Power System Operation Corporation Ltd.

Detailed Procedure

For

Ancillary Services Operations

Prepared in Compliance to Regulation 14

of

CERC (Ancillary Services Operations) Regulations, 2015

March 2016

National Load Despatch Centre (NLDC)

New Delhi

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Ancillary Services Operations

Detailed Procedure

1. Preamble

1.1. This Procedure is issued in compliance to Regulation 14of the Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations 2015, herein after referred to as the "AS Regulations".

1.2. The objective of AS Regulations is to help in restoring the frequency level to the nominal level and to relieve the congestion in the transmission network.

1.3. All Generating Stations that are Regional Entities and whose tariff for the full capacity is determined or adopted by the Central Electricity Regulatory Commission (CERC) shall provide the Reserves Regulation Ancillary Services (hereinafter to be referred as "RRAS") and shall abide by this Procedure.

1.4. All the words and expression used in the Procedure shall have the same meaning as assigned to them in the AS Regulations.

1.5. This procedure will be implemented with effect from the date of its approval by the CERC.

2. Objective

2.1. The objective of the detailed procedure is to lay down the roles, responsibilities, eligibility criteria, scheduling, despatch, accounting and settlement methodologies to be followed by the Nodal Agency, Regional Load Despatch Centres (RLDCs), Regional Power Committees (RPCs), RRAS providers and State Load Despatch Centres (SLDCs) in the implementation of the Ancillary Services Operations.

3. Scope

3.1. The Procedure shall be applicable to the Regional Entities involved in the transactions facilitated through Short-Term Open Access (STOA) or Medium-Term Open Access (MTOA) or Long-Term Access (LTA) in inter-State transmission of electricity.

3.2. The Procedure shall also apply to the SLDCs, RLDCs, NLDC and RPCs.

3.3. The Procedure shall not apply to the Regional Entity Generating Stations whose tariff for the full capacity is not determined by the CERC.

4. Role of Nodal Agency

4.1. The National Load Despatch Center (NLDC), as the Nodal Agency, shall be responsible for implementation of Ancillary Services at inter-state level through the Regional Load Despatch Center (RLDCs).

4.2. The Nodal Agency shall forecast the daily region-wise and All India demand on day-ahead basis generally by aggregating demand forecast by the State Load Despatch Center (SLDC) and BBMB, DVC, SSP, etc. If required, the aggregated demand forecast may be moderated by the Nodal Agency.

4.3. The Nodal Agency shall prepare merit order stack of all RRAS Providers based on the variable cost of generation. The merit order stack shall be sorted from the lowest variable cost to the highest variable cost for the purpose of implementation of the "Up Regulation" of RRAS. The merit order stack shall be sorted from the highest variable cost to the lowest variable cost for the purpose of implementation of the "Down Regulation" of RRAS.

4.4. The Nodal agency shall consider inter-regional and intra-regional congestion, if any, while dispatching the RRAS and, segregate the merit

order stack on a region-wise/bid-area wise basis as per the anticipated congestion.

4.5. The Nodal Agency shall dispatch the RRAS providers based on the merit order stack and direct the concerned RLDC to schedule the RRAS provider(s). In case of congestion or exigencies in the system, merit order may be discounted and other factors such as ramp rates, location, response time, quantum of relief sought, minimum run time in case of cold start and module capacity may also be considered. Further, in order to have faster relief, the Nodal Agency may consider simultaneous dispatch of Ancillary by multiple RRAS providers.

4.6. The Nodal Agency shall monitor the power system parameters such as frequency, line loadings, likelihood of congestion, etc. while dispatching RRAS. The Nodal Agency shall also assess the impact on the transmission corridors of the respective region including inter-regional corridors while dispatching RRAS.

