SE (EM), MePDCL, Lumjingshai, Short Round Road, Shillong – 793 001
5. Head of SLDC, MePTCL, Lumjingshai, Short Round Road, Shillong – 793 001
6. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
7. ED (Comml), MSPDCL, Secure Office Building Complex, 3rd Floor, South Block, Near 2nd MR Gate, Imphal – 01
8. ED (Tech), MSPDCL, Secure Office Building Complex, 3rd Floor, South Block, Near 2nd MR Gate, Imphal – 01
9. ED (Tech), MSPCL, Keishampat, Imphal – 795 001
10. S.E. (Commercial), Department of Power, Govt. of Mizoram, Khatla, Aizawl – 796 001
11. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl – 796 001
12. A.C.E. (Gen & Trans), Department of Power, Govt. of Nagaland, Kohima – 797 001
13. Head of SLDC, Department of Power, Dimapur, Nagaland
14. AGM (C&SO), TSECL, Agartala – 799 001
15. Head of SLDC, TSECL, Agartala – 799 001
16. General Manager, Loktak HEP, NHPC Limited, Vidyut Vihar, Komkeirap, P.O. Loktak, Manipur – 795 124
17. GM (Comml), OTPC, 6th Floor, A Wing, IFCI Tower-61, Nehru Place, New Delhi-110019
18. Head of the Plant, OTPC, Palatana, Kakraban, Gomati District, Tripura - 799116
19. AGM (Comml), NTPC Limited, 16th Rupalim Path, Rukhmini Nagar, Guwahati-781022



निदेशक / Director/S.E (Comml)

The slide features a light blue background with a white circle at the top center. Below the circle, the title "Ancillary Services Operations" is written in a large, bold, orange font, followed by the subtitle "Experience in Indian Context" in a smaller, italicized orange font. At the bottom, the author's name "SHEIKH SHADRUDDIN" and affiliation "NERLDC, SHILLONG" are displayed in a dark blue, all-caps font.

Ancillary Services Operations

Experience in Indian Context

SHEIKH SHADRUDDIN
NERLDC, SHILLONG

The slide has a light blue background with a white circle at the top center containing the number "2". Below the circle, the word "Outline" is written in a dark blue font. A list of 14 bullet points follows, detailing the presentation's structure. The slide concludes with a dark teal horizontal bar at the bottom.

Outline

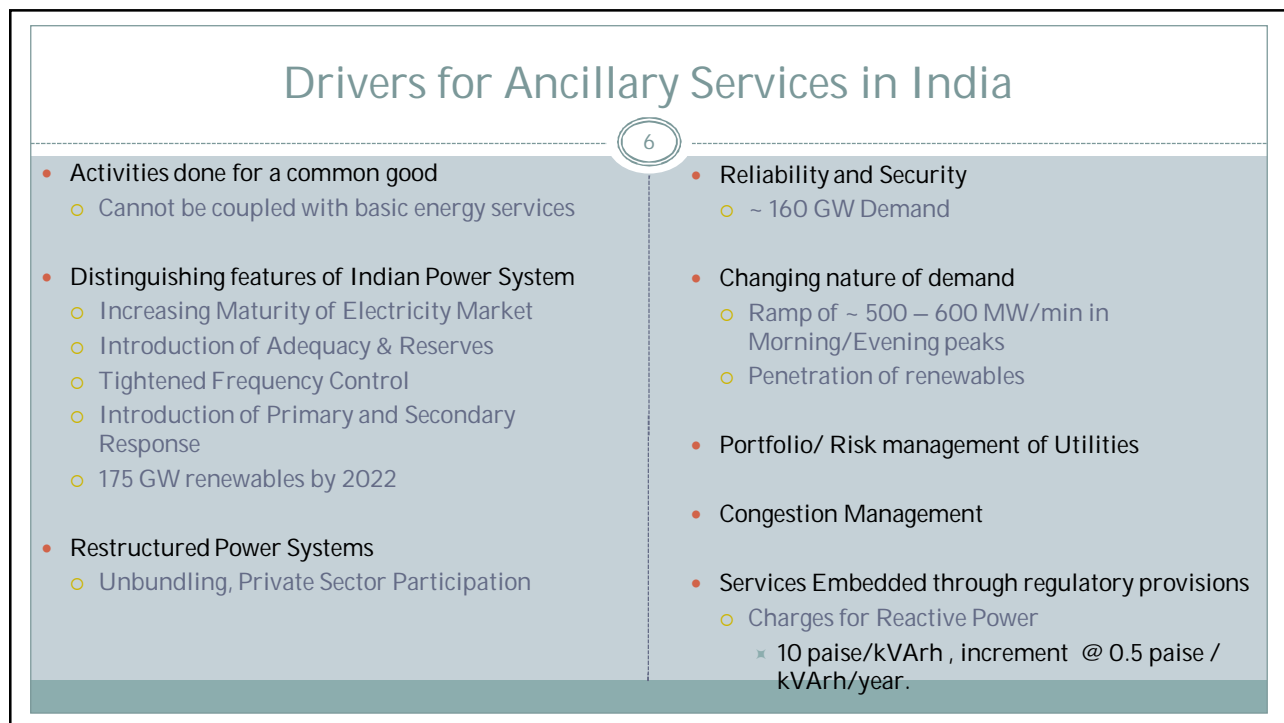
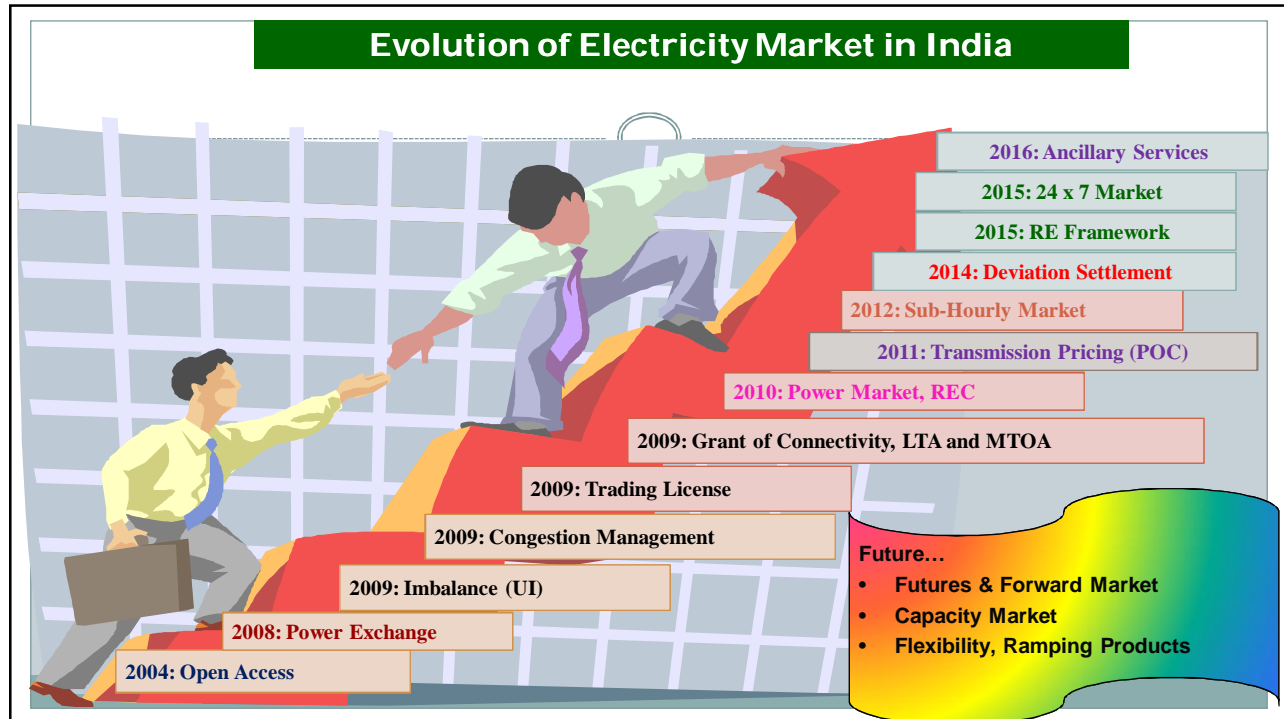
- Ancillary Services – Introduction
- Reserve Regulation Ancillary Services (RRAS)
- Improved Frequency Profile
- Harnessing Undespached Surplus
- Statistics of RRAS Implementation
- RRAS Providers
- Analysis of RRAS Despatch Instructions
- SCADA Visualization and Situational Awareness
- In-House developed Software Application
- RRAS Accounting & Settlement
- Key Learnings...
- Challenges...
- Way Forward

