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Date: 11th November, 2009

The Secretary,
Andhra Pradesh Electricity Regulatory Commission (APEREC)
11-4-660,
4th & 5th floors,
Singareni Bhavan, Red Hills,
Hyderabad -500 004



Engg.	<input checked="" type="checkbox"/>	For perusal
Tagiff	<input checked="" type="checkbox"/>	Secretary
Law	<input checked="" type="checkbox"/>	Member/F
Admn.	<input type="checkbox"/>	
IT	<input type="checkbox"/>	Member/T
CA	<input type="checkbox"/>	
EAS	<input type="checkbox"/>	Chairman.

Respected Sir,

Sub: Response to APERC's draft Standard Power Purchase Agreement (PPA) and Guidelines on Power Evacuation from Wind Power Projects in Andhra Pradesh

We introduce ourselves as an umbrella body of the wind energy sector in India, representing and espousing the cause of the wind turbine manufacturers, developers and investors of India. IWTMA is espousing and entrusting the cause of wind mill developers and investors since its inception.

At the outset, we would like to extend our gratitude to Hon'ble Commission for issuing the long awaited draft Power Purchase Agreement (PPA) and Guidelines on Power Evacuation from Wind Power Projects in Andhra Pradesh and for giving us an opportunity to be a part of the process. We would also like to congratulate APTRANSCO and various DISCOMs for their support. We are sure that after the finalization of Standard PPA and Power Evacuation Guidelines for Wind Power Projects a lot of investment will pour in the State of Andhra Pradesh.

However in the interest of conferring greater clarity and holistic accord, the following among other aspects merit clarity and consolidation by this Hon'ble Commission:

IWTMA Comments on Power Evacuation Guidelines for Wind Power Projects:

Point 2:

Our Comments:

Kindly insert “or Grid Network” after “to nearest substation” in line 3. This will provide more clarity and also make the expression more comprehensive and practical.

Point 3. (i) Voltage Level of Evacuation (At 33 kV Level):

Our Comments:

- 1) The choice of the Conductors has been limited to only AAAC Conductors which is not appropriate as there are several other types of conductor available in the Market like ACSR, new Technologies like ACCC. The developer should be left free to adopt any of these technologies.
- 2) The SI no 2 of the table given in the draft guidelines i.e. From Wind project To EHT Pooling SS or existing EHT APTRANSCO SS again restricts the loading on the Conductors and type of conductors. It is to be noted that, the Electrical Installations from the Wind turbine up to and including the Pooling station is owned by the Wind farm developer.
- 3) There is no mention of “Panther” conductor which is around 232 Sqmm. This is one of the main conductors used across the country in the wind farm for main Evacuation lines between the Wind turbines and the Pooling station. The selection of conductors would be done by the developers based on the Techno-commercial considering a balance between the Investment and Internal losses.
- 4) In view of all the above factors, the size, type and loading on the conductors on thermal limits have to be at the discretion of the developers.

Point 3. (i) Voltage Level of Evacuation (At EHT Level):

Our Comments:

1. Loading condition on 132 kV both Single circuit & double circuit is not acceptable as technically 132 KV SC line can take 90 MW under normal thermal loading condition. From the table provided in the guidelines, it is understood that the author might have considered Surge Impedance Loading (SIL) of 132 KV lines which is 40 MW. This is relevant only for long lines of 132 KV Evacuation lines which are considered to be more than 100 KM.
2. For Wind Power Projects, on 132 KV, the Evacuation lines will certainly be less than 100 Kms as longer line lengths adversely affect the financial viability of Wind Power Projects.
3. The same fact is even recognized in the draft guidelines, a reproduction of the same is provided below:

... "The above evacuation facilities are permitted specifically for Wind power projects only considering the following:

- (a) The Wind power projects are renewable and have low Capacity Utilization Factor (CUF).*
- (b) The Wind power projects are seasonal and operate lesser capacity during most of the time. "...*
- (c) The optimum utilization of infrastructure will help the Wind power projects to enhance financial viability.*

Hence loading condition can go up to thermal loading which is 90 MW on 132 kV

4. Further for 132 KV DC line, safe thermal loading can be up to 180 MW where the upstream line capacity is capable of absorbing the entire power.

In view of the above narration it has to be concluded that

- A. On a 132 KV Double circuit the Evacuation from a Wind power project can be to extent of 180 MWs.
- B. For Wind farms beyond 180 MWs, 220 KV Pooling station shall be contemplated.

Point 3. (v) Power Evacuation Scheme Finalization & Sanctioning of Estimate:

Our Comments:

1. The sanction of the necessary estimates by APTRANSCO shall be for the portion of the Infrastructure which will be finally owned by APTRANSCO. In this case, the portion of the infrastructure which will be owned by APTRANSCO is the EHT Line connecting the Wind farm pooling station and the APTRANSCO Grid. Rest of the infrastructure will be owned, operated and maintained by the Developer of the wind farm itself.
2. In view of this, the sanction of the estimates by APTRANSCO has to be limited to the EHT Line connecting the Wind farm pooling station and APTRANSCO Grid.
3. Also in case of DISCOM, as explained above the sanction of the necessary estimates by DISCOM shall be for the portion of the Infrastructure which is finally going to be owned by DISCOM.
4. As the complete 33 KV line is constructed owned and operated by the Wind farm developer, the same shall not be considered for sanctioning any estimates or drawings from any of the agencies.

