



नई दिल्ली
NEW DELHI

याचिका संख्या. /Petition No.: 319/RC/2018

कोरम/Coram:

श्री पी. के. पुजारी, अध्यक्ष/Shri P. K. Pujari, Chairperson
डॉ. एम. के. अय्यर, सदस्य/ Dr. M.K. Iyer, Member
श्री आई. एस. झा, सदस्य/ Sh. I.S. Jha, Member

आदेश दिनांक /Date of Order: 28th of August, 2019

IN THE MATTER OF

Automatic Generation Control (AGC) implementation in India

AND

IN THE MATTER OF

National Load Despatch Centre
Power System Operation Corporation Ltd.
(A Government of India Enterprise) B-9,
Qutab Institutional Area, Katwaria Sarai
New Delhi-110016

...Petitioner

VERSUS

1. NTPC Limited,
Plot No A-8A,
Sector-24, Noida,
Uttar Pradesh, India- 201301
2. NHPC Limited,
N.H.P.C Office Complex,
Sector-33, Faridabad – 121003, Haryana

3. Central Transmission Utility,
Saudamini, Plot No. 2,
Sector-29, Gurgaon-122 001 (Haryana)
4. SJVN, Shakti Sadan,
SJVN Corporate Office Complex, Shanan-171006
5. THDC INDIA LIMITED, Corporate Office,
Rishikesh, Pragatipuram, By Pass Road,
Rishikesh – 249201, Uttrakhand
6. Aravali Power Company Private Ltd.,
Indira Gandhi Super Thermal Power Station (IGSTPS),
Jharli, District Jhajjar, Haryana-124141
7. N T E C L Vallur Thermal Power Project,
P.O.: Vellivoyal Chavadi,
Ponneri Taluk, Tiruvallur Dist, Chennai- 600 103
8. NLC India Limited,
Block - 1, Neyveli - 607 801,
Cuddalore District, Tamilnadu
9. NTPC-SAIL Power Company Limited –
Corporate Centre, 4th Floor, Nbcc Tower,
15 Bhikaiji Cama Place, New Delhi, Delhi – 110066
10. Coastal Gujarat Power Ltd,
Tata Power Co. Ltd., Backbay Rec Station,
148, Lt. Gen. J.Bhonsle Marg,
Nariman Point, Mumbai 400 021
11. Sasan Power Limited,
Reliance Centre, Near Prabhat Colony,
Off Western Express Highway,
Santacruz East, Mumbai – 400055, Mumbai
12. Ratnagiri Gas and Power Pvt. Ltd.,
Registered Office, NTPC Bhawan,
Core-7, SCOPE Complex,
7, Institutional Area, Lodi Road,
New Delhi-110003, India
13. North Eastern Electric Power Corporation Ltd,
Brookland Compound, Lower New Colony,
Shillong-793003, Meghalaya, India.

14. ONGC Tripura Power Company Ltd.
6th Floor, A Wing, IFCI Towers, 61,
Nehru Place, New Delhi – 110019

15. Bharatiya Rail Bijlee Company Ltd.
Nabinagar, Khera Police Station
Dist.-Aurangabad, Bihar-824303

Northern Region

16. Delhi Transco Limited,
33kV, Sub Station Building,
Minto Road, New Delhi -110002.

17. Haryana Vidyut Prasaran Nigam Limited,
XEN/LD & PC, SLDC Complex,
Sewah Panipat -132103.

18. Himachal Pradesh State Electricity Board,
HP Load Despatch Society,
SLDC complex, Totu,
Shimla -171011.

19. Jammu & Kashmir Power Development Department,
SLDC Building,
220 kV Grid Station Narwal,
Jammu -180007.

20. Punjab State Transmission Corporation Limited,
Ablowal, Patiala, SLDC Building,
Near 220KV Grid Substation,
PSTCL, Ablowal,
Patiala -147001

21. Rajasthan Rajya Vidyut Prasaran Nigam Limited,
State Load Despatch Centre,
Rajasthan Rajya Vidyut Prasaran Nigam Limited,
Ajmer Road, Heerapura,
Jaipur -302024

22. Uttar Pradesh Power Transmission Corporation Limited,
Power System, 5th Floor,
Shakti Bhawan, 14 Ashok Marg,
Lucknow -226001

23. Power Transmission Corporation of Uttarakhand Limited,
400 KV Substation,
Veerbhadra, Rishikesh -249202

24. General Manager,
Singrauli Super Thermal Power Station,
Shakti Nagar, UP-231222
25. General Manager,
Singrauli Solar PV Power Project,
Shakti Nagar, UP-231222
26. General Manager,
Singrauli Small Hydro Power Project,
Shakti Nagar, UP-231222
27. General Manager,
Rihand Super Thermal Power Station-I,
Rihand Nagar, UP-231223
28. General Manager,
Rihand Super Thermal Power Station-II,
Rihand Nagar, UP-231223
29. General Manager,
Rihand Super Thermal Power Station-III,
NTPC Rihand, Dist-Sonbhadra,
UP - 231223
30. General Manager,
Dadri, National Capital Power Project,
Dadri Dhaulana Road,
Distt. Gautam Buddh Nagar,
UP-201008
31. General Manager,
Dadri – Stage - II,
National Capital Power Project,
Dadri Dhaulana Road,
Distt. Gautam Buddh Nagar,
UP-201008
32. General Manager,
Firoz Gandhi Unchahar Thermal Power Project-I,
Unchahar, Distt. Rai bareilly,
UP
33. General Manager,
Firoz Gandhi Unchahar Thermal Power Project-II,
Unchahar, Distt. Raibareilly,
UP

34. General Manager,
Firoz Gandhi Unchahar Thermal Power Project-III,
Unchahar, Distt. Raibareilly,
UP
35. General Manager,
Firoz Gandhi Unchahar Thermal Power Project-IV,
P.O. Unchahar, Dist. : Raibareilly (U.P.) Pin-229406
36. General Manager,
Firoz Gandhi Unchahar Solar PV Power Project,
Unchahar, Distt. Raibareilly, UP
37. General Manager,
Dadri Gas Power Project,
Dhaulana Road, Distt.
Gautam Buddh Nagar,
UP-201008
38. General Manager,
Dadri Solar PV Power Project,
Dhaulana Road, Distt.
Gautam Buddh Nagar,
UP-201008
39. General Manager,
Auraiya Gas Power Project(Gas Fired, RLNG Fired, Liquid Fired),
Dibiyapur, Distt Etawah,
UP-206244
40. General Manager,
Anta Gas Power Project (Gas Fired, RLNG Fired, Liquid Fired),
Distt. Baran,
Rajasthan-325209
41. General Manager, Koldam HPP, NTPC,
Post- Barman, Dist- Bilaspur,
Himachal Pradesh 174013
42. Station Director,
Narora Atomic Power Station,
Narora, Distt. Bulandshahar,
UP-202389
43. Station Director,
Rajasthan Atomic Power Station-B,
Anu Shakti Vihar, Kota,
Rajasthan-323303