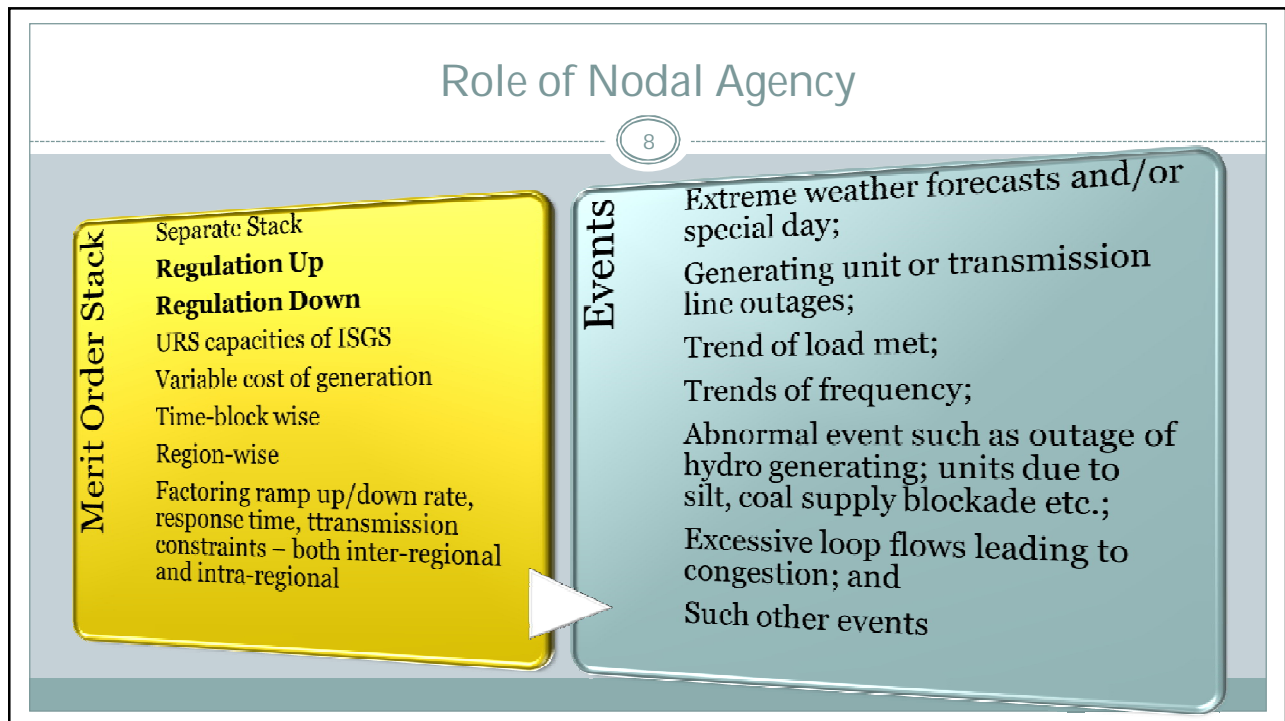
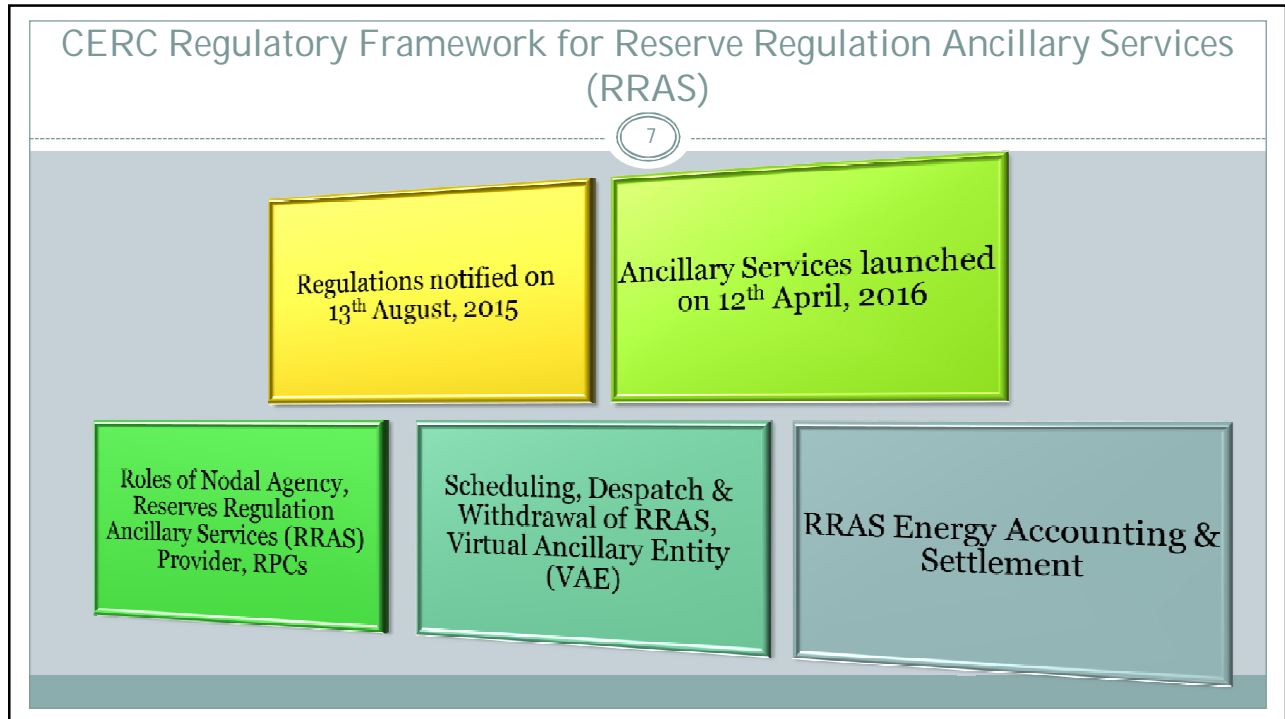


