



भारत सरकार
Government of India
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
ग्रिड प्रबंधन प्रभाग
Grid Management Division

छठा तल, सेवा भवन, आर. के. पुरम, नई दिल्ली - 110066
6th Floor, Sewa Bhawan, R.K. Puram, New Delhi - 110066
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ISO 9001:2008

सं. 8/X/TEC/GM-2016/ 1788-1827

दिनांक: 05-09-2016

सेवा में ,

ट्रांसमिशन यूटिलिटीज / लाइसेंसधारी
(संलग्न सूची के अनुसार)

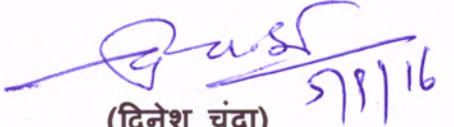
विषय : वर्ष 2015-16 के लिये विद्युत क्षेत्र की बृहत पुरस्कार योजना ।

महोदय /महोदया,

उपरोक्त विषय से संबंधित एक पत्र आपकी सूचना एवं आवश्यक कार्यवाही हेतु
संलग्न है।

संलग्नक : यथोपरि ।

भवदीय


(दिनेश चंद्रा) 5/9/16
मुख्य अभियंता

प्रतिलिपि : सदस्य सचिव/उ.क्षे.वि.स./पू.क्षे.वि.स./प.क्षे.वि.स./द.क्षे.वि.स./उ.पू.क्षे.वि.स. ।



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वेबसाइट/ Website: www.cea.nic.in

No. 8/X/TEC/GM/2016/ 1788-1827

Dated: 05-09-2016

To ,

The Transmission Utilities/ Licensees
(As per list attached)

Subject: Comprehensive Award Scheme for Power Sector for the year 2015-16.

Sir/ Madam,

The **Comprehensive Award Scheme** of Government of India cited above aims to reward meritorious performance in power sector with the intention to boost productivity, efficiency and economy in the sector. Under this scheme, awards have been instituted in various categories to augment performance of Thermal stations/ Hydro stations/ Nuclear stations/ distribution companies/ rural distribution franchises, enhance transmission system availability, expedite completion of Thermal stations/ Hydro stations/ transmission projects and environmental friendly management of coal based thermal stations.

Grid Management Division is the nodal division of Central Electricity Authority (CEA) for the **Transmission System Availability Award (Scheme Code: Tr-1)**, a category of award under the Comprehensive Award Scheme. The nominations are invited for participation in this award scheme for the year 2015-16 from all eligible transmission utilities/Licenses in the Central, State & Private Sector (excluding captive power plants). A copy of the scheme containing eligibility criteria, evaluation criteria, data requirement and other details is enclosed for reference. There will be three awards in the scheme for highest availability of the transmission system with two awards in Category-I (220kV and above) and one award in Category-II (132kV and above). Nomination from each licensee for a category of awards will be considered taking into account all the circles/ areas/ administrative regions of that category under the respective licensee in the country as a whole. Further, the data regarding award

scheme from transmission licensees should be for the whole year 2015-16. Circle-wise/area-wise/ administrative region-wise data and monthly data from any licensee would not be considered for the award scheme by CEA.

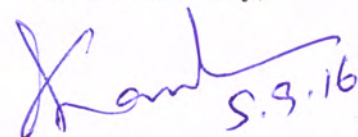
STUs / intra-state transmission licensees shall submit the requisite data to the concerned SLDCs for certification of their data which then will be submitted to CEA. The Inter-state transmission licensees shall submit the aforesaid data through respective Regional Power Committees (RPCs) to CEA. The concerned SLDC/ RPC would evaluate the performance of the nominee for its entire transmission system of a particular category in the State/Region. There will be **only one nomination** from a licensee either for category of 220kV and above or category of 132kV and above.

Accordingly, transmission licensees are requested to forward their data as per the enclosed scheme for the transmission system availability for the year 2015-16 for the appropriate voltage levels to the concerned SLDC/ RPC **by 15th October, 2016**. A soft copy of the same may also be sent to the e-mail address gmcea@nic.in. Nominations received in CEA through SLDC/RPC after 30th October, 2016 may not be considered for the scheme.

It is also requested to intimate the name and contact details of Nodal Officer from your organization in Annexure-II of the scheme.

Encl: As above

Yours faithfully,



**(Dinesh Chandra)
Chief Engineer**

Copy to: Member Secretary (NRPC/ERPC/WRPC/SRPC/NERPC)

– With the request to encourage the transmission utilities in the region to participate in the scheme and furnish requisite data therefor as per above time-schedule. It is further requested to forward the same after certification of the percentage Transmission Availability to this office by **30th October, 2016**.

