



# KARNATAKA POWER TRANSMISSION CORPORATION LIMITED

Corporate Identity Number (CIN) : U40109KA1999SGC025521

Regd. Office of the Company : Corporate Office, Kaveri Bhavan, K.G. Road, Bengaluru-560 009

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**Sub:-** Surveying and Geo-technical investigation works for Transmission lines and substations- reg. revision of Schedule of Rates-2019.

**Ref:-** 1. KPTCL/B9/30791/12-13 dated 04/03/2014.  
2. KPTCL/B9/30791/12-13 dated 24/06/2015.  
3. KPTCL/B19/7625/86-87 dated 28/05/2019.  
4. KPTCL/B9/85334/18-19 dated 02/11/2020.

## **Preamble:**

1. In Corporate O.M dated 04/03/2014, approval was accorded for adopting Modern Survey Techniques for all Transmission Line surveys of all voltage class. Further, the standard technical specification and bill of quantities required for conducting Transmission Line surveys of all voltage class, using Modern Survey Techniques was also issued along with the said order.
2. In the Corporate O.M. dated 24/06/2015, approval was accorded for adopting computed rates for various items of transmission line surveying using Modern Survey Techniques.
3. Approval was also accorded to use Google maps instead of NRSA imageries in respect of transmission lines of all voltage class where the length of line is less than or equal to 5Kms. Further in respect of lines where the length of line is more than 5Km, use of NRSA imageries was mandated for route identification and finalizing the most feasible and economical alignment.
4. In the Corporate order dated 28/05/2019, approval was accorded to the revised Major Works Schedule of Rates with effect from 01/06/2019 as per the recommendations of the SR Revision Committee and as approved in the CPC meeting held on 14/05/2019.
5. In the Revised Major Works Schedule of Rates-2019 (Part-II), the unit rates for various items of surveying and Geo-technical investigation works for transmission lines and substations, have been provided for preparation of estimates and for evaluation of tenders.

6. Considering the time required for collection of NRSA imageries and its resolutions, directions were issued in the Corporate circular dated 02/11/2020, to use Google maps instead of NRSA imageries in respect of transmission lines of all voltage class, where the length of line is equal to 25Kms.
7. Of late, it is observed that the empanelled agencies carrying out surveying works are quoting rates far below the Schedule of Rates-2019. In this regard, the rates quoted by the agencies in the last three years for transmission lines of all voltage class were analyzed.
8. Considering the advancement in surveying instruments, softwares available, the time period required for field work and the office work required in connection with preparation of reports have greatly reduced. As such, it was felt appropriate to revise the Schedule of Rates-2019 pertaining to surveying and geo-technical investigation works for both transmission lines and substations.
9. Further, in order to simplify the procedure, the various individual items considered for surveying and geo-technical investigation works in the Schedule of Rates-2019 were clubbed together and unit rates per Km of transmission line surveying, unit rate per Hectare of substation land for contour surveying and unit rate per substation for geo-technical investigations were computed.
10. A proposal for revision of Schedule of Rates-2019 pertaining to surveying and geo-technical investigation items of works with modified specifications was made in the Corporate office note dated 19/02/2020 and got approved. Hence, this order.

**Order No. KPTCL/B9/85334/18-19 Bengaluru,**

**dated 20/02/2021**

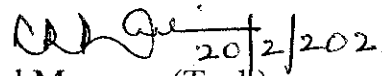
Approval is hereby accorded for the following amendments to Schedule of Rates-2019 in respect of the items pertaining to surveying and geo-technical investigation works for transmission lines and substations with immediate effect.

1. The unit rates provided for items pertaining to surveying and geo-technical investigation works appearing in **Part-II of Schedule of Rates-2019 shall be treated as inoperative with immediate effect.** The said items/ rates shall not be used henceforth (Sl. No. inoperative items are 1A (i) to 2B (c) appearing in page No. 63 to 72 of SR 2019).

2. Revised unit rates and description for the items replaced by the above amendment, have been annexed to this order for adoption with immediate effect.

The above revised unit rates are not applicable in respect of surveying and geo-technical investigation works which have been already awarded. The revised unit rates annexed to this order will be in force till further orders.

