Terms of Reference (ToR)
for Energy Efficient Street lighting in pre-selected slum areas of Thane Municipal Corporation, Maharashtra for the project “Promoting Low Emission Urban Development Strategies in Emerging Economy Countries” (Urban-LEDS)

<table>
<thead>
<tr>
<th>Task</th>
<th>Energy Efficient street lighting Design, Supply, Installation, Testing, Commissioning and comprehensive Maintenance in pre-selected slum areas of Thane Municipal Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>Given the trends in urbanization and the associated rise in slum populations, upgrading slum infrastructures forms an important component of the overall development process. Providing energy efficient streetlights in the low income communities will not only demonstrate the use of latest technology but will also improve the present illumination level in these areas. Moreover, implementation of slum level energy efficient street light project will showcase strong inter-link between the massive scale up programme of retrofitting 10,000 energy efficient street lights through ESCO within the city of Thane.</td>
</tr>
</tbody>
</table>
| Description of the assignment, expected outcomes | The scope of work is divided into two parts as:

(I) Winning bidder shall carry out job of detailed planning and design of energy efficient street light for the pre-selected low income community areas within Thane Municipal Corporation jurisdiction, which may be subject to change in consultation with ICLEI South Asia and Thane Municipal Corporation. The specific task under Assignment I covers and however are not limited to:

1. Establishment of energy baseline for the existing street light infrastructure through field survey, conducting feeder panel/switching point wise lux and power measurement, etc.
2. Conducting an inventory of the key features for the
lighting fixtures such as fixture types, wattages, nos., spacing, fixture housing type, control systems, related characteristics like Color Rendering Index (CRI), existing lumen levels and other technical specifications.

3. Collecting secondary data for realistic estimation of current energy bills attributable to street lighting from relevant agencies.

*Note: The contractor shall undertake the above work and submit the baseline report after two weeks of award of work order*

**(II) Supply, installation and comprehensive maintenance** of new energy efficient LED luminaire. The specific task involves:

1. Dismantling of existing street lighting luminaires and handing over to Electrical store, TMC.
2. Installation of new LED fixtures as per the specifications and confirming to testing and operating standard.
3. Comprehensive maintenance of new LED street light fixtures for a period of 5 years.

*Note: The contractor shall undertake the above work after ten weeks of award of work order. For details please refer to the attached documents:*

- Annexure I: Bidders Eligibility Criteria and list of required documents
- Annexure II: Contract Terms
- Annexure III: Detailed Scope of Work
- Annexure IV: Expected Technical Specifications
- Annexure V: Format for Price Bid

**Concrete deliverables expected**

Approx. 565 nos. of energy efficient LED street lights to be installed at pre-selected slum areas within Thane Municipal Corporation jurisdiction. The no. of streetlights is indicative and may increase or decrease. (Please refer to Annexure III for more details)

**Time frame, location**

**Location:** 11 slum areas in 4 wards-
<table>
<thead>
<tr>
<th>Mumbra Ward:</th>
</tr>
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<tbody>
<tr>
<td>- Gavdevi</td>
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<tr>
<td>- Roshni Apt.</td>
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<tr>
<td>- Shankar mandir</td>
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<tr>
<td>Rayladevi Ward:</td>
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<tr>
<td>- Aambewadi</td>
</tr>
<tr>
<td>- Ram Nagar</td>
</tr>
<tr>
<td>Uthalsar Ward:</td>
</tr>
<tr>
<td>- Gokul Nagar</td>
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<tr>
<td>- Azad Nagar Shamshan</td>
</tr>
<tr>
<td>- Gokuldaswadi</td>
</tr>
<tr>
<td>Kopri Ward:</td>
</tr>
<tr>
<td>- Gandinagar maidan</td>
</tr>
<tr>
<td>- Gandinagar nala</td>
</tr>
<tr>
<td>- Gandinagar talao</td>
</tr>
</tbody>
</table>

**Timelines:**

1. Commencement of work: at the earliest or not more than 7 days after date of issue of work order
2. Completion of work: At the earliest or max by 3 months including monsoon period.

*For additional details please refer to Point no. 12 of Annexure II*

**Available budget**

- 20% of work value on submission of:
  - i) initial baseline assessment report for existing street lights and
  - ii) upon furnishing Bank Guarantee 1 of value 10% of total project cost to ICLEI South Asia, valid for a period of 6 months
- 40% of work value on releasing/dismantling of 50% of existing street lights (identified for replacement) and safe hand over to TMC and executing the work of Supply, Erection (Installation), Testing & Commissioning of 50% of total Energy Efficient LED street lights to be provided.
- 30% of work value on releasing/dismantling of remaining 50% of existing street lights (identified for replacement) and safe hand over to TMC and executing the work of Supply, Erection (Installation), Testing & Commissioning of remaining 50% of total Energy Efficient LED Street to be provided.
- 10% of work value and return of Bank Guarantee 1 to contractor on submission of performance Bank Guarantee 2 to TMC of value 5% of total project cost valid for a period of 5 years 6 months and submission of performance report w.r.t energy saving after continuous operation for 3 months.
- Return of Bank Guarantee 2 by TMC to contractor after successful completion of comprehensive maintenance of LED Street lights for a period of 5 years.