44. Station Director,
Rajasthan Atomic Power Station-C, (RAPS-5&6)
PO-Anushakti, Kota,
Rajasthan-323304
45. General Manager,
Bairasiul Hydro Electric Project,
NHPC Ltd., Surangini,
Distt. Chamba, HP-176317
46. General Manager,
Salal Hydro Electric Project,
NHPC Ltd,
Jyotipuram, Distt. Udhampur,
J&K-182312
47. General Manager,
Tanakpur Hydro Electric Project,
NHPC Ltd.,
Banbassa, Distt. Champawa,
Uttarakhand-262310
48. General Manager,
Chamera-I Hydro Electric Project,
NHPC Ltd.,
Khairi, Distt.
Chamba, HP-176310
49. General Manager,
Uri Hydro Electric Project,
NHPC Ltd.,
Mohra, Distt. Baramulla,
J&K-193122
50. General Manager,
Chamera-II Hydro Electric Project,
NHPC Ltd.,
Karian, Distt. Chamba,
HP-176310
51. General Manager,
Chamera-III Hydro Electric Project,
NHPC Ltd., Dharwala, Distt.- Chamba,
HP-176311
52. General Manager,
Dhauliganga Hydro Electric Project,
NHPC Ltd., Tapovan, Dharchula, Pithoragarh,
Uttarakhand-262545

53. General Manager,
Dulhasti Hydro Electric Project,
NHPC Ltd.,
Chenab Nagar, Distt. Kishtwar,
J&K-182206
54. General Manager,
Uri 2 Hydro Electric Project, NHPC Ltd.,
Nowpora, Distt. Baramulla, J&K-193123
55. General Manager,
Parbati HE Project Stage-III Behali,
P.O- Larji Kullu 175122 Himachal Pradesh
56. Chief Engineer,
Sewa-II Power Station,
NHPC Ltd. Mashke, post Bag no-2,
P.O-Khari, Dist: Kathua, Jammu and Kashmir -176325
57. The Chief Engineer (Electrical),
Kishanganga HEP,
Office cum Residential colony, Kralpora,
Distt: Bandipora, Jammu and Kashmir-193502
58. Chief Engineer (Elect.),
Parbati-II HEP, Electrical & Mechanical complex,
Sainj, Distt. Kullu, Himachal Pradesh -175134
59. General Manager,
Napha Jhakhri HEP,
Satluj Jal Vidyut Nigam Ltd. Power Project,
Jhakri, Rampur, Distt. Shimla, HP-172201
60. General Manager,
Rampur HEP,
Satluj Jal Vidyut Nigam Ltd. Power Project,
Jhakri, Rampur, Distt. Shimla, HP-172201
61. General Manager,
Tehri Hydro Development Corporation Ltd.,
Pragatipuram, Rishikesh,
Uttarakhand-249201
62. General Manager,
Koteshwar HEP, THDCIL, Koteshwerpuram,
Post Office- Pokhari Tehri Garwal, Uttarakhand - 249146

63. Director (Power Regulation),
Bhakra Power House, SLDC Complex,
66 KV Substation, Industrial Area Phase-I,
Madhya Marg, BBMB Chandigarh
64. General Manager, ADHPL,
Village- Prini, PO -Jagat Sukh,
Tehsil - Manali, Distt- Kullu (H.P) India.
65. General Manager,
Indra Gandhi Super Thermal Power Project,
PO -Jharli, Tahsil Matanhail, Dist – Jhajjar, (Haryana)-124125
66. General Manager,
Karcham Wangtoo HEP,
Himachal Baspa Power Company Limited,
Sholtu Colony, PO- Tapti, Dist-Kinnaur, -172104 (HP)
67. Director,
Malana - II Everest Power Pvt. Ltd,
Hall-A/ First Floor Plot No-143-144,
Udyog Vihar, Phase -4, Gurgaon, Haryana 122015
68. Company Secretary,
Shree Cement Thermal Power Project Bangurnagar,
Beawar , Dist Ajmer, Rajasthan -305901
69. Company Secretary,
Greenco Budhil HPS Ltd,
Plot No. 1367 Road No- 45,
Jubilee Hills, Hyderabad- 500033
70. Project General Manager,
Himachal Sorang Power Limited, D-7,
Lane-I, Sector-I, New Shimla, Shimla, H.P.-171009.
71. General Manager,
Sainj HEP, HPPCL, Larji,
Distric - Kullu, Himachal Pradesh, 175122

Western Region

72. MSLDC,
Airoli, Navi Mumbai, Airoli,
Thane - Belapur Road, Navi Mumbai-400708.
73. State Load Despatch Centre,
MPPTCL, Jabalpur,
O/o Chief Engineer (SLDC), MPPTCL, Nayagaon, Jabalpur

74. SLDC Gotri Vadodara,
Gujarat, 132kV Gotri s/s compound,
Opposite Kalpvruv Complex,
Gotri Road,
Vadodara
75. Chhattisgarh State Load Despatch Centre,
C.E(LD), State Load Despatch Centre,
CSPTCL, Daganiya-HQ,
Raipur, Chhattisgarh
76. General Manager, Korba STPS STG (I& II),
National Thermal Power Corporation,
P.O. Vikas Bhavan, Jamnipali,
Korba(Distt.),
Chhattisgarh- 495 450.
77. General Manager,
Korba STPS STG (III),
National Thermal Power Corporation,
P.O. Vikas Bhavan, Jamnipali,
Korba(Dist),
Chhattisgarh- 495 450.
78. General Manager,
STAGE-I, Vindhyachal STPS,
National Thermal Power Corporation of India Ltd,
P.O Vindhyanagar, Sidhi(Dist),
Madhya Pradesh – 486 885
79. General Manager,
STAGE-II, Vindhyachal STPS,
National Thermal Power Corporation of India Ltd,
P.O Vindhyanagar, Sidhi(Dist),
Madhya Pradesh – 486 885
80. General Manager,
STAGE-III, Vindhyachal STPS,
National Thermal Power Corporation of India Ltd,
P.O Vindhyanagar, Sidhi(Dist),
Madhya Pradesh – 486 885
81. General Manager,
STAGE-IV, Vindhyachal STPS,
National Thermal Power Corporation of India Ltd,
P.O Vindhyanagar, Sidhi(Distt.),
Madhya Pradesh – 486 885

82. General Manager,
Kawas Gas Power Project,
National Thermal Power Corporation of India Ltd,
P.O. Aditya Nagar,
Surat- 394 516
83. General Manager,
Gandhar Gas Power Project,
National Thermal Power Corporation of India Ltd,
P.O. NTPC Township, Bharuch(Distt.),
Gujarat- 392 215
84. General Manager,
SIPAT TPS Stg-I,
National Thermal Power Corporation of India Ltd,
SIPAT, Chhattisgarh.
85. General Manager,
SIPAT TPS Stg-II,
National Thermal Power Corporation of India Ltd,
SIPAT, Chhattisgarh.
86. General Manager,
Mouda STPP,
NTPC Ltd,
Mouda Ramtek Road,
P.O.Mouda, Nagpur (Dist),
Maharashtra
87. General Manager ,
2 X 135 MW Kasaipali Thermal Power Project,
ACB (India) Ltd.
District - Korba
Chhattisgarh Chakabura 495445
88. General Manager,
Bharat Aluminium Co. Ltd,
Captive Power plant-II,
BALCO Nagar Chhattisgarh, Korba 495 684
89. Executive Director,
Costal Gujarat Power Ltd,
Tunda Vandh Road, Tunda Village, Mundra,
Gujarat Kutch 370435
90. Executive Director,
DB Power,
Village - Baradarha, Post - Kanwali,
Dist - Janjgir, Champa, Chhattisgarh Baradarha 495695

