

Draft

**ENERGY SAVINGS PERFORMANCE CONTRACT
(ESPC)/ CONCESSION AGREEMENT**

between

LUDHIANA SMART CITY LIMITED (LSCL)

and

LUDHIANA MUNICIPAL CORPORATION (LMC)

&

CONCESSIONAIRE (Company Name)

Dated on DD-MM-YYYY

**ENERGY SAVINGS PERFORMANCE CONTRACT
(ESPC)/CONCESSION AGREEMENT**

between

LUDHIANA SMART CITY LIMITED (LSCL)

&

LUDHIANA MUNICIPAL CORPORATION (LMC)

and

CONCESSIONAIRE (Company Name)

Dated on DD-MM-YYYY

Contents

| | |
|--|----|
| 1. Definitions and interpretations | 9 |
| 2. Interpretations | 10 |
| 3. Concession Agreement Documents | 11 |
| 4. Term and commencement | 11 |
| <hr/> | |
| 4.1. Effective Date and Term | 11 |
| 4.2. Conditions Precedent | 11 |
| 4.3. Extension of Term | 12 |
| <hr/> | |
| 5. Services | 12 |
| <hr/> | |
| 5.1. Scope of Services | 12 |
| 5.2. Extension of the Scope of Services | 12 |
| <hr/> | |
| 6. LMC's Responsibilities | 13 |
| <hr/> | |
| 6.1. Access | 13 |
| 6.2. Assistance to Concessionaire | 13 |
| 6.3. Payment of Fees | 14 |
| 6.4. Lux level measurements | 14 |
| 6.5. Operation and maintenance | 14 |
| <hr/> | |
| 7. The Concessionaire's Responsibilities | 14 |
| <hr/> | |
| 7.1. Energy Baseline Determination | 14 |
| 7.2. Services | 15 |
| 7.3. Timeline for implementation of the project | 15 |
| 7.4. Extension of Implementation Timeline | 15 |
| <hr/> | |
| 8. Asset Ownership | 16 |
| <hr/> | |
| 8.1. Existing lighting fixtures | 16 |
| 8.2. Newly installed equipment and systems | 16 |
| <hr/> | |
| 9. Remuneration | 17 |
| <hr/> | |
| 9.1. Energy Savings Fee | 17 |
| 9.2. O&M Fee | 18 |
| 9.3. Buy-back of dismantled luminaires | 19 |
| 9.4. Infrastructure Development Fee | 19 |
| 9.5. Key performance indicators for Concessionaire's performance | 19 |
| 9.6. Penalty for non-compliance with electrical safety related matters | 20 |
| 9.7. Penalties assessment | 20 |
| 9.8. Payment Mechanism | 20 |
| 9.9. Set Off | 21 |

| | |
|--|----|
| 10. Payment Security | 21 |
| 11. Theft of Electricity and Material | 21 |
| 12. Termination | 22 |
| 12.1. Termination events | 22 |
| 12.2. LMC Event of Default | 22 |
| 12.3. Concessionaire Event of Default | 22 |
| 12.4. Termination Procedure | 22 |
| 12.4.1. Termination of this Concession Agreement by Authority | 22 |
| 12.4.2. Termination of this Concession Agreement by Concessionaire | 23 |
| 12.5. Termination Payments | 23 |
| 13. Transfer | 23 |
| 14. Employees and training | 24 |
| 15. Delay liquidated damages | 24 |
| 16. Limitation of Liability | 24 |
| 17. Third party claims | 24 |
| 17.1. Indemnification | 24 |
| 17.2. Handling of Claims | 25 |
| 18. Settlement of disputes | 25 |
| 18.1. Consultation | 25 |
| 18.2. Arbitration | 25 |
| 19. Taxes and duties | 25 |
| 20. Confidentiality | 25 |
| 21. Notice | 26 |
| 21.1. Notice | 26 |
| 21.2. Change of Information | 26 |
| 22. Insurance | 26 |
| 23. Representations and warranties | 26 |
| 23.1. The Concessionaire's Representations and Warranties | 26 |
| 23.2. Authority's Representations and Warranties | 26 |
| 24. Representatives | 27 |
| 24.1. Authority's representative | 27 |
| 24.2. The Concessionaire Representative | 27 |
| 25. Governing Law and Language | 27 |
| 25.1. Governing Law | 27 |
| 25.2. Language | 27 |

| | |
|--|----|
| 26. Force Majeure | 27 |
| 27. Material Adverse Government Action | 28 |
| 28. Performance Guarantee | 29 |
| <hr/> | |
| 28.1. Performance Guarantee | 29 |
| 28.2. Notice | 29 |
| 28.3. Replacement | 29 |
| <hr/> | |
| 29. Reporting | 30 |
| 30. Miscellaneous | 30 |
| <hr/> | |
| 30.1. Assignment | 30 |
| 30.2. Entire Agreement | 30 |
| 30.3. Amendments | 30 |
| 30.4. Severability | 30 |
| 30.5. No Partnership | 30 |
| 30.6. Schedules | 31 |
| <hr/> | |
| 31. Schedules | 33 |
| <hr/> | |
| 31.1. Schedule 1: Scope of Services | 33 |
| 31.2. Schedule 2: Technical specifications of the project | 33 |
| 31.2.1. LED technical specification | 33 |
| 31.2.2. CCMS | 35 |
| <hr/> | |
| 31.3. Schedule 3: Baseline energy consumption | 37 |
| 31.4. Schedule 4: Format for weekly reporting of fixture replacement | 39 |
| 31.5. Schedule 5: Template for Bank Guarantee | 40 |
| 31.6. Schedule 6: Letter of Award | 41 |
| 31.7. Schedule 7: Results of Live Demonstration | 42 |

This energy savings performance contract (hereinafter called the "Concession Agreement") is made on the _____ day of _____, 2017 at _____ by and between:

1. **Ludhiana Smart City Limited, registered under the Companies Act of 2013, having registered office at** having its headquarters at _____ and its legal representative being _____, hereinafter referred to as "**LSCL**";

And

2. **Ludhiana Municipal Corporation,** having its headquarters at _____ and its legal representative being _____, hereinafter referred to as "**LMC**";

And

3. _____, a company registered under Companies act 1956, having its registered office at _____, herein after referred to as the "**Concessionaire**"

LSCL, LMC and the Concessionaire are hereinafter referred to individually as a "Party" and collectively as the "Parties".

WHEREAS:

- a. **Ludhiana Municipal Corporation (LMC)** operates the street lighting infrastructure in the city of Ludhiana and wishes to enter into a Concession Agreement with the Concessionaire. The Concessionaire will undertake the work of replacement of existing street lights with energy efficient LED street lights, installation of control systems along with operation & maintenance for a Concession Agreement period of 08 years (the "**Project**") including installation period of 9 months (extendable by 3 months with prescribed penalty clause) and remaining for O&M and energy savings payment from the Effective Date.
- b. The Project area comprises of poles that are under jurisdiction of LMC's four administrative zones (A, B, C and D). There are a total of 105,236 luminaires in place being operated by 1,474 switching points/feeder panels.
- c. The Concessionaire submitted a bid in response to the request for proposal issued by LSCL. The financial bid parameter estimated, as per the section 6.4 of RfP, based on the values quoted by Concessionaire for shared monetized energy savings to LMC, O&M cost and buy-back price for dismantled luminaries. The concessionaire has also given Live Demonstration of LED lamps & proposed CCMS system which has met the technical specifications provided at Schedule 2. The details and results of Live Demonstration are provided at Schedule 7.
- d. LSCL & LMC has invited the Concessionaire to enter into this Concession Agreement.
- e. The following documents shall be deemed to form and be read and construed as part of this Concession Agreement.