For additional details please refer to Point no. 12 of Annexure II

<table>
<thead>
<tr>
<th>Deadline for indicating interest</th>
<th>Publication of tender on ICLEI Website: May 21, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Publication of revision 01 of tender on ICLEI website: 26th May, 2015</td>
</tr>
<tr>
<td></td>
<td>Last date of acceptance of proposals: 1st June, 2015</td>
</tr>
<tr>
<td></td>
<td>Date of announcement of successful bidder: 8th June, 2015</td>
</tr>
<tr>
<td></td>
<td>Issue of work order to winning bidder: 15th June, 2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact information</th>
<th>Ms. Soumya Chaturvedula, Programme Coordinator (Energy &amp; Climate), ICLEI South Asia, Ground Floor, NSIC- STP Complex, NSIC Bhavan, Okhla Industrial Estate, New Delhi-110020, India,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tel: +91-11-41067220 Fax: +91-11-41067221</td>
</tr>
<tr>
<td></td>
<td>Email: <a href="mailto:soumya.chaturvedula@iclei.org">soumya.chaturvedula@iclei.org</a></td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.southasia.iclei.org">www.southasia.iclei.org</a></td>
</tr>
</tbody>
</table>
Annexure I: Bidders Eligibility Criteria and list of required Documents

(A) Bidder Eligibility Criteria

- Technical requirements
  a. The bidder may be a Manufacturer of LED street light luminaire for a minimum period of last three years or an Authorized Distributor or Dealer of a Manufacturer of LED street light luminaire for a minimum period of last three years or ESCO Company accredited with BEE Grade 3 or higher or electrical contractor registered in class A with Govt. or Semi Govt.
  b. The Manufacturer shall possess an ISO certificate
  c. Eligible Bidder shall have completed supply, installation, testing, commissioning and handing over of at least 200 LED Street-light fixtures in a single order and operational for at least 6 months in any Municipality / Municipal Corporation in India
  d. The bidder shall be able to facilitate or attend maintenance works during performance guarantee period
  e. Joint Venture are not allowed, however, subcontracting is allowed

- Financial requirements
  f. Eligible bidder to have an average turn-over of at least INR 30 lakhs in last 3 years audited and certified by charted accountant
  g. The bidder must be registered with Sales tax/Trade tax department
  h. The bidder must be registered with Income tax department and should produce Latest Income Tax clearance certificate/income tax return details

(B) Documents to be submitted by participating bidders

a. The bidder shall submit documentary evidence for Manufacturer of LED street light luminaire for a minimum period of last three years or as Authorized Distributor or Dealer of a Manufacturer of LED street light luminaire for a minimum period of last three years or as ESCO Company accredited with BEE Grade 3 or higher or copy of electrical contractor registered in class A with Govt. or Semi Govt, as the case may be

b. In case of manufacturer ISO certificate shall be submitted
  i. The bidder shall have to submit successful completion certificate for the work of supply, installation, testing, commissioning and handing over of at least 200 LED Street-light fixtures in a single order and operational for at least 6 months in any Municipality / Municipal Corporation in India

  a. A copy of valid Pan no.
  b. Particulars of registration with appropriate Sales Tax/ VAT and Service Tax authorities
  c. In case of authorized dealer additional authorization letter from manufacturing company along with other documents
d. The bidder shall submit documentary proof/evidence for average turn-over of at least INR 30 lakhs in last 3 years audited and duly certified by chartered accountant

e. Last 3 Financial Year’s balance sheet audited by certified Chartered Accountant

f. Details of similar work previously carried out mentioning: Beneficiary, Capacity of Installation, Contract Value, Date of Commencement, Date of Commissioning, Contact details (with telephone no.) of contact person for the given contract along with the performance certificate issued by the previous clients

g. List of Machinery, tools and & equipment available

h. Details of all the technical personnel whom the bidder shall engage for this project including their resume providing name, qualification, nature of work (field or office), mode of employment, previous experience.

1.1 TECHNICAL BID: The bidder must submit in addition to the documents as mentioned in Section (B) of Annexure I:

- company profile of the LED manufacturing activities, understanding of Photometry and LED Technology

- printed catalogue and technical specification/ literature and test certificate from approved Government lab

- The bid documents duly signed by authorized signatory in each page and stamped. This shall not contain any alternative items or suggestions, comments or conditions.