4.7. The Regulation up/down instructions to the RRAS Provider shall be given by Nodal Agency through respective RLDC.

4.8. The Nodal Agency shall also publish the variable cost of each RRAS Provider on its website after receiving the same from RPC on a monthly basis. The Declared Capability (DC), Schedule, Un-despatched power (DC – Schedule or un-requisitioned surplus or URS), Technical Minimum, Minimum Run Time, module capacity, module interdependency and Schedule under Ancillary Services shall be made available for each RRAS Provider through the web based portal of the Nodal Agency/concerned RLDC.

4.9. Hydro generation, within the total energy dispatch constraints, is providing the peaking support including ramping and normally, there is no un-despatched power. However, in case of exigencies or otherwise, the hydro stations would also be considered for despatch under Ancillary Services by the Nodal Agency.

5. Role of RRAS Providers

5.1. The RRAS Provider shall provide (in the prescribed Format AS1) the following details by 8th day of the current month (if 8th day is holiday, then next working day) along with any other information pertaining to the generating station for the next month to respective RPC.

a) RRAS Provider Station Name
b) Owner Name
c) Unit wise and Total Installed/Effective Capacity (MW)
d) Type of fuel used
e) Maximum possible ex-bus injection (including overload if any)
f) Region and Bid Area
g) Ramp Up Rate (MW/Min.)
h) Ramp Down Rate (MW/Min.)
i) Station Technical Minimum (MW and in %) as per CERC ….. Regulations.
j) Fixed cost or Capacity Charges (paise/kWh up to one decimal place)
k) Variable cost or Energy Charges (paise/kWh up to one decimal place)
l) Start-up time for cold start and warm start
m) Module constraints, if any, in the case of gas based stations

Fixed cost submitted shall be based on latest tariff order of CERC corresponding to normative availability in accordance with the applicable CERC Terms and Conditions of Tariff Regulations for RRAS Providers whose tariff is regulated by CERC under Section 62 of the Electricity Act 2003.

Fixed cost submitted shall be based on quoted non-escalable and escalable capacity charges corresponding to normative availability in accordance with the PPA for RRAS Providers whose tariff is adopted by CERC under Section 63 of the Electricity Act 2003.

Variable Charges shall be the variable charges for the previous month as per bill raised by the RRAS Provider for the generating stations, or in case that is not available then last available month bill.

In case of new generating station the expected variable cost shall have to be indicated by the RRAS in the first month of operation based on CERC norms of station heat rate, auxiliary energy consumption and specific fuel oil consumption, as applicable.

Supporting documents in respect of fixed cost, variable cost, ramp rates and technical minimum shall be provided by the RRAS Providers.

5.2. The RRAS providers shall provide (as per Format – AS2) all necessary details for communication such as Contact details of Nodal person / Control Room, fax, telephone (including mobile) nos. and Email ID to the Nodal Agency.

5.3. The RRAS Provider shall increase or decrease the generation as per the instruction of the Nodal Agency given through the respective RLDC for Regulation Up and Regulation Down respectively.

5.4. The continuity of the RRAS shall be ensured by the RRAS provider over the period of the despatch.

6. Role of Regional Power Committees (RPC)

6.1. Based on the data provided by the RRAS Providers, the RPCs shall publish the following information (as per Format-AS3) on their respective websites on a monthly basis by the 12th day of current month (if 12th day is holiday, then next working day).

a) RRAS Provider Station Name
b) Unit wise and Total Installed/Effective Capacity (MW)
c) Type of fuel used
d) Maximum possible ex-bus injection (including overload if any)
e) Region and Bid Area
f) Ramp Up Rate (MW/Min.)

g) Ramp Down Rate (MW/Min.)
h) Station Technical Minimum (MW and in %), as per the relevant CERC Regulations on technical minimum of plants
i) Fixed cost or Capacity Charges (paise/kWh up to one decimal place)
j) Variable cost or Energy Charges (paise/kWh up to one decimal place)
k) Start-up time for cold start and warm start
l) Module constraints, if any, in the case of gas based stations

The above information will be used for despatch of RRAS from the 16thday of the current month till the 15th day of the next month.