Schedule 1 Scope of Services

Schedule 2 Technical Specifications of the Project

- Schedule 3 Baseline energy consumption
- Schedule 4: Format for weekly reporting of fixture replacement
- Schedule 5: Template for bank guarantee
- Schedule 6: Letter of Award
- Schedule 7: Results of Live Demonstration

IN WITNESS WHEREOF, the Parties, intending to be legally bound, have caused this Concession Agreement to be executed on INR 1000 stamp paper by their duly authorized representatives on ____ day of _____, 2017.

| | |
|---|--|
| For and on behalf of the Ludhiana Smart City Limited | |
| Name: _____ Designation: _____ | |
| In the presence of | |
| Witness Sign: Name: Address: | |

| | |
|---|--|
| For and on behalf of the Ludhiana Municipal Corporation | |
| Name: _____ Designation: _____ | |
| In the presence of | |
| Witness Sign: Name: Address: | |

| | |
|---|--|
| For and on behalf of Concessionaire | |
| Name: _____ Designation: _____ | |
| In the presence of | |
| Witness Sign: Name: Address: | |

NOW THEREFORE, the Parties agree as follows:

1. Definitions and interpretations

In this Concession Agreement (including the recitals and schedules), the following words and expressions have the following meanings:

Authority – Combined office of both the Authority 1 and Authority 2.

Authority-1 – The Chief Executive Officer (CEO), acting on behalf of Ludhiana Smart City Limited (LSCL), who conducted the bidding process till the selection of successful Concessionaire.

Authority 2- Municipal Commissioner, acting on behalf of Ludhiana Municipal Corporation (LMC)

Commissioning Certificate will be issued by LSCL & LMC against the installation, verification and testing of all the proposed street light technologies and infrastructure along with CCMS panels.

Consent - means any permit, approval, authorization, agreement, no objection certificate, waiver or license which is required to be obtained by the Concessionaire in order to perform the Services.

Concession Agreement – this energy saving performance contract entered into between LSCL & LMC and the Concessionaire on the date hereof, including the recitals and schedules, as may be amended from time to time by the Parties.

Concession Agreement Year – successive periods of twelve (12) calendar months commencing from the date of signing of this agreement.

Concession Agreement Officer – An officer who has been duly authorized on behalf of LSCL & LMC

Concessionaire –The Selected Bidder who is responsible for designing, engineering, financing, procurement, construction, operation and maintenance of the Project.

Concessionaire Representative - the person appointed by the Concessionaire to represent the Concessionaire and communicate with **Nodal Officer** .

Corrupt Act – the act of promising, giving, receiving, or agreeing to receive money or some other item of value with a corrupt aim, or perceived aim, of influencing a public official in the discharge of his official duties; and acts giving rise to criminal liability under Indian Laws

Day- Day means a calendar day

Delay Liquidated Damages - means an amount per week of delay calculated in accordance with clause 15 in the event the Services are not completed in accordance with the Timeline.

Effective Date – the date on which this Concession Agreement and all of its schedules are signed by the duly empowered representatives of both Parties.

Energy Baseline - has the meaning given in section 12.6 of RFP.

Energy Conservation Measures (ECMs) – the installation of new equipment, modification or alteration of the Existing Lighting Infrastructure by the Concessionaire at the Concessionaire's cost, in the city of Ludhiana, or revised operation and maintenance procedures to reduce energy and maintenance costs by improving efficiency of use.

Energy Savings - Energy savings is a reduction of energy consumption or electrical demand resulting from the Concessionaire's ECMs taking into considerations quality of power supply.

Engineer In charge – Nominated authorized person of LSCL.

Existing Lighting Infrastructure - all LSCL owned street lighting equipment and apparatuses, including, but not limited to, poles, cables, wires, lighting fixtures, fittings, ballasts, lamps, tubes, switching devices and timers within the Project Area.

Force Majeure Event - has the meaning given in clause 26 of this agreement.

Laws – all current or future applicable Indian laws, administrative regulations, local regulations, regulations on the exercise of autonomy, special regulations, rules, judicial interpretations and other regulatory documents with legal binding force or any compulsory requirement.

Lender – any agency/ person providing financing to the Concessionaire in relation to this Project.

Nodal Officer: Authorized representative representing the Office of Authority.

Operation and Maintenance (O&M) – all the activities required for operation and maintenance of the street lighting fixtures handed over to the Concessionaire within the Project Area including, but not limited to, those required for meeting the lighting standards specified in this Concession Agreement.

Performance guarantee – has described in section 4.1.2.15 of RFP.

Project – has the described given in the Recitals.

Project Area – has the described given in the Recitals.

Services – the services to be performed by the Concessionaire pursuant to this Concession Agreement and described in Schedule 1.

Term – the period starting on the Commencement Date and ending on the eighth (8th) anniversary of the Commencement Date, as may be extended in accordance with section 4 of RFP, or on the Termination Date, whichever is earlier.

Termination Date – any date of early termination of this Concession Agreement pursuant to section 11 of RFP.

Year- means the financial year beginning on the 1st day of April and ending on the 31st day of following March.

2. Interpretations

In this Concession Agreement, unless the context otherwise requires,

- a) the words "include" and "including" are to be construed without limitation;
- b) Energy Efficiency and EE will be used interchangeably in the document hereafter.
- c) any reference to day, month or year shall mean a reference to a calendar day, calendar month or calendar year respectively;
- d) the Schedules to this Concession Agreement form an integral part of this Concession Agreement as though they were expressly set out in the body of this Concession Agreement;

- e) any reference at any time to any agreement, deed, instrument, license or document of any description shall be construed as reference to that agreement, deed, instrument, license or other document as executed, amended, varied, supplemented, modified or suspended at the time of such reference;
- f) any agreement, consent, approval, authorization, notice, communication, information or report required under or pursuant to this Concession Agreement from or by any Party shall be valid and effectual only if it is in writing under the hands of duly authorized representative of such Party in this behalf and not otherwise;
- g) any reference to any period commencing “from” a specified day or date and “till” or “until” a specified day or date shall include both such days or dates;
- h) "person" shall be construed as a reference to any person, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and a person shall be construed as including a reference to its successors, permitted transferees and permitted assigns in accordance with their respective interests;
- i) The documents forming part of this Concession Agreement are to be taken as mutually explanatory to one another and, unless otherwise expressly provided elsewhere in this Concession Agreement, the priority of the following documents shall, in the event of any conflict between them, be in the order set out hereunder:
 - this Concession Agreement
 - all other documents forming part of this Concession Agreement
- j) The tables of contents and any headings or sub-headings in this Concession Agreement have been inserted for ease of reference only and shall not affect the interpretation of this Concession Agreement.

3. Concession Agreement Documents

The following documents, and any amendments or addenda thereto, comprise this Concession Agreement and are fully a part of this Concession Agreement as though attached hereto or set forth at length in Tender ID _____, including the offer, General Provisions, and specifications contained therein.

This Concession Agreement is the entire agreement between the Parties, and no alterations, changes or additions thereto shall be made, except in writing approved by the Parties.