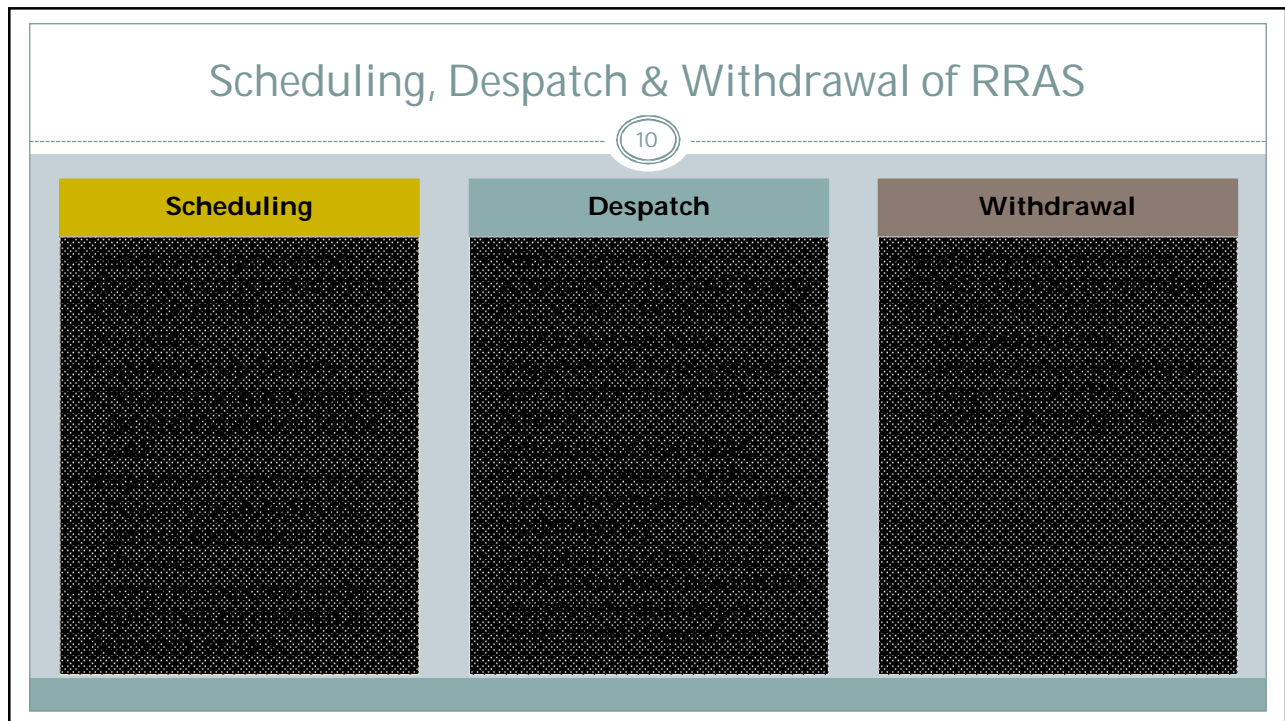
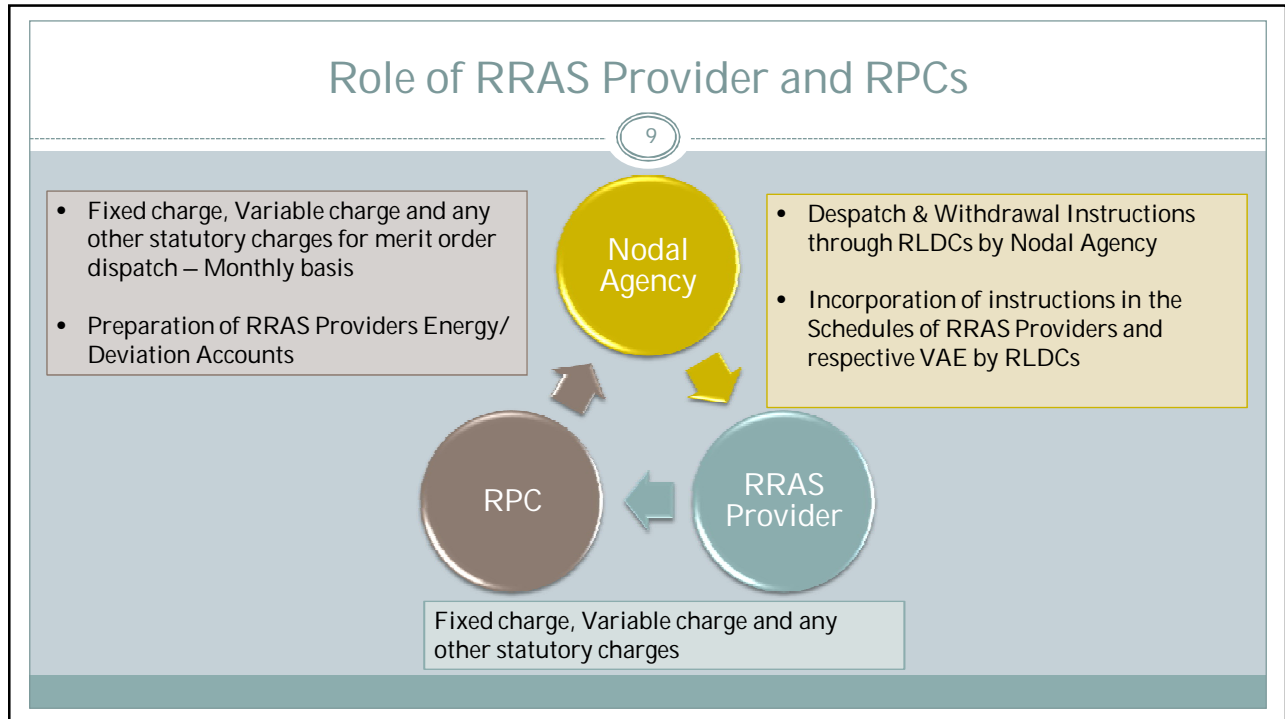
Ancillary Services in Indian Power System