Point 3. (vi) Execution of Power Evacuation Work & Synchronization of Wind Power Projects with Grid for Commercial Operation:

Our Comments:

1. The sanction of the necessary estimates by APTRANSCO / DISCOM will arise only for the portion owned and maintained by APTRANSCO / DISCOM.
2. Since the entire 33 KV network from the Wind turbine up to and including the Wind farm pooling station is constructed, owned and operated by the Wind farm developer, there should not be any supervision charges payable to APTRANSCO or DISCOM.
3. In view of this, supervision charges shall not be levied.
4. EHT lines will be owned & maintained by APTRANSCO; in this case supervision charges are acceptable as well as justifiable. However, the quantum of charges has to be 5% of the estimate by APTRANSCO with a maximum ceiling of Rs. 25 Lakhs / Project. This is because the length of EHT lines beyond the interconnection point varies from Project to Project. In many cases, the lengths of the EHT lines could be so long that it may lead project to the brink of financial non viability.
5. For supervision of EHT lines, the installation that would be owned by the Utility is limited to EHT Lines only. And the same is out of the purview of DISCOMs. The supervision shall only be done by APTRANSCO Officials.
6. In case of temporary supply for the construction phase of Wind Farm, wherever the power is availed through DG sets, the developer need not to approach DISCOMs and should not be liable to pay any charges.

IWTMA Comments on Draft Power Purchase Agreement (PPA):

A Standard Power Purchase Agreement will complete the regulatory framework in the State of Andhra Pradesh and will increase the bankability of the upcoming projects. Our comments on the Draft Power Purchase Agreement are as follows:

Article 1 (Definition):

Definition 1.5 (Delivered Energy):

The Definition of Delivered Energy is very clear and precise. Explanation 2 for the Delivered Energy is ambiguous and redundant. Whatever a wind farm generates from the agreed capacity as per the preamble and Project Definition (Definition 1.13), same will become the delivered energy. The question of calculation of energy based on number of hours and fraction thereof will not arise at all. This explanation will definitely lead to confusion in the future and therefore should be removed.

P. P.
Engg.

Definition 1.20 (Voltage of Delivery):

Comments on the Tables:

At 33 kV Level:

1. The choice of the Conductors has been limited to only AAAC Conductors which is not appropriate as there are several other types of conductor available in the Market like ACSR, new Technologies like ACCC. The developer should be left free to adopt any of these technologies.
2. The Sl no 2 of the table given in the draft guidelines i.e. From Wind project To EHT Pooling SS or existing EHT APTRANSCO SS again restricts the loading on the Conductors and type of conductors. It is to be noted that, the Electrical Installations from the Wind turbine up to and including the Pooling station is owned by the Wind farm developer.
3. There is no mention of "Panther" conductor which is around 232 Sqmm. This is one of the main conductors used across the country in the wind farm for

main Evacuation lines between the Wind turbines and the Pooling station. The selection of conductors would be done by the developers based on the Techno-commercial considering a balance between the Investment and Internal losses.

4. In view of all the above factors, the size, type and loading on the conductors on thermal limits have to be at the discretion of the developers.

At EHT Level:

1. Loading condition on 132 kV both Single circuit & double circuit is not acceptable as technically 132 KV SC line can take 90 MW under normal thermal loading condition. From the table provided in the guidelines, it is understood that the author might have considered Surge Impedance Loading (SIL) of 132 KV lines which is 40 MW. This is relevant only for long lines of 132 KV Evacuation lines which are considered to be more than 100 KM.
2. For Wind Power Projects, on 132 KV, the Evacuation lines will certainly be less than 100 Kms as longer line lengths adversely affect the financial viability of Wind Power Projects.
3. The same fact is even recognized in the draft guidelines, a reproduction of the same is provided below:

3 (i)... "The above evacuation facilities are permitted specifically for Wind power projects only considering the following:

- a. The Wind power projects are renewable and have low Capacity Utilization Factor (CUF).*
- b. The Wind power projects are seasonal and operate lesser capacity during most of the time." ...*
- c. The optimum utilization of infrastructure will help the Wind power projects to enhance financial viability.*

4. Hence loading condition can go up to thermal loading which is 90 MW on 132 kV
5. Further for 132 KV DC line, safe thermal loading can be up to 180 MW where the upstream line capacity is capable of absorbing the entire power.

In view of the above narration it has to be concluded that

- C. On a 132 KV Double circuit the Evacuation from a Wind power project can be to extent of 180 MWs.
- D. For Wind farms beyond 180 MWs, 220 KV Pooling station shall be contemplated.

Article 6 (Undertaking):

Clause 6.2 (DISCOM agrees to):

Kindly insert following point in the clause 6.2:

- (iii) *Off-take and purchase all the Electricity generated by the Company at the Delivery Point.*
- (iv) *To coordinate with APTRANSCO and assist the Company in obtaining approval for the interconnection facilities where the interconnection is at 66 KV or above voltages, for synchronization Commercial Operation, regular operation etc., as required by the Company*
- (v) *To allow the Company to operate the Project as a must run generating station.*
- (vi) *To provide start up power required for the plant as and when necessary.*

The Association herein, pleads for incorporation and addressing of the above aspects into the final Power Purchase Agreement (PPA) and Guidelines on Power Evacuation from Wind Power Projects in Andhra Pradesh to be approved by this Hon'ble Commission. Further, urges for the leave to submit such additional documents and arguments to be advanced in the Public Hearing.

Therefore this Hon'ble Commission may be pleased to convene a Public Hearing for the purposes and grant the opportunity of hearing to the Association in the interest of equity and justice.

Thanking you

Yours faithfully

For Indian Wind Turbine Manufacturers Association



UB Reddy

Member Task force