- Memorandum of Understanding (MoU) between bidder and Subcontractor(s) and/or consultant(s) and/or dealer, distributor or manufacturer of LED Lights as the case be, clearly showing portion of work, in physical and financial terms, intended under for subcontract(s) and/or consultancy, in the bidders letter head jointly signed and stamped by bidder as well as Subcontractor(s) and/or consultant(s)

- Project Schedule with activity and duration to accomplish the task within the scheduled project duration. Minimum work breakdown that shall be shown starting from designing, design submission for approval, procurement, fabrication, delivery, electrical works, erection, testing & commissioning

- Organizations quality and safety policy of the bidder

- If the bidder is ESCO than must submit supporting document on:
  - Company’s experience in ESCO
  - Companies Experience in LED Street Light manufacturing along with Purchase Orders

*Please note that the bidder shall produce, original documents for cross verification as and when requested by ICLEI South Asia. Each page of all the documents mentioned above as well as technical and price bid documents shall be duly signed by bidder.*
Annexure II: Contract Terms

1. Specific conditions of contract

1.1 CONTRACTOR TO STUDY CONDITIONS:

- The bidder shall be deemed to have carefully examined the work and site conditions’ including labour and shall be deemed to have visited the site of the work and to have fully informed himself regarding local conditions and carried out his own investigations to arrive at rates quoted in the tender. In this regard, he will be given necessary information to the best of knowledge of ICLEI South Asia in consultation with Thane Municipal Corporation (TMC), Thane but without any guarantee to it.

- If he shall have any doubt as to the meaning of any portions of these general contract terms, or the scope of the work or the specifications, or any other matter concerning the contract, he shall in good time, before submitting his tender, set forth the particulars thereof and submit them to the Manager-Maharashtra Operation, ICLEI South Asia by email in order that such doubts may be clarified authoritatively before tendering. Once a tender is submitted, the matter will be decided according to the tender conditions in the absence of such authentic pre clarification.

1.2 Baseline assessment: A bidder is expected to study the existing loads and carry out a concise energy audit. The decision on the wattage and number of LED street light fixtures for actual installation shall be will be taken in consultation with ICLEI South Asia and TMC senior officials based on budget allocation under the project.

1.3 BID SUBMISSION:

- The ToR/bid/tender form shall be downloaded free of cost from the ICLEI South Asia website.

- The bid document shall be submitted by bidders through email to the below mentioned email Id on or before 01.06.2015:
  
  soumya.chaturvedula@iclei.org
  
  rashmi.sinha@iclei.org

- The bidder shall also submit 3 sets of hard copies of the bid documents to the address as mentioned below:

  Ms. Soumya Chaturvedula
  ICLEI South Asia, Ground Floor, NSIC-STP Complex, NSIC Bhavan, Okhla Industrial Estate, New Delhi- 110020, India.
  Tel: +91-11-41067220 Fax: +91-11-41067221
  Email: soumya.chaturvedula@iclei.org

- The hard copy of bid document shall reach to the above mentioned address not later than 3 days from the last date of submission of bid document, provided the bid have been submitted through email before the due date of submission.

- The Bid shall be submitted in two parts, viz.
  
  - Envelop I: —Technical Bid;
  - Envelop II: —Financial Bid; and
  - both the Envelops I & II to be placed and sealed inside Envelope III.
- Envelop I: sealed and shall be super scribed as:
  
  **Part A: Technical bid for**

  “Energy Efficient Street lighting in pre-selected slum areas of Thane Municipal Corporation, Thane-Urban LEDS”

- Envelop II: sealed and shall be super scribed as:

  **Part B: Financial bid for**

  “Energy Efficient Street lighting in pre-selected slum areas of Thane Municipal Corporation, Thane-Urban LEDS”

- Envelop III: sealed and shall be super scribed as:

  “Energy Efficient Street lighting in pre-selected slum areas of Thane Municipal Corporation, Thane-Urban LEDS”

- The bid shall be valid for a period of 90 days from the date of submission of bid document

- A bidder shall submit the bid documents that satisfies each and every condition laid down in this notice, failing which, the bid will be liable to be rejected by ICLEI South Asia

- In case the bidder wishes to sub-contract part of his deliverables, the final responsibility of delivery and performance solely lies with the bidder

1.4 Price BID

- The price quoted shall be fixed and firm and not subjected to any escalation or variation. The price should be inclusive of all transportation charges, duties & taxes, insurance and as per the format given in Annexure V.