- *As per IEGC, 2010*
 "Ancillary services in power system (or grid) operation means services necessary to support the power system (or grid) operation in maintaining power quality, reliability and security of the grid, e.g active power support for load following, reactive power support, black start etc"
- *The Appellate Tribunal for Electricity, judgment in appeal no.202 (13th December 2006)*
 "Ancillary services are those functions performed to support the basic services of generation, transmission, energy supply and power delivery. Ancillary services are required for the reliable operation of the power system."

4







RRAS Energy Accounting & Settlement

11

RRAS Energy Accounting

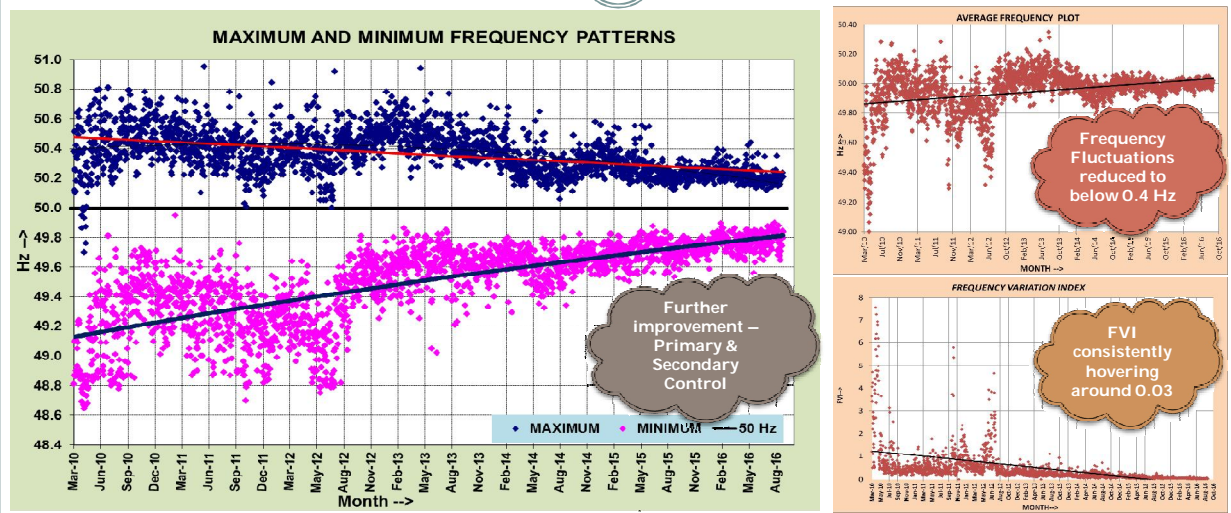
- Done by RPC on weekly basis along with DSM Account
- Based on interface meters data and schedule of RRAS Providers
- Separate statement maintained along with Regional Deviation Settlement Account for RRAS

RRAS Energy Settlement

- Under separate account head of RRAS from Regional DSM Pool Account
- **Regulation Up**
 - RRAS provider paid at their fixed & variable charges with markup
- **Regulation Down**
 - RRAS provider shall pay 75 % of variable charges to Pool Fund
- No retrospective settlement
- Any deviation settled as per CERC DSM Regulations, 2014
- Penalties for sustained failure to provide RRAS and violation of directions of RLDC

