NORTHERN REGIONAL POWER COMMITTEE

ADDITIONAL AGENDA – III

FOR

39th MEETING OF TECHNICAL COORDINATION SUB-COMMITTEE
&
42nd MEETING OF NORTHERN REGIONAL POWER COMMITTEE

B. OPERATIONAL ISSUES

B.39 Hydro Generation and Silt Monitoring – Need for development of weather forecast bias mathematical model for better/accurate hydro generation forecast with error correction mechanism (Agenda by HPSEBL)

B.39.1 A presentation was given by HPSEBL in 35th TCC and 39th NRPC meeting held on 1st & 2nd May 2017 respectively and issues concerning huge variations amongst the anticipated generation as per the LGBR, day ahead forecast and the actual generation in real time primarily due to huge difference in the forecasted and the actual weather conditions encountered on the particular day. It has been observed that there is huge difference in weekly or even 3 days advance weather forecast resulting into abrupt decline/rise in hydro generation coupled with no forecast for silt making the situation vulnerable and alarming. Accordingly, in order to take care of weather vagaries suggested the development of "Weather forecast Bias Mathematical Model for Generation Forecast/ Availabilities with error correction mechanism". After detailed deliberations, it was decided to constitute a committee comprising of Members from HPSEBL, NRLDC, NRPC Secretariat, CEA, NHPC, BBMB and CWC under Member Secretary NRPC **to develop mechanism for better hydro generation forecasting.**

B.39.2 This issue was again taken up by HPSEBL in the 37th TCC and 40th NRPC meeting held on 27th and 28th October, 2017 respectively **wherein** following observations were made:

i) Chairperson, CEA suggested that CERC should consider fuel neutral and more power under ancillary services. He suggested that a sub-group may be constituted to examine all the issues and submit report to CEA.

ii) Member Secretary, NRPC informed that a Committee has been formed for silt forecasting. Nominations had been sought for member of the Committee.

iii) NRPC decided that all the States would sign the overarching agreement to facilitate short-term power transactions among NR beneficiaries. It was also decide that the scope of the sub-group to be constituted would be widened to examine all related issues.

B.39.3 In the meantime, as per the decisions taken in the 35th TCC and 39th NRPC meeting, the committee was constituted vide NRPC communication no. NRPC/OPR/102/01/2018/1278-85 dated 25.01.2018 with following terms of reference;

a) To review the present mechanism used by hydro generators for generation and silt forecasting as well as protocols being followed for operation of hydro generators during high silt season.

b) To suggest measures and mechanisms for improving the forecasting by generators.

c) To suggest mechanism for silt forecasting, silt information dissemination and protocols to be used to manage hydro generation operation keeping in view grid and generating machine safety.

B.39.4 The first meeting of the Committee was held on 02.02.2018 wherein though the need of development of mechanism for better hydro generation forecasting including silt monitoring was emphasized and the respective agencies including ISRO who have been the special invitee, yet no much head way has been achieved in this direction. However, it was further proposed that before the next meeting, the committee should look into utilizing the data available with CWC for forecasting before the rainy season. It was also added by the CWC representative that in the next meeting they will give a presentation on the methodology in which their silt forecasting model is being operated by them. Therefore, the methodology for development of a mechanism for better forecasting remained at the background only and next meeting is yet to take place.

B.39.5 As almost one year since has elapsed and no much head way has been achieved with respect to "Developing Weather forecast Bias Mathematical Model for Generation Forecast/ Availabilities with error correction mechanism" and the problem is aggravating day by day due to the inclement weather condition encountered during the first quarter of current year FY-2018-19 right from its commencement. In order to substantiate HPSEBL's experience particularly on NJPS, Rampur & Koldam scheduling with respect to the forecasted LGBR, Day Ahead injection schedule and the revisions taken in real time during the month of even during June 18 when NJPC generally generates to its full potential i.e. 1500MW and above on RTC basis. On 19.06.2018, the generation came down by almost 33% in a single day. Same situation prevailed on all the major hydros in Satluj basis viz. Karchham Wangtoo, Rampur, Koldam etc. Similarly, due to silt during last year for 10 days in the months of July17 and August17, total closure of all the major hydros aggravating to 3000 MW deficits, was encountered and no concrete arrangement appeared to be kept as reserve to compensate such exigencies arising out of sudden outages.

B.39.6 It is further brought out that Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015 provides as under:

6.5 Nodal agency shall direct the selected RRAS Provider(s) based on the merit order for economical despatch for Regulation Up and Regulation Down, as and when requirement arises in the system on account of any of the following events

(i) Extreme weather forecasts and/or special day;
(ii) Generating unit or transmission line outages;
(iii) Trend of load met;
(iv) Trends of frequency;
(v) Any abnormal event such as outage of hydro generating units due to silt, coal supply blockade etc.;
(vi) Excessive loop flows leading to congestion; and
(vii) Such other events.

B.39.7 These aforestated abrupt declines in hydro generation are happening presumably for the very reason that the LGBRs made are not subjected to the any weather forecast bias corrections and no error correction mechanism is further available to correct the forecasted generation on day ahead basis and its revisions which are undertaken resulting into putting the beneficiaries under great stress of arranging the such huge deficits without any prior notice/time and ultimately affecting the consumers at large. It is pertinent to mention here that the provisions allow generating stations to carry out as many as revisions during real time operations with a short notice and beneficiaries have not sufficient time to make arrangements to mitigate the deficits/dispose of surpluses owing to such revisions and results into affecting anticipated availability exorbitantly.

B.39.8 Therefore, following action points are proposed to be discussed in the ensuing TCC/NRPC meetings, till such time the a foolproof mechanism is developed for better hydro forecasting including silt forecasting for the purpose:

i) That the gaps being encountered on daily basis w.r.t. LGBR anticipations, day ahead forecast and the real time drastic downward revisions including forced outages of hydro generating stations owing to high silt, may be filled in by ancillary services provider(s) (RRAS) by the nodal agency through respective RLDCs in a transparent manner.

ii) Availability of ancillary service providers and capacity available with them may be shared by the nodal agencies through web portal.

iii) The Committee may be empowered to hire specialists including expertise of IMD, ISRO, SASE etc. to develop the foolproof mechanism for better hydro generation forecasting and take care of weather vagaries in a time bound manner with a time frame of three months and the expenditure to be incurred on this account be made from NRPC funds.

iv) The above proposed model initially be got developed for Satluj Basin which possesses the maximum hydro generating stations in operation in its vicinity and unfortunately having only one automatic weather station at Kalpa. (In fact there is utmost urgency and requirement of more weather stations/observatories for landslides, sedimentations etc. in the catchment areas.

Members may kindly deliberate on the issue.