



**Society for Water, Power & Natural resources  
conservation Awareness and Monitoring**

(Regd.No 153/2007)

Add: Flat-C3, KAY PEE APARTMENT, NO-5 ROAD, OPPOSITE LEPL  
MALL, NEAR BENZ CIRCLE, VIJAYAWADA-520008

Our Ref: Reg-4/2017 amendment/APERC – February, 2020

Date: 26-02-2020

To

The Secretary,  
APERC, 11-4-660, Singareni Bhavan, Red Hills,  
Hyderabad – 500 004. (commn-secy@aperc.gov.in)

Admn.	For Perusal
Engg.	Secretary
Law	Member / TRS
Tariff	Member / PRR
	Chairman

Sir,

Sub: Amendment to the regulations – 4/2017 - Certain Suggestions – Submitted - Reg.

Ref: 1. Public Notice Dt. 13.2.2020 by the Hon'ble APERC

This has reference to the notification for amending various clauses of regulation 4/2017 by the Hon'ble APERC on the representation from APTRANSCO. In this context, the following views and observations are submitted, which may be taken for consideration by the Hon'ble APERC.

1. Among various amendments proposed by APTRANSCO, the amendment relating to introduction of forecast error needs re-examination for the following reasons:
  - a. As per values given in the example i.e., Installed VRE capacity of 7300MW, Diversity factor of 0.7 and Deviation limit permitted under CERC regulation for RE rich states i.e., 250MW, the allowable forecast error would be 2.39%  $[0.7 \times 250 \times 100 / 7300]$ , but not 4.89% arrived by APTRANSCO.
  - b. It is requested to examine the need for adopting the limits imposed by CERC regulations and scientific reasons for consideration of diversity factor.
  - c. However, it is suggested that the forecast error may be stipulated by the Hon'ble APERC at the level of 5% as requested by APTRANSCO or 6%, the maximum deviation observed by the Hon'ble APERC in the AAR 2020 while discussing consideration of energy from the wind/solar projects and impact on grid stability.
  - d. It is further requested that the small projects connected to the 33/11kV Discom network up to 5MW may be exempted from submission of forecasts to the SLDC and the Discoms may be monitored the generations from these small projects. At least small generators having PPA/Agreements with



Discoms (other than OPEN ACCESS and Third Party generators) may be exempted from F&S regulations.

- e. It is also to bring to the notice of the Hon'ble Commission that as per the regulations, even the roof top RE generator also need to comply with the regulations as there are no clear definition of the generator as to the capacity. Therefore, it is suggested that the generators connected to Discom network may kindly be exempted from compliance of regulations. At least small generators having PPA/Agreements with Discoms (other than OPEN ACCESS and Third Party generators) may be exempted from F&S regulations.
2. APTRANSCO also proposes imposition of Rs.2/- per unit for deviation from the scheduled energy (either excess injection or shortfall) over and above the allowable forecast error. On this account, the following alternatives may kindly be examined to achieve more generation from renewable projects:
    - a. For the over injection by VRE generator, imposing penalty is not suggested. If the grid can not absorb due to difficulty in further backing down of thermal stations below their technical limits, the VRE projects monitored by the SLDC can be asked to backdown. The estimated balancing cost of 40 paise per unit may be imposed on VRE generator and given to the thermal generator who backed down the generation.
    - b. For the shortfall by the VRE generator, the UI rates in the market or actual rate of purchase in the market by SLDC may be collected, instead of proposed Rs.2/- per unit.
  3. APTRANSCO rightly proposed the de-pooling of generators while calculating the deviation charges in aggregate manner. In fact, the pooling of generators spread across the State, through the QCA indirectly causing creation of a parallel or virtual SLDC dealing with the renewable projects. In addition to the reasons mentioned by APTRANSCO, the following additional information is submitted for perusal of the Hon'ble Commission:
    - a. The primary objective of the regulations is to promote grid discipline and security, which can be achieved only with the proper planning and utilization of the transmission/ distribution network. This has much bearing on costs.
    - b. Please see Exhibit-1. For ex, the transmission loss alone is 31.59% for transmitting 200MW power through 220kV line for 1000km. The loss can be reduced to a level of 3.159% if 2000MW is pumped in and drawn at 10 locations @200MW. This exhibits the fact and necessity of generation & utilization of electricity at the same node/place. Further the capital cost of network for transmission of each kWh will also gets reduced.
    - c. Therefore, location of generation, its transmission and utilization is playing huge impact on overall cost of service to the consumer and therefore shall be compensated by the generators for deviations from their own schedules.
    - d. However, the Hon'ble Commission may consider exemption of the small categories from compliance of such regulations. Alternatively, the SLDC




which was also authorized to act as QCA may be entrusted with the task by collecting a nominal fee from small generators.