प्रेषिती सूची / List of Addressee:

| S.No. | दक्षिणी क्षेत्र | | उत्तरी क्षेत्र |
|-------|--|-----|---|
| 1. | अध्यक्ष, तमिलनाडू विद्युत बोर्ड, 800, अन्ना सलाई, चेन्नई- 600 002. फेक्स नं.- 044-28544528 टेली नं.- 044-28521300 | 6. | अध्यक्ष, भाखड़ा ब्यास मनेजमेन्ट बोर्ड, मध्य मार्ग, सेक्टर-19 बी, छत्तीसगढ़ 160019 फेक्स नं.- 0172-2549857 टेली नं.- 0172-5011751 |
| 2. | अध्यक्ष, कनार्टक पावार ट्रांस कोपोरेशन लिमिटेड, कावेरी भवन, के.जी. रोड, बंगलौर- 560009, फेक्स नं.- 080-22213526 टेली नं.- 080-22214342 / 22244556 | 7. | अध्यक्ष और प्रबंधक निदेशक, पंजाब स्टेट ट्रांसमिशन कोरपोरेशन लिमिटेड, द मॉल, सचिवालय कॉपलैक्स, पटियाला- 147001. फेक्स नं.- 0175-2307779 टेली नं.- 0175-2212005 |
| 3. | अध्यक्ष, केरल स्टेट विद्युत बोर्ड, विद्युति भवन, पट्टम, तिरुवेन्द्रम- 695004 फेक्स नं.- 0471-2442125 / 2514680 टेली नं.- 0471-2441328 | 8. | अध्यक्ष, हिमाचल प्रदेश स्टेट विद्युत बोर्ड, विद्युत भवन, शिमला- 171002. फेक्स नं.- 0177-2813563 / 2803600 टेली नं.- 0177-2813563 / 2803600 |
| 4. | सुपरइंटेन्डिंग इंजिनियर-1, पुदुचेरी विद्युत विभाग, बीच रोड, पुदुचेरी- 605001 फेक्स नं.- 0413-2331556 टेली नं.- 0413-2334277 | 9. | अध्यक्ष एवं प्रबंधक निदेशक, राजस्थान राज्य विद्युत प्रसारण निगम लिमिटेड, विद्युत भवन, ज्योति नगर, जनपथ, जयपुर- 302005 फेक्स नं.- 0141-2740168 टेली नं.- 0141-2740118 |
| 5. | अध्यक्ष एवं प्रबंधक निदेशक एपीट्रांसको, विद्युत सौदा, हैदराबाद - 500 082. फेक्स नं.- 040-23320565 टेली नं.- .040-23317657 | 10. | प्रबंधक निदेशक, पावर ट्रांसमिशन कारपोरेशन ऑफ इंडिया लिमिटेड, 7-बी, लेन नं.-1, वसंत विहार एन्कलेव, देहरादून- 248001. फेक्स नं.- 0135-2268867 / 2768895 |

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| | उत्तर पूर्वी क्षेत्र | 11. अध्यक्ष, हरियाण विद्युत प्रसारण निगम लिमिटेड, शक्ति भवन, सेक्टर-6, पंचकुला- 134109, फेक्स नं.- 0172-2560640 / 2560815 टेली नं.- 0172-2714004 |
| 18. | अध्यक्ष, असम स्टेट इलेक्ट्रिसिटी बोर्ड, बिजली भवन, पलटन बाज़ार, गुवाहाटी - 781 001. फेक्स नं.- 0361-2541090 टेली नं.- 0361-2540311 / 2541088 | 12. अध्यक्ष एवं प्रबंधक निदेशक देहली ट्रांसको लिमिटेड, शक्ति भवन, कोटला रोड, आईटीओ, नई दिल्ली- 110002. फेक्स नं.- 011-23234640 / 23215198 / 23231748 |
| 19. | अध्यक्ष, मेघालय सरकार, मेघालय स्टेट इलेक्ट्रिसिटी बोर्ड, लुमजिंग्शाई, एस. आर. रोड, शिलोंग - 793 001. फेक्स नं.- 0364-2590355 / 2590367 / 2590638 | 13. प्रमुख सचिव (पावर), सिविल सचिवालय, जम्मू (जम्मू एवं कश्मीर) फेक्स नं.- 0194-2479836 / 2462173 |
| 20. | सेक्रेटरी (पावर), पावर विभाग, अरुणाचल प्रदेश सरकार, इटानगर - 791 111. फेक्स नं.- 0360-2217302 टेली नं.- 0360-2217301 | 14. अध्यक्ष एवं प्रबंधक निदेशक, उत्तर प्रदेश पावर कारपोरेशन लिमिटेड, शक्ति भवन, 14-अशोक मार्ग, लखनऊ- 226001. फेक्स नं.- 0522-2782877 / 2287827 / 2287801 |
| 21. | सेक्रेटरी (पावर), मणिपुर सरकार, इम्फाल - 795001. फेक्स नं.- 0385-2450702 | 15. मुख्य अभियंता, विद्युत विभाग, चंडीगढ़ की यूटी, सचिवालय आफिस भवन, सेक्टर-9(डी), चंडीगढ़- 160009. फेक्स नं.- 0172-2740276 टेली नं.-- 0172-2740029 |