91. Executive Director,
Jindal Power Ltd. Stg-I,
OP Jindal STPP, PO-Tamnar,
Gjarghoda Tehsil,
Chhattisgarh District - Raigarh, 496107
92. Executive Director,
Jindal Power Ltd. Stg-II,
OP Jindal STPP,
PO-Tamnar,
Gjarghoda Tehsil,
Chhattisgarh District - Raigarh, 496107
93. Executive Director,
Plot No Z-9,
Dahej SEZ Area (Eastern side),
Dahej, Taluka-Vagra, Gujarat Dist-Bharuch, 392130
94. Executive Director,
EMCO Power Ltd,
Plot No B-1, Mohabala MIDC Growth Center
Post Tehsil - Warora, Dist Chandrapur-Maharashtra 442907
95. Executive Director,
ESSAR POWER MP LTD.
Village Bandhora,
Post Karsualal, Tehsil Mada,
Distt. Singrauli, Madhya Pradesh-486886
96. General Manager,
GMR CHHATTISGARH ENERGY LTD
Skip House, 25/1, Museum Road
Karnataka Bangalore 560025
97. Managing Director,
Jaypee Nigri Super Thermal Power Project,
Nigri District, Madhya Pradesh
Singrauli 486668
98. Executive Director,
DCPP, OP Jindal STPP,
PO-Tamnar, Gjarghoda Tehsil,
Chhattisgarh District - Raigarh, 496107
99. Station Director,
Nuclear Power Corporation of India ltd,
Kakrapara Atomic Power Station,
PO - via Vyara, Gujarat Dist - Surat 395651

100. Station Director,
Tarapur Atomic Power Station 1&2,
Nuclear Power Corporation of India Ltd,
P.O. TAPP, Thane(Dist),
Maharashtra- 401 504
101. Station Director,
Tarapur Atomic Power Station 3&4,
Nuclear Power Corporation of India Ltd,
P.O. TAPP, Thane (Distt.),
Maharashtra- 401 504
102. Managing Director,
Korba West Power Co. Ltd.,
Village – Chhote Bhandar,
P.O. - Bade Bhnadar,
Tehsil - Pussore,
District - Raigarh,
Chhattisgarh Raigarh 496100
103. Managing Director,
KSK Mahanadhi,
8-2-293/82/A/431/A, Road No 22 Jubilee Hills
Andhra Pradesh Hyderabad 500033
104. General Manager,
LANCO Power Ltd,
Plot No - 397, Phase -III, Udyog Vihar, Haryana
Gurgaon 122016
105. General Manager,
NTPC-SAIL Power Company Private Ltd,
Puranena Village, Chhattisgarh Dist - Durg,
Bhilai 490021
106. General Manager,
Ratnagiri Gas & Power Pvt Ltd,
2nd Floor, Block-2, IGL Complex,
Sector-126, Expressway, Uttar Pradesh
Noida 201304
107. Managing Director,
Sasan Power Ltd,
DAKC, I Block, 2nd Floor, North Wing,
Thane Belapur Road, Koparkhairana Maharashtra
New Mumbai 400710

108. Managing Director,
Vandana Vidyut Bhavan,
M. G. Road
Chhattisgarh Raipur 492001
109. Managing Director,
RAPP Transmission Company Limited,
Mira Corporate Suites,
1&2 Ishwar Nagar,
Okhla crossing,
Mathura road,
New Delhi, 110065
110. General Manager,
LARA,
National Thermal Power Corporation of India Ltd,
Chappora, PO-Pussora,
Raigarh, Chhattisgarh.
111. General Manager,
Solapur,
National Thermal Power Corporation of India Ltd,
Western Region HQ,
Samruddhi Venture Park,
2nd Floor, MIDC Marol,
Andheri East, Mumbai,
Maharashtra.

Eastern Region

112. State Load Despatch Center,
GRIDCO Colony
PO-Mancheswar Railway Colony,
BBSR Bhubaneshwar -751070
113. State Load Despatch Center,
Jharkhand State Electricity Board (JSEB)
Kushai Colony, Doranda,
Ranchi-834002
114. SLDC-BSEB,
Patna, Bihar State Electricity Board,
Vidyut Bhawan, Jawaharlal Nehru Marg,
Patna-800021
115. SLDC-W.Bengal,
P.O. Danesh Seikh Lane,
Andul Road
Howrah – 711109

116. Damodar Valley Corporation,
DVC Tower,
VIP Road, Kolkata,
WB 700054
117. Energy and Power Deptt.,
Govt. of Sikkim
Kazi Road,
Gangtok 737 201
118. General Manager,
Farakka Super Thermal Power Plant-I&II,
NTPC Ltd.,
Farakka, WB 742236
119. General Manager,
Farakka Super Thermal Power Plant-III,
NTPC Ltd.,
Farakka, WB 742236
120. General Manager,
Kahalgaon Super Thermal Power Plant-I NTPC Ltd,
Bhagalpur Bihar 813214
121. General Manager,
Kahalgaon Super Thermal Power Plant-II NTPC Ltd,
Bhagalpur Bihar 813214
122. Executive Director,
Talcher Super Thermal Power Stn-I NTPC Ltd,
Nayapalli, Odisha 751012
123. Addl. General Manager,
National Thermal Power Corporation Limited,
BARH Thermal Power Station, Patna, Bihar 803213
124. GM(O&M),
Kanti Bijlee Utpadan Nigam Limited
Muzaffarpur Thermal Power Station Bihar Muzaffarpur 843130.
125. The General Manager(O&M),
Bharatiya Rail Bijlee Company Ltd.
Nabinagar,Khera Police Station Dist.-Aurangabad, Bihar-824303
126. General Manager (O&M),
Darlipali Super Thermal Power Project NTPC Ltd.
Odisha Darlipali,Sundergarh 770072.(upcoming)

127. Chairman, Damodar Valley Corporation
DVC Tower, VIP Road West Bengal Kolkata 700054
(Not an ISGS but have many generating units)
128. Chief Engineer (Elect),
Teesta V HEP,
NHPC,
Singtam, East Sikkim 737134
129. Chief Engineer,
Rangit Hydro Electric Project NHPC,
P.O. Rangit Nagar
South Sikkim 737111
130. CEO,
Maithon Power Limited
MA-5 Gogna Colony,
P.O: Maithon, Dhanbad,
Jharkhand 828027
131. DGM (Electrical), Adhunik Power & Natural Resource Limited
Village: Padampur, PS: Kandra Tata-Seraikela Road,
Jharkhand 832105
132. GM (Power Sales & Regulatory),
GMR Kamalanga Energy Ltd,
Plot No.-29, Satyanagar,
Bhubaneswar, Odissa-751007
133. Head Power & Sales,
Jindal India Thermal Power Ltd.,
Plot No.12,Local Shopping Complex,
Sector-B1,Vasant Kunj, New Delhi- 110070
134. Advisor(Power),
Ind-Barath Energy Utkal Ltd ,
Sahajbahal, PO CgarpaliBarpali,
Dist - Jharsuguda, Odisha , Pin – 768211
135. GM(C & RA),
Odisha Power Generation Corporation Ltd.,
Zone-A, 7th Floor, Fortuna Towers,
Chandrashekharpur, Odisha Bhubaneswar 751023. (Upcoming)
136. Sr.Vice President(O&M),
Teesta Urja Ltd.(Teesta -III HEP)
Vijaya Building, 2nd Floor, 17 Barakhamba Road
New Delhi New Delhi 110001