4. Term and commencement

4.1. Effective Date and Term

This Concession Agreement comes into effect on the Effective Date and expires on the eight (8th) anniversary of the Effective Date (the “Term”), unless terminated earlier pursuant to clause 7 and 11 of RFP or extended in accordance with clause 4.3 of this agreement.

4.2. Conditions Precedent

The Parties shall ensure that the following conditions are met as soon as possible following the Effective Date:

- a. The Concessionaire has paid a fee in Indian Rupees equivalent to INR 88,76,000 (Rupees Eighty Eight Lakh Seventy Six Thousand Only) as an earnest money deposit (submitted at the time of RfP stage).

The same shall be returned to Authority within 15 days of receipt of performance bank guarantee (of _____%of the Contract Amount) from the Concessionaire.

- b. LMC shall, in agreement with the Concessionaire, open an ESCROW account in a nationalized/scheduled commercial bank and shall deposit an amount equal to three (3) month of electricity savings and three (3) month of O&M Fee as per year-wise amount quoted in this Bid, within 1 month of the signing of Energy Savings and Performance Contract (ESPC) or otherwise the Concessionaire will be provided a revolving bank guarantee by LMC for the amount equal to 3 month amount for energy saving and O&M share of Concessionaire.
- c. LMC shall provide the Concessionaire with a letter duly executed granting the Concessionaire access to the Existing Lighting Facilities/infrastructure.

4.3. Extension of Term

LSCL on receiving request from the Concessionaire may at its discretion, permit extension of time for execution of the Concession Agreement. The Concession Agreement Period would be 08 years including installation period of 9 months (extendable by 3 months with prescribed penalty clause in RFP) and remaining for O&M and energy savings payment. End date of Concession Agreement period would be exactly 8 years irrespective of installation period whether it is less than or more than 9 months. After end date of Concession Agreement, the Concessionaire will not be eligible for any payment except the pending payment of contract duration.

5. Services

5.1. Scope of Services

Without prejudice to any other provision of this Concession Agreement, the Concessionaire shall carry out the Services set out in Schedule 1 of this agreement and Section 4 of RfP within the Project Area and undertake the other obligations to be performed by the Concessionaire as further described in this Concession Agreement from the Commencement Date and until the end of the Term.

5.2. Extension of the Scope of Services

In view the continuous development of the city, the Concessionaire may be asked to install additional street lights and CCMS panels and connect the same to overall CCMS system. In case of such additions after commissioning of the project, LMC will reimburse the Concessionaire at a standard rate of INR 60/watt throughout the concession period. No payment towards energy savings would be made by LMC to the Concessionaire for all such additional street lights.

Also, in such cases as defined in clause 4.1.1.19 of the RFP, the Concessionaire has to carry out the O&M of these additional luminaires and CCMS panels. The Concessionaire will be paid as per their quoted rates, of that respective year, in the price bid document of this tender. The Operation and Maintenance Fee associated with these addition/deletion will be done starting following month of addition/deletion till the overall contract end date.

Undertakings

The Concessionaire undertakes the following:

- a) The provision of the Services shall not contravene any Law of the Country and shall comply with all Laws;
- b) The Concessionaire shall perform and complete the Services in a professional, timely, safe and environmentally responsible manner and comply with the safety, health and security regulations in force in India and the State of Punjab;

- c) The Concessionaire shall use appropriate, advanced and proven technology, software and information systems; and
- d) The Concessionaire shall carry out its obligations under this Concession Agreement in a manner which is consistent with Indian standards, international best practices, methods, techniques, skills, diligence and prudence which are generally expected from a Concessionaire with similar obligations.

6. LMC's Responsibilities

6.1. Access

LMC shall be responsible for providing the Concessionaire with, free of charge, on and from the Effective Date, access to all the information and data, the Existing Lighting Infrastructure and all land in the Project Area whose access is required for the performance of Services and in respect of which LMC has control. Access to the Existing Lighting Infrastructure and the land within the Project Area shall confer on the Concessionaire a right to only use the Existing Lighting Infrastructure and the land necessary to enable the Concessionaire to carry out the Services.

The Concessionaire will be provided with a small place in each zone with basic infrastructure where the Concessionaire will make available a person with amenities like computer, printer, phone, complaint register, etc. during working shift timings to register complaints regarding street lighting. These complaint handling centers will be connected to LMC's existing Complaint Management System and such centers should become fully operational within 30 days of allocation of such space by Authority.

If LMC removes any particular pole or fixture after commissioning, the Concessionaire shall be entitled for the Energy Savings Fee that would have arisen out of the energy savings pertaining for such fixture for the remaining life of the Project. If access to any particular pole or fixture is not provided by LMC to the Concessionaire during O&M phase; the Concessionaire shall be entitled to the Energy Savings Fee for the fixtures that would have arisen out of the energy savings pertaining to such fixtures for the amount of time when access was not provided.

6.2. Assistance to Concessionaire

If requested by the Concessionaire, LSCL shall facilitate the Concessionaire in a timely and expeditious manner with the following:

- a. Obtaining all the consents necessary for the Services (excluding the qualifications that the Concessionaire should already possess) such as construction permits, permits for temporary suspension of water, power or traffic, etc.
- b. Protecting underground pipelines, buildings and structures (including historic relics) and trees located on or close to the Project Area
- c. Consulting with the Concessionaire if any construction or installation project implemented by LMC/LSCL or other local public entity in the city of Ludhiana may have direct or indirect impact on the Concessionaire
- d. Obtaining PSPCL's full cooperation during the Term of the Concession Agreement.

However, the Concessionaire has to arrange all the machineries and equipment required for the implementation of the project at its own expense. Also the Concessionaire shall procure at his sole expenses all permits and licenses and pay all charges and fees for lawful execution of the work.

6.3. Payment of Fees

In consideration for the Services performed by the Concessionaire under this Concession Agreement, LMC shall pay to the Concessionaire the Energy Savings Fees and the O&M Fees as well as Infrastructure Development Fees in timely manner in accordance with clause 9 and clause 4.1.4 of the RFP.

For payment of energy savings fee, as mentioned in the clause 4.1.4 of the RfP, the Concessionaire will be eligible to raise the invoice for the energy savings after complete installation in two zones and for subsequent zones (i.e. 3rd and 4th Zone), payment of energy saving would start only after total completion of each zone.

Similarly, the O&M period shall commence from the date of issue of satisfactory Installation, Testing and commissioning certificate of all LED Street lights (i.e. only after complete installation in particular zone). Therefore, the payment for O&M will begin after satisfactory Installation, Testing and Commissioning of all LED Street lights. The payment, on account of O&M, for the period between the completion date of any zone and the first day of the second year will be made @ of O&M quoted by the Concessionaire for the first year.

6.4. Lux level measurements

At random during project operation, LSCL official shall ask Concessionaire to demonstrate the lux level of operating LED fixture to check compliance with the data recorded during live demonstration. Under such case, Concessionaire will have to install the LED fixture at the site of live demonstration and verify the lux level. If, during such test it is found that lux level has fallen below the minimum required average lux level and uniformity ratio, Concessionaire at its own cost will have to replace all the LED fixtures with similar wattage as per the direction of Engineer In charge. Also, the average lux level and uniformity ratio measured, for the existing street light fixture, during the live demonstration will be binding throughout the project tenure.

6.5. Operation and maintenance

LMC shall be responsible for the operation and maintenance of all the identified switching points and street lighting fixtures until the same are handed over to the Concessionaire.