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| 22. | सेक्रेटरी (पावर), मिजोरम सरकार, आइजौल - 796 001. फेक्स नं.-0389-2320862 टेली नं.- 0389-2322848 | 16. | अध्यक्ष एवं प्रबंधक निदेशक, पावर ग्रिड कारपोरेशन आफ इंडिया लिमिटेड, प्लाट नं.-2, सेक्टर-29, न्यू इफको चौक, गुड़गांव - 122001. फेक्स नं.- 95124-2571760 / 2571848 |
| 23. | सेक्रेटरी (पावर), त्रिपुरा सरकार, अगरतला - 799001. फेक्स नं.- 0381-2228001 फेक्स नं.- 0381-2319427 | 17. | मुख्य कार्यकारी अधिकारी, पावरलिंकस ट्रांसमिशन लिमिटेड, चौथा तल, कंचनजंघा भवन, 18, बाराखम्भा रोड, नई दिल्ली- 110001, फेक्स नं.- 011-66306377 टेली नं.- 011-66306380-82 |
| 24. | सेक्रेटरी (पावर), नागालैंड सरकार, कोहिमा - 797001. फेक्स नं.- 0370-2240178 टेली नं.- . 0370-2243149 | | |
| | पूर्वी क्षेत्र | | पश्चिमी क्षेत्र |
| 25. | अध्यक्ष, वेस्ट बंगाल स्टेट इलेक्ट्रिसिटी बोर्ड, विद्युत भवन, ब्लाक-डी.जे., सेक्टर-II, बिधान नगर, कोल्काता - 700 091. फेक्स नं.- 033-23373002 /23591915 | 31. | मेनैजिंग निदेशक, एम.एस.ई.टी.सी.एल., प्रकाशगढ़, बांद्रा (ई), मुम्बई- 400051. फेक्स नं.- 022-26476711 / 22695638 टेली नं.- 022-22619400 / 22618061 |
| 26. | अध्यक्ष, बिहार स्टेट इलेक्ट्रिसिटी बोर्ड, विद्युत भवन, जवाहर लाल नेहरू मार्ग, पटना - 800 001. फेक्स नं.- 0612-2222968 टेली नं.- 0612-2224534 / 2225036 | 32. | अध्यक्ष एवं प्रबंधक निदेशक, गुजरात एनर्जी ट्रांसमिशन कारपोरेशन, सरदार पटेल विद्युत भवन, रेस कोर्स सर्किल, वड़ौदरा, गुजरात- 390007 फेक्स नं.- 0265- 2344734 टेली नं.- 0265-2338299 |

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| 27. | अध्यक्ष, दामोदर वैली कार्पोरेशन, डी. वी. सी. टावर, वी. आई. पी. रोड, कोल्काता - 700 004. फेक्स नं.- 033-2355-1252 टेली नं.- 033-23557955 / 23556955 | 33. | अध्यक्ष, छत्तीसगढ़ स्टेट इलेक्ट्रिसिटी बोर्ड, दंगनिया, रायपुर- 492013 फेक्स नं.- 0771-4028882 टेली नं.- 0771-4066900 / 2242345 |
| 28. | अध्यक्ष, झारखंड स्टेट इलेक्ट्रिसिटी बोर्ड, एच. ई. सी., इंजीनियरिंग बिल्डिंग, पो. आ. - धुर्वा, रांची - 834 004. फेक्स नं.- 0651-2403799 टेली नं.- 0651-2400807 / 2400809 | 34. | चीफ इलेक्ट्रिकल इंजिनियर, बिजली विभाग, गोवा सरकार, विद्युत भवन, तीसरा तल, पणजी, गोवा- 403001. फेक्स नं.- 95832-2222354 टेली नं.- 0832-2426986 |
| 29. | अध्यक्ष एवं प्रबंधक निदेशक ओडिशा विद्युत ट्रांसमिशन कार्पोरेशन लिमिटेड, जनपथ, भुवनेश्वर - 751 007. Tel No. 0674-2540098 फेक्स नं.- 0674-2541904 | 35. | अध्यक्ष एवं प्रबंधक निदेशक, मध्य प्रदेश पावर ट्रांसमिशन कार्पोरेशन लिमिटेड, शक्ति भवन, विद्युत नगर, रामपुर, जबलपुर- 482008 (मध्यप्रदेश) टेली नं.- 0761-2661234 |
| 30. | सेक्रेटरी, पावर विभाग सिक्किम सरकार, गंगटोक - 737 101. फेक्स नं.- 03592-202927 टेली नं.-- 03592-224842/224512 | | |