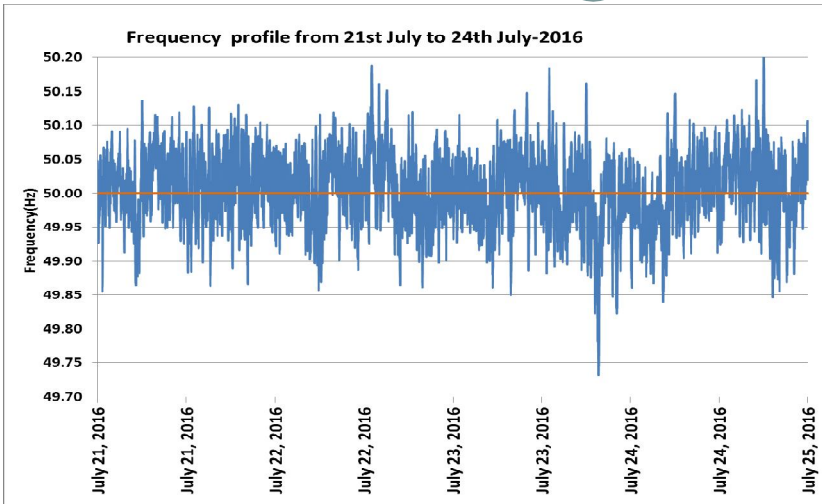
Frequency Profile

12



Frequency Profile: 21st - 24th July, 2016

13

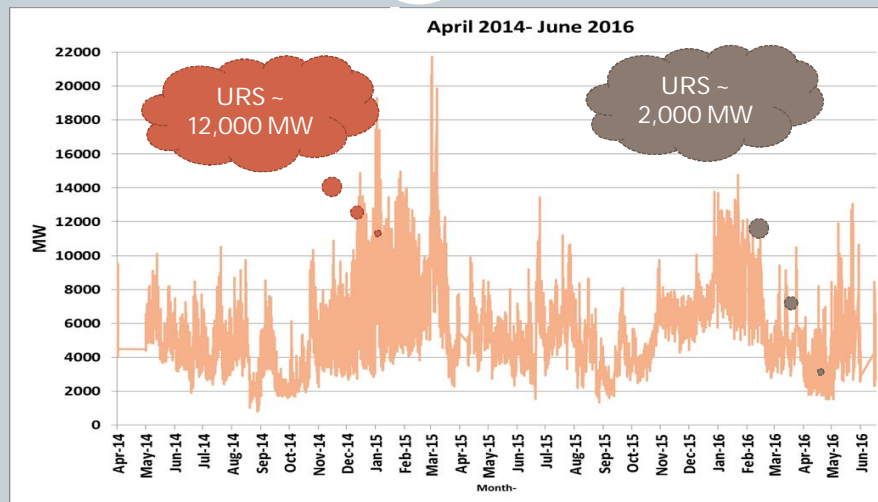


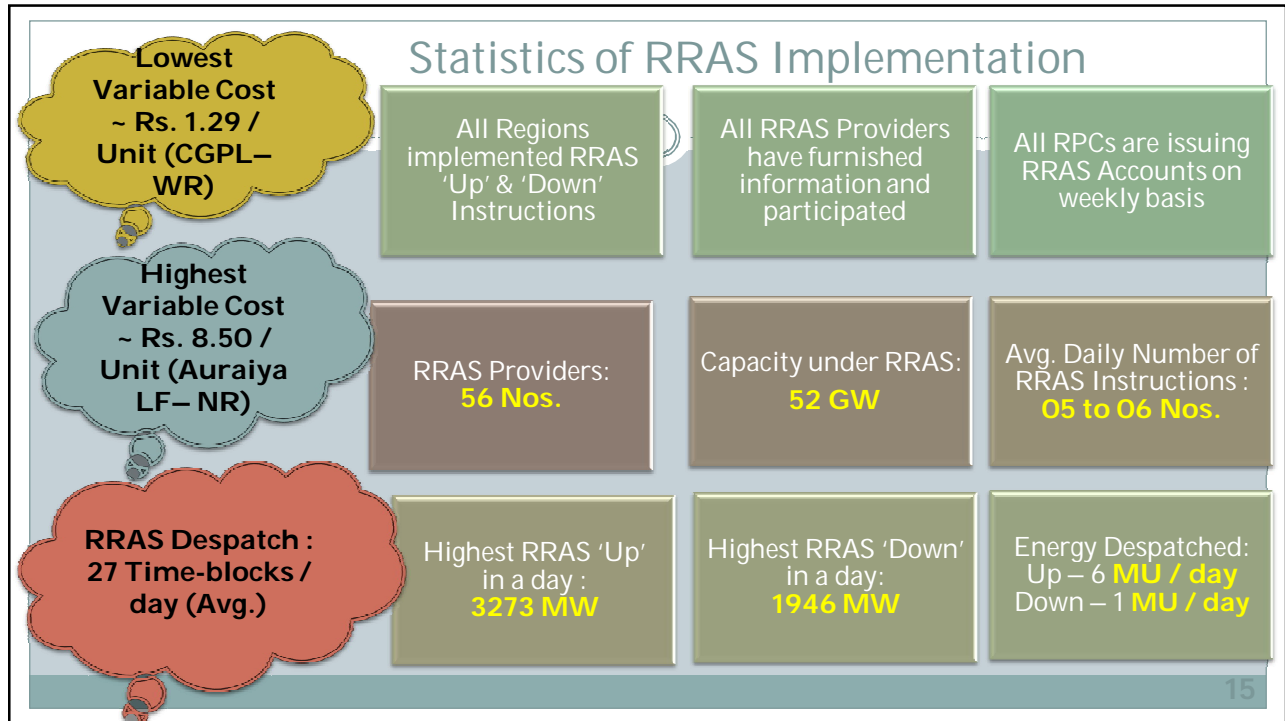
Sustained period of improved frequency profile

Date	FVI
21st July-2016	0.022
22nd July-2016	0.026
23rd July-2016	0.03
24th July-2016	0.028