- Thane Municipal Corporation-Thane reserves the right to add/delete the final quantity at the units rate quoted by the bidder

- The bidder shall acquaint with the work and working conditions at site and locality. No claim shall be entertained on this issue after the bid has been submitted

- All or any accessories/consumables/items required for satisfactory commissioning of the work shall be deemed to be included in the contract and shall be provided by the bidder without extra charges

1.5 Completion period / Time schedule

- The work, of supply, and installation & commissioning of all the Energy Efficient LED Lamp Street Light fixtures shall be completed within 3 months from date of Letter of Intent (L.O.I)

1.6 The detailed work plan:

- The detailed weekly work plan in form of bar chart/pert chart for supply of Energy Efficient LED Lamp street light fixtures by replacing existing street light fixtures, installation & commissioning shall be submitted within seven days from issue of LOI.
2. General conditions of contract

2.1 The total no. of LED street light to be installed is approx. 565, however the number is indicative and may increase or decrease depending upon the budget allocation under Urban LEDS project and the rate/unit as quoted by the bidder. The final location and the total no. of street light to be replaced will be mentioned in the work order, however it may change as per site condition and in that case revised work order may be issued.

2.2 If it is required to make alterations in the mounting height and/or mounting brackets then it shall be done by contractor in consultation with ICLEI South Asia office and TMC officials. The baseline report shall clearly mention if such changes are required (along with the specific details) at the pre-selected slum locations.

2.3 It should be noted that the project is being implemented in TMC jurisdiction area and hence instructions to bidders will be given in consultation with TMC officials and the Dy. City Engineer (Electricals) will be overall in-charge for all the works that would be executed under the present scope of work.

2.4 Once the light fixtures are installed, TMC being the rightful beneficiary of the system, it will stand transferred to TMC.

2.5 Guarantee: All equipment and entire installation shall be guaranteed for a period of 5 years from the date of taking over the installation against performance, break design, workmanship and material. The equipment or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Thane Municipal Corporation- Thane. The bidder shall promptly entertain complaints received from TMC and shall rectify the same.

2.6 The LED fixture shall be of Osram, Philips, Bajaj, Crompton, GE Lighting, Keselec Schreder, Thorn, Havels. The LED fixtures of makes other than above approved makes meeting all technical and lighting parameters may be approved after testing of fixtures in NABL accredited laboratory accredited for testing of LED fixtures.

2.7 The bidder will be responsible to achieve the illumination standard, lux level, uniformity etc. in its entirety for the lighting system and all the testing equipment shall be arranged by the bidder at his own cost to check the same in the presence of the representative of the Thane Municipal Corporation.

2.8 The bidder shall make sure and verify that the lux level obtained shall be as per the specification as provided by bidder and duly approved by the ICLEI South Asia in consultation with Thane Municipal Corporation.

2.9 The equipment and materials to be furnished shall be designed, manufactured and tested in accordance with the latest revision of the Indian Standards (IS), (BS) and BEE unless otherwise stated.

2.10 All the work mentioned in the scope and as approved by the ICLEI South Asia in the final work order shall comply to rules of MSEDCL, electrical inspectors and other statutory norms of national and state level standards. The bidder shall also obtain necessary permission.
from concerned Government Departments related to the work if deemed necessary and in coordination with Thane Municipal Corporation.

2.11 Each page of the bid document should be signed by the bidder. This will not contain any alternative items or suggestions, comments or conditions.

2.12 In case of manufacturer or authorised dealer or ESCO's the job shall be done through license electrical contractor.

3. Tender Evaluation & Bid Assessment

3.1 The bids received will be scrutinized & evaluated by ICLEI South Asia in consultation with senior officials of Thane Municipal Corporation and involved in execution of Urban LEDS project. The same shall be informed to the winning bidders.

3.2 The Bids of those bidders whose technical bids are found to be responsive shall be informed and shall be invited for seeking any further clarification/s either individually or a meeting would be called, if desired. In both the cases the bidders shall be informed accordingly and bidders are expected to be present at given date and time.

3.3 The ICLEI South Asia will inform those bidders whose proposals did not meet the minimum qualifying requirements or were considered technically non-responsive to the terms of reference and their Price Bids will not be opened.

4. Award of contract:

4.1 The winning bidder will be issued a letter of intent (L.O.I) as soon as the bidder is selected.

4.2 The winning bidder to accept the contract and communicate at the earliest or not more than 7 (seven) days of the L.O.I.

4.3 Detailed Letter of Award (L.O.A) along with Work order will be issued to winning bidder.

4.4 In case the winning bidder fails to respond within the stipulated time of 7 (seven) days for accepting the contract and observe the formalities as above, the L.O.I will be cancelled and the next bidder will be finalised by ICLEI South Asia in Consultation with TMC senior officials and L.O.I shall be issued.

5. Performance Security

5.1 The security deposit shall be performance based and shall be in the form of Bank guarantee and the following clause is applicable w.r.t to bank guaranteed:

- The contractor, within two weeks of receipt of work order, shall submit a bank guarantee (Bank Guarantee 1) of value 5% of contract value, valid for a period of 6 months, in favour of ICLEI South Asia as a security.