प्रेषिती सूची / List of Addressee:

| S.No. | Southern Region | | Northern Region |
|--------------|---|-----|---|
| 1. | Chairman, Tamil Nadu Electricity Board, 800, Anna Salai, Chennai – 600 002. Fax No. 044-28544528 Tel.No. 044-28521300 | 6. | Chairman, Bhakra Beas Management Board, Madhya Marg, Sector-19 B, Chandigarh 160 019. Fax No. 0172-2549857 Tel.No. 0172-5011751 |
| 2. | Chairman, Karnataka Power Trans. Corp. Ltd., Kaveri Bhawan, K.G Road Bangalore - 560 009. Fax No. 080-22213526 Tel. No. 080-22214342 / 22244556 | 7. | Chairman and Managing Director, Punjab State Transmission Corporation ltd. The Mall, Secretariat Complex, Patiala - 147 001. Fax No. 0175-2307779 Tel. No.0175-2212005 |
| 3. | Chairman, Kerala State Electricity Board, Vaidyuthi Bhawan, Pattam, Thiruvananthapuram – 695 004. Fax No. 0471-2442125 / 2514680 Tel. No. 0471-2441328 | 8. | Chairman, Himachal Pradesh State Electricity Board, Vidyut Bhawan, Shimla - 171 002. Fax No. 0177-2813563 / 2803600 Tel. No. 0177-2813563 / 2803600 |
| 4. | Superintending Engineer-I, Puducherry Electricity Department, Beach Road, Puducherry – 605001. Fax No. 0413-2331556 Tel. No. 0413-2334277 | 9. | Chairman and Managing Director, Rajasthan Rajya Vidyut Prasaran Nigam Ltd., Vidyut Bhawan, Jyoti Nagar, Janpath, Jaipur - 302 005. Fax No. 0141-2740168 Tel. No. 0141-2740118 |
| 5. | Chairman and Managing Director, APTRANSCO, Vidyut Soudha, Hyderabad - 500 082. Fax No. 040-23320565 Tel. No. 040-23317657 | 10. | Managing Director, Power Transmission Corporation of Uttarkhand Ltd, 7-B, Lane No.-1, Vasant Vihar Enclave, Dehradun – 248 001. Fax No. 0135-2268867 / 2768895 Tel. No. |
| | NE Region | 11. | Chairman, Haryana Vidyut Prasaran Nigam Ltd., Shakti Bhawan, Sector-6 Panchkula - 134 109. Fax No. 0172-2560640 / 2560815 Tel. No. 0172-2714004 |
| 18. | Chairman, Assam State Electricity Board, Bijuli Bhawan, Paltan Bazar, Guwahati – 781 001. Fax No. 0361-2541090 Tel. No. 0361-2540311 / 2541088 | 12. | Chairman and Managing Director, Delhi Transco Ltd., Shakti Sadan Kotala Road, ITO, New Delhi - 110002. Fax No. 011-23234640 / 23215198 / 23231748 |

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| 19. | Chairman, Government of Meghalaya, Meghalaya State Electricity Board, Lumjingshai, S. R. Road, Shillong - 793 001. Fax No. 0364-2590355 / 2590367 / 2590638 | 13. | Principal Secretary (power), Civil Secretariat, Jammu (J&K), Fax No. 0194-2479836 / 2462173 |
| 20. | Secretary (Power), Department of Power, Govt. of Arunachal Pradesh, Itanagar - 791 111. Fax No. 0360-2217302 Tel. No. 0360-2217301 | 14. | Chairman and Managing Director, Uttar Pradesh Power Corporation Ltd., Shakti Bhawan, 14-Ashok Marg, Lucknow - 226 001. Fax No. 0522-2782877 / 2287827 / 2287801 |
| 21. | Secretary (Power), Govt. of Manipur, Imphal – 795001. Fax No. 0385-2450702 | 15. | Chief Engineer, Electricity Department, UT of Chandigarh, Sectt. Office building, Sector 9-D, Chandigarh - 160 009. Fax No. 0172-2740276 Tel No. 0172-2740029 |
| 22. | Secretary (Power), Government of Mizoram, Aizwal - 796 001. Fax No. 0389-2320862 Tel. No. 0389-2322848 | 16. | Chairman and Managing Director, Power Grid Corporation of India Ltd., Plot no. -2, Sector-29, New IFFCO Chowk, Gurgaon - 122 001. Fax No. 95124-2571760 / 2571848 |
| 23. | Secretary (Power), Government of Tripura, Agartala – 799001. Fax No. 0381-2228001 Fax No. 0381-2319427 | 17. | Chief Executive Officer, Powerlinks Transmission Ltd., 4 th Floor, Kanchenjunga Building, 18, Barakhamba Road, New Delhi – 110001. Fax No. 011-66306377 Tel No. 011-66306380-82 |
| 24. | Secretary (Power), Government of Nagaland, Kohima – 797001. Fax No. 0370-2240178 Tel. No. 0370-2243149 | | |
| | Eastern Region | | Western Region |