7. The Concessionaire's Responsibilities

7.1. Energy Baseline Determination

LSCL has provided a snapshot of energy consumption baseline conditions of street lighting under its jurisdiction in clause 12.6 of the RFP. The annual energy baseline has been estimated at **47,037,528 kWh/year**, assuming 100% of the street lights are in operation and the average operating hours of the street lights is 10 hours/ day.

The baseline defined in Annexure VI of RFP is for existing condition of street lighting system in Ludhiana. However, actual baseline during the installation period (i.e. from the start of project to complete installation) may vary by $\pm 15\%$ in terms of number of light points as well as electricity consumption. The Concessionaire may be asked by LSCL to install/ uninstall light points during the time of implementation and subsequently, the

baseline will be modified on the completion of installation of LED lights. This modified baseline will be considered for assessment of energy savings throughout the concession period for verifying the actual saving.

The Concessionaire, if required, immediately from the Commencement Date, shall undertake field survey of street lighting systems to identify infrastructure improvement/development required as defined in the clause 4.1.1.18 of the RFP. The Concessionaire has to perform this task in parallel to other activities and no additional time will be provided for this activity.

In such instances, the Concessionaire will provide the asset deficiency report and related anticipated expenditure for replacement. The replacement of such infrastructure will be done by the Concessionaire after getting approval of LSCL/ DISCOM (as the case may be). The Concessionaire will be paid for this infrastructure improvement @ 15% discount, on approved Common Schedule of Rates (CSR) as approved by State of Punjab for replacing/ installing the poles, power cables, JBs/MCBs on poles for street lighting. In addition to this, LSCL may ask for painting of some poles across the city. After approval on the number of poles and locations for painting from LSCL, the Concessionaire can start the painting work and payment will be made, considering 15% discount, on approved Common Schedule of Rates (CSR) as approved by State of Punjab. If rate is not available in CSR, then LSCL will discover the market price through minimum three bids. In such situation the Concessionaire will be paid on discovered market price.

7.2. Services

The Concessionaire shall execute the services to be provided in accordance with clause 4.1 of RFP.

7.3. Timeline for implementation of the project

The Services to be performed by the Concessionaire has been classified into two tasks. The Concessionaire has to adhere to the stipulated timelines as mentioned hereunder:

Task 1: Replacement of existing luminaires (within municipal boundary of Ludhiana Municipal Corporation) with LED luminaires (including LED lamp, Driver and Luminaire) and installation of Centralized Control & Monitoring System (CCMS) – This activity shall be completed within 9 months from the date of signing of this Concession Agreement.

Task 2: Undertake comprehensive operation and maintenance of street lighting network – This activity shall commence from the date of issue of satisfactory Installation, Testing and Commissioning certificate of all LED Street lights from Engineer-in-charge (i.e. only after complete installation in any particular zone) and shall continue for eight consecutive years from the effective date of signing of this agreement.

In addition to above tasks, Concessionaire is also responsible for infrastructure improvement required to make it suitable for LED installations. This activity shall also be completed during the implementation phase i.e. within nine months from signing of this Concession Agreement.

7.4. Extension of Implementation Timeline

Concession Agreement Period would be 08 years including installation period of 9 months (extendable by 3 months with defined penalty clause) and remaining for O&M and energy savings payment. End date of Concession Agreement period would be exactly 8 years irrespective of installation period whether it is less than or more than 9 months. The Concessionaire will not be eligible for any payment, for the period, after the Concession Agreement end date.

Notwithstanding the above Timeline, if the Concessionaire does not have access to part or the whole of the Existing Lighting Infrastructure for any reason, including, but not limited, to a Force Majeure Event (as defined

in clause 26 of this agreement) for any period of time during the Term of the Concession Agreement, then the Concessionaire shall be excused from the performance or punctual performance of its obligations under this Concession Agreement for such period of time when the Concessionaire does not have access to all the Existing Lighting Infrastructure in the Project Area. Also, the timeline shall be extended for a period of time equal to the period of time during which the Concessionaire didn't have access to all the Existing Lighting Infrastructure.

8. Asset Ownership

8.1. Existing lighting fixtures

LMC shall at all times during the Concession Agreement period remain the owner of the land and the existing lighting infrastructure under its jurisdiction.

The Concessionaire will not be held liable for lighting infrastructure existing prior to the date of commissioning of LED luminaires and CCMS panels or arising from any event or circumstance that occurred prior to the date of commissioning.

The Concessionaire shall ensure proper recording of the dismantled conventional fixtures, as per format attached at Schedule 4, to office of Authority at least on weekly basis .

8.2. Newly installed equipment and systems

The Concessionaire shall remain the owner of the LED luminaires and CCMS panels installed by it during the Concession Agreement period. The Concessionaire shall undertake all the procurement of equipment and services necessary for the Project. This LED luminaires and CCMS panels installed by Authority under this contract shall be free of any lien and should have paid all applicable taxes. At the end of the Term, the Concessionaire shall submit to Authority a list of all the equipment, fittings or other items that were replaced during the Terms of project.

The essence of this Concession Agreement is to keep all the street lights 'ON' & as such any nonfunctioning of street light fixtures/feeder panels/poles will be adversely reflected on the performance of the Concessionaire. Hence it will be in the interest of the Concessionaire to identify & attend to the faults & keep the lights 'ON' in a safe manner. He should employ only qualified & experienced personnel & use proper instruments, take adequate precautions, use good quality material, have proper supervision & maintain proper report back system & public relations.

The Concessionaire should monitor the electrical load on each phase & each circuit in the panel & also maintain load balance equally on all the phases. He should never allow any circuit to be overloaded.

The material used for the work shall be new & of best quality available and work should be carried out with best workmanship. Material used and works carried out shall conform to the relevant Electricity Act & rules of Bureau of Indian standards.

At the expiry of the Concession Agreement period, all rights and titles to, and interests in, all improvements and equipment constructed or systems installed are vested in LMC, free and clear of all and any liens and encumbrances created or caused by the Concessionaire. The Concessionaire shall surrender possession of the LED luminaires and CCMS panels, along with CCMS bill of material, to LMC with 98% of them in working condition.

LMC can lease out certain maintenance equipment and vehicles to the Concessionaire based on mutually agreed terms and conditions and defined fixed monthly/yearly payments.