By order

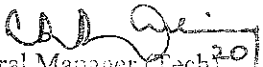
  
General Manager (Tech)  
KPTCL, Bengaluru.

**Copy to:**

1. All Chief Engineers (Ele), KPTCL.
2. All Financial Advisers, KPTCL.
3. The General Manager (Personnel), KPTCL, Kaveri Bhavan, Bengaluru.
4. The Company Secretary, KPTCL, Kaveri Bhavan, Bengaluru.
5. All Superintending Engineers (Ele), KPTCL.
6. The Superintending Engineer (Civil), KPTCL, Kaveri Bhavan, Bengaluru.
7. The Superintending Engineer (Ele), (IT) to publish the same in KPTCL website.
8. All Executive Engineers (Ele)/ MW and TL & SS Divisions, KPTCL.
9. All Executive Engineers (Civil), Transmission Zones, KPTCL.
10. SPS to MD/ Director (Finance)/ Director (Transmission)/ Director (A&HR), KPTCL, Bengaluru.


## Annexure to Corporate order No. KPTCL/B9/85334/18-19 dated 20/02/2021

Revised Schedule of Rates pertaining to Surveying and Geo-technical investigation works for transmission lines and substations.					
Sl. No.	Description	Unit	Unit Rate (in. Rs) (Excluding GST)		
			400kV lines	220kV lines	66kV and 110kV lines
1	<p><b>Preliminary survey:</b> Preliminary survey for identification of 3 alternative routes using Google Images and Survey of India maps and finalization of most economical, optimum route showing the topographical and other features on either side and indicating final selected route alignment and digital modeling in undulated hilly terrain along the proposed route using contour data from topographical map and submission of preliminary survey reports for approval as detailed in technical specifications, in all types of terrain. The rates includes walk over/ reconnaissance survey along the alignment of the line with collecting topographical details on either side upto 8Kms in case of 400kV line upto 5 Kms in case of 220kV line upto 3Kms in case of 110kV line and upto 2 Kms in case of 66kV lines. The output shall be in the form of digitized route alignment colour drawings with latest topographical and other details on either side of the alignment (both in hard and soft copies) and submission of preliminary survey reports in 3 set for approval of the final route alignment.</p>	Per Km	3050.00	2900.00	2750.00
2	<p><b>Detailed Survey:</b> Detailed survey along the approved route alignment by using Modern Survey equipments like DGPS/Total stations/Digital theodolites/GPS including profiling, tower spotting and optimization of locations by using computer aided techniques as detailed in the scope of work, using PLS-CADD software in all types of terrains and includes the following.</p> <ul style="list-style-type: none"> <li>• Drawing the route profile including geographical features like Nalas, Rivers, Gardens, P&amp;T Lines, Railways crossing etc.,</li> <li>• Leveling of the profile with reference to Survey of India bench marks (MSL).</li> <li>• Tower Schedule with optimization of tower location /tower spotting.</li> <li>• Line Schedule along the Right of Way.</li> <li>• Burgie details and providing GPS, Co-ordinates at each anchor points for identification of anchor locations including permanent marks, like poles, telephones lines, buildings etc.,</li> <li>• Soil resistivity along the selected route with measurement at a distance not exceeding 2Kms.</li> <li>• Route marking along the approved route with GPS Co-ordinates for all tower locations duly marking river/ road /power line /telecommunication/ railway line crossings.</li> <li>• Making 150mm dia bore holes for a depth not less than 3 mtrs or refusal strata at all tower locations in case of 400kV and 220kV transmission lines and at</li> </ul>	Per Km	14000.00	13300.00	12630.00

  
 General Manager (Tech) 20/2/2021  
 KPTCL, Bengaluru.