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| 25. | Chairman, West Bengal State Electricity Board, Vidyut Bhavan,Block-DJ, Sector-II, Bidhannagar, Kolkata - 700 091. Fax No. 033-23373002 / 23591915 | 31. | Managing Director, MSETCL, Prakashgad, Bandra (E), Mumbai – 400 051. Fax No. 022-26476711 / 22695638 Tel. No. 022-22619400 / 22618061 |
| 26. | Chairman, Bihar State Electricity Board, Vidyut Bhawan, Jawaharlal Nehru Marg, Patna - 800 001. Fax No. 0612-2222968 Tel. No. 0612-2224534 / 2225036 | 32. | Chairman and Managing Director, Gujrat Energy Trans. Corpn, Sardar Patel Vidyut Bhawan, Race Course Circle, Vadodara, Gujarat - 390 007. Fax No. 0265- 2344734 Tel. No. 0265-2338299 |
| 27. | Chairman, Damodar Valley Corp., DVC Towers, VIP Road, Kolkata - 700 004. Fax No. 033-2355-1252 Tel.No.-033-23557955 / 23556955 | 33. | Chairman, Chhattisgarh State Electricity Board, Danganiya, Raipur. – 492 013. Fax No. 0771-4028882 Tel. No. 0771-4066900 / 2242345 |
| 28. | Chairman, Jharkhand State Electricity Board, HEC, Engineering Building, PO - Dhurwa, Ranchi - 834 004. Fax No. 0651-2403799 Tel. No. 0651-2400807 / 2400809 | 34. | Chief Electrical Engineer, Electricity Department, Govt. of Goa, Vidyut Bhawan, 3 rd Floor, Panaji, Goa - 403001. Fax No. 95832-2222354 Tel.No. 0832-2426986 |
| 29. | Chairman and Managing Director Orissa Power Transmission Corporation Ltd., Janpath, Bhubaneswar - 751 007. Tel No. 0674-2540098 Fax No. 0674-2541904 | 35. | Chairman and Managing Director, Madhya Pradesh Power Transmission Corporation Ltd., Shakti Bhavan, Vidyut Nagar, Rampur, Jabalpur - 482 008 (MP). Fax No. 0761-2664141 Tel. No. 0761-2661234 |
| 30. | Secretary, Power Department, Govt. of Sikkim, Gangtok - 737 101. Fax No. 03592-202927 Tel.No.03592-224842 / 224512 | | |

**(5)
AWARD SCHEME
FOR
POWER TRANSMISSION SYSTEM
AVAILABILITY**

AWARD SCHEME FOR POWER TRANSMISSION SYSTEM AVAILABILITY

1.0 PREAMBLE

This Award Scheme has been instituted by Ministry of Power and Central Electricity Authority to encourage the power transmission licensees in the country to strive for better efficiency in maintenance and operation of transmission systems and to accord recognition to efficient utilities for maintaining higher transmission system availability.

2.0 OBJECTIVE

The main objective of the scheme is:

- To ensure optimum availability of EHV AC transmission systems in the country.
- To encourage electricity utilities having poor transmission system availability to improve.

3.0 ELIGIBILITY CRITERIA AND NATURE OF AWARD

There will be three (3) awards with two (2) in Category-I and one (1) in Category-II as given below:

Category-I : For all Central and State transmission Licensees except those in the states of North-Eastern Region, Sikkim, Uttarakhand, Himachal Pradesh and Jammu & Kashmir. Private/ joint venture (JV) transmission licensees in these states with transmission lines in excess of 2,000 circuit kms are also eligible to participate in the scheme.

- i) Best transmission system availability award for transmission system of 220 kV and above; and
- ii) Second Best transmission system availability award for transmission system of 220 kV and above.

Category-II: For all transmission Licensees including private/ joint venture (JV) transmission licensees in the special category States of North-Eastern Region, Sikkim, Uttarakhand, Himachal Pradesh and Jammu & Kashmir who have predominantly 132 kV transmission System.

- iii) Best transmission system availability award for transmission system of 132 kV and above.

4.0 ELEMENTS TO BE CONSIDERED FOR DETERMINING AVAILABILITY

A transmission Licensee shall be eligible to participate as a single nominee either in category-I or category-II awards given below, and accordingly, the licensee shall submit the relevant data in respect of the entire transmission system owned by it in the country.