Key to Ancillary Services - Undespached Surplus in ISGS

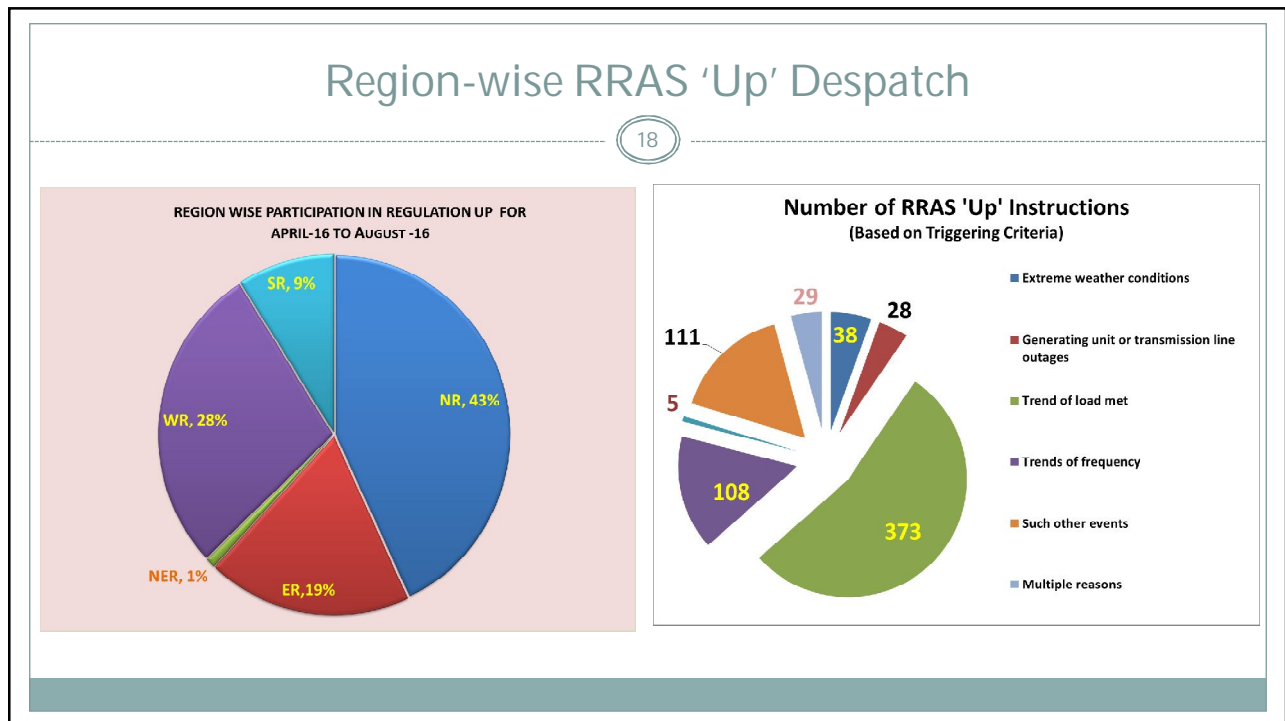
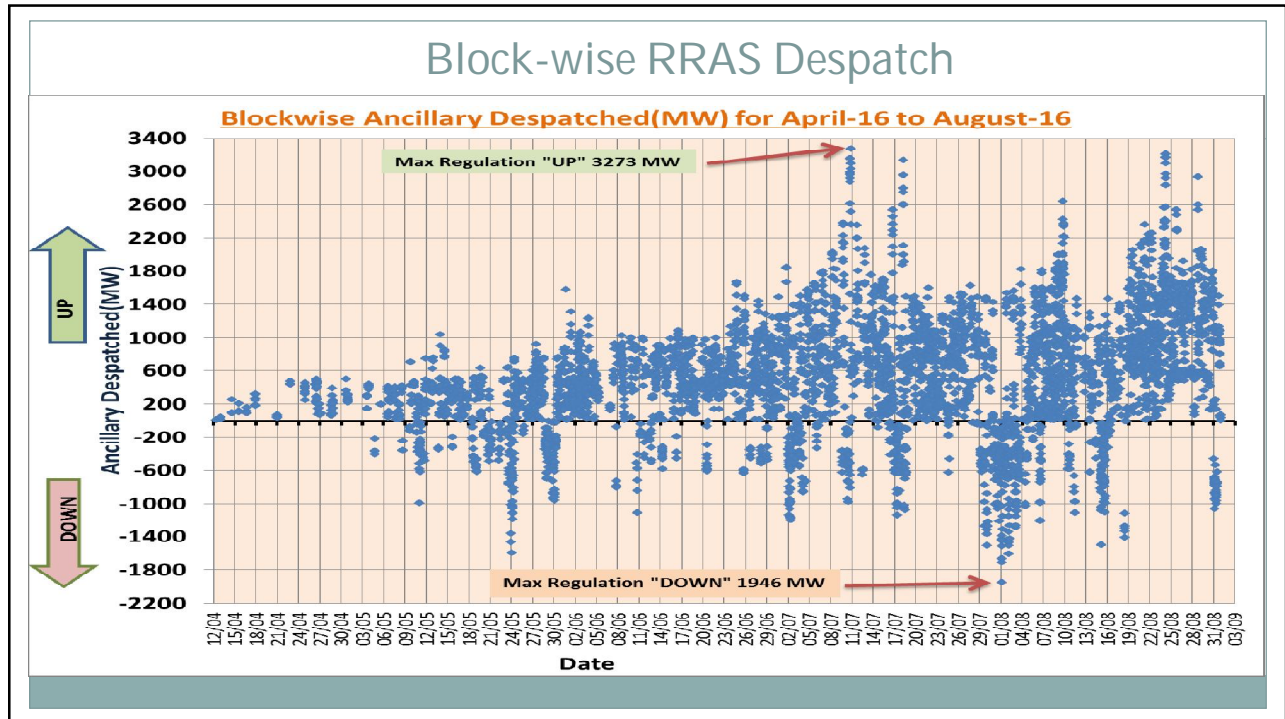
14