Asuitable and mutually agreed file transfer protocol shall be developed for exchange of above information between the RPCs and the Nodal Agency/RLDCs.

6.2. The RPCs shall use the above mentioned details of fixed charge, variable charge and any other statutory charges applicable on the RRAS Providers for preparation of Energy/Deviation Accounts of the RRAS providers. Any post-facto revision in rates/charges by RRAS providers shall not be permitted.

7. Role of State Load Despatch Centre (SLDC)

7.1. In accordance with the stipulations in Clause 5.3 of the IEGC regarding demand estimation, each SLDC shall prepare the block wise daily forecast of demand (Format AS4) on day-ahead basis by 1500 hrs of current day for next day taking into account variousfactors such as historical data, weather forecast data, outage plan of units / transmission elements, etc.

7.2. The details would also be communicated by the SLDCs to the concerned RLDCs through a mutually agreed file transfer protocol by 1600 hrs. In case there is any revision in the forecast subsequently, this should be communicated by the SLDC to the concerned RLDC.

8. Triggering Criteria of Reserves Regulation Ancillary Services (RRAS)

8.1. The first merit order stack as described above shall be prepared after issuance of revision '0' schedule issued by RLDCs by 1800 hours of current day for next day for the period 0000 to 2400 hours of the next day. Subsequently, this would be updated to reflect the changes in the schedule.

8.2. The RRAS for Regulation Up and Regulation Down may be triggered on account of any of the following events:

i. *Extreme weather conditions* such as storms/cyclones, dust storms, fog, hail storms, etc.and/or special days such as, festivals, etc. which may lead to any changes in the demand patterns, depletion in the network by way of tripping of network elements (e.g., during fog), etc.;

ii. *Generating unit or transmission line outages*; In case of likelihood or occurrence of violation of n-1 criteria for any of the transmission corridor or violation of ATC of any flow gate or curtailment of LTA / MTOA / STOA (Collective and Bilateral) due to forced outage of any element, Nodal Agency may issue instruction for Regulation Up / Down to any RRAS provider.

iii. *Trend of load met:* Nodal Agency, through the concerned RLDC, may issue instructions for Regulation Up/Down service to the RRAS Providers in any of the region considering the impact of trend of load met on line loading, frequency and other system parameters; for example during periods of high demand in Northern Region due to weather beating load or due to high agricultural demand not foreseen earlier and leading to higher imports from other regions.

iv. *Trends of frequency*;

a. If the frequency remains below 49.90 Hz (or the lower limit of the operational frequency band as per IEGC) continuously for a period of 5 minutes or more in a time-block and giving due regard to forecasts, the Nodal Agency may issue Regulation Up instructions. The Nodal Agency may also withdraw Regulation Down instruction if already instructed depending upon inter-regional and intra-regional congestion.

b. If the frequency remains above 50.05 Hz (or the upper limit of the operational frequency band as per IEGC) continuously for a period of 5 minutes or more in a time-block and giving due regard to forecasts, the Nodal Agency may issue Regulation Down instructions. The Nodal Agency may also withdraw Regulation Up instruction if already instructed depending upon inter-regional and intra-regional congestion.

v. *Intimation of any abnormal event* such as outage of hydro generating units due to silt, outage of thermal generating units due to coal/gas supply shortage/blockade, nuclear unit outage due to fuel / reactor related issues, outage of Ultra Mega Solar Power Parks/wind generation due to sudden weather changes and any other force majeure conditions etc.;

vi. *Loop flows* leading to congestion, for example, in a scenario where real time flows are different from those considered while estimating the TTC/ATC;

vii. *Trend of computed area control error (ACE) at regional level:* ACE shall be computed as per the following:

$$ACE = (NI_A - NI_S) - k\,(F_A - F_N)$$

Where,
NI_A = Actual net interchange or Actual drawl from grid
NI_S = Scheduled net interchange or Schedule drawl from grid
F_A = Actual frequency
F_N= Nominal system frequency (50 Hz)
k = Power number/Stiffness constant in MW/Hz (taken as 3% of demand met or the Frequency Response Characteristics)

viii. *Recall by the original beneficiary*.