Category-I

All 220 kV and above AC transmission systems with elements up to the Low Voltage sides of the transformers shall be considered for determining the Transmission System Availability.

Category-II

All 132 kV and above AC transmission systems with elements up to the Low Voltage sides of the transformers shall be considered for determining the Transmission System Availability.

5.0 EVALUATION CRITERIA

Transmission System Availability for all Transmission Licensees of Inter-State Transmission System shall be calculated as per Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 notified on 21-02-2014 by CERC and effective from 01-04-2014 as amended from time to time. The relevant extracts of CERC Tariff Regulations 2014, Appendix- III, IV and V are enclosed at Annexure I.

Transmission System Availability for other transmission Licensees shall also be calculated in line with the above referred CERC Regulations.

6.0 DATA REQUIREMENT

The utilities participating in the award scheme shall submit Transmission system availability of their system during the period 2015-16 along with the transmission element data and outage data for the transmission system in the prescribed proforma as per Annexure-II, III & IV to CEA. The Inter-state transmission licensees shall submit the aforesaid data through respective Regional Power Committees (RPCs). The requisite data pertaining to Transmission Licensees of the States shall be submitted after certification of the data by respective SLDC.

7.0 TIME SCHEDULE FOR SUBMISSION OF DATA

It will be the responsibility of the Transmission Licensees to ensure that complete data as required in respect of its system reaches CEA/ respective RPCs latest by 30th October 2016/ 15th October 2016, as applicable. The Transmission Licensees for which data is not received by the said date may not be considered for the Award. The RPCs will verify the data of inter-state transmission licensees and send the verified data to CEA by 30th October, 2016.

8.0 NODAL OFFICER

Director (Grid Management),
Central Electricity Authority
Sewa Bhawan (N), 6th Floor,
R. K. Puram, New Delhi - 110 066
Phone No.011-26732643).
Email: gmcea@nic.in

Procedure for Calculation of Transmission System Availability Factor for a Month

1. Transmission system availability factor for a calendar month (TAFM) shall be calculated by the respective transmission licensee, got verified by the concerned RLDC and certified by the Member-Secretary, Regional Power Committee of the region concerned, separately for each AC and HVDC transmission system and grouped according to sharing of transmission charges. Transmission System Availability shall be calculated separately for each Regional Transmission System and inter-regional transmission system. For the purpose of calculation of TAFM:
 - i) AC transmission lines: Each circuit of AC transmission line shall be considered as one element.
 - ii) Inter-Connecting Transformers (ICTs): Each ICT bank (three single phase transformer together) shall form one element.
 - iii) Static VAR Compensator (SVC): SVC along with SVC transformer shall form one element. However, 50% credit to inductive and 50% to capacitive rating shall be given.
 - iv) Bus Reactors/Switchable line reactors: Each Bus Reactors/Switchable line reactors shall be considered as one element.
 - v) HVDC Bi-pole links: Each pole of HVDC link along with associated equipment at both ends shall be considered as one element.
 - vi) HVDC back-to-back station: Each block of HVDC back-to-back station shall be considered as one element. If associated AC line (necessary for transfer of interregional power through HVDC back-to-back station) is not available, the HVDC back-to-back station block shall also be considered as unavailable.

2. The Availability of AC and HVDC portion of Transmission system shall be calculated as under:

$$\% \text{ TAFM for AC system} = \frac{o \times AV_o + p \times AV_p + q \times AV_q + r \times AV_r}{o + p + q + r} \times 100$$

$$\% \text{ TAFM for HVDC system} = \frac{s \times AV_s + t \times AV_t}{S + t} \times 100$$

Where

o = Total number of AC lines.

AV_o = Availability of o number of AC lines.

p = Total number of bus reactors/switchable line reactors

AV_p = Availability of p number of bus reactors/switchable line reactors

Q = Total number of ICTs.

AVq= Availability of q number of ICTs.
r = Total number of SVCs.
AVr= Availability of r number of SVCs.
s = Total number of HVDC poles
AVs= Availability of s number of HVDC poles
t = Total number of HVDC back-to-back station blocks
AVt= Availability of t number of HVDC back-to-back station blocks

3. The weightage factor for each category of transmission elements shall be as under:

(a) For each circuit of AC line – Surge Impedance Loading for Uncompensated line (SIL) multiplied by ckt-km.

SIL rating for various voltage level and conductor configuration is given in Appendix-IV. However, for the voltage levels and/or conductor configurations not listed in Annexure-I, appropriate SIL based on technical considerations may be used for availability calculation under intimation to long-term transmission customers/DICs.

For compensated AC line, Surge Impedance Loading (SIL) shall be as certified by the Regional Power Committee (RPC) Secretariat considering the compensation on the line.