137. Asst. General Manager ,
DANS ENERGY PVT. LTD.
5th Floor, DLF Building No. 8,
Tower C, DLF Cyber City, Phase – II,
Gurgaon- 122002, Haryana
138. Chairman,
GATI Infrastructure Ltd,
268, UdyogVihar,
Phase-IV, Gurgaon,
Haryana 122001
139. President –Technical,
Shiga Energy Private Ltd.
5th Floor, DLF Building No.8,
Tower C, Phase-II, Haryana Gurgaon 122002
140. VP (Commercial),
Sneha Kinetic Power Project Private Ltd
1366, Road no. 45, Jubilee Hills
Telangana Hyderabad 500033

Southern Region

141. Andhra Pradesh State Load Dispatch Centre,
Room No. 611, 6th Floor, A Block APTRANSCO,
Vidyut Soudha, Khairatabad
142. State Load Despatch Centre,
KPTCL, 28, Race course Cross Road,
Bangalore -560009
143. State Load Despatch Centre, Kalamassery,
Executive Engineer O/o Chief Engineer, (Transmission),
System Operation, Kalamassery-683503
144. System Control Centre,
Electricity Department, Puducherry,
137, Nethaji Subhash Chandra Bose Salai,
Electricity Department-605001
145. TANTRANSCO, SLDC, MLDC
Block, 144 Anna Salai, Chennai-600002
146. Telangana SLDC, Chief Engineer,
Room No 611 A Block,
SLDC of the State of Telangana (TSSLDC),
TSTRANSCO, Vidyut Soudha,
Khairtabad, Hyderabad-500082

147. General Manager,
National Thermal Power Corporation Ltd.,
SR Headquarters II & V Floors,
MCH Complex,
R.P. Road, Secunderabad-500 003,
148. General Manager,
National Thermal Power Corporation Ltd.,
SR Headquarters II & V Floors,
MCH Complex,
R.P.Road, Secunderabad-500 003,
149. General Manager,
Neyveli Lignite Corporation Ltd.,
Corporate Office, Block-01,
P.O. Neyveli, PIN: 607 801,
Cuddalore Distt., Tamil Nadu State.
150. The Deputy General Manager,
Neyveli Lignite Corporation Ltd.,
Corporate Office, Block-01,
P.O. Neyveli, PIN: 607 801,
Cuddalore Dist., Tamil Nadu State.
151. The Deputy General Manager,
Neyveli Lignite Corporation Ltd.,
Corporate Office, Block-01,
P.O.Neyveli, PIN: 607 801,
Cuddalore Dist., Tamil Nadu State.
152. The Deputy General Manager,
Neyveli Lignite Corporation Ltd.,
Corporate Office, Block-01,
P.O.Neyveli, PIN: 607 801,
Cuddalore Dist., Tamil Nadu State.
153. The Station Director,
Madras Atomic Power Station,
Nuclear Power Corpn. Of India Ltd.,
Kalpakkam – 603 102, Tamil Nadu State
154. The Deputy General Manager,
Kaiga Generating Station,
Nuclear Power Corpn. of India Ltd.,
P.O.Kaiga, Via Karwar,
Karnataka - 581400 , Karnataka State.

155. The Station Director,
Kudankulam Nuclear Power Project, Unit -1
Nuclear Power Corporation of India Ltd.,
P.O. Kudankulam, Radhapuram Taluk Tirunelveli District,
Tamil Nadu - 627 106
156. The Station Director,
Kudankulam Nuclear Power Project, Unit -2
Nuclear Power Corporation of India Ltd.,
P.O. Kudankulam, Radhapuram Taluk Tirunelveli District,
Tamil Nadu - 627 106
157. The Chief Operating Officer,
LANCO- Kondapalli Power Ltd., Stage-II
Plot No.4, Software Units Layout,
Hitech City, Madhapur,
Hyderabad-500 081. Andhra Pradesh State
158. The Chief Operating Officer,
LANCO- Kondapalli Power Ltd., Stage-III
Plot No.4, Software Units Layout,
Hitech City, Madhapur,
Hyderabad-500 081. Andhra Pradesh State
159. General Manager (O&M),
NTPC Tamilnadu Energy Company Ltd.,
Vallur Thermal Power Project,
Vellivoyalchavadi P.O.,
Ponneri Taluk, Tiruvallur Dist.,
Chennai – 600103, Tamil Nadu State.
160. Sr. Vice President,
Meenakshi Energy Pvt. Ltd.,
Meenakshi, Plot No: 119,
Road No: 10, Jubilee Hills,
Hyderabad-500 033.
161. The Chief Executive Officer,
NLC Tamil nadu Limited,
2*500, MW JV Thermal Power Project,
Harbour Estate,
Tuticorin, PIN: 628004, Tamil Nadu State.
162. Thermal Power Tech Corporation India Limited,
SPSR Nellore, 6-3-1090,
A-Block, 5th Floor, TSR Towers,
Raj Bhavan Road, Somajiguda,
Hyderabad, 5000082.

163. Sr. Vice President,
Meenakshi Energy Pvt. Ltd.,
Meenakshi, Plot No: 119,
Road No: 10, Jubilee Hills,
Hyderabad-500 033.
164. The General Manager (Projects),
Simhapuri Energy Pvt. Ltd.,
Madhucon Greenlands, 6-3-866/2,
3rd Floor, Begumpet,
Hyderabad-500016.
165. Managing Director,
Coastal Energen Pvt. Ltd,
7th Floor, Buhari Towers,
4 ,Moores Road,
Chennai, PIN: 600006, Tamil Nadu State
166. The Chief Commercial Officer (CCO)
SEMBCORP Energy India Ltd.,
6-3-1090, A-Block, 5th Floor,
T.S.R Towers, Raj Bhavan Road,
Somajiguda, Hyderabad 500082, Telangana
167. Senior General Manager,
IL & FS Tamilnadu Power Company limited,
C. Pudhupettai post,
Parangipettai (via), Chidambaram(tk.),
Cuddalore-608502, Tamil Nadu.
168. General Manager,
Sembcorp Gayatri Power Ltd.,
TP Gudur Mandal,
Nellore-524344, Andhra Pradesh.