ix. Nodal Agency may also consider dispatch of RRAS under the following circumstances:

- Grid voltage in the important nodes downstream/upstream of the corridor is beyond the operating range specified in the IEGC and/or

- The real time power flow along a corridor is such that n-1 criteria may not be satisfied
- One or more transmission lines in the corridor are loaded beyond the normal limit specified in CEA Manual on Transmission Planning Criteria.

x. Such other events

Notwithstanding the above mentioned events, the Nodal Agency may also consider to despatch RRAS, if required, based on the anticipated system conditions.

8.3. *"Up Regulation" RRAS:* The merit order stack from lowest to highest variable cost prepared by the Nodal Agency shall be used for "Up Regulation" RRAS. The despatch of "Up Regulation RRAS" involves dispatch from already running units on bar or calling for a unit under reserve shutdown to be synchronized for delivery under RRAS. Accordingly, the following two cases arise:

8.3.1. *Case – I (Despatch from already running units):* In this scenario, URS power available through the RRAS providers, as per merit order, will be dispatched for the duration selected by the Nodal Agency. Due consideration shall also be given to ramp rates and congestion.

8.3.2. *Case – II (Despatch from units under reserve shutdown)*: This scenario requires that adequate lead time shall be allowed by the Nodal Agency while scheduling the RRAS. A minimum dispatch duration of ninety six (96) time blocks i.e., twenty four (24) hours shall be given by the Nodal Agency to the thermal (coal based) RRAS providers from the time the unit is scheduled for providing RRAS. A minimum dispatch duration of twelve (12) time blocks i.e., three (3) hours shall be given by the Nodal Agency to the gas/RLNG/liquid based RRAS providers from the time the unit is scheduled for providing RRAS. Due consideration shall also be given to, ramp rates and congestion.

8.4. *Down Regulation:* For "DOWN Regulation", the stack prepared from the highest to the lowest variable cost shall be used. The DOWN Regulation requirement could arise because of system conditions (frequency,

congestion, consolidate reserves etc.). The DOWN Regulation shall be implemented as per merit order presented in the stack. Due consideration shall also be given to technical minimum, ramp rates and congestion.

8.5. The Nodal Agency while despatching Ancillary Services in case of congestion, shall also consider other methods of alleviating congestion such as imposition of congestion charges depending on the prevailing real time system conditions.

8.6. Normally, the Nodal Agency shall review the dispatch made under RRAS on an hourly basis, except in the case of exigencies in the system.

9. Scheduling of Reserves Regulation Ancillary Services (RRAS)

9.1. A virtual regional entity called "Virtual Ancillary Entity (VAE)" shall be created for each of the five regional grids by the respective RLDCs. As this is a "virtual" entity, the schedule under Ancillary for the VAE shall be deemed delivered.

9.2. The quantum of generation dispatched by the Nodal Agency shall be directly incorporated in the schedule of respective RRAS provider by the concerned RLDC. The schedule under RRAS may be revised by the Nodal Agency depending on the real time system conditions.

9.3. For Regulation Up Service, power shall be scheduled from the RRAS Provider to the respective VAE by the Nodal Agency/concerned RLDC and for Regulation Down Service, power shall be scheduled from the respective VAE to the RRAS Provider.

9.4. The schedule of the RRAS Providers will become effective earliest from the time block starting 15 minutes after issue of the dispatch instruction by the Nodal Agency and this shall be clearly specified in the dispatch instruction. However, the Nodal Agency may also consider to implement RRAS from any time block after the above mentioned time block, if required, based on the anticipated system conditions.