- After successful commissioning of the work and submission of performance report (3 months) as defined in the present scope and duly approved by ICLEI South Asia and beneficiary-The Thane Municipal Corporation, the contractor shall submit another bank guarantee (Bank Guarantee 2) of value 5% of contract value in favour of Thane Municipal Corporation valid...
for a period of 5 years and 6 months from the date of commissioning as a performance security deposit.

- **Bank Guarantee 1** shall be handed over to the winning bidder by ICLEI South Asia after issuance of Work Completion Certificate by TMC and subject to confirmation of receipt of **Bank Guarantee 2** by Thane Municipal Corporation (TMC)

- The Final payment against successful completion of the work will be released to the winning bidder by ICLEI South Asia only after submission of **Bank Guarantee 2** of value 5 % of contract value to Thane Municipal Corporation

5.2 If the performance of the bidder, with respect to the approved scope of work is found to be unsatisfactory during the supply, installation, testing and commissioning activities, ICLEI South Asia may forfeit the Bank Guarantee 1.

5.3 It should be noted that the system is being installed in the premises owned by Thane Municipal Corporation and shall rightfully stand transferred to Thane Municipal Corporation after commissioning. Hence, the instructions to the winning bidder, post-handover should be taken from TMC officials

5.4 The contractor shall abide by the terms and obligations mentioned in the bank guarantee format provided by TMC (Bank Guarantee 2). In case of default or non-performance by contractor post-handover or during the period of 5 years comprehensive maintenance of street light fixtures, TMC will have right to forfeit the Bank Guarantee 2.

5.5 The Bank Guarantee 2 shall be returned to the bidder after defect liability period of 5 years.

6. **Comprehensive Maintenance Contracts (CMC)**

6.1 The Bidder will maintain the complete system for 5 years

6.2 The Maintenance service shall include monthly examination of the installation during regular working hours by trained persons and shall include all necessary supplies and genuine standard parts to keep the lighting in proper working order. The call back should also be attended immediately.

7. **Safety Measures**

7.1 All safety measures to be taken by the bidder while allowing his labour to work on poles with power distribution lines and safe means of access shall be provided to all working platform and ICLEI south Asia and TMC will not be responsible for the any unhappy incidents occurring

7.2 The bidder shall employ on the Work, only his regular skilled Employees with experience of this particular Work and in accordance with law

7.3 All safety tools like ladder mounted jeeps, vehicles with hoists suitable for replacing the street light fixtures, ladders, helmets, hand gloves, safety belts shall be provided to the labor while working
7.4 All necessary personal safety equipment should be kept available for the use of the persons employed on the site and maintained in a condition suitable for immediate use and the bidder should take adequate steps to ensure proper use of equipment by those concerned

7.6 First-Aid: The Contractor shall provide necessary First-Aid facilities for all his employees, representatives and workmen working at the Site and shall be immediately attended at the time of any accidental incidence.

8. Compensation for delay

8.1 *Time is the essence of the contract* and as such all works shall be completed within the time stipulated in the contract/ work order

8.2 If the bidder, without reasonable cause or valid reasons, commits default in commencing the work within the aforesaid time limit, ICLEI South Asia shall without prejudice to any other right or remedy, be at liberty, by giving 15 days’ notice in writing to the contractor to commence the work, to forfeit the bank guaranteed by him and to cancel the Work Order.

9. Extension of date of completion:

On occurrences of any events causing delay as stated- here-under, the bidder shall intimate immediately in writing to ICLEI South Asia-

9.1 Force Majeure:
- Natural phenomena, including but not limited to abnormally bad weather, unprecedented flood and draught, earthquakes & epidemics.
- Political upheaval, strikes, lockouts, acts of any Govt. (domestic/foreign) including but not limited to war, properties, quarantine embargoes.

10. Materials/Appliance at site:

10.1 All the existing luminaires after dismantling shall be handed over to the Electrical store, Thane Municipal Corporation. The no. of items shall be duly checked and confirmed by the ICLEI South Asia in consultation with Thane Municipal Corporation senior officials before handling to TMC.

10.2 ICLEI South Asia nor Thane Municipal Corporation undertake any responsibility for supply of any materials to the bidder

10.3 All materials, tools and plants brought to site by the bidder shall be the responsibility of the bidder. Thane Municipal Corporation shall extend help as and when approached by the bidder to keep the material safely, however not liable for any loss, theft or damage due to fire or other cause, the responsibility for which shall lie entirely on the bidder.