North Eastern Region

169. State Load Despatch Centre,
Agartala, 79 Tilla, Kunjaban, Agartala,
Tripura (West)
170. Department of Power,
Government of Nagaland, SLDC Nagaland,
Electricity Colony,
Full Nagarjan Dimapur, Nagaland
171. Mizoram State Load Despatch Centre,
Tuikhuahtlang, Aizawl -796001

172. State Load Despatch Centre,
Assam, SLDC, AEGCL,
Near 132kv Grid Sub Station,
Kahilipara, Guwahati
173. General Manager,
Doyang HEP, NEEPCO,
Wokha, Nagaland
174. General Manager,
Ranganadi HEP, NEEPCO,
P.O. Ranganadi Proj. Dist. Subansiri,
Ar. Pradesh-791121
175. General Manager,
AGBPP, NEEPCO,
Kathalguri, Tinsukia, Assam
176. General Manager,
AGTPP, NEEPCO,
Ramchandranagar, Agartala, Tripura
177. General Manager,
KHANDONG HEP, NEEPCO,
Umrangsoo, N.C.Hills, Assam
178. General Manager,
KOPI LI HEP, NEEPCO,
Umrangsoo, N.C.Hills, Assam
179. General Manager,
KOPI LI-2 HEP, NEEPCO,
Umrangsoo, N.C.Hills, Assam
180. Chief Engineer,
NHPC
Loktak HEP Leimatak-795124, Manipur
181. Ranganadi HEP (NEEPCO)
Ranganadi HEP, NEEPCO Ltd.,
Yazali, Dist. Lower Subansiri,
Andhra Pradesh-791119
182. Managing Director,
ONGC Tripura Power Company Ltd,
6th Floor, A Wing, IFCI Tower-61,
Nehru Place, New Delhi, 110019

183. General Manager,
Bongaigaon TPP, NTPC Ltd.,
P.O.-Salakati, Kokrajhar Dist.
Assam-783369
184. Kameng HEP (NEEPCO),
EMG, Kameng HEP, NEEPCO, Kimi,
P.O.- Bhalukpong, Post Box-2, West Kameng
Dist., Arunachal Pradesh, PIN – 790114
185. Pare HEP (NEEPCO),
Pare HEP, NEEPCO Ltd, Sopo,
P.O- Doimukh, Dist- Papumpare,
Arunachal Pradesh, PIN – 791112
186. State Load Despatch Centre,
Agartala, 79 tilla, Kunjaban,
Agartala, Tripura (West)
187. Department of Power,
Government of Nagalnd,
SLDC Nagaland, Electricity Colony,
Full Nagarjan Dimapur, Nagaland.
188. Mizoram State Load Despatch Centre,
Tuikhuahtlang, Aizawl -796001
189. State Load Despatch Centre,
Assam, SLDC, AEGCL,
Near 132kv Grid Sub Station,
Kahilipara, Guwahati

...Respondents

190. Member Secretary,
Northern Regional Power Committee
18-A, Shaheed Jeet Singh Sasanwal Marg,
Katwaria Sarai,
New Delhi-110 016
191. Member Secretary,
Southern Regional Power Committee
29, Race Course Cross Road,
Bangalore-560 009.
192. Member Secretary,
Eastern Regional Power Committee
14, Golf Club Road,
Kolkata-700 033

193. Member Secretary,
Western Regional Power Committee
F-3, MIDC Area,
Andheri (East),
Mumbai-400 093
194. Member Secretary,
North Eastern Regional Power Committee
NERPC Complex,
Dong Parmaw,
Lapalang,
Shillong-6
195. Chief Engineer (Grid Management),
Central Electricity Authority Sewa Bhawan,
R.K.Puram,
New Delhi-110 022.
196. Chief Engineer
(National Power Committee),
Central Electricity Authority,
18-A, Shaheed Jeet Singh Sasanwal Marg,
Katwaria Sarai, New Delhi-110 016

...Proforma Respondents

Parties Present: Shri S.R. Narasimhan, NLDC
Shri N. Nallarasana, NLDC
Shri Phanisankar Chilakuri, NLDC

ORDER

The Petitioner, National Load Dispatch Centre (NLDC) is the system operator at the national level and has made the following prayers:

- a) Direct all ISGS stations whose tariff is regulated / determined by CERC to install equipment as per the requirement mentioned in the Petition at the unit control rooms for transferring the required data for AGC by 30th June 2019.*
- b) Direct all ISGS stations whose tariff is regulated / determined by CERC to ensure communication from nearest wide band node to the RTU in the unit control room by 30th June 2019.*
- c) Direct Central Transmission Utility (CTU) to ensure communication availability*

from NLDC/RLDCs to nearest wide band node/switchyard for the generating stations in a redundant and alternate path ensuring route diversity and dual communication by 30th June 2019.

- d) Decide the mark up price for secondary regulation service through AGC.*
- e) Allow NLDC/RLDCs to test, tune and operate the AGC system for providing the signals to the power plants as and when they comply with the directions above.*
- f) Allow any variation in the generation during testing phase to be settled under DSM.*
- g) Allow NLDC/RLDCs to put all the Phase-I plants under continuous operation on AGC before 31st December 2019.*
- h) Direct Phase-II plants in the detailed modus operandi to provide infrastructure at RTU/internal communication.*
- i) Road map for implementation of AGC at RLDCs in future may be accepted.*
- j) Pass any other orders as this Commission may deem fit and proper under the given facts and circumstances.*

SUBMISSIONS OF THE PETITIONER

2. The Petitioner has submitted that vide Order dated 13.10.2015 in petition no 11/SM/2015, the Commission gave the roadmap for ‘Operationalization of Generation Reserves in the Country’. The Order mandated that each region should maintain primary, secondary and tertiary reserves. The objective of the Order was to introduce ‘Spinning Reserves’ in the country, which is one of the important components for ensuring grid security, quality and reliability by achieving adequacy of supply and maintaining load-generation balance. All generating stations that are regional entities were directed to ‘must plan’ operationalization of Automatic Generation Control (AGC) along with reliable telemetry and communication by 01.04.2017. The Commission noted that this would entail a one-time expense for the generators to install requisite software and firmware, which could be compensated for and that the communication infrastructure must be planned by the Central Transmission Utility (CTU) and developed in parallel, in a cost-effective manner.

3. The Commission directed the Petitioner to upload the detailed modus operandi on ‘Operationalization of Spinning Reserves’ on NLDC website and seek comments from the

stakeholders by 11.08.2017 and file the comments received from stakeholders within two weeks thereafter. Accordingly, the report was also uploaded on the NLDC website.

4. The Petitioner has submitted that the detailed implementation plan was also discussed in the National Power Committee (NPC) meeting held at Indore on 08.09.2017. An agenda on 'secondary frequency control' was sent to NPC for discussion in the respective Regional Power Committees (RPC). The Expert Group constituted (in May 2017) by the Commission to review and suggest measures for bringing power system operation closer to National Reference Frequency, recommended that the frequency control continuum as given in their report may be adopted and included as part of the Grid Code (hereinafter referred to as 'IEGC') through an amendment to Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010. Further, it was recommended that AGC must be implemented throughout the country at the earliest in line with the Commission's recommendation of treating a region as a balancing area and that the Performance Metrics for AGC payments may be introduced once sufficient experience is gained through the pilot project (carried out at Dadri generating station of NTPC). AGC at the intra-State level, particularly for large states, was to be implemented in line with directions by the Appropriate Commission(s).

5. The Petitioner has submitted that the Commission in its order dated 06.12.2017 in Petition No. 79/RC/2017 approved the Commissioning of the AGC Pilot Project between NLDC and NTPC Dadri Stage-II and various developments in the AGC Pilot were acknowledged by the Commission. Vide the above order, the Commission also directed that similar pilot projects may be replicated by NLDC, in at least one other regional grid of the country. Dadri Stage-II was successfully taken under remote as a part of AGC pilot project from NLDC from 1225 Hrs. of 04.01.2018 and is under continuous operation. Further, data is being submitted by NLDC to NRPC in the agreed format on a weekly basis.