9. Remuneration

9.1. Energy Savings Fee

LMC through escrow account will pay the quoted percentage sharing of saving (monetary value) to the Concessionaire starting from the first month after implementation is complete in any two zones of Ludhiana and continuing during the term on monthly basis. The energy savings will be assumed to be same throughout the duration of the Concession Agreement period, and is 60% of the baseline energy consumption, assuming 100% of the street lights are in operational and the average operating hours of the street lights is 10 hours/ day. The deemed saving approach is being used to estimate the energy savings under the Concession Agreement. The detail calculation of energy savings and baseline are presented in the table below:

| Type of fixture | Quantity | Wattage (W) | LED equivalent (W) | Annual energy consumption with existing lights (kWh/year) | Annual energy consumption with LEDs (kWh/year) | Annual energy savings (kWh) |
|----------------------|----------|-------------|--------------------|---|--|-----------------------------|
| 40 W FTL | 4,800 | 40 | 18 | 876,000 | 315,360 | 560,640 |
| 18 W CFL | 2,243 | 18 | 9 | 147,365 | 73,683 | 73,683 |
| 70 W HPSV | 57,493 | 70 | 30 | 17,837,203 | 6,295,484 | 11,541,720 |
| 150 W HPSV | 32,245 | 150 | 60 | 20,008,023 | 7,061,655 | 12,946,368 |
| 250 W HPSV | 4,886 | 250 | 120 | 4,904,3223 | 2,140,068 | 2,764,255 |
| 150 W MH | 1,076 | 150 | 60 | 667,658 | 235,644 | 432,014 |
| 250 W MH | 2,331 | 250 | 120 | 2,339,741 | 1,020,978 | 1,318,763 |
| 400 W HPSV-High Mast | 162 | 400 | 180 | 257,216 | 106,434 | 150,782 |
| Total | 105,236 | | | 47,037,528 | 17,249,305 | 29,788,223 |

Operating hours for Baseline and Energy Saving estimation

| Particulars | Hours |
|--|--------------|
| Annual Operating hours before EE lighting i.e. baseline condition (10 hours per day) | 3,650 |
| Annual Operating hours after LED lighting (10 hours per day) | 3,650 |

The energy consumption baseline will be adjusted for any increase or decrease in actual number of lamps corresponding to their rating and number after the implementation of the project. Corresponding to this the payments to the Concessionaire will also be adjusted.

Also, although the concessionaire has to maintain average operating hours per day for street lights across the year, equivalent to existing levels of 10 hours per day but, if Authority wants to increase operating hours, for newly installed LED lights, then baseline will also be changed correspondingly to estimate energy savings.

It is important to note that in view of the continuous development of the city expected during the Concession Agreement tenure and after the commissioning date, Authority might need to install more street lights in the new or existing areas. In those cases, the Concessionaire may be asked to install additional street lights and CCMS panels and connect the same to overall CCMS system. But, these additional lights will not form the part of baseline consumption and therefore additionally realized energy savings will not be shared with the Concessionaire.

The payment for energy savings fee to Concessionaire shall commence once the installation is completed in any two zones. For estimation of energy savings fee, an annual escalation of 3% has been considered in the tariff

rate starting from the 2nd year, as given in the table below. The payment of energy savings fee for the period between the completion date of any two and the first day of the second year will be made considering the tariff rate for the first year.

| Year | Remaining Months ¹ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------------------|-------------------------------|------|------|------|------|------|------|------|
| Tariff (Rs./kWh) | 6.69 | 6.69 | 6.69 | 6.89 | 7.10 | 7.31 | 7.53 | 7.76 |
| Monthly payment in each year (Rs.) | | | | | | | | |

The table below provides details of the revenues realized by LMC and Concessionaire throughout the contract term from sharing of the energy savings.

| Savings | Sharing of monetized energy savings | |
|-------------|-------------------------------------|-----------------------------|
| | LMC Share in % | Concessionaire's Share in % |
| Year | | |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |

9.2. O&M Fee

The O&M period shall commence from the date of issue of satisfactory Installation, Testing and Commissioning certificate of all LED Street lights from Engineer-in-charge (i.e. only after complete installation in a particular zone). The payment for O&M will begin after date of issue of satisfactory Installation, Testing and Commissioning certificate of all LED Street lights.

LMC shall pay the Concessionaire quoted year-wise operation and maintenance fee (the "O&M Fee") on monthly basis. The Concessionaire will raise a separate invoice for operation and maintenance fee at the end of every month. Before making the payment, Authority may verify if the minimum standards for maintenance of the lux level on roads and operation & maintenance of street lighting system are adhered as per the RFP.

The payment, on account of O&M, for the period between the completion date of any zone and the first day of the second year will be made @ of O&M quoted by the Concessionaire for the first year.

| Quote for O&M expenses (lakhs for 105,236 lights) | | |
|---|-------------------|-------------------|
| Year | Amount (in Lakhs) | Amount (in words) |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |

¹ It means the period from completion of installation in any two zones to the first day of the second year

9.3. Buy-back of dismantled luminaires

This RFP makes it mandatory for the Concessionaire to buy-back all the dismantled luminaires at the quoted price. The quoted buy-back price for the dismantled luminaires is provided in the table below. These prices will remain same, irrespective of the condition of dismantled lamps.

| Quote for buy-back for dismantled luminaires | | | |
|--|---------------------------|---|-------------------------------|
| Type of luminaire | Luminaire Quantity (Nos.) | Buy-back amount/ luminaire (in figures) | Total Buy-back amount (Lakhs) |
| FTL 40 | 4,800 | | |
| CFL 18 | 2,243 | | |
| HPSV 70 | 57,493 | | |
| HPSV 150 | 32,245 | | |
| HPSV250 | 4,886 | | |
| MH 150 | 1,076 | | |
| MH250 | 2,331 | | |
| High Mast 400 | 162 | | |
| Total | | | |

9.4. Infrastructure Development Fee

The Concessionaire can raise the bill of the work done under the Infrastructure Improvement as per the Clause 9.2 of the RFP after every 30 days for the work completed till that date. LSCL will review the work and approve work and LMC will pay for the approved works in receipt of the bill. The table below provides the format in which Concessionaire will be required to notify the Authority regarding asset deficiency.

| S. No. | Asset Type | Unit | Quantity | Price per unit (Rs.) | Total Amount (Rs.) |
|--------|-------------------------------------|--------|----------|----------------------|--------------------|
| 1 | Power Cables (overhead/underground) | Meter | | | |
| 2 | Junction Boxes | Number | | | |
| 3 | MCBs | Number | | | |
| 4 | Poles | Number | | | |

The Concessionaire will be paid, @ 15% discount, on approved Common Scheduled Schedule of Rates (CSR) as approved by State of Punjab for replacing/ installing the poles, power cables, JB/MCBs on poles for street lighting. Therefore, the price per unit as specified by the Concessionaire shall not be higher than this value. In addition to this, Authority may ask for painting of some poles across the city. After approval on the number of poles and locations for painting from Authority, the Concessionaire can start the painting work and payment will be made, considering 15% discount, on approved common Schedule of Rates (CSR) as approved by State of Punjab. If rate is not available in CSR, then Authority will discover the market price through minimum three bids. In such situation the Concessionaire will be paid on discovered market price

9.5. Key performance indicators for Concessionaire's performance

The key performance indicators that shall be used for assessment of Concessionaire's performance are response time for complaints and phase failure issues, compliance with hours of operation of the street light and ensuring guaranteed savings of 60%. The penalty for the non-compliance shall be as defined under:

| Performance parameter | Particulars | Penalty for non-achievement |
|-----------------------|--|-----------------------------|
| Complaint resolution | The complaints need to be solved within 48 hours of lodging of complaint | Rs. 100/lamp/day |

| Performance parameter | Particulars | Penalty for non-achievement |
|-------------------------------------|--|--|
| Addressing phase failure issue | The phase failure should be resolved within same day | Rs. 500/ phase/ day |
| | | Rs. 500/visit If Authority staff is engaged for resolving phase issue |
| Hours of operation of street lights | As per normal operating hours | Increased bill amount + 100% as a penalty on this increased bill if average hours of operation per annum are more than 10 hours/ day without the approval of Authority |
| Guaranteed savings of 60% | Concessionaire has to maintain the minimum guaranteed savings of 60% | Rs. 110,000 per month for every 1% reduction in minimum guaranteed energy saving. For example: if 2% reduction in minimum guaranteed energy saving, then penalty would be 220,000 per month in addition to the lower payment to Concessionaire on energy saving bill. In case the savings fall below 50%, Concessionaire will not be made any payments towards energy savings and only O&M cost will be paid. |

9.6. Penalty for non-compliance with electrical safety related matters

In case the Concessionaire is found to be negligent in matters pertaining to electrical safety as per the requirement specified in Article 4.1.2.18 of RfP, he shall be penalized by Authority to the extent of five times the value of actual damage caused to the street lighting infrastructure/other assets which will be ascertained by proper investigation to be undertaken by Authority.