11. Final Inspection of Work:

11.1 The Dy. City Engineer (Electricals), Thane Municipal Corporation and ICLEI South Asia team shall jointly make final inspection of all work included in the contract/work order, or any portion thereof, or any completed structure forming part of the work of the contract, as
soon as practicable after notification by the bidder that the work is completed and ready for acceptance.

11.2 Dy. City Engineer at the time of such inspection shall inform ICLEI South Asia which in turn inform the bidder in writing as to the particular defects to be remedied before final acceptance can be made.

### 12. Planned Schedule of activities and payment

<table>
<thead>
<tr>
<th>Activity</th>
<th>Timeline</th>
<th>Payment to Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submission of initial baseline assessment report for existing street lights and Bank Guarantee 1 of value 10% of total contract value to ICLEI South Asia valid for a period of 6 months</td>
<td>2 weeks from issue of work order</td>
<td>20% of work value</td>
</tr>
<tr>
<td>Releasing/dismantling of 50% of existing street lights</td>
<td>8 weeks from issue of work order</td>
<td>40% of work value</td>
</tr>
<tr>
<td>Supply, Erection (Installation), Testing &amp; Commissioning of 50% of Energy Efficient Street LED Lamps</td>
<td>8 weeks from issue of work order</td>
<td>40% of work value</td>
</tr>
<tr>
<td>Releasing/dismantling of remaining 50% of existing street lights and safely hand over to TMC and executing the work of Supply, Erection (Installation), Testing &amp; Commissioning of Energy Efficient Street LED Lamps</td>
<td>12 weeks from issue of work order</td>
<td>30% of work value</td>
</tr>
<tr>
<td>Submission of performance Bank Guarantee 2 for a value of 5% to TMC valid for a period of 5 years 6 months</td>
<td>3 months from the date of installation and commissioning of system</td>
<td>10% of work value and return of Bank Guarantee 1 to contractor</td>
</tr>
<tr>
<td>Satisfactory performance of the luminaire without default post installation and successful completion of comprehensive maintenance period of 5 years</td>
<td>5 years from the date of installation and commissioning of system</td>
<td>Return of Bank Guarantee 2 to contractor by TMC</td>
</tr>
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### Annexure III: Detailed Scope of Work

#### Details of existing street Light Fixtures in Pre-selected low income areas

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Area</th>
<th>Consumer No.</th>
<th>Existing HPSV fittings</th>
<th>Existing LED fittings</th>
<th>Proposed LED fittings</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td>70 W</td>
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<td>Mumbra ward</td>
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<tr>
<td>1</td>
<td>Gavdevi</td>
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<td>Gokuldaswadi</td>
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<td>-</td>
<td>16</td>
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<tr>
<td>Kopri ward</td>
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</tr>
<tr>
<td>9</td>
<td>Gandhinagar Maiden</td>
<td>38002058</td>
<td>-</td>
<td>33</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>Gandhinagar nala</td>
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<td>1</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>Gandhinagar Talao</td>
<td>38130994/6</td>
<td>-</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>35</td>
<td>358</td>
<td>172</td>
</tr>
</tbody>
</table>

Total street lights proposed for replacement=35+358+172=565
Note: 1. The above table shows details of pre-selected low income area, existing and proposed street light fixtures. 2. The total no. of street light for retrofitting with energy efficient LED street lights is 565 as per the table, however this is indicative and subject to change. 3. The final quantity of LED lights and the wattages will be furnished in the Work Order.
1. **Scope of work**

1.1 The scope includes design, supply, installation (retrofit), testing, commissioning and comprehensive maintenance (for 5 years) of energy efficient LED luminaire with complete fixture at pre-selected slum area of Thane (refer Table in section 1 above). The fixture shall be complete with all accessories, LED lamps with suitable current control driver and deeming driver circuit including mounting bracket for street light.

1.2 Detailed study of the existing infrastructure supporting the street lights to satisfy themselves regarding reliability of the infrastructure. Contractor to report the short-comings/ faults/ defects/ unbalanced load distribution if any in the infrastructure and ensure its correction by TMC prior to commencement of installation of fixtures.

1.3 Initial baseline assessment: to study the existing sodium vapour street-light infrastructure in pre-selected slum areas provided by ICLEI South Asia and design the new energy efficient LED Street-lights. The initial assessment report should also provide the amount of energy saving that is targeted to be achieved through retrofitting and to conform illumination level to recommended illumination level in national lighting code. The report shall mention relevant changes w.r.t to mounting height and/or mounting brackets, etc the report, if required.

1.4 Supply and installation/commissioning work:

(a) Releasing the existing street light fixtures:

- Dismantling existing fittings and depositing them in TMC store room as per instructions from TMC officials

- The released/dismantled street light shall be safely packed in suitable Size card board boxes an mentioning of type of street light along with number on to the top of card board box

- The safely released & packed street light lamps and fixtures shall be handed over to the Electrical stores of Thane Municipal Corporation.