6. The Petitioner has submitted that Karnataka Power Transmission Corporation Limited (KPTCL) together with (United States Agency for International Development (USAID) has proposed AGC pilot project on Varahi and Sharavathi Hydro Power Plants. On 10.02.2018, SRLDC, USAID and NLDC visited NP Kunta solar park in Andhra Pradesh for understanding the feasibility of AGC implementation. USAID agreed to take the AGC implementation at NP Kunta Solar power project under 'Greening the Grid' (GtG)-RISE

project. The matter was also discussed in the 33rd meeting of SRPC held on 17.02.2018 at Puducherry. A workshop was organised by USAID and NLDC on 15.05.2018 at Andhra Pradesh SLDC, Vijayawada to explain the basic architecture of the AGC project and the proposed project at NP Kunta to stakeholders.

7. On 18.05.2018, Letter of Award was issued by NTPC Simhadri to M/S Siemens for the supply, testing and commissioning of software and hardware and implementation of the AGC pilot project at NTPC-Simhadri. AGC on Barh (Eastern Region), Bongaigaon (North Eastern Region) and Mauda (Western Region) are power plants of NTPC under contracting phase of implementation.

8. The Petitioner has submitted that it has started up-gradation of SCADA from October 2017. AGC set up is envisaged to be capable of sending and receiving AGC signals to all Regional Entity generating stations to start with for the first time in India. The RLDCs' SCADA/EMS system was recently upgraded before AGC was notified through the Commission's Order. Hence, considering a region as a balancing area, AGC is being implemented through NLDC, which is a unique experiment as five (5) AGCs are being operated from a single control center at NLDC. Further, as a next step, discussion could start on the roadmap to progressively shift AGC control to RLDCs over the next 3-5 years. At the intra-regional level, discussion at RPC level is on for introducing AGC at least in the few intra-State generators in RE-rich States.

9. The Petitioner has submitted that the CERC (Communication System for inter-State transmission of electricity) Regulations, 2017 has provided detailed roles and responsibilities of various organizations with respect to communication. NLDC was given the responsibility for preparation and issuance of guidelines with the approval of the Commission on the interfacing requirements in respect of terminal equipment, RTUs, SCADA, PMUs, Automatic Generation Control (AGC), Automatic Meter Reading (AMR), Advanced Metering Infrastructure (AMI), etc. and for data communication to the respective control centres. The Generic Technical Specifications for AGC connecting equipment that has to be procured by the power plants were prepared by the Petitioner based on the experience of the AGC pilot project (at Dadri) for full scale implementation of AGC. Generating stations have to install AGC connecting equipment at the unit control rooms for transferring the required set of data for AGC.

10. The Petitioner has submitted that Regional Secondary Reserves quantum, mandated by the Commission are given as below:

Secondary Reserves quantum needed in MW (Region wise)	
NR	800
ER	660
WR	800
SR	1000
NER	363
Total	3623

11. The Petitioner has suggested that the detailed implementation plan pan-India for AGC implementation is proposed in the following manner:

Phase-I

(a) Inter-State Generating Stations (ISGS) generators, whose tariff is regulated/ adopted by the Commission, are proposed to be made capable of participating in 'Secondary Control' since the tariff for these generators is already available and there are fewer communication issues. This is also because in case of these generating stations, Ancillary Services/ AGC Pilot Project Framework is available for settlement (without the refund of fixed charges as mentioned in the Half Yearly Feedback on Ancillary Services and CERC Order on AGC Pilot Project) and, therefore, its implementation is expected to be dispute free. However, limiting AGC implementation to only these generating stations may not be sufficient to ensure availability of the full quantum of reserves as mandated by the Commission.

Phase-II

(b) All Regional Entity generating stations scheduled by RLDCs (over and above the Phase-I power stations mentioned above) can be made capable of participating in secondary control. However, Declared Capability (DC) at present is not taken from these generating stations by RLDCs. Some Independent Power Producers (IPP) have part Power Purchase Agreements with discoms/ traders while part capacity is untied, and power is sold under merchant contracts. Tariff for these generators has to be

decided and agreed upon *a priori* for secondary control participation of these generators. DC and Schedule have to be obtained from these generators similar to Central Sector generating stations for reserve estimation. Many of these regional entity generating stations operate in the day-ahead energy market and the day-ahead prices may have a significant role in respect of these generating stations as far as availability to the grid at any instant is concerned. Low prices in the Day-Ahead Market (DAM) on a sustained basis may lead to many of these units remaining off the grid. The following, inter-alia, may be the requirements for the Regional entity generating stations equipped under Secondary Control:

- The generating stations shall bear the cost of secondary control hardware at the generating station end including the cost of the fibre optic cable from the generating station control room to the nearest communication node.
- Share DC and Schedule like ISGS generators on day ahead basis and subsequent revisions with RLDCs.
- Payment for energy and incentive will be as decided by the Commission.
- The generating stations shall have working control systems for turbine, boiler and governor. Governor response plots/ graphs of past incidents have to be submitted to concerned RLDC.
- Existing wide band communication node to be established within a radius below 30-40 km from the plant to communicate with the nearest RLDC. Distance need not be a binding limitation and the connectivity of the generating station with the communication node can be seen on case to case basis based on merit.

12. The Petitioner has submitted that Primary, secondary and tertiary generation reserves are required for frequency control and ensuring reliable operation of the grid, particularly under high Renewable Energy (RE) penetration. Primary control provision has been existing in the IEGC but its enforcement has been an issue that has been highlighted before the Commission. Secondary control had been absent in the system so far while tertiary frequency control was introduced only in April 2016 through the Central Electricity Regulatory Commission (Reserves Regulation Ancillary Services) Regulations, 2016 (or for short, RRAS Regulations). Through Order dated 16th July 2018 in Petition No. 07/SM/2018, Fast Response Ancillary Services or FRAS was ordered by the Commission for central sector hydro stations and is under implementation phase.

13. The Petitioner has submitted that the following issues become important when one looks at the entire continuum of frequency control:

- i. Ensuring accurate load forecasting and Renewable Energy (RE) forecasting: This is the first step towards reliability as generating units need to get committed based on the forecasts. Starting from Discom level, the forecasts need to be aggregated for the State at SLDCs level, at RLDCs for the regional level and at NLDC for the All-India level.
- ii. Evaluating Area Control Error (ACE) of each control area: Bias may be taken as equal to Frequency Response Characteristics (FRC) of the State in past ten events. For ACE, high quality measurement of line flows and frequency at 10 seconds or better periodicity at LDCs is a must. Further, seamless transfer of schedule data from off-line systems to SCADA must be ensured. RLDCs are already bringing forth the non-availability of real time data in the RPC forums and this needs to be addressed promptly.
- iii. Primary Response: The SLDCs must also monitor the primary response from the generating units within the State and report to the respective SERCs as directed by CERC vide its order dated 31st July 2017 in Petition No. 84/MP/2015.
- iv. Measurements: For AGC, high quality measurements are needed for inter-regional tie lines and generating stations under AGC. As stated above, periodic monitoring of the data quality needs to be done at the RPC forums and chronic problems of non-availability of data are addressed promptly so that real time operation is smooth.
- v. Fiber Optic Communication: Fiber optic communication from Regional Entity generating station to nearest CTU node and from there on to RLDCs/ NLDC is a must and it could be closely monitored through the RPC forums. This is required irrespective of whether we have a regulated system of secondary reserves procurement or a market based one.
- vi. Participation: ACE is allocated to the generating stations under AGC based on the selected participation factor mode in the AGC software. The participation of each generating station will be calculated by the AGC software based on the weightage assigned to different attributes of the plant and the grid. Spinning reserve availability, ramp rate and variable cost of the generating station are the important attributes that are typically considered. In case of inter-/ intra-regional transmission constraints during

outages, certain plants may not be able to participate in AGC till normalization of transmission system.