9.5. The schedule of the RRAS Provider shall be at ex-bus periphery. The injection loss (for Regulation-UP service) and the withdrawal loss (for Regulation-DOWN service) shall be accounted for in kind in the schedule of the respective VAE.

9.6. The schedules of the RRAS Providers shall be considered as revised by the quantum scheduled by the Nodal Agency under RRAS.

9.7. Any deviations from schedule (including the RRAS schedule) by RRAS provider shall be treated in accordance with the CERC (Deviation Settlement Mechanism and related matters) Regulations, 2014 and amendments thereof (hereinafter referred to as "CERC DSM Regulations").

9.8. Once RRAS has been triggered, a message shall be sent from the Nodal Agency to the concerned RLDC for incorporation of the RRAS despatch instruction in the schedule of the respective RRAS Provider. Subsequently, a message shall also be sent by the Nodal Agency/RLDC to the concerned RRAS provider.

9.9. In case of downward DC revision due to unit tripping in the station of the RRAS provider, the RRAS power will be curtailed first, followed by STOA, MTOA and LTA transactions. RRAS curtailment shall be effective from the second time block considering the time block in which the intimation is received as the first time block.

9.10. In case of transmission line tripping/congestion in evacuation of power from the RRAS provider generating station, the schedules of the respective RRAS Provider generating station shall be revised by the quantum scheduled by the Nodal Agency under RRAS followed by STOA, MTOA and LTA transactions as per requirement.

9.11. Once the URS power from a RRAS provider has been scheduled under RRAS, then, this can be recalled only by the original beneficiary in accordance with the CERC Ancillary Services Operations Regulations 2015.

In case any beneficiary other than the original beneficiary requests for URS power from a generating station which is a RRAS provider, such request will not be considered by RLDCs if the same URS power has already been scheduled under RRAS.

9.12. The RRAS schedules, as finalized by the concerned RLDC in the implementation schedule, shall be transferred electronically by the RLDC to the concerned RPC and NLDC.

9.13. Sustained failure, i.e., failure to provide the RRAS (barring unit tripping) by RRAS Provider(s) more than three (3) times during a month shall be brought to the notice of the CERC.

10. Withdrawal of Reserves Regulation Ancillary Services (RRAS)

10.1. The Nodal Agency, shall issue instructions to the RRAS provider, through the concerned RLDC, to withdraw RRAS once the circumstances requiring deployment of RRAS no longer exist. Accordingly, Nodal Agency shall withdraw dispatch under RRAS.

a) If the frequency remains above 49.90 Hz continuously for a period of 5 minutes (for low frequency criteria) in a time block
b) If the frequency remains below 50.05 Hz continuously for a period of 5 minutes (for high frequency criteria) in a time block
c) No violation of n-1 criteria for the transmission corridor or no violation of ATC for 15 minutes.
d) Depending on real time power system conditions

10.2. The necessary revision in the schedule of the RRAS provider shall be carried out by the concerned RLDC. A message (as per Format AS6) may also be sent by the Nodal Agency/RLDC to the concerned RRAS provider.

10.3. The schedule of the RRAS providers will become effective earliest from the time block starting 15 minutes after issue of the withdrawal instruction by the Nodal Agency and this shall be clearly specified in the withdrawal

instruction. However, the Nodal Agency may also choose to withdraw RRAS from any time block after the above mentioned time block, if required, based on the anticipated system conditions.

10.4. In case Un-despatched power is requisitioned back by the original beneficiary, the quantum dispatched under RRAS shall be reduced by the quantum of recall by the original beneficiary. This quantum would be scheduled to the original beneficiary from fourth time-block counting the time-block in which requisition has been received as the first block. The RRAS schedule of the RRAS provider and the beneficiary would be revised accordingly. Additional dispatch under RRAS will be considered by the Nodal Agency, if required, in such cases.

11. Data and Voice Communication

11.1. Voice communication and web based interfacing with Nodal Agency and RLDCs shall be ensured by the respective RRAS Providers and Regional entities.

