



ABSTRACT

Schemes – State Schemes – Replacement of Street Lights with LED Lights in rural areas during the year 2016-17 - Sanction of funds and Guidelines to be followed – Orders – Issued.

Rural Development & Panchayat Raj (SGS-III) Department

G.O.(Ms) No.11

Dated: 25.01.2017

Read:

1. G.O.(Ms)No.72, Rural Development and Panchayat Ra (PR-I) Department, dated. 28.06.2016.
2. From the Director of Rural Development and Panchayat Raj, Chennai-15, Letter No.Roc.52182/2016/PRI 3-2, Dated:01.09.2016.

ORDER:

The Hon'ble Chief Minister has made the following announcement under rule 110 of Tamil Nadu Legislative Assembly on 29.08.2016:

“தமிழ்நாட்டில், ஊரகப் பகுதிகளின் தெருக்களில் சுமார் 16 இலட்சத்து 46 ஆயிரம் குழல் விளக்குகள் பயன்பாட்டில் உள்ளன. தெரு விளக்குகளை முறையாகப் பராமரித்தல், மின்சார செலவினைக் குறைத்தல் மற்றும் ஒளி விளக்குகளின் நீடித்த செயல்திறன் ஆகியவற்றைக் கருத்தில் கொண்டு ஊரகப் பகுதிகளில் உள்ள குழல் விளக்குகள் அனைத்தும் LED விளக்குகளாக மாற்றியமைக்க நடவடிக்கை எடுக்கப்பட்டு வருகிறது. ஊரகப் பகுதிகளில், 8 இலட்சத்து 24 ஆயிரம் குழல் விளக்குகள் LED தெரு விளக்குகளாக 300 கோடி ரூபாய் செலவில் மாற்றிடும் பணிகள் நடைபெற்று வருகின்றன. இந்த ஆண்டு மீதமுள்ள 8 இலட்சத்து 22 ஆயிரம் குழல் விளக்குகளும் 300 கோடி ரூபாய் செலவில் LED தெரு விளக்குகளாக மாற்றியமைக்கப்படும்”

2) In the letter second read above, the Director of Rural Development and Panchayat Raj has sent a proposal alongwith Guidelines and Technical Specifications and stated that, as per Section 110 of the Tamil Nadu Panchayats Act, 1994, one of the basic and statutory duties of Village Panchayats is extension and maintenance of street lights in rural areas. Approximately 35% of the Village Panchayat income is spent towards current consumption (cc) charges which heavily affects the other development initiatives in the Village Panchayat area. The Government

have taken various steps to reduce the Current Consumption charges and increase the power efficiency such as switching over to LED, regularization of usage, improvisation of gadgets. Light Emitting Diode (LED) lights are now being recognized as an energy efficient and powerful light source that can be easily adopted for all applications.

3) The Director of Rural Development and Panchayat Raj has further stated that in the G.O. first read above, Government have directed that new / extended areas should be provided only with LED lights and also ordered that LED lights may be provided wherever current consumption charges are heavy in the existing poles from Fourteenth Finance Commission Grant and have also issued guidelines that the Village Panchayats can create/improve more number of infrastructure facilities through proper convergence and dovetailing of different funds including 14th Finance Commission Grants.

4) The Director of Rural Development and Panchayat Raj has therefore requested the order of Government for installation of 8.22 lakh LED Street Lights in rural areas by replacing the existing Tube Lights in the year 2016-17 at the cost of Rs.300 Crore from the following grants and advances.

1.	Pooled Assigned Revenue	:	Rs.	50	crore
2.	Fourteenth Finance Commission Grant	:	Rs.	150	crore
3.	State Finance Commission Grant	:	Rs.	100	crore
	Total	:	Rs.	300	crore

5) The Government have examined the proposal of the Director of Rural Development and Panchayat Raj and decided to accept the same and sanction is accorded for Rs.300 Crore for installation of 8.22 lakh LED Street Lights by replacing the existing Tube Lights / Sodium / Mercury lights during the year 2016-17 from the following grants and advances. Subject to the condition that the auctioned value of the replaced Tube Lights should be remitted into the respective Village Panchayat and Panchayat Union heads and a consolidated report should be submitted to Government in due course.