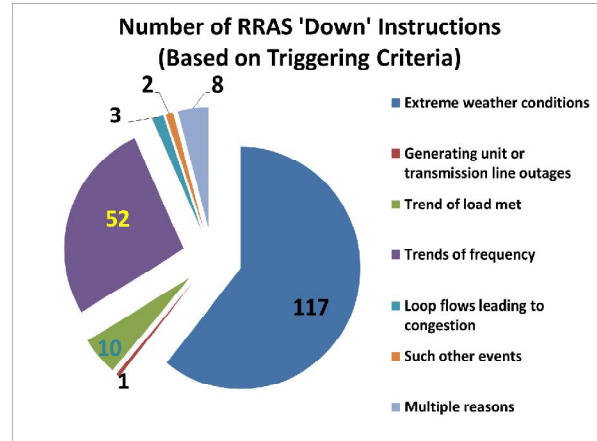
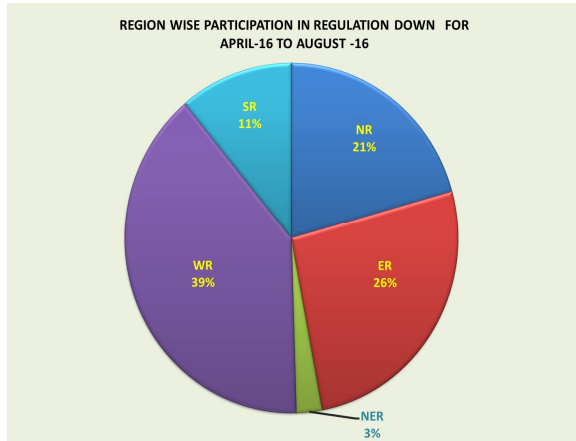
List of RRAS Providers (w.e.f 16.09.2016)

Sl no	RRAS Provider	Variable cost (Paise/kWh)	Sl no	RRAS Provider	Variable cost (Paise/kWh)
1	CGPL (4150,129.24)	129.24	29	NLC-IIExp(500,243.3)	243.3
2	SIPAT -I (1980,135.8)	135.8	30	NLC- I Exp(420,245.1)	245.1
3	SIPAT-II (1000,139.8)	139.8	31	Gandhar NAPM(657.39,246.2)	246.2
4	Korba (I & II)(2100,151.4)	151.4	32	Kahalgaon-I(840,246.4)	246.4
5	AGTTP(130,158)	158	33	Kawas NAPM(656,247.4)	247.4
6	Sasan (3960,160.5)	160.5	34	Farakkal & II(1600,259.6)	259.6
7	Singrauli (2000,160.7)	160.7	35	NLC TPS -I(630,259.9)	259.9
8	Talcher - II (2000,163.2)	163.2	36	NLC TPS - II(840,259.5)	259.9
9	Talcher - I (1000,164.6)	164.6	37	Simhadri - II(1000,260.1)	260.1
10	Rihand - I (1000,165.5)	165.5	38	Unchahar- II(420,267.6)	267.6
11	AGBPP(291,167.2)	167.2	39	Unchahar- III(210,267.6)	267.6
12	Rihand - III (1000,167.4)	167.4	40	Unchahar- I(420,267.7)	267.7
13	Vindhyachal-III (1000,172)	172	41	Barh TPS(1320,278.5)	278.5
14	Vindhyachal-II (1000,174.1)	174.1	42	Anta GF(419,278.9)	278.9
15	Vindhyachal-V (500,174.1)	174.1	43	Dadri GF(830,280.1)	280.1
16	Vindhyachal-IV (1000,174.9)	174.9	44	Dadri- I(980,306.2)	306.2
17	Rihand - II (1000,176.2)	176.2	45	Auraiya GF(663,323.2)	323.2
18	Vindhyachal-I(1260,184.1)	184.1	46	Dadri - I(840,326.5)	326.5
19	NSPCL(500,190.3)	190.3	47	BGTTP(250,342.3)	342.3
20	RGPP(LGF(663,191)	191	48	Jhajjar(1500,349)	349
21	Ramagundam -III(500,209.1)	209.1	49	Anta RF(419,448.8)	448.8
22	Ramagundam I&II(2100,212.4)	212.4	50	Dadri RF(829,627.4)	627.4
23	Vallur(1500,213.6)	213.6	51	Auraiya RF(663,670.4)	670.4
24	Gandhar GF(657.39,217.6)	217.6	52	Auraiya LF(663,730.6)	730.6
25	KawasGF(656,220.7)	220.7	53	Dadri LF(830,759.8)	759.8
26	Kahalgaon -II (1500,233.5)	233.5	54	Anta LF(419,812.3)	812.3
27	Tuticorin(1000,233.9)	233.9	55	Anta LF(419,812.3)	812.3
28	Mouda-I(1000,241.3)	241.3	56	Auraiya LF(663,850.8)	850.8



Region-wise RRAS 'Down' Despatch

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NRPC

North Western Regional Power Committee

RRAS Settlement Account For The Week 2016/06/16 To 2016/06/26

Format -A57- RRAS Settlement Account by RPC

Sr. No.	RRAS Provider Name	Energy scheduled to VAE under RRAS (MWh)	Fixed Charges (Rs)	Variable Charges (Rs)	Mark-up as per CERC Order (Rs)	Total Charges (Rs)
1	DADRI TPS	116722	11834	51202	79877	73442
2	DADRI TPS	2361175	24499	62382	188059	188057
3	SRINAGAR	224720	102449	24252	22928	149822
4	RRAS/3/2/01	842222	68024	124369	42228	226842
5	RRAS/3/2/02	173112	12082	22121	5612	14809
6	RRAS/3/2/03	276422	101928	11221	11242	12424
7	RRAS/3/2/04	147822	7823	17822	7821	3224
8	RRAS/3/2/05	28112	4212	11212	212	2202
9	RRAS/3/2/06	10122	212	212	212	212
10	RRAS/3/2/07	10122	212	212	212	212
11	RRAS/3/2/08	10122	212	212	212	212

ERPC

East Central Regional Power Committee

RRAS Settlement Account For The Week 2016/06/16 To 2016/06/26

Format -A57- RRAS Settlement Account by RPC

Sr.No	RRAS Provider Name	Energy scheduled to VAE under RRAS (MWh)	Fixed Charges (Rs)	Variable Charges (Rs)	Mark-up as per CERC Order (Rs)	Total Charges (Rs)
1	RRAS/3/2/01	3215000	233814	713410	146779	3322803
2	RRAS/3/2/02	11822814	118400	249613	55179	478612
3	RRAS/3/2/03	1078222	107822	21212	52571	350624
4	RRAS/3/2/04	5164288	682212	106136	274212	2660227
5	RRAS/3/2/05	272428	4184	12771	18131	22001
6	RRAS/3/2/06	262428	4184	12771	18131	22001