14. The Petitioner has submitted that ‘Spinning Reserves’ viz. DC on bar minus schedules available in real time in ISGS is currently used for rescheduling/ tertiary reserves by States, tertiary frequency control through Reserves Regulation Ancillary Services and now being envisaged for secondary control through AGC. It is also available for primary control though the IEGC clearly specifies that the schedules should not exceed capacity on bar less Normative Auxiliary Consumption. This ensures that even if the power plant is fully scheduled, the overload capacity and margins in auxiliary consumption is able to provide primary response.

15. The Petitioner has submitted that after the forecast of load and RE generation, the scheduling of conventional generation resources by the States assumes importance. Here, apart from scheduling, the States also need to indicate the amount of hot spinning reserves it is holding. The reserves could be held either within the State or at the ISGS where the State has a share but it should be replenished whenever there is a contingency such as a generating unit tripping within the State. Unless such a mechanism is in place, the secondary control would not work as all the reserves would get depleted quickly. DC on bar less the schedules equals the hot spinning reserves. It was observed that hot spinning reserve gets depleted daily during the morning and evening peak hours when States requisition their full entitlement. Under this situation, the State utilities ought to have reserves elsewhere within the State.

16. The Petitioner has submitted that on 06.09.2018, the Commission has issued a discussion paper on ‘*Redesigning Ancillary Services Mechanism in India*’ and comments were invited from stakeholders. The Petitioner is of the view that the physical infrastructure in terms of communication and suitable hardware/ software at the power plants is sine qua non for secondary control through AGC irrespective of whether the same is regulated or market-based. The only variable is the quantum of secondary reserves required on day to day basis.

PROCEEDINGS DURING HEARING

17. The Petition was admitted on 25.10.2018. During the hearing on 31.1.2019, the

Petitioner submitted that the present petition has been filed for implementation of AGC in India.

18. The Petitioner further submitted that the Commission in its Order dated 06.12.2017 in Petition No. 79/RC/2017 approved the commissioning of AGC pilot project between NLDC and NTPC Dadri Stage-II and the Commission also directed that similar pilot projects may be replicated by NLDC, in at least one other regional grid of the country. Accordingly, one plant in each region has been identified and AGC has also been commissioned in Simhadri and Mauda generating station.

19. The Petitioner requested the Commission to direct ISGS to install the equipment in power plants for accepting signals from NLDC. After hearing, the Commission directed the Petitioner to furnish the Minutes of Meeting held with RPCs wherein RPCs have given their consent to the AGC pilot project. The Commission further directed the Petitioner to submit the feedback report on the operation of AGC at NTPC Dadri Stage-II along with the summary of findings of this pilot project.

20. The Petitioner has complied with the directions and submitted the minutes of the special meetings on AGC pilot project which were held with all RPCs. The Petitioner has also submitted the feedback report before the Commission on 15th February 2019, highlighting the learning from the pilot project. Several learning including those on the implementation aspects, communication protocols, generator regulation and load following capabilities, metering, monitoring, visualisation, accounting etc. were gathered via pilot project and explained in the feedback report. The Pilot projects have also provided capacity building in the field of AGC which will be useful during implementation of secondary control on a large scale.

ANALYSIS & DECISION

21. We have heard the Learned Counsels for the Petitioner and have carefully perused the records.

22. The Commission is of the view that the most important responsibility of the Power System operators is to maintain reliability of the Power System by maintenance of Load -

Generation balance. For a large complex grid such as the Indian grid, primary, secondary and tertiary frequency controls are must-have tools to ensure reliability. With the objective of ensuring grid security, quality and reliability, the Commission vide Order dated 13.10.2015 in Petition no 11/SM/2015 had laid down a roadmap for '*Operationalization of Generation Reserves in the Country*'. It was envisaged that apart from the primary reserve at the national level, secondary reserve should be maintained by each region and tertiary reserve by each State. All the generating stations that are regional entities were directed to plan to operationalize AGC along with reliable telemetry and communication by 01.04.2017. The NLDC was directed to submit a detailed procedure to operationalize reserves in the country vide Order dated 13.10.2015.

23. The Commission notes that an 'outline procedure' was submitted by NLDC vide letter dated 15.12.2015 in which it was proposed to take up a pilot project with one of the NTPC plants in a region based on which further activities could be taken up. On 05.02.2016, NLDC was advised to submit the draft detailed procedure and implementation plan for operationalization of Reserves within three months of implementation of Ancillary Services Regulations. After various brainstorming sessions and meetings, NLDC submitted the detailed procedure on Operationalization of Spinning Reserves on 14.07.2017 and recommended that secondary control should be added as an Ancillary Service.

24. The Commission observes that the 'National Electricity Policy' also mandates that adequate reserves may be maintained to ensure secure grid operation. The Commission is of the view that collective efforts of the stakeholders in implementation of the AGC are a step forward and will go a long way in development of the secondary reserves in the country leading to stable frequency operation and grid security and reliability.

25. The Commission observes that the feedback on implementation of AGC submitted by NLDC highlights the need for enhancing adequacy of reserves in the country. It has been stated that valuable experience has been gained in terms of implementation aspects, communication protocols, generator regulation and load following capabilities, cyber security etc. which is useful during implementation of secondary control on a large scale. The Petitioner has submitted that from the interactions with national and international experts on power systems and experience with Ancillary Services till date, the general understanding was that different solutions as a package like load and Renewable Energy (RE) generation

forecast, proper portfolio management by the States, primary response from the generators, secondary control in the form of AGC, Ancillary Service products in different timeframes etc. are needed for stable frequency operation of the power system. No unique solution existed. NLDC report emphasised that a bad or no forecast of load/ RE generation and poor portfolio management by the State utilities would lead to heavy deviations from schedule and grid indiscipline exhausting all reserves in the system and making the system insecure. AGC effectiveness would have to be seen in this overall context. It was further highlighted in the feedback report that deployment of two-three plants under AGC with 200 MW-300 MW reserve might not be sufficient for a grid size like that of India. The Commission observes that the Expert Group on 'National Reference Frequency' in its report submitted to the Commission in November 2017 recommended that AGC must be implemented throughout the country at the earliest and Performance Metrics for such AGC payments may be introduced once sufficient experience is gained through the pilot project.