For shunt compensated line the reduced value of SIL shall be taken in accordance with the location of the reactor. Similarly in case of the lines with series compensation the higher SIL shall be taken as per the percentage of compensation.

(b) For each HVDC pole- The rated MW capacity x ckt-km.

(c) For each ICT bank – The rated MVA capacity.

(d) For SVC- The rated MVAR capacity (inductive and capacitive).

(e) For Bus Reactor/switchable line reactors – The rated MVAR capacity.

(f) For HVDC back-to-back station connecting two Regional grids- Rated MW capacity of each block.

4. The availability for each category of transmission elements shall be calculated based on the weightage factor, total hours under consideration and non-available hours for each element of that category. The formulae for calculation of Availability of each category of the transmission elements are as per **Appendix-V**.

5. The transmission elements under outage due to following reasons shall be deemed to be available:

i. Shut down availed for maintenance or construction of elements of another transmission scheme. If the other transmission scheme belongs to the transmission licensee, the Member-Secretary, RPC may restrict the deemed availability period to that considered reasonable by him for the work involved.

- ii. Switching off of a transmission line to restrict over voltage and manual tripping of switched reactors as per the directions of RLDC.
6. Outage time of transmission elements for the following contingencies shall be excluded from the total time of the element under period of consideration.
- i. Outage of elements due to acts of God and force majeure events beyond the control of the transmission licensee. However, onus of satisfying the Member Secretary, RPC that element outage was due to aforesaid events and not due to design failure shall rest with the transmission licensee. A reasonable restoration time for the element shall be considered in accordance with Central Electricity Regulatory Commission (Standard of Performance of inter-State transmission licensees) Regulations, 2012 as amended from time to time and any additional time taken by the transmission licensee for restoration of the element beyond the reasonable time shall be treated as outage time attributable to the transmission licensee. Circuits restored through ERS (Emergency Restoration System) shall be considered as available.
 - ii. Outage caused by grid incident/disturbance not attributable to the transmission licensee, e.g. faults in substation or bays owned by other agency causing outage of the transmission licensee's elements, and tripping of lines, ICTs, HVDC, etc. due to grid disturbance. However, if the element is not restored on receipt of direction from RLDC while normalizing the system following grid incident/disturbance within reasonable time, the element will be considered not available for the period of outage after issuance of RLDC's direction for restoration.

**Annexure- I
(Appendix-IV)**

Surge Impedance Loading (SIL) of AC Lines

| Sl. No. | Line voltage (kV) | Conductor Configuration | SIL (MW) |
|---------|-------------------|-------------------------|----------|
| 1 | 765 | Quad Bersimis | 2250 |
| 2 | 400 | Quad Bersimis | 691 |
| 3 | 400 | Twin Moose | 515 |
| 4 | 400 | Twin AAAC | 425 |
| 5 | 400 | Quad Zebra | 647 |
| 6 | 400 | Quad AAAC | 646 |
| 7 | 400 | Tripple Snowbird | 605 |
| 8 | 400 | ACKC(500/26) | 556 |
| 9 | 400 | Twin ACAR | 557 |
| 10 | 220 | Twin Zebra | 175 |
| 11 | 220 | Single Zebra | 132 |
| 12 | 132 | Single Panther | 50 |
| 13 | 66 | Single Dog | 10 |

Formulae for Calculation of Availability of each Category of Transmission Elements

$$AV_o \text{ (Availability of } o \text{ no. of AC lines)} = \frac{\sum_{i=1}^o \frac{W_i(T_i - TNA_i)}{T_i}}{\sum_{i=1}^o W_i}$$

$$AV_s \text{ (Availability of } s \text{ no. of HVDC pole)} = \frac{\sum_{j=1}^s \frac{W_j(T_j - TNA_j)}{T_j}}{\sum_{j=1}^s W_j}$$

$$AV_q \text{ (Availability of } q \text{ no. of ICTs)} = \frac{\sum_{k=1}^q \frac{W_k(T_k - TNA_k)}{T_k}}{\sum_{k=1}^q W_k}$$

$$AV_r \text{ (Availability of } r \text{ no. of SVCs)} \left[= \frac{\sum_{l=1}^r 0.5 \frac{W_{II}(T_{II} - TNA_{II})}{T_{II}}}{\left[\sum_{l=1}^r 0.5 W_{II} + \sum_{l=1}^r 0.5 W_{CI} \right]} + \frac{\sum_{l=1}^r 0.5 \frac{W_{CI}(T_{CI} - A_{CI})}{T_{CI}}}{\left[\sum_{l=1}^r 0.5 W_{II} + \sum_{l=1}^r 0.5 W_{CI} \right]} \right]$$

$$AV_p \text{ (Availability of } p \text{ no. of Switched Bus reactors)} = \frac{\sum_{m=1}^p \frac{W_m(T_m - TNA_m)}{T_m}}{\sum_{m=1}^p W_m}$$

$$AV_t \text{ (Availability of } t \text{ no. of HVDC Back-to-back Blocks)} = \frac{\sum_{n=1}^t \frac{W_n(T_n - TNA_n)}{T_n}}{\sum_{n=1}^t W_n}$$