Pooled Assigned Revenue	:	Rs.	50	crore
Fourteenth Finance Commission Grant	:	Rs.	150	crore
State Finance Commission Grant	:	Rs.	100	crore
Total	:	Rs.	300	crore

ANNEXURE – I

(G.O.(Ms) No.11 RURAL DEVELOPMENT AND PANCHAYAT RAJ (SGS-III)
DEPARTMENT, DATED : 25.01.2017)

Guidelines for replacement of street lights with LED lights in Village Panchayats

1. Introduction:

As per section 110 of Tamil Nadu Panchayats Act, 1994, provision and maintenance of street lights in rural area is one of the statutory duties of Village Panchayats. As on 31.03.2016, in Street lighting system, 16,45,859 tube lights are available in rural areas.

Approximately 35% of the Village Panchayat income is spent towards current consumption (cc) charges which heavily affects the other development initiatives in the Village Panchayat area. The Government have taken various steps to reduce the CC charges and increase the power efficiency such as switching over to LED, regularization of usage, improvisation of gadgets. Considering the increased electricity consumption and maintenance cost of street light systems, an efficient street lighting through installation of LED lights in Village Panchayats will ensure energy efficiency, proper lighting and durability.

Light Emitting Diode (LED) lights are now being recognized as an energy efficient and powerful light source that can be easily adopted for all applications. In continuation of the announcement made by the Hon'ble Chief Minister of Tamil Nadu on 03.09.2015, under Rule 110, in the Legislative Assembly 8.24 lakh tube lights are being replaced with LED lights.

Further, in order to replace the remaining tube lights in rural areas with LED lights, Hon'ble Chief Minister of Tamil Nadu announced in the Tamil Nadu Legislative Assembly under Rule 110 on 29.08.2016 that the remaining 8.22 lakh tube lights in the rural areas will be replaced with LED lights in the current year at the estimate cost of Rs.300 crore. By replacing it, **Tamil Nadu will be the first State in the country to have replaced all tube lights in rural areas with LED lights.**

2. Advantages of LED Lights:

- i) Gives higher light output without generating UV and Infrared rays. Minimal heat generation.
- ii) 7 to 10 times more efficient than incandescent light sources. Twice as efficient as fluorescent/ CFL sources.
- iii) Can be switched ON-OFF electronically without delay or flicker.
- iv) Lasts 5 to 7 times longer than fluorescent/CFL sources and much higher than 25 times incandescent sources.
- v) Requires low maintenance and operating costs due to minimum electricity consumption and a longer life.

- vi) Reduces electricity consumption by 80% compared to halogen or incandescent lights. Absence of mercury and UV, better recyclability and reduced waste generation, make LED the most eco-friendly lighting system.
- vii) Saves energy and reduces the carbon foot print.
- viii) More than 50% of energy saving when compared to other lights.

3. Allocation for the year 2016-17:

As mentioned above 16.46 lakh tube lights were available in rural areas in the State. During the year 2015-16, 8.24 lakh tube lights have been taken up for conversion as LED lights. During the year 2016-17, the remaining 8.22 lakh street lights are to be replaced with LED lights at an approximate estimate cost of Rs.300 crore. Accordingly, the Director, Rural Development and Panchayat Raj will decide the district wise allocation based on the number of street lights available in the Districts.

4. Phasing out of tube light system:

By the continuous effort of the Government in street lighting system of rural areas, tube lights will be phased out in the rural areas of the State this year. Tamil Nadu will become the first State in the country with only LED public lighting system in rural areas.

5. Allotment to Village Panchayats:

The District Collector and Chairman, District Rural Development Agency will identify the Village Panchayats at District level and allot number of LED lights to be installed in each Village Panchayat based on the number of balance tube lights to be replaced in the village.