(b) Erection / Installation portion:

- Installation of LED fittings on the poles provided in the Table above and as approved in the work order

- The various types of new L.E.D street light fixtures with lamps shall be properly assembled and fixed rigidly at the same places & at same heights where the earlier street lights fixtures existing by using G.I. clamps & bolt & nuts

- Cabling of LED fixtures from pole junction box to fixture using best engineering practices without disturbing the provided infrastructure

- In absence of earthing and grounding system for poles, providing earthing and grounding of poles

- Jointing of cables and terminals wherever required between junction box to fixture

- All the New L.E.D lamp street light fixtures shall be tested for its proper functioning in presence of ICLEI South Asia team and senior officials of Thane Municipal Corporation and obtain their dated acknowledgement.
1. Operation of LED fixtures for 3 months from the date of commissioning and generation of energy saving report demonstrating the lux level achieved against the targeted lux level and energy saving achieved against the targeted savings.

(c) Comprehensive maintenance of LED fixtures along with cabling up to junction box for 5 years.

1.5 General

- Collection of field data required for designing of the system at each of the pre-selected slum areas
- Design of the system and its components
- Procurement, fabrication and assembly of various components of the system
- Supply of complete material at site as per specification
- Installation, commissioning and testing as per the technical specifications
- Arrangement of all the necessary spares required at site during the performance guarantee period
- Taking appropriate insurance covers for the period up to successful commissioning of the systems.
Annexure IV: Expected Technical Specifications

1. Technical Specification:

1.1 Technical specification for 36 to 48 W LED streetlight luminaire

Integral high pressure Die cast/extruded aluminum LED Streetlight luminary with proper heat dissipation & toughened glass protector or with non-yellowing injection moulded polycarbonate cover having high light transmission index. The LEDs are provided with suitable lens for dispersal for achieving street light optics to ensure uniform light distribution. The LED fixture is designed for at least L70 life of minimum 50,000 burning hours. at ambient temperature not less than 35°C. The system wattage (fixture's total power consumption) should be 36 to 48 W max.

Ingress protection of IP66. The system level efficacy of the luminary should be equal or greater than 90 lumens / W & Power factor should be greater than 0.95. CRI should be greater than 70 & color temperature should be between 4000°K to 6000°K (max limit). The color temperature variation should not be more than +/- 100° K in LED fixtures provided for one project. Driver efficiency should be greater than 80% & THD Limits- For Current<10% and for voltage<3%. The LED fixture should have integral surge protection of not less than 5 kV & operating voltage range should be within 120 V - 270 V. Standard street lighting photometric distribution of the luminary should be validated with LM -79 Report & the LED module data should be supported by the LM 80 test report from the manufacturer.

 Fixture lighting deliverables should be as follows;
 - Min / Avg =>0.4 , Min / Max =>0.3 , Maintenance factor =0.8
 - Mounting height - 5 meter, road width- 5 meter
 - Distance Between pole = 18 meter
 - Avg Lux =15 Lux
 - Tilt 10 degree
 - Arm Length -0.5 meter

1.2 Technical specification for 60 to 70 W LED streetlight luminaire

Integral high pressure Die cast/extruded aluminum LED Streetlight luminary with proper heat dissipation & toughened glass protector or with non yellowing injection molded polycarbonate cover having high light transmission index. The LEDs are provided with suitable lens for dispersal for achieving street light optics to ensure uniform light distribution. The LED fixture are designed for at least L70 life of minimum 50,000 burning hours. at ambient temperature not less than 35°C. The system wattage (fixture's total power consumption)should be 60 to 70 W max.

Ingress protection of IP66. The system level efficacy of the luminary should be greater than 90 lumens / W & Power factor should be greater than 0.95. CRI should be greater than 70 & color temperature should be between 4000°K to 6000°K (max limit). The color temperature variation should not be more than +/- 100° K in LED fixtures provided for one project. Driver efficiency should be greater than 80% & THD Limits- For Current<10% and for voltage<3%. The LED fixture should have integral surge protection of not less than 5 kV & operating voltage range

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should be within 120 V - 270 V. Standard street lighting photometric distribution of the luminary should be validated with LM-79 Report & the LED module data should be supported by the LM 80 test report from the manufacturer.

- Fixture lighting deliverables should be as follows;
- Min / Avg =>0.4 , Min / Max =>0.3 , Maintenance factor =0.8
- Mounting height - 6 meter, road width- 7 meter
- Distance Between pole = 20 meter
- Avg Lux =20 Lux
- Tilt 10 degree
- Arm Length: 1 meter

1.3 Technical specification for 80 to 95 W LED streetlight luminaire

Integral high pressure Die cast/extruded aluminum LED Streetlight luminary with proper heat dissipation & toughened glass protector or with non yellowing injection molded polycarbonate cover having high light transmission index. The LEDs are provided with suitable lens for dispersal for achieving street light optics to ensure uniform light distribution. The LED fixture are designed for at least L70 life of minimum 50,000 burning hours. at ambient temperature not less than 35°C. The system wattage (fixture’s total power consumption)should be 80 to 95 W max.