Where

W_i = Weightage factor for i th transmission line

W_j = Weightage factor for j th HVDC pole

W_k = Weightage factor for k th ICT

W_{II} & W_{CI} = Weightage factors for inductive & capacitive operation of l th SVC

W_m = Weightage factor for m th bus reactor

W_n = Weightage factor for n th HVDC back to back block.

$T_i, T_j, T_k, T_{II}, T_{CI}$, - The total hours of i th AC line, j th HVDC pole, k th ICT, l th SVC

T_m & T_n (Inductive Operation), l th SVC (Capacitive Operation), m th Switched Bus

Reactor & n th HVDC back-to-back block during the period under consideration

(excluding time period for outages not attributable to transmission licensee for reasons given in Para 6 of the procedure)

TNA_i ,TNA_j , TNA_k - The non-availability hours (excluding the time period for outages

TNA_{il}, TNA_{cl}, TNA_m- not attributable to transmission licensee taken as deemed availability

TNA_{nas} per Para 5 of the procedure) for *i*th AC line, *j*th HVDC pole, *k*th ICT, *l*th SVC (Inductive Operation), *l*th SVC (Capacitive Operation), *m*th Switched Bus Reactor and *n*th HVDC back-to-back block .

Transmission Utility/ Licensee Details

1. Name of the Transmission Licensee:
2. Address for correspondence:
3. Name & Contact details of Nodal officer in the organization:
4. Brief details about Transmission Licensee:
5. Brief details of calculation as per enclosed scheme at Appendix-III, IV and V of **Annexure-I**:

Annexure- III

Transmission Element Data as on 31/03/2016

Details of Transmission Lines:

| Sl. No. | Name of the Transmission Line | Voltage Level (kV) | S/C or D/C or S/C on D/C Tower Line | Line Length (Ckt. Km.) | Conductor type and characteristics | Surge Impedance Loading (SIL) | Date of commissioning | Date of Comml. Operation |
|---------|-------------------------------|---------------------------|-------------------------------------|-------------------------------|------------------------------------|-------------------------------|-----------------------|--------------------------|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |

Details of Substations:

| Sl. No. | Name of the Sub-Station | Voltage Level (kV) | No. of ICTs / Switched Bus Reactors / SVCs | MVA Capacity of ICTs / MVAR of Switched Bus Reactors / SVCs | Date of commissioning | Date of Comml. Operation |
|---------|-------------------------|---------------------------|--|---|-----------------------|--------------------------|
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |

Transmission System Outage Data

Name of the Transmission Licensee:

Period: 2015-16

(Elementwise chronological listing)

| Sl. No | Name of the Transmission Element | Outage | | Restoration | | Duration of Outage attributable to | | | | | | Deemed Availability (%) | Reason of outage | Weightage factor of the transmission element (Wi) | Ckm \$ | Time considered for availability (Ti) (Hrs) | Time considered for Non-availability (TNAi) (Hrs) | Wi (Ti-TNAi)/Ti | Element wise availability (%) |
|--|----------------------------------|----------|----------|-------------|----------|------------------------------------|-----|--------|-------|----------|-----|-------------------------|------------------|---|--------|---|---|-----------------|-------------------------------|
| | | Date | Time | Date | Time | Utility itself | | Others | | System # | | | | | | | | | |
| | | dd/mm/yy | hrs : mm | dd/mm/yy | hrs : mm | Hrs | Min | Hrs | (Hrs) | Hrs | Min | | | | | | | | |
| Transmission Lines | | | | | | | | | | | | | | | | | | | |
| AC Lines | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | |
| Element wise Sub-Total | | | | | | | | | | | | | | | | | | | |
| HVDC* | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | |
| Inter-connecting Transformers (ICT)* (Location & MVA Capacity) | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | |
| Element wise Sub-Total | | | | | | | | | | | | | | | | | | | |
| SVCs* (Location & MVAR Capacity) | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | |
| Element wise Sub-Total | | | | | | | | | | | | | | | | | | | |
| Bus Reactors* (Location & MVAR Capacity) | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | |
| Element wise Sub-Total | | | | | | | | | | | | | | | | | | | |

* MVA capacity for ICTs / MVAR for bus reactors and SVCs / rated capacity of HVDC system in MW

System constraints/ Natural calamity/ Militancy etc \$ Ckm and number of Sub-Conductor for lines ,and number for ICT/bus reactor / SVC