4. The proposal of APTRANSCO for amending the formula for calculation of error may be approved. The consideration of AVC- available capacity in the denominator is not justified for any reason.
  - a. The capacity of the solar project is the cumulative capacity of the individual solar panels.
  - b. But some of the generators have gone for installation of additional panels arguing that the contracted capacity on AC side is only the limitation for dispatch of energy to the grid.
  - c. Please peruse the Exhibit-2 attached herewith.
  - d. A solar plant with 100MW installed capacity of panels would generate 85-90MW AC power if the solar radiation is 1000 w/sq.m & ambient temperature of 25DegC. The loss of power from panels to grid is about 10-15% depending upon plant design & material quality and hence output would be 85-90MW AC.
  - e. The same plant would generate 100MW if the radiation is higher to the order of 1100-1200 under favourable ambient conditions. It is to submit that the AP state experience higher radiation to the extent of 1300W/Sq.m, particularly in summer months. The increase in ambient temperature reduces the output.
  - f. Considering optimization of equipment costs on DC side and AC side of the projects, the developers are resorting to the addition of more panels and connected to the inverters and control/limit the plant output through inverter to comply with grid regulations. The decision is taken with reference to the overall increased output and associated costs.
  - g. It is also to bring to the notice of the Hon'ble Commission that the regulation-2(a)(ii) of CEA (Technical standards for connectivity to the grid), 2019 notified on 6-2-2019 clearly defined that the installed capacity of solar plant is the cumulative capacity of solar units i.e., panels. Thereafter, the MNRE have issued a clarificatory note dt.5.11.2019 deviating from CEA standards without explaining valid purpose and intent for such deviation. MNRE should have instructed the CEA to review the regulations, if required, for proper administration of the rules and regulations in the electricity sector. The issue may kindly be examined by the Hon'ble Commission and instruct the concerned stakeholders to take appropriate action, with reference to the standards and agreements.
  - h. It is therefore felt that the AVC shall be replaced with scheduled generation as proposed by APTRANSCO.

5. It is requested to arrange clarity on applicability of these regulations to all generators of the state whether they are in operation even before the issuing of the regulations.

Yours truly,



B.N.PRABHAKAR

M.Tech, PGDFM., LL.B., FIE.,

**PRESIDENT**

- CC: 1. CMD, APTRANSCO (cmd@aptransco.co.in)  
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## EXHIBIT-1

### Assumptions:

Voltage : 220kV

Conductor: Moose 520 Sq.mm

AC resistance: 0.069 per km @75deg C

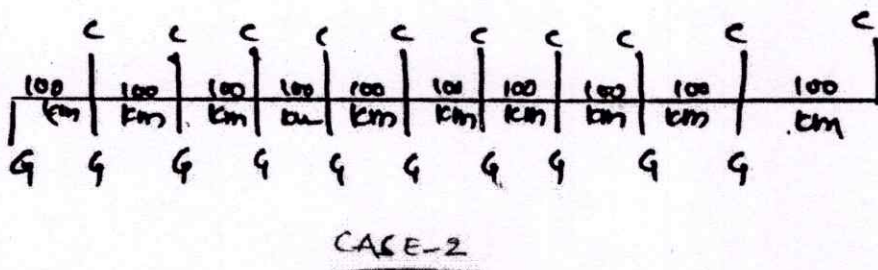
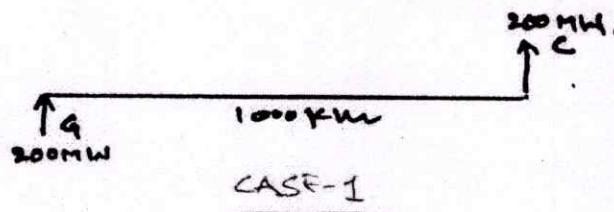
Line Length : 1000 km

**Case-1:** If only one generator and one consumer at ends of the line exist and 200MW power is transmitted:

- a. Line Current :  $200 \times 1000 / 1.732 \times 220 \times 0.95 = 552.5 \text{ A}$
- b. Loss in MW :  $3 \times 1000 \times 552.5 \times 552.5 \times 0.069 / 1000000 = 63.18 \text{ MW}$
- c. % loss :  $63.18 \times 100 / 200 = 31.59\%$

**Case-2:** If there are ten generators and ten consumers at interval of 100km of the line exist and capacity of each generator/consumer is 200MW, then total power handled by the same line is 2000MW:

- a. Line Current :  $200 \times 1000 / 1.732 \times 220 \times 0.95 = 552.5 \text{ A}$
- b. Loss in MW in each segment of 100km :  $3 \times 100 \times 552.5 \times 552.5 \times 0.069 / 1000000 = 6.318 \text{ MW}$
- c. Total loss in MW in 1000km (i.e., 10 segments) =  $6.318 \times 10 = 63.18 \text{ MW}$
- d. % loss :  $63.18 \times 100 / 2000 = 3.159\%$



# EXHIBIT-2