11.2. Nodal Agency and the RLDCs shall provide information related to dispatch of Ancillary Services on their respective websites.

12. Energy Accounting

12.1. Energy Accounting shall be done by the respective RPC on weekly basis along with Deviation Settlement Account (hereinafter referred to as "DSM Account") based on interface meters data and schedule data.

12.2. The respective RLDC shall furnish the actual net injection/drawal of concerned regional entities, 15 minute-wise, based on the interfacemeter data. The above data along with the processed data of all interface meters and the schedules shall be forwarded by the concerned RLDC to the respective RPC Secretariat on a weekly basis as per the existing procedure. The concerned RPC shall prepare and issue the RRAS account along with

DSM Account. All computations carried out by RLDC shall be open to all regional entities for checking/verifications for a period of 15 days.

12.3. A statement of RRAS energy account shall be prepared by the respective RPC secretariat on weekly basis along with the DSM Account based on the data provided by the concerned RLDC.

13. RRAS Settlement

13.1. The concerned RPC, using block wise schedules given by concerned RLDC on weekly basis, shall compute and furnish the following details along with the DSM Account under separate account head of RRAS

a) Fixed and variable charges payable to RRAS providers from the pool in case of UP Regulation
b) Variable charges payable byRRAS providers tothe pool in case of DOWN regulation
c) Mark up as specified by CERC through a separate order
d) Fixed charges to be reimbursed by RRAS providers to the original beneficiaries

13.2. The payment to the generator under RRAS would be on the basis of the quantum scheduled under Ancillary Services and the RRAS Settlement Account (Format-AS5) prepared by the concerned RPC. No separate bills shall be raised for this purpose.

13.3. The settlement shall be done by the concerned RLDC based on the accounts issued by RPCs from the Deviation Settlement Pool Account under separate account head of RRAS. The payment to RRAS Provider(s) shall be from the Regional Deviation Pool Account Fund of the concerned Region where the RRAS provider is located. Deficit, if any, in the Regional Deviation Pool Account Fund maintained by an RLDC due to despatch of Ancillary Services, shall be made up proportionately by Regional Deviation Pool Account Fund maintained by other RLDCs on a weekly basis.

13.4. In case of "DOWN Regulation", the refund of 75% of the variable charges (in accordance with the accounts prepared by the concerned RPC) by the RRAS Providers to the respective Deviation Settlement Pool Account shall be made within 10 (ten) days of the issue of statement of RRAS Account.

13.5. In case of "UP Regulation", the payment of the fixed and variable charges to the RRAS Providers shall be made within 15(fifteen) days of the issue of statement of RRAS Account by the respective RPC. This payment shall be made from the Deviation Settlement Pool Account of the concerned region subject to availability of adequate funds in the DSM Pool Account.

13.6. The RRAS Providers shall pay the fixed charges within 20(twenty) days of the issue of statement of RRAS Account by the respective RPC to the beneficiaries having share in the RRAS provider and regional entities. RRAS provider shall refund back the fixed charge to the original beneficiaries in proportion to the quantum surrendered from its generating stationas per the statement brought out by respective RPC (Format AS7).

13.7. The payment of charges for RRAS shall have a high priority.

13.8. If payments by the RRAS provider, due under the Ancillary Services are delayed by more than two days, i.e., beyond twelve (12) days from the date of issue of the statement by the Secretariat of the respective Regional Power Committee, the defaulting RRAS provider shall pay simple interest @ 0.04% for each day of delay. Liability to pay interest for the delay in payments to the "Regional Deviation Pool Account Fund" shall remain till interest is not paid; irrespective of the fact that RRAS Providers who have to receive payments have been paid from the "Regional Deviation Pool Account Fund" in part or full.