6. Technical specification and tender document:

A State Level Committee was constituted in 2015-16 vide reference second cited to finalise the specification and the technical details of LED lighting given by TEDA and also to finalise the tender procedure, draft tender notice and tender schedule

The Members of the Committee were:

1. The Director of Rural Development and Panchayat Raj - Chairman
2. The Chairman / Managing Director, TEDA or a nominee of CMD, TEDA.
3. The Joint Secretary to Government, Finance Department or a nominee of Additional Chief Secretary to Government, Finance Department.
4. The Superintending Engineer (Rural Development), Directorate of Rural Development and Panchayat Raj
5. One Superintending Engineer nominated by the Chairman, TANGEDCO.

The above members of the State level Committee had conducted the meeting on 08.02.2016 and finalised the specification and tender document for LED street lighting in the year 2015-16. The same specification and tender

document finalised by the State level Committee will be adopted for the year 2016-17. The Technical and other specifications / parameters in respect of LED lighting in rural areas is enclosed as Annexure - II. The Project Director, DRDA will call for tenders based on the above tender document.

7. District Level Committee:

District Collector is the authority for implementation of the scheme at District level. There will be a Committee at the District level for procurement of LED lights and to monitor the installation in Village Panchayats. The District level Committee consists of :

- | | | | |
|------|---|---|------------------|
| i) | District Collector | : | Chairman |
| ii) | Project Director, District Rural Development Agency | : | Member Secretary |
| iii) | Executive Engineer (RD) | : | Member |
| iv) | Executive Engineer (TANGEDCO) nominated by Superintendent Engineer (TANGEDCO) | : | Member |
| v) | Assistant Director (Panchayats) | : | Member |

Tender will be called at District level for the allocation made to the District. Even though, the operation and maintenance of street lights are done by the Village Panchayats, they are not capable to call for tender for purchase of LED street light materials. Hence, considering the size of procurement and the technicality involved, it is recommended to call for tender at District level. The Project Director, District Rural Development Agency will be the tender inviting authority. The District Collector will be the tender accepting authority. Installation of LED lights will be done by the Village Panchayats. The Block Development Officer (Village Panchayats) will be responsible for monitoring the installation of LED lights at Block level.

8. Issue of work order:

After finalization of tender and identification of Company / Agency for supply of LED lights, work order will be issued by the District Collector and agreement should be executed by the Company / Agency for supply of lights within the time limit and for maintenance of lights upto certain period as per the tender.

9. Execution of works:

The LED lights should be supplied to the Village Panchayat by the Company / Agency approved by the District Collector. The Village Panchayats should make entry in the Stock Register after receipt from the Company / Agency. The Village Panchayat will install the LED lights by replacing the already

identified / available tube lights. The installation charges will be met from the Village Panchayat general funds for which order has already been issued by the Government. Payment will be made by the District Rural Development Agency / Village Panchayats concerned to the supplying Agency / Company after receipt of certificate from the Village Panchayats for receipt of LED lights.

10. Quality Control:

In order to ensure that the LED lights supplied by the approved firms / companies are as per required standards and specifications the following measures will be put in place:

1. The bidding firms shall submit 3 samples of 20W of LED street light fitting unit along with test reports from a NABL accredited laboratory at the time of tendering. The samples will also be tested at the field by Electrical department corporation of Chennai, to check illumination levels. The test results should be satisfactory for the bidder to qualify in the technical bid evaluation.
2. The Departmental officials will select three random samples of LED street lights from each consignment after delivery and these random samples will be sent for complete testing in any of the NABL accredited laboratory. The cost of carrying out all these tests shall be borne by the Contractor.
3. In the event if the LED street light fitting fails to confirm to any of the tests carried out in the NABL laboratories then the entire consignment of LED street lights shall be rejected.
4. Payment shall be released only if the LED street light fittings confirm to all the tests carried out in the NABL laboratory.
5. The LED lights will carry a 5 year warranty period.