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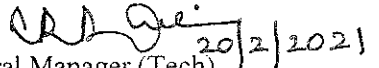
	<p>anchor points for 110kV and 66kV transmission lines and furnishing the bore log details for soil classification for tower foundations along with GPS Co-ordinates for each bore holes and back filling of bore holes on completion of work.</p> <ul style="list-style-type: none"> <li>Digitized contouring at undulated / hilly tower locations for assessing the quantum of benching and revetment required.</li> <li>Detailed land schedule along the Right of Way duly plotting the line corridor on the digitized Revenue village maps to show details of land along the corridor with Sy. No. and computation of estimate of land compensation for line corridor and tower foot area as per the prevailing guidance value notified by GOK.</li> <li>Preparation of schedules for processing for statutory clearances such as PTCC proposal (30 copies), Railway crossing proposal (10 sets per crossing), Forest proposal (10 sets) in required number of copies (both hard and soft copies) as per the requirement of respective departments.</li> <li>Tree schedule containing the details like name of tree, girth size of tree, distance from center line of the alignment, approximate height of tree etc.</li> <li>Submission of detailed consolidated final report for surveying work done appending all the approved draft reports including all relevant information collected during survey, calibration certificates of the instruments used for the work, photos / videos taken at site and submitting soft copies of all documents and hard copy of reports in 6 sets.</li> </ul> <p>The detailed report shall contain following approved draft reports Preliminary Report/ Detailed Survey Report/ Soil Resistivity Report/ Soil classification report with location wise/ Tree Schedule/ Line Schedule/ Land schedule/ Burgie details/ Digitized contours/ Digitized village map geo referenced and superimposed on the line corridor.</p>				
3	<p><b>Check survey to be conducted during construction stage:</b> Conducting detailed check survey along the approved route duly following the route alignment, GPS Co-ordinates, submission of detailed line schedule, tower schedule, land schedule and comparing the same with respect to detailed survey report, bringing out the differences if any. Submission of contour maps for undulated / hilly tower. The work also includes marking corridor width in the field and computing the quantum of benching and revetment, preparation of detailed land schedule along the corridor on the digitized Revenue village maps indicating the Sy. Nos. falling within the corridor for the purpose of estimation of the land compensation, submission of detailed consolidated hard copy of reports of check survey in 6 sets along with soft copy for approval in all types of terrain per Km.</p>	Per Km	2400.00	2300.00	2200.00

  
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4	<b>Contour surveying for substations:</b> Contour surveying of substation land using total stations and other survey equipments duly running peripheral traversing, establishing RL's at every 5Meter intervals with reference to a permanent bench mark, fixing boundary stones at every corner points along with providing GPS Co-ordinates, submission of CADD drawings for block levels, generating contours at suitable intervals, superimposing GA drawings of the substation on the contour map, computation of cutting and filling quantities for site grading and submission of hard copy of detailed report and drawings in 6 sets along with soft copy.	Per Heactare	15200.00		
5	<b>Geo-technical investigation for substations:</b> Conducting Geo-technical investigation for substations duly collecting undisturbed soil samples by soil exploration with augur boring with at least 3 Nos. of bore holes for 66kV and 110kV substations, 5 Nos. of bore holes for 220kV stations, 10 Nos. of bore holes for 400kV substations and 3 Nos. of bore holes for GIS substations. The depth of bore holes for collection of samples shall not be less than 5Meter below natural ground level or refusal strata. Collection of undisturbed sample shall be at every 2 Meter intervals or at change of strata, transportation of collected samples to the laboratory and back filling of the bore holes. Conducting various laboratory tests on the soil samples collected at approved laboratory of the agency or at NABL accredited laboratory, for analysis of the soil parameters like moisture content, density, specific gravity, grain size distribution, Atterbergs limits, permeability, Swell pressure and index, Un confined compressive strength, shear, consolidation tests and CBR etc., as per the relevant Indian Standards of latest edition and submission of hard copy of final reports in 6 sets incorporating all field records and laboratory tests results. Furnishing the safe bearing capacity of the soil and recommendations on the type of foundations to be adopted for various structures of the substation.	Per substation	87000.00	55000.00	37000.00
6	Preparation of Revenue Survey sketch of the land along the line corridor for the purpose of computing compensation for corridor land and tower foot area land through licensed GOK approved surveyors and submission of survey sketch, extent of land falling in the line corridor, name of the land owner and RTC in the form of a schedule with due certification from Revenue authorities for the purpose of making payment of land compensation.				
i.	Rural area (Per Survey sketch)	No.	1416.00		
ii.	Urban Area (Per Survey sketch)	No.	1700.00		

Note: Add 10% weightage for conducting surveying and Geo-technical investigation works in Hilly terrain.

  
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