13.9. If payments to the RRAS provider, due under the Ancillary Services are delayed by more than two days, i.e., beyond seventeen (17) days from the date of issue of the statement by the Secretariat of the respective Regional

Power Committee, the RRAS provider shall be paid simple interest @ 0.04% for each day of delay.

13.10. No commitment charges would be payable to the RRAS providers for providing RRAS. Further, the quantum of schedule under RRAS (both up-regulation and down-regulation) shall not be considered for the purposes of incentive calculation for the generating station by the concerned RPC.

13.11. The Nodal Agency shall issue a monthly report regarding the various operational aspects of the RRAS mechanism and submit the same to the Market Monitoring Cell (MMC) of CERC.

13.12. Monthly reconciliation of the Reserves Regulation Ancillary Services Account shall be done by the respective RLDCs with the RRAS providers.

13.13. The payments related to the Ancillary Services shall be settled from the concerned RLDC's DSM Pool Account before transfer of any residual amount to the PSDF.

14. **Removal of Difficulties**

14.1. Notwithstanding anything contained in this Procedure, Nodal Agency /RLDCs may take appropriate decisions in the interest of System Operation. Such decisions shall be taken under intimation to CERC and the procedure shall be modified /amended, as necessary.

14.2. In case of any difficulty in implementation of this procedure, this procedure shall be reviewed or revised by the Nodal Agency with the approval from the Commission.

Format AS1: Generator Details by RRAS Provider

From: (Name of RRAS Provider Generating Station) / (Name of Owner Organization)

To: NRPC/WRPC/SRPC/ERPC/NERPC

Validity of the Information **From:** 16/mm/yyyy **To:**15/mm/yyyy

Date: dd/mm/yyyy

S.No.	Title/Parameters	Values/Data
a)	Number of Generating Units (e.g. 1 x 210 MW + 2 x 500 MW)	
b)	Total Installed Capacity (MW)	
c)	Maximum possible Ex-bus injection (MW) (including overload if any)	
d)	Technical Minimum (MW)	
e)	Type of Fuel	
f)	Region	
g)	Bid area	
h)	Fixed Cost (paise / kWhupto one decimal place)	
i)	Variable Cost (paise / kWhupto one decimal place)	
j)	Ramp-Up Rate (MW/Min) for each unit	
k)	Ramp-Down Rate (MW/Min) for each unit	
l)	Start-up Time from Cold Start (in Min) & Warm Start of each unit	
m)	Any other information	

Copy to:

Signature of Authorized Signatory (with Stamp)

Name:

Designation:

Format AS2: RRAS Provider Contact Information

From: (Name of RRAS Provider Generating Station) / (Name of Owner Organization)

To: Nodal Agency
Concerned RLDC (NRLDC/WRLDC/SRLDC/ERLDC/NERLDC)

Date: dd/mm/yyyy

I. Contact Details of the Control Room of RRAS Provider Generating Station

a) Landline Number (1) : _____
b) Landline Number (2) : _____
c) Fax Number (1) : _____
d) Fax Number (2) : _____
e) E - Mail Address (1) : _____
f) E - Mail Address (2) : _____
g) Locational Address : _____

II. Contact Details of the Nodal Person for RRAS Provider Generating Station

a) Name : _____
b) Designation : _____
c) Contact Number
   i. Landline Number : _____
   ii. Mobile Number : _____
d) Fax Number : _____
e) E - Mail Address : _____

III. Contact Details of the Alternate Nodal Person for RRAS Provider Generating Station

a) Name : _____
b) Designation : _____
c) Contact Number
   i. Landline Number : _____
   ii. Mobile Number : _____
d) Fax Number : _____
e) E - Mail Address : _____

Copy to: Concerned RPC

Signature of Authorized Signatory
Name:
Designation:

Format AS3: RRAS Provider Parameters by RPC

From: NRPC/WRPC/SRPC/ERPC/NERPC **To:** Nodal Agency (NLDC, Delhi)

(Name of RRAS Provider Generating Station)_____
(Name of Owner Organization)_____