11. Fund release and maintenance of Accounts:

The funds required for installation of street lights will be utilized from the Pooled Assigned Revenue, Fourteenth Finance Commission Grant and State Finance Commission Grant for the year 2016-17. The break up details are as below:

1. Pooled Assigned Revenue 2015-16 (Village Panchayats and Panchayat Union Share 2:1)	: Rs. 50 Crore
2. Fourteenth Finance Commission Grant (Village Panchayats)	: Rs. 150 Crore
3. State Finance Commission Grant (Village Panchayats and Panchayat Union Share 2:1)	: Rs. 100 Crore
Total	: Rs. 300 Crore

The Director, Rural Development and Panchayat Raj will draw funds from Pooled Assigned Revenue and the State Finance Commission Grant and release to the District Collectors. The Fourteenth Finance Commission Grant allocation

has already been communicated to the District Collectors. Out of this Rs.150 crore has been earmarked at the Districts for LED lighting.

A separate Saving Bank Account should be maintained in a Nationalized Bank by the District Rural Development Agency for maintenance of this fund at District level. Funds to the Companies should be released in two installments based on the certificate received from Village Panchayats after receipt of LED lights and the receipt of Certificate on the proper lighting by the Village Panchayats.


12. Monitoring:

The District Collector will review the progress of supply and installation of LED lights at District level. The Project Director, District Rural Development Agency is responsible for installation of LED lights and expenditure at District level. Nodal Officers in the cadre of Assistant Director should be appointed by the District Collector to supervise the works in Village Panchayats.

13. The Principal Secretary to Government, Rural Development and Panchayat Raj Department is empowered to modify the guidelines issued for this Scheme whenever necessary in consultation with the Director of Rural Development and Panchayat Raj.

HANS RAJ VERMA,
PRINCIPAL SECRETARY TO GOVERNMENT.

// Forwarded By Order //


Section Officer.


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ANNEXURE - II

(G.O.(Ms)No.11, RURAL DEVELOPMENT AND PANCHAYAT RAJ (SGS-III)
Dated: 25.01.2017

Technical specification for the 20 W LED Street Lighting Unit**1. Description:**

Sl. No.	Criteria	Specification for LED street light fitting
1	Luminaire configuration / technical requirement	Side entry type. Shall consist of separate optical and control gear compartment. Driver should be easily replaceable in the field conditions
2	Housing / Body of fitting	Pressure Die cast or extruded Aluminum housing with corrosion resistant polyester powder coated and manufacturer name embossed on the housing/screen printing is not allowed
3	Finish	Aesthetically designed housing with Black / Grey / Cream colour corrosion resistant polyester powder coating.
4	Cover	Fixture cover - UV stabilised Polycarbonate Test certificate for the material of the fixture cover should be submitted in the tender.
5	Product qualities	Energy efficiency, High quality consistency, glare control lumen maintenance, luminaire appearance.
6	Protection - IP	Optical and Control gear compartment- IP 65
7	Impact resistance	Impact resistance greater than or equal to IK 05
8	Optical assembly	Structured LED array for optimized roadway photometric distribution with lens and meet road lighting standard
9	Operating voltage	140-270 volt universal electronic driver
10	Frequency	45 to 55 Hz
11	Power factor	>0.95
12	Fixture Temperature	Ambient Temperature + 35 degree C
13	Operating temperature	Range 0 to +50 degree C
14	Working Humidity	10% to 90% RH