NERPC

North Eastern Regional Power Committee

RRAS Settlement Account For The Week 2016/06/16 To 2016/06/26

Format -A57- RRAS Settlement Account by RPC

Sr. No.	RRAS Provider Name	Energy scheduled to VAE under RRAS (MWh)	Fixed Charges (Rs)	Variable Charges (Rs)	Mark-up as per CERC Order (Rs)	Total Charges (Rs)
1	RRAS/3/2/01	102	780	187	111	1078
2	RRAS/3/2/02	5	720	145	215	1080
3	RRAS/3/2/03	82	1800	217	111	2108

SRPC

South Western Regional Power Committee

RRAS Settlement Account For The Week 2016/06/16 To 2016/06/26

Format -A57- RRAS Settlement Account by RPC

Sr.No	RRAS Provider Name	Energy scheduled to VAE under RRAS (MWh)	Fixed Charges (Rs)	Variable Charges (Rs)	Mark-up as per CERC Order (Rs)	Total Charges (Rs)
1	RRAS/3/2/01	3215000	233814	713410	146779	3322803
2	RRAS/3/2/02	11822814	118400	249613	55179	478612
3	RRAS/3/2/03	1078222	107822	21212	52571	350624
4	RRAS/3/2/04	5164288	682212	106136	274212	2660227
5	RRAS/3/2/05	272428	4184	12771	18131	22001
6	RRAS/3/2/06	262428	4184	12771	18131	22001

WRPC

West Regional Power Committee

RRAS Settlement Account For The Week 2016/06/16 To 2016/06/26

Format -A57- RRAS Settlement Account by RPC

Sr. No.	RRAS Provider Name	Energy scheduled to VAE under RRAS (MWh)	Fixed Charges (Rs)	Variable Charges (Rs)	Mark-up as per CERC Order (Rs)	Total Charges (Rs)
1	RRAS/3/2/01	102	780	187	111	1078
2	RRAS/3/2/02	5	720	145	215	1080
3	RRAS/3/2/03	82	1800	217	111	2108

Information Dissemination & Transparency

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- Information on Nodal Agency (NLDC) Website
- 1. RRAS Instruction summary- <http://www.nldc.in/AnnualReport2016&tdt=26-07-2016>
- 2. <http://www.nldc.in/AncillaryServices.aspx>
- 3. Monthly report- <http://www.nldc.in/AncillaryReports.aspx>
- AS3 Format uploaded by RPCs
 - ERPC- http://www.erpc.gov.in/home/commercial_p/ancillary_services.aspx
 - NRPC- <http://www.nrpc.gov.in/comm/ancillaryservices.html>
 - NERPC- <http://www.nerpc.nic.in/Ancillary%20Service.php>
 - SRPC- http://www.srpc.kar.nic.in/html/all_uploads.html
 - WRPC- http://www.wrpc.gov.in/Commercial_rras_dat.asp
- RRAS Accounts uploaded by RPCs
 - ERPC- http://www.erpc.gov.in/home/commercial_p/ui_and_devreport.php
 - NRPC- <http://www.nrpc.gov.in/comm/rras.html>
 - NERPC- <http://www.nerpc.nic.in/devreport.php>
 - SRPC- http://www.srpc.kar.nic.in/html/all_uploads.html
 - WRPC- http://www.wrpc.gov.in/Commercial_rras_chrg.asp

Key Learnings...

22

- Layer of Centralized Ancillary Despatch over Decentralized Layer of Scheduling Process
- Availability of Variable charges for first time in public domain
 - Better Despatch Decisions
 - Changing Merit Order month on month
- Improvement in Frequency Profile
- Ramp Management - Evening Peak / Morning Peak
- Congestion Management
- Helps Management of Low Probability, High Impact Events – Grid Resilience
- Handling impact of extreme weather conditions on the grid
- Reliability Support
- Benefits to stakeholders – Generators & State Utilities
- Freedom and Choice available to states retained

Challenges...

23

- **Minimum quantum of RRAS 'Up' and 'Down' Instruction**
 - Say 10 MW & above
- **Direct Communication of Instructions to RRAS Providers**
 - Via respective RLDCs
- **Area Control Error (ACE) concept needs to be implemented**
- **Overlap of scheduling process and RRAS Despatch**
 - Undespached Surplus keeps changing
 - Philosophy of requisitioning of power by states – Accuracy of forecasts
- **Accounting & Settlement**
 - Pool Deficit in One Region – Need to compensate from other regional pools
 - Monthly adjustment of Fixed Charges instead of weekly

Challenges...

24

- **Exclusion of RRAS Generators**
 - Utilizing gas under e-bid mechanism
 - Regulation of power supply
- **Quantum of Reserves available**
 - Undespached Surplus not enough at times
- **Support for Technical Minimum – Hot Spinning Reserves**
 - Quantum necessary to maintain the technical minimum generation level scheduled under RRAS.
- **Refund of fixed charges**
 - Common methodology

Highlights of Amended Ancillary Procedure issued by CERC

25

- **1.3 For those generating stations which are regulating power supply to beneficiaries for non-payment of dues under the CERC (Regulation of Power Supply) Regulations shall be considered to be despatched under RRAS. The revenue received on this account except markup shall be adjusted as per CERC (Regulation of Power Supply) Regulations.**

Highlights of Amended Ancillary Procedure issued by CERC

26

- **8.7 In order to avoid too many stations getting a very small quantum of dispatch under RRAS, the stations having less than 10 MW (5 MW in North-eastern Region) of undespached surplus shall be excluded from the merit order stack while dispatching RRAS.**

Highlights of Amended Ancillary Procedure issued by CERC

27

- **12.4 Deviation charges shall be worked out by RPCs strictly in accordance with the CERC (Deviation Settlement Mechanism and related matters) Regulations, 2014. The deviation charges for each entity shall be accounted without any adjustment for Payable = Receivable**

Way Forward

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- Load Forecasting...Format AS4 to be submitted by all states
- Replication of Ancillary Services framework at state level
- Urgent need for National Pool account
- Need for Primary and Secondary Frequency control