Ingress protection of IP66. The system level efficacy of the luminary should be greater than 90 lumens / W & Power factor should be greater than 0.95. CRI should be greater than 70 & color temperature should be between 4000K to 6000K (max limit). The color temperature variation should not be more than +/- 100° K in LED fixtures provided for one project. Driver efficiency should be greater than 80% & THD Limits- For Current<10% and for voltage<3%. The LED fixture should have integral surge protection of not less than 5 kV & operating voltage range should be within 120 V - 270 V. Standard street lighting photometric distribution of the luminary should be validated with LM-79 Report & the LED module data should be supported by the LM 80 test report from the manufacturer.

Fixture lighting deliverables should be as follows;
- Min / Avg =>0.4 , Min / Max =>0.3 , Maintenance factor =0.8
- Mounting height - 6 meter, road width- 7 meter
- Distance Between pole = 24 meter
- Avg Lux =25 Lux
- Tilt 10 degree
- Arm Length: 1.5 meter

1.4 Technical specification for 130 to 140 W LED streetlight luminaire

Integral high pressure Die cast/extruded aluminum LED Streetlight luminary with proper heat dissipation & toughened glass protector or with non yellowing injection molded polycarbonate cover having high light transmission index. The LEDs are provided with suitable lens for dispersal for achieving street light optics to ensure uniform light distribution. The LED fixture are designed for at least L70 life of minimum 50,000 burning hours. at ambient temperature not
less than 35°C. The system wattage (fixture's total power consumption) should be **130 to 140 W max.**

Ingress protection of IP66. The system level efficacy of the luminary should be greater than **90 lumens / W** & Power factor should be greater than 0.95. CRI should be greater than 70 & color temperature should be between 4000⁰K to 6000⁰K (max limit). The color temperature variation should not be more than +/- 100⁰ K in LED fixtures provided for one project. Driver efficiency should be greater than 80% & THD Limits- For Current<10% and for voltage<3%. The LED fixture should have integral surge protection of not less than 5 kV & operating voltage range should be within 120 V - 270 V. Standard street lighting photometric distribution of the luminary should be validated with LM -79 Report & the LED module data should be supported by the LM 80 test report from the manufacturer.

Fixture lighting deliverables should be as follows;
- Min / Avg =>0.4 , Min / Max =>0.3 , Maintenance factor =0.8
- Mounting height - 7 meter, road width- 9 meter
- Distance Between pole = 24 meter
- Avg Lux =30 Lux
- Tilt 10 degree
- Arm Length: 1.5 meter.
# Annexure V: Format for Price Bid

## Price Bid Format

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Quantity* (Nos.)</th>
<th>Unit Price (Rs.)</th>
<th>Total Amount (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>Supply &amp; Installation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td><strong>36 to 48 W</strong> LED Lamps</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td><strong>60 to 70 W</strong> LED Lamps</td>
<td>358</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>80 to 95 W</strong> Watt LED Lamps</td>
<td>172</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total cost in Figures (A)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Cost in Words (A)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B)</td>
<td>O&amp;M</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comprehensive maintenance for 5 years (C) for total ................. nos. of LED lamps with complete fittings**

**Grand Total (A+B+C) in Figures**

**Grand Total (A+B+C) in Words**

---

1. *The total quantity is indicative and may increase or decrease depending on the price quoted per unit of LED lights by the bidder and availability of budget under Urban LEDS project.*
2. The final quantity will be furnished in the Work Order.
3. **The rates shall be inclusive of all taxes and duties, insurances etc. The bidder shall furnish the proof against the same.**
4. Payment terms: Payment within 15 days from the date of submission of bills accompanied by acceptance certificate/letter from ICLEI South Asia and concerned TMC officials.

---

Pan No.:-----------------------------------------------

VAT/TIN Registration No.: -----------------------

Name: --------------------------------------------

Business address: ----------------------------------

---

Signature of Bidder
with Company Seal

---

Date:  
Place:  

---

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**Note:**
- The total quantity is indicative and may increase or decrease depending on the price quoted per unit of LED lights by the bidder and availability of budget under Urban LEDS project.
- The final quantity will be furnished in the Work Order.
- The rates shall be inclusive of all taxes and duties, insurances etc. The bidder shall furnish the proof against the same.
- Payment terms: Payment within 15 days from the date of submission of bills accompanied by acceptance certificate/letter from ICLEI South Asia and concerned TMC officials.