Sl. No.	Criteria	Specification for LED street light fitting
15	Storage Temperature	0 to 50 degree C
16	Maintenance factor	0.80 For lighting design to be considered
17	Total Current Harmonic distortion	Total Current Harmonic Distortion should be lesser than 20%
18	Total system wattage of Fixture including Driver	(a)20 W The wattage should be within the UL-approved range using the following formula: $\{(measured\ wattage)*0.9 - 0.5\} < (stated\ wattage) < \{(measured\ wattage)*1.1 + 0.5\}$. The stated wattage is the wattage mentioned in the name plate / label of the fitting. This should be within the range. The wattage of the fitting as measured in the electrical lab while testing should be within the range of the specified formula.
19	Luminous flux	Contractor to mention the luminous flux of 20 W LED street light fitting
20	LED efficacy (lumen/watt)	Efficacy of LED should be greater than 120 lumens / watt.
21	LED Luminaire efficacy	The system lumen output of the 20 W LED Luminaire should be minimum of 90 Lumens/Watt supported with LM79 report at the time of installation.
22	Power efficiency / LED driver efficiency	The efficiency should be more than 85 % in all cases at all times during project period.
23	Lumen maintenance(L-70)	System rating is 50,000 hr
24	Lumen Depreciation (LD) Performance at 50,000 hours	To be supported with LM 79
25	Correlated Color temperature	Correlated Color Temperature should be between 5000K to 6000 K (Nominal and variation as per ANSI)
26	CRI	The value of CRI shall be more than 70
27	Light distribution	Optimized roadway photometric distribution provided with cut-off or semi-cut-off for road classification GroupB2 as per IS1944
28	Spread and throw of Fixture	Similar to street lighting with optimum spacing to height ratio.

Sl. No.	Criteria	Specification for LED street light fitting
29	Lux level for the given parameters	For 20W LED - 5m height, 5m road width and 21m Spacing Average 4 lux at road level with uniformity min/average > 0.3 and min / max > 0.2
30	Effective illuminated area	For 20 W LED - 5m x21m at 5 m height,
31	Light Distribution Curve / Beam Pattern	Light Distribution Curve / spread and throw are to be Mentioned
32	Make of LED	Make of LED: CREE / GE / Philips Lumileds / Nichia / Osram or equivalent satisfying the technical requirements. The LED shall be of Surface Mounted Design
33	Lens	Lens should be provided for each LED.
34	LED Drive Current	Upto 1A and should be of single current rating (option for variation of drive current through hardware / switches is not required)
35	Driver Specification	140-270 Volt universal electronic driver with Internal surge protection of >3kV. Wide range of voltage to withstand the fluctuation.
36	Junction temperature (Tj)	The junction temperature measured at the soldering point should not exceed 55 degree C + 10% at an ambient temperature of 25 degree C
37	Heat dissipation / heat sink	Well designed Thermal management system with Aluminum heat sink.
38	Warranty for LED luminaries	not less than 5 years against mfg. defects
39	Warranty for Electronic driver	5 years on Mfg. defects with replacement warranty
40	Electrical safety as per IEC.	As per IEC/IS standards
41	Conformation standards of luminaire	The luminaire conform to IEC 60598.
42	Endorsement / certification	Any NABL accredited laboratory - Only
43	Compliance	RoHS for LED
44	Protections	IP65, Surge protection, Harmonics: IEC61000-4-5
45	Suitable for brackets	(a) For 20W LED - The fittings should be suitable for fixing to brackets having 40 mm dia OD. If necessary, adaptor / reducers may be used for making the fitting suitable for 40 mm OD brackets. The adaptor / reducer should not extend the fitting by more than one meter from the pole when

Sl. No.	Criteria	Specification for LED street light fitting
		mounted. The following shall be provided for erecting the LED lights -1" GI bend pipe – 2 feet – 1no, 1" GI clamp sets – 2 Nos, 2"Bolts and Nuts – 4nos.
46	Test reports of luminaire	<p>(a) The luminaire should be tested as per IEC 60598-2-3:2002 standards and following test reports should be submitted: Heat Resistance Test, Thermal Test, Ingress Protection Test, Electrical / Insulation Resistance Test, Endurance Test, Humidity Test.</p> <p>(b) Should be compliant to LM-79 IESNA: approved method for the Electrical and Photometric Measurements of Solid-State Lighting Products LM-79 testing of the complete luminaire</p> <p>(b) Should be compliant to LM-80 IESNA: Approved Method for Measuring Lumen Maintenance of LED Light Sources and LED lumen depreciation time to L70 based on LM-80 data to estimate lifetime based on performance data collected from IESNA LM-80</p> <p>(c) Required test certifications obtained from NABL accredited laboratory should be submitted for the specification stipulated in this section.</p> <p>(d) Copy of above test certificates should be submitted with tender.</p>
		(f) Random samples from supplied lot should be tested at NABL accredited laboratory and report submitted for acceptance.
47	Termination	LED street light fitting has to be supplied along with trailing cable of continuous length of 1.0 mtrs of PVC insulated & PVC Sheathed 3 Core x 1 Sq.mm. Cable with Electrolytic Grade Annealed Copper Conductor suitable up to 1100 V Grade with ISI mark, Confirming to IS:694
48	Serial number	LED street light fitting should be supplied with serial number mentioned on a name plate which should be attached permanently to the fitting. The Name plate should mention: Name of Manufacture, Street light fitting model name and number, Wattage of fitting, Date of Manufacture and other relevant details.