Validity of the Information F**rom:** 16/mm/yyyy **To:**15/mm/yyyy

Date: dd/mm/yyyy

S.No.	Title/Parameters	Values/Data
a)	Number of Generating Units (e.g. 1 x 210 MW + 2 x 500 MW)	
b)	Total Installed Capacity (MW)	
c)	Maximum possible Ex-bus injection (MW) (including overload if any)	
d)	Technical Minimum (MW)	
e)	Type of Fuel	
f)	Region	
g)	Bid area	
h)	Fixed Cost (paise/kWh up to one decimal place)	
i)	Variable Cost (paise/kWh up to one decimal place)	
j)	Ramp-Up Rate (MW/Min) for each unit	
k)	Ramp-Down Rate (MW/Min) for each unit	
l)	Start-up Time from Cold Start & Warm Start (in Min) for each unit	
m)	Any other information	

Copy to:

Signature of Authorized Signatory (with Stamp)
Name:
Designation:

Format-AS4:Day Ahead Load Forecast by SLDC

State: ……..

Forecast Done on Date (D):…… Forecast for Date (D+1):……

Time Block	Actual Demand met for day D-1 (MW)	Forecasted Load for day D+1 (MW) (X)	Total Quantum tied up to meet forecasted demand in Net MW				
			Own Generation (A)	ISGS/Long Term (B)	Medium Term (C)	Short Term (D)	Total tied up Y = (A+B+C+D)
1							
2							
3							
.							
.							
.							
.							
.							
95							
96							

(To be transmitted to concerned RLDC electronically)

Format-AS5:Triggering of RRAS

(Electronically generated & transmitted)

From: **Nodal Agency**

To: **<RRAS Provider name>**

Through: <concerned RLDC>

Date: **dd/mmm/yyyy** Time: **HH:MM**

Message No: **……**

RRAS Triggering Instructions

Period of despatch : Date …… From Time Block ….…To Time Block ……

Type of despatch ……. (Up-Regulation or Down-Regulation)

Quantum of despatch ……. MW

Reason for despatch of RRAS ……

(Shift Charge Engineer)

NLDC

Format-AS6:Withdrawal of RRAS

(Electronically generated & transmitted)

From: **Nodal Agency**

To: **<RRAS Provider name>**

Through: <concerned RLDC>

Date: **dd/mmm/yyyy** Time: **HH:MM**

Message No: **……**

RRAS Withdrawal Instructions

Period of withdrawal…… From Time Block ……..

Type of despatch …….

(Up-Regulation or Down-Regulation or Withdrawal by original beneficiary)

Quantum ……. MW

Reason for withdrawal of RRAS ……

(Shift Charge Engineer)

NLDC

Format-AS7: RRAS Settlement Account by RPC

(To be issued by concerned RPC)

RRAS Account for Week: …….

A. Payments to the RRAS Provider(s) from the DSM Pool for UP Regulation

Sr. No.	RRAS Provider Name	Energy scheduled to VAE under RRAS (MWh)	Fixed Charges (Rs) (A)	Variable Charges (Rs) (B)	Markup as per CERC Order (Rs) (C)	Total Charges (A+B+C)
1						
2						
3						
.						
.						

B. Payments by the RRAS Provider(s) to the DSM Pool for DOWN Regulation

Sr. No.	RRAS Provider Name	Energy Scheduled from VAE under RRAS (MWh)	Total Variable Charges for generation reduced (A)	Variable charges to be paid to the DSM Pool (B = 75% of A)
1				
2				
3				
.				
.				

C. Reimbursement of Fixed Charges by RRAS Provider to the Original Beneficiaries

Sr. No.	RRAS Provider Name	Energy scheduled to VAE under RRAS (MWh)	Fixed Charges to be refunded (Rs)	To Beneficiary Name
1				
2				
3				
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(To be put up on the website of the respective RPC& transmitted to concerned RLDC electronically)