# MoP (Draft Proposal on Day Ahead Operation of Security Constrained Economic Dispatch) 2023, [Draft]

Ministry of Power (MoP) notified a draft on Day-ahead (DA) Operation of Security Constrained Economic Despatch (SCED) on 24th January, 2023. The key highlights of the draft are mentioned below:

**Objective:** The main objective of this document is to expand the scope of SCED by involving more plants and run the SCED on a DA basis for providing a look-ahead schedule. The draft proposes to expand national-level merit order scheduling under SCED by including all inter-state generating station (ISGS), which can declare their compensation charge on a monthly basis.

**Proposed procedure of DA-SCED:**

- ISGS participating in DA-SCED shall submit their declared capacity along with ramp rate and minimum turndown level for the next day (D) on D-1 by 06:00 hrs.
- The entitlements and the share of beneficiaries shall be declared by respective RLDC on D-1 by 07:00 hrs.
- The beneficiaries shall submit their requisitions/schedules from ISGS on D-1 by 08:00 hrs.
- The injection and drawl schedules shall be prepared by respective RLDC, based on availability and schedules submitted by 09:30 hrs.
- The first run of DA-SCED shall be carried out on D-1 at 09:45 hrs. before the opening of the bidding window of DAM. Based on the results, the ISGS have a choice to participate in Day Ahead Market (DAM) as well as Real Time Market (RTM).
- The second run of DA-SCED shall be carried at 17:30 hrs. This will help in re-assessing the SCED schedules for the next day (D) and the committed reserve capacity available through DAM-AS.
- If available reserves are less then the required quantum then additional units would be deployed which shall be included in the third run of DA-SCED for 96-time blocks done by NLDC at 22:00 hrs.
- The payments for the stations where incremental power is scheduled (shall be paid their equivalent energy charges) and beneficiaries of those stations to ensure Resource Adequacy, shall be made to/from the Deviation and Ancillary Services, Pool Account.

**Benefits of DA-SCED:**

- Maintain resource adequacy in an optimal manner.
- Provides real-time control.
- Ensure balance between supply and demand.
- Sharing of benefits between the generating stations and their beneficiary states, thus incentivizing the entities.

The document can be accessed here.

Comments on

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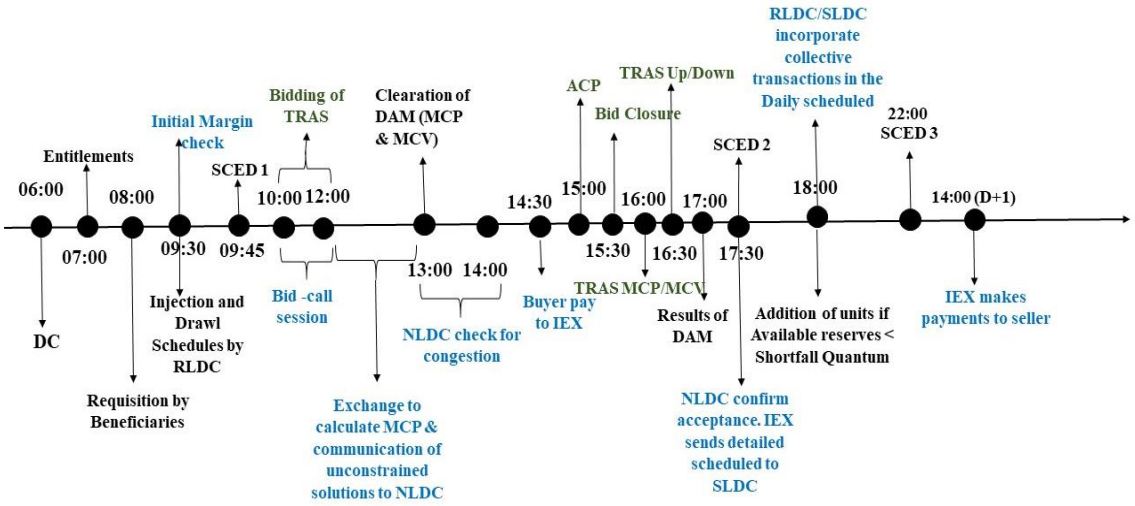
1. **Purpose and Nomenclature of the Proposed Mechanism:** The SCED, as the name suggest is the dispatch mechanism implemented few time blocks before the actual time block of delivery. Given this context, **the terminology used to describe the three 'day ahead' interventions as DA- SCED may not be warranted as these are neither binding on the parties nor these result in dispatch instruction. It is suggested that a different terminology may adopted for the proposed three DA interventions. Since the proposal has used the SCED nomenclature, we continue to use it for the rest of the discussion herein.** As per the proposed draft, SCED is run three times in addition to the current SCED mechanism, which is run on a two-block ahead basis. Let us call these, temporarily, as SCED-1, SCED-2 and SCED-3 respectively.

2. **Relevance of DA-SCED – Key to Address Information Asymmetry and Assist Planning by Discoms:** SCED-1 is run just before the closing of bids for the DAM. The SCED participants' capacity is available for offer on DAM, thus there is no commitment to the SCED-1 solution as it would be overridden by the market outcome of the DAM at 17:00 hrs. The SCED-1 thus only serves a purpose of disseminating information about economics of demand and supply in public domain as compared to private information that is generally associated with the individual stakeholders in the market. This information is very valuable, especially to the discoms, who can do better planning for short-term power procurement. The SCED-2 is implemented before the unit commitment solution to be worked out in the evening of the previous day (say, post 18:00 hrs.). The SCED-2 solution is of no direct consequence to the market outcome as the UC solution would override the SCED-2 solution that was arrived at post DAM outcome.

   The SCED-3 would provide the solution at 22:00 hrs. a day earlier for each of the time-blocks. This would also not be a committed solution as this would be overridden by the RTM solution. This would also serve the important role of disseminating market information before the RTM, thus improving market efficiency.




3. **Multi-block Rolling SCED:** All the DA-SCED should be run for the whole set of 96- blocks together considering all technical constraints of the system constituents including technical minimum, ramping constraints, fuel availability etc. The current mechanism for SCED is still based on a single block based optimisation. As demonstrated through research at EAL, IIT Kanpur and, suggested earlier in previous issues of the Power Chronicle Vol 2 Issue 2[1], a multi-period modelling exercise provides more optimal solution as compared to individual block solution. It is suggested that multi-period rolling block based optimisation may be adopted for a more efficient solution for the sector.

4. **Special Treatment of Energy Storage Systems especially Pumped Storage Plants (PSPs) in SCED:** The PSPs run both as a load as well as generator as per the operational strategy of the PSPs. Under current mechanism for SCED implementation, PSPs under generator function would only be eligible for participation. Economics of storage of energy in PSPs can also be part of the SCED mechanism, wherein In all, the only run that can truly be called SCED would be the existing one which gives the dispatch instructions after optimization across all the participating demand and supply side contracts.

[1] Suggested by Singh et al, "Security Constrained Economic Despatch – India: A Rolling Block Implementation Framework" accepted in ICPS 2019, IEEE Conference at MNIT Jaipur, (2019) https://ieeexplore.ieee.org/document/9067641 which demonstrated that effective cost savings from few blocks look-ahead, but implemented on block-wise basis to be higher. This was also covered in Power Chronicle, EAL's quarterly newsletter https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_2_issue_2.pdf. Note: The solution has not yet been implemented for the current 'real-time' SCED solution.