Sl. No.	Criteria	Specification for LED street light fitting
49	Replacement warranty for LED luminaries	Not less than 5 years against Mfg. defects
50	Replacement warranty for Electronic driver	Not less than 5 years against Mfg. defects
51	Replacement of fittings in warranty period	<p>The replacement warranty period for the LED fitting complete set shall be for a minimum of five years, against manufacturing defects, from the date of supply and acceptance of the fitting at Village Panchayat. The supplier should inspect / repair / collect / deliver the faulty / replacement fitting at Village Panchayat.</p> <p>The supplier / successful bidder will be intimated about defective fittings by the field engineers of the department. The supplier should address the complaint by collecting the product and analyse the nature of Faulty fitting / and if it is Mfg. defect should replace parts</p>

The electrical infrastructure should have an isolated street lighting control with separate phase neutral and earth lines from the feeder pillar box as per relevant Indian standards of electrical installation practice, This line should not be connected to other residential and commercial load to avoid any kind of surges and voltage fluctuations which will damage the LED fixtures

2. Illumination levels

The street lighting shall be designed taking the following factors into consideration



While taking field measurement of lux level, the fitting shall be mounted as per their design requirement by the representative of the company at site.

Field measurement of lux level-the first line of the grid will be 0.5 mtrs from the base of the lamp post.										
Reading will be taken on road surface. Readings will be taken in presence of the bidders										
Sl.No.	Wattage of led street light fitting	Number of fittings for testing	Length	Mounting height of fitting above ground level	Spacing between lamp post	Area over which lux level is measured	Grid dimension	Average lux	Minimum average	Transverse minimum / maximum
				Aa = bb = cc	Ab = bc	Eh x hg	Ek x ei			
				Nos	M	M	M			
1	20 w	3	0.5	5	21	21 x 5	1.5 x 1	4	>0.3	>0.2

3. FOR 20 W LED STREET LIGHT FITTING

- The areas to be lighted up are with 5 m wide road. The spacing between the poles will be 21 m. The mounting height of the fitting shall be not less than 5 m above the ground level.
- The bidder shall submit the expected lux level of their fittings with the following conditions: Number of fittings: three
- Mounting height of fittings: 5 m above ground level Spacing between lamp posts: 21 m
- Mounting bracket: 0.5 metre in length and as per the design for the required lighting levels. Alignment : Single side straight line
- The expected lux level of the fitting in the center shall be furnished and the readings on a grid area of 1.5 m x 1 m over the ground area of 21 m x 5 m with the following results:
average lux of 4 or more, uniformity ratio (minimum / average illumination levels) should be greater than 0.3 and the ratio of minimum / maximum level of illumination should be greater than 0.2 or more.

- The lighting design shall fulfill the requirement illumination as per I.S.1944 (part 1&2) for code of practice for lighting of public through fares. Measuring of the road junction width, length, etc, and obtaining any other information / particulars / parameters required for completing the design etc., shall be of the contractor responsibility.

HANS RAJ VERMA,
PRINCIPAL SECRETARY TO GOVERNMENT.

// Forwarded By Order //

by
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Section Officer.
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