26. The Petitioner has suggested that implementation of AGC be undertaken in Phases. Under Phase-I, ISGS generators, whose tariff is regulated/ adopted by the Commission, are proposed to be made capable of participating in 'Secondary Control'. Dadri Stage-II NTPC in Northern Region was the first AGC pilot project of the country which was approved by the Commission vide Order in Petition No.79/RC/2017 on 06.12.2017 and is in continuous operation from 1225 Hrs. of 04.01.2018. The Commission also directed that similar pilot projects may be replicated by NLDC, in at least one other regional grid of the country. Accordingly, four more AGC pilot projects have been/are being implemented viz. Simhadri Stage-II in Southern Region, Mauda Stage-II in Western Region, Barh Stage-II in Eastern Region and Bongaigaon in North-Eastern Region.

27. The Commission observes that there is one-time expense involved for the generators to install requisite software and firmware. The Commission has been informed that the implementation cost i.e. placing of order for the equipment and integration cost of the four AGC pilot projects which have been commissioned viz. Dadri Stage-II NTPC in Northern Region Simhadri Stage-II in Southern Region, Mauda Stage-II in Western Region and Barh Stage-II in Eastern Region, is in the range of Rs. 30.00 lakhs to Rs. 50 lakhs per generating station. The Commission accepts the Petitioner's proposition that the cost of such equipment at generating stations for AGC implementation is not significant and ideally all ISGS stations should be AGC enabled. The Commission notes that majority of the thermal stations

regulated by the Commission have station capacity of 200 MW and above and the AGC support is mainly expected from these facilities apart from the hydro generating stations other than Run-of-River projects. It will therefore be prudent, also from the point of view of cost effectiveness to ensure that the thermal generating stations with installed capacity of 200 MW and above and all hydro stations with capacity exceeding 25 MW necessarily have the capability to provide AGC support. Further, the Commission is of the view that with due regard to the nature of the Run-of-River Hydro projects it may not be advisable to mandate such plants to provide AGC support, as this might lead to spillage/ under-utilization of water, which should be avoided. Accordingly, the Commission directs all thermal Inter State Generating Stations (ISGS) that are regional entities with installed capacity of 200 MW and above and all hydro stations with capacity exceeding 25 MW excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by the Commission, to install the required software and firmware for implementation of AGC at the unit control rooms for transferring the required set of data for AGC. These regional entity generators may approach the Commission under relevant regulations and provisions of PPA for compensation of this one-time cost. The Commission also directs the Central Transmission Utility and the NLDC to commission the required communication system in parallel.

28. Once the aforesaid generating stations are AGC enabled, NLDC/ RLDCs shall be allowed to test, tune and operate the AGC system for providing the signals to the power plants. With this decision to make the ISGS stations AGC compliant, the Commission is of the view that any other pilot beyond the five pilots already initiated by NLDC, may not be needed.

29. As regards compensation for AGC support and deviation charges, it is clarified that the framework in this regard as stipulated in the Commission's Order in Petition no. 79/RC/2017 dated 06.12.2017 shall apply to the five pilot projects as also to other ISGS as and when they are AGC enabled. This arrangement shall remain in place till further Orders or till relevant regulations inter-alia on compensation for AGC services are framed by the Commission.

30. The Commission has noted the suggestions of the Petitioner for covering under Phase-II, other regional entity generators (other than those whose tariff is determined or adopted by

the Commission). The Commission is of the view that decision on this issue cannot be taken in the present petition. It needs wider consideration.

31. The Commission observes that NLDC in its report on implementation of RRAS, has recommended moving towards market-based procurement of ancillary service for a more robust design. The relevant excerpt is reproduced below:

“Once the scope of present implementation of ancillary services is enlarged from the regulated generation stations at inter-state level to include state-level generators also, a critical mass would be achieved. Moreover as more and more generators start participating in regulation services, closer monitoring of the performance of generating stations would also be needed. The implementation would also be more robust by design and subsequently, based on the experience gained, market based procurement of ancillary services could also be thought of.”

32. The Commission is of the view that the experience gained under RRAS underlines the need for a calibrated approach to transform the extant administered Ancillary Services mechanism to a market-based mechanism with the objective of increasing the ambit of potential providers of such services at efficient costs and enhanced reliability of the grid. The Staff Paper on *‘Redesigning Ancillary Services Mechanism in India’* issued by staff of the Commission on 06.09.2018 has highlighted that the physical infrastructure in terms of communication and suitable hardware/ software at the power plants is sine qua non for secondary control through AGC irrespective of the fact whether the same is regulated or market-based. The only variable is the quantum of secondary reserves required on day to day basis.

33. The Commission observes that given the changes in technology, generation mix and increasing decentralized generation, and locational ancillary requirements, long term bilateral contracts for ancillary support should be avoided. Same resource can provide multiple flexibility services. For example, a generator that can provide fast tertiary response can also provide slow tertiary response. An arrangement which bundles multiple flexibility services has some advantages – by allowing such generators to utilize their capabilities to serve various system requirements thereby reducing the cost of providing individual services. Accordingly, the Commission directs the staff of the Commission to initiate a comprehensive review of Ancillary services framework based on these principles, and present to the Commission for suitable decision.

SUMMARY

34. In the interest of reliable and safe grid operation, the Commission directs that all the ISGS stations whose tariff is determined or adopted by CERC shall be AGC-enabled and the ancillary services including secondary control through AGC be implemented as per the following direction:

- i. All thermal ISGS stations with installed capacity of 200 MW and above and all hydro stations having capacity exceeding 25 MW excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by CERC are directed to install equipment at the unit control rooms for transferring the required data for AGC as per the requirement to be notified by NLDC. NLDC shall notify the said requirements within one month of this order.*
- ii. All such ISGS stations whose tariff is determined or adopted by CERC shall have communication from the nearest wide band node to the RTU in the unit control room.*
- iii. The Central Transmission Utility (CTU) is directed to have communication availability from NLDC/ RLDCs to the nearest wide band node/ switchyard for the generating stations in a redundant and alternate path ensuring route diversity and dual communication.*
- iv. The NLDC is also directed to commission the required communication infrastructure.*
- v. The expenditure as a result of compliance of the above directions may be claimed as per relevant regulations or provisions of the PPA.*
- vi. The NLDC is directed to monitor implementation of the above directions so that all the ISGS stations whose tariff is determined or adopted by CERC are AGC-enabled within six months of this order.*
- vii. The framework regarding compensation for AGC support and deviation charges as stipulated in the Commission's Order in Petition no. 79/RC/2017 dated 06.12.2017 shall apply to the five pilot projects as also to other ISGS as and when they are AGC enabled. This arrangement shall remain in place till the relevant regulations inter alia on compensation for AGC services are framed by the Commission.*
- viii. NLDC/RLDCs are allowed to operate the AGC system for enabling the signals to the power plants at the earliest.*

ix. All new thermal ISGS stations with installed capacity of 200 MW and above and hydro stations having capacity exceeding 25 MW excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by CERC shall mandatorily have the capability to provide AGC support.

35. With the above directions, Petition No. 319/RC/2018 stands disposed of.

Sd/-

आई. एस. झा
सदस्य

Sd/-

डॉ एम. के. अय्यर
सदस्य

Sd/-

पी. के. पुजारी
अध्यक्ष