In case the Concessionaire does not undertake electrical safety audit as per the requirement specified in clause 4.1.2.18 of RfP, he shall be penalized by Authority to the extent of three times the cost of undertaking electrical safety audit as determined by Authority.

9.7. Penalties assessment

The Concessionaire will be required to submit, at start of every month, detailed CCMS report capturing energy consumption at each CCMS panel, hours of operation, details of events like phase failure, non-operational light points, etc. to Authority

Office of Authority or the third party consultant hired by Authority will conduct reconciliation of CCMS report and DISCOM bills semi-annually and any discrepancies observed in the savings of CCMS report would be adjusted in the subsequent invoice of the Concessionaire.

9.8. Payment Mechanism

LMC will pay monthly share of quoted energy savings (monetary value) and monthly O&M as derived from quoted annual O&M to the Concessionaire. The energy savings will assume to be same (60% of the baseline) for the energy saving payment throughout the duration of the concession period as deemed saving approach will be used to estimate the energy savings under this project.

For providing payment security and making payment to Concessionaire, following options may be used based on the mutual agreement between the Authority and Concessionaire;

- The payment shall be routed through ESCROW account where funds are held until it receives the appropriate written instruction from Authority.
- The payment may be made based on the invoices raised by the Concessionaire

The Concessionaire shall raise invoices for each part of each zone and submit Three copies of the same (one for ESCROW bank², One for Authority & LMC). Authority will review the invoice and approve the same after adjusting for applicable penalties, if any. The payment will be processed as per LMC's standard operation procedure. The ESCROW bank upon receipt of written approval of the invoice by LMC shall undertake use of the money deposited in the ESCROW account to pay against the Energy Savings Fee and O&M Fee. However, if written approval/clarifications of invoice are not received within 60 days of invoice submission then invoice will be assumed to be deemed approved and payment will be made to the Concessionaire.

The payment shall be made through NEFT/RTGS on following bank details of the Concessionaire

Bank Account Holder : _____
Name of Bank : _____
Branch : _____
Account number : _____
NEFT/RTGS code : _____
Branch Address : _____

For the invoice submitted for Infrastructure Development, Authority will review the work and recommend for the payment to LMC against the receipt of the bill.

9.9. Set Off

LMC through Authority shall be entitled to set off any undisputed amounts payable or liabilities under or in relation to this Concession Agreement against the Energy Savings Fee to be paid by LMC to the Concessionaire in accordance with clause 4.1.4 of the RFP. If the amounts to be set off are larger than the relevant Energy Savings Fee to be paid by LMC to the Concessionaire, then the balance shall be recovered from future Energy Savings Fees to be paid by LMC.

10. Payment Security

For providing payment security and making payment to Concessionaire, following options may be used based on the mutual agreement between LMC and Concessionaire;

- The payment can be routed through ESCROW account where funds are held until it receives the appropriate written instruction from LMC.
- The payment can be made based on the invoices raised by the Concessionaire

LMC shall deposit in the ESCROW account; an amount equal to sum of three (3) month of electricity savings and three (3) month of O&M Fee as per the amount quoted in the price bid for the 1st year, within 1 month of the signing of this Concession Agreement, failing which it would be considered as LMC event of default. Also, this amount shall be maintained based on year-wise quoted price, throughout the term of this Concession Agreement.

The ESCROW account (held by ESCROW bank, LMC and Concessionaire) will be opened in a bank having branch in Ludhiana which is acceptable to both LMC and the Concessionaire. The LMC shall borne the cost associated with opening and maintenance of ESCROW account.

In no case any advance will be given to the Concessionaire by LMC.

11. Theft of Electricity and Material

In case of theft of the material or electricity, the Concessionaire will inform the Authority immediately and LSCL will facilitate filing of FIR. Further, after FIR, the Concessionaire will address the theft by replacement of material or removing illegal electricity connection as the case may be, in presence of Authority representative officials. The Concessionaire will have to bear the cost for the losses in material. However, in case of theft of

² ESCROW Bank means where ESCROW account will be opened.

electricity, the feeder panel specific consumption would be adjusted for the theft after inspection and subsequent proof.

12. Termination

12.1. Termination events

This Concession Agreement shall terminate:

- a) due to a Force Majeure Event in accordance with clause 26;
- b) due to a LMC/ LSCL or Authority Event of Default in accordance with clause 12.2 and clause 10 ;
- c) due to a Concessionaire Event of Default in accordance with clause 12.3, 15, 28.1 and 29;

12.2. LMC Event of Default

The following events, provided that they are not caused by a Concessionaire Event of Default or a Force Majeure Event and are not cured within sixty (60) days following the issuance of a notice from the other Party, shall constitute a "LMC Event of Default" and the Concessionaire shall be entitled to terminate this Concession Agreement:

- a) Payment default if LMC fails to pay the Concessionaire any undisputed amount due and payable under this Concession Agreement within ninety (90) days of the date of issuance of the invoice by the Concessionaire; and
- b) LMC is in material breach of its obligations under this Concession Agreement, including but not limited to payment default or access default.

12.3. Concessionaire Event of Default

The following events, provided that they are not caused by a LMC/LSCL or Authority Event of Default or a Force Majeure Event and are not cured within sixty (60) days or within specified timelines, following the issuance of a notice from the other Party, shall constitute a "Concessionaire Event of Default" and Authority shall be entitled to terminate this Concession Agreement:

- a) The Concessionaire made any representation or warranty that was incorrect when made during the bidding stage or during further stage of the Concession Period;
- b) Liquidation or insolvency of the Concessionaire;
- c) Transferring the Services in violation of this Concession Agreement;
- d) The Concessionaire has been convicted of a fraud and corrupt practices ;
- e) The Concessionaire is in material breach of any of its obligations under this Concession Agreement;
- f) LMC/LSCL or Authority determines that the Concessionaire has, directly or indirectly, engaged in corrupt practices, fraudulent practices, coercive practices, undesirable practices or restrictive practices during the bidding process for this Project; and
- g) The Concessionaire's failure to pay the Delay Liquidated Damages as per clause 15.

Notwithstanding the above provisions, failure by the Concessionaire to issue monthly reports, daily reports and annual electrical safety energy audit report in accordance with clause 29 of this agreement shall automatically constitute a Concessionaire Event of Default without having to wait for the end of the sixty (60) days cure period.

12.4. Termination Procedure

12.4.1. Termination of this Concession Agreement by Authority

Authority may terminate this Concession Agreement by giving a termination notice to the Concessionaire if a Concessionaire Event of Default has occurred and continued for more than sixty (60) days or within specified timelines after Authority notified the Concessionaire of such Concessionaire Event of Default.

12.4.2. Termination of this Concession Agreement by Concessionaire

The Concessionaire may terminate this Concession Agreement by giving a termination notice to Authority if a LMC/ Authority Event of Default has occurred and continued for more than sixty (60) days after Authority has received a notice from the Concessionaire mentioning the Authority Event of Default and requesting Authority to remedy such Authority Event of Default.

12.5. Termination Payments

In case of termination arising on account of a Force Majeure Event, as specified in clause 26 of this agreement, MC shall pay the Concessionaire one hundred percent (100%) of the Book Value for all the equipment constructed or systems installed up to the Termination Date, as duly certified by a reputed auditor appointed with consent of both the Parties.

If transfer of Assets happens before the expiry of Work Concession Agreement Period due to either a LMC/Authority Event of Default or a Concessionaire Event of Default, then the LMC shall pay the Concessionaire for all the equipment constructed or systems installed up to the termination date as duly certified by the statutory auditor and approved by Authority considering the transfer value of the Assets together with the termination and transfer assistance fee.

All rights, titles and interests in and to all improvements and equipment constructed or systems installed shall vest in LMC after payments made to the Concessionaire and free and clear of all and any liens and encumbrances created or caused by the Concessionaire. The Concessionaire shall surrender possession of the said equipment and systems to LMC with at least 98% of them in working condition.

13. Transfer

In case of delay in project owing to reasons not under the control of concessionaire, six (6) months before the end of the Term, the Parties shall discuss whether this Concession Agreement shall be renewed or not. If the Parties decide not to renew the Concession Agreement, then all the Existing Lighting Infrastructure as may have been upgraded and maintained by the Concessionaire shall be transferred to LMC free of charge on the day immediately following the end of the Term.

During the Exit Management Period, the Successful Concessionaire will transfer all the assets in normal working condition and as per the specifications of the clause 11 of the RFP including the ones being upgraded to the Client.

The Concessionaire, if not already done, shall transfer all the right to use software licenses under the name of Client during the Exit Management Period. The Concessionaire shall also transfer all the relevant Software Passwords, User Names and Keys. If such a transfer of Assets happens before the expiry of Work Concession Agreement Period, Parties shall mutually discuss and agree on the transfer value of the Assets together with the termination and transfer assistance fee.

The Successful Concessionaire shall be entitled to use the Assets for the duration of the exit management period which shall be three months from the date of expiry or notice of termination of the Agreement.

For any material breach on the part of Concessionaire during the Project Implementation Phase and Operation & Management Phase, Client is entitled to provide notice in writing on the selected Concessionaire at any time during the exit management period as detailed here in above requiring the selected Concessionaire to provide the department or its nominated agencies with a complete and up to date list of the Assets within 30 days of such notice.

14. Employees and training

LMC shall remain the principal employer of the Ludhiana Municipal Corporation employees working for the street lighting department. Such employees may or may not, at the Concessionaire's sole discretion, be seconded to the Concessionaire for a specific duration and under terms and conditions to be agreed upon between the Parties. The Concessionaire has no obligation to employ directly or indirectly any municipal employees.

The Concessionaire will organize half-day training program at LSCL office wherein the Concessionaire will train the employees of LMC on any day within one month of the date of commissioning and on any day within last quarter of end of Concession Agreement period on the operation, maintenance and repair of the equipment and systems installed by the Concessionaire

The Concessionaire's personnel, representatives or other members of the Consortium shall be under the complete control of the Concessionaire and shall not be deemed to be employees of LMC in any case.

15. Delay liquidated damages

Where the Concessionaire fails to complete the Services within the Timeline provided under clause 7.3 and 7.4 of this agreement, Authority shall be entitled to apply Delay Liquidated Damages as follows:

In the event the Concessionaire fails to finalize the activities and deliverables of Task-1 within the stipulated time of 9 months, the Concessionaire shall be liable to pay Authority Delay Liquidated Damages of an amount equal to Indian Rupees One Lakhs (Rs. 100,000) for each week of delay, subject to a maximum delay of 13 weeks after which M&V of energy savings will be stopped resulting in no payments towards energy saving.

16. Limitation of Liability

Neither LMC/Authority nor the Concessionaire shall be liable to the other under this Concession Agreement for any loss of profit, loss of revenue or any other indirect or consequential damages that may be suffered by the other Party.

Unless this Concession Agreement provides otherwise, no approval, expression of satisfaction, comment, review, payment or certificate whatsoever made or given (or any failure to make or give the same) by LMC/Authority its employees under this Concession Agreement, shall relieve the Concessionaire of any of its obligations, risks or liabilities under this Concession Agreement.

17. Third party claims

17.1. Indemnification

The Concessionaire shall indemnify and hold LMC and Authority and its employees or any other Concessionaire harmless from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs and expenses of whatsoever nature, including attorney's fees and expenses, that arise in connection with the execution of the Services due to the negligence or willful misconduct of the Concessionaire, any Sub Concessionaire or their employees, in respect of the following, except to the extent that the following is caused by the negligence of LMC and Authority :

- a) the death or injury of any person;
- b) loss or damage to any property, real or personal; and
- c) third party losses and claims.

17.2. Handling of Claims

If any proceedings are brought or any claim is made against LMC or Authority in relation to the performance of the Services by the Concessionaire, or any of its employees, LMC or Authority shall promptly notify the Concessionaire and set out full particulars of the claim. The Concessionaire shall conduct such proceedings or claims and any negotiations for the settlement of any such proceedings or claims at its own expense and on behalf of LMC or Authority and with Authority's assistance.

18. Settlement of disputes

18.1. Consultation

Both Parties must agree that in the event any dispute, controversy or claim arising between the Parties out of, under or in connection with this Concession Agreement, or in the interpretation of any of its provisions, including any question regarding its existence, validity or termination, the Parties shall meet promptly on the request of either Party in an effort to resolve such dispute, controversy or claim through consultation in an amicable manner. If a settlement is not reached then the matter shall be referred to LSCL, Ludhiana for seeking their advice. Pursuant to this clause within thirty (30) days of the said request, the Parties shall refer their dispute to Arbitration.

18.2. Arbitration

In case the dispute is not resolved amicably, the matter shall be settled by the arbitrator under the Arbitration and Conciliation Act, 1996 with any amendments thereto and its decision would be final and binding on both the parties. The place of arbitration shall be Ludhiana, Punjab.

19. Taxes and duties

The quoted rates online in the Price Bid shall be inclusive of all taxes, duties, etc. except service tax (as applicable) and no claim in this context shall be entertained. Concessionaires shall not be paid any extra amount due to increase in any type of Government Taxes including excise duty during implementation of Concession Agreement. Any variations in taxes shall be borne by the Concessionaire. The provisions of this Article shall survive the termination or expiry of this Concession Agreement.

20. Confidentiality

The Parties shall treat as confidential the existence and contents of this Concession Agreement (including its Schedules), all the information and documents obtained in relation to this Concession Agreement, the Services, as well as all other aspects of the Project contemplated under this Concession Agreement. The duration of the confidentiality obligation shall last for two (2) years following the end of the Term.

The above clause shall not apply in following cases:

- a) Information already published or otherwise publicly available;
- b) Information already obtained by one Party in a manner which does not breach a confidentiality obligation;
- c) Information obtained from a third party in a manner which does not breach a confidentiality obligation;
- d) Information required to be disclosed in accordance with Indian Laws; and
- e) Information disclosed for the purpose of the performance by either Party of its obligations under this Concession Agreement.

21. Notice

21.1. Notice

Any notice under this Concession Agreement shall be in writing and in English, and shall be delivered in person or sent by registered post, fax or email to the following addresses:

For Authority _____

For Concessionaire _____

21.2. Change of Information

Should either Party need to change its contact information, it shall inform the other Party in writing fifteen (15) days in advance. The change takes effect immediately upon receipt of such notice by the other Party.

22. Insurance

The Concessionaire shall at all times, as may be applicable, obtain, maintain and renew those insurance covers required in relation to people, equipment, systems as well as third party damages in accordance with applicable Government Acts and Regulation. In particular, the Concessionaire shall maintain an insurance coverage against the risk of damage by fire or otherwise of Concessionaire-owned and installed equipment and systems until the title to the equipment and systems passes on to LMC upon expiry of the Term.

The Goods supplied under the Concession Agreement shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage, delivery, completion of installation and commissioning as brought out at Clause "Special Conditions of Tender mentioned in 4.1.1 and 4.1.2". For delivery of goods at site, the insurance shall be obtained by the Successful Concessionaire, for an amount not less than the Price of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War risks and strikes.

23. Representations and warranties

23.1. The Concessionaire's Representations and Warranties

The Concessionaire represents and warrants to LMC that:

- a) The Concessionaire is an independent company duly incorporated, validly existing and of good standing under Indian Laws;
- b) The Concessionaire is financially solvent, is able to pay its debts as they mature, and has sufficient capital and resources to complete its obligations under this Concession Agreement;
- c) The Concessionaire is not a party to any legal, administrative, arbitral, investigation or other proceedings or controversy, pending or (to the best of the Concessionaire's knowledge) threatened, that would adversely affect its ability to perform its rights and obligations under this Concession Agreement;
- d) Without LMC's or Authority's written permission, the Concessionaire shall not engage in any related activities in the city of Ludhiana that may impinge upon this Project, other than the Services;
- e) The execution and performance of this Concession Agreement will not result in a breach or violation of, or constitute a default under, any agreement to which the Concessionaire is a party; and
- f) The execution and performance of this Concession Agreement has been duly authorized, and this Concession Agreement has been duly executed by the signatories and constitutes a legal valid and binding obligation.

23.2. Authority's Representations and Warranties

Authority represents and warrants to the Concessionaire that:

- a) Authority has the power and authority to enter into and perform its obligations under this Concession Agreement;
- b) The execution of this Concession Agreement will not result in a breach or violation of or constitute a default under any agreement to which it is a party.

24. Representatives

24.1. Authority's representative

Authority may from time to time replace its Representative by notifying the Concessionaire (to be effective upon receipt by the Concessionaire).

The Authority Representative shall have full authority and power to represent and act for Authority at all times during the Term. All notices, instructions, orders, certificates, approvals and all other communications under this Concession Agreement shall be given by, and to, the Authority Representative unless Authority notifies the Concessionaire otherwise.

24.2. The Concessionaire Representative

The Concessionaire Representative shall have full authority and power to represent and act on behalf of the Concessionaire at all times during the Term, including for sending or receiving notices, instructions, information and all other communication in relation to this Concession Agreement.

The Concessionaire shall not revoke the appointment of the Concessionaire Representative without notifying Authority of the new Concessionaire Representative.

25. Governing Law and Language

25.1. Governing Law

This Concession Agreement is governed by and construed in accordance with the Laws of India and the State of Punjab.

25.2. Language

This Concession Agreement is written in the English language. All communications and information provided should be in writing and in the English language only.

26. Force Majeure

A "Force Majeure Event" shall mean any event or combination of events occurring inside or directly involving the city of Ludhiana that is beyond the reasonable control of Authority or the Concessionaire, as the case may be, occurring or subsisting after the Effective Date and which (or the effects of which) is unavoidable, notwithstanding the reasonable care of the Party affected, including, in the case of the Concessionaire, any Sub Concessionaire, and, in the case of the Concessionaire only, such event(s) could not have been foreseen by an experienced Concessionaire, or to the extent that the event(s) could have been foreseen by an experienced Concessionaire, such Concessionaire could not have reasonably mitigated against the effects of such events. Such Force Majeure Events include, but are not limited to:

- a) War (whether declared or undeclared), invasion, armed conflict or act of foreign enemy;
- b) Rebellion, sabotage, act of terrorism, revolution, insurrection, civil war or epidemic (excluding vandalism);

- c) Strikes, lock-outs, works to rule or go-slows that are widespread or nationwide, or that are of a political nature, unless they are solely related to Authority, the Concessionaire or any Sub Concessionaire; and
- d) Lightning, earthquake, flood, hurricane, typhoon, tornado or volcanic activity.

Such events cannot be caused or contributed to by an act or omission of the Party relying on it or persons for whom that Party is responsible.

If either Party is prevented, hindered or delayed from performing any of its obligations under this Concession Agreement by a Force Majeure Event, then it shall notify the other Party in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under this Concession Agreement for so long as the relevant Force Majeure Event continues and to the extent that such Party's performance is prevented, hindered or delayed.

The Party or Parties affected by the Force Majeure Event shall use reasonable efforts to mitigate the effects thereof upon its/their performance of this Concession Agreement and to fulfil its/their obligations under this Concession Agreement, but without prejudice to either Party's right to terminate this Concession Agreement.

No delay or non-performance by either Party caused by the occurrence of any Force Majeure Event shall:

- a) constitute a breach under this Concession Agreement;
- b) extend the Term; or
- c) give rise to any claim for damages or additional cost or expenses occasioned thereby.

If the performance of the Services is substantially prevented, hindered or delayed for more than one hundred and twenty (120) consecutive days on account of one or more Force Majeure Events during the Term, either Party may terminate this Concession Agreement by giving a notice to the other. If this Concession Agreement is terminated pursuant to this clause, LMC shall pay to the Concessionaire the part of the Energy Savings Fee payable for the Energy Savings performed prior to the Termination Date and the part of the O&M Fee payable for the operation and maintenance services performed prior to the Termination Date. The Concessionaire shall not be entitled to any further compensation.

Notwithstanding this clause, Force Majeure Events shall not apply to any LMC's or Authority's obligation to make payments to the Concessionaire hereunder.

27. Material Adverse Government Action

A "Material Adverse Government Action" ("MAGA") shall mean any act or omission, after the Effective Date, by LMC or Authority or any other public entity, which has a Material Adverse Effect.

A MAGA shall include the following circumstances:

- a) Any imposition or change of Law that is directly targeted at the Project and/or projects similar to the Project and/or that is discriminatory against the Concessionaire.
- b) Any imposition or change of Law of an environmental or technical nature which would have the effect of making the Laws more stringent than the Law in force at the Effective Date
- c) Expropriation or compulsory acquisition, or seizure of the Existing Lighting Infrastructure by a public entity with respect to substantially the same subject matter
- d) Any material breach by Authority of its obligations, including, but not limited to, failure to supply electricity within the whole or part of the Project

- e) Any regulator's decision having the effect of decreasing the Concessionaire's remuneration under this Concession Agreement.

Within 30 days of notice to Authority of a MAGA, Authority shall procure the remedy of the MAGA in question. Should Authority fail to procure a remedy prior to the expiry of 30 day period, the Parties shall discuss the issue in an attempt to reach a mutually satisfactory solution that restores the Concessionaire to the position it would have been in had such MAGA not occurred (including compensation for costs and loss of profits). If the Parties fail to reach an agreement on a satisfactory solution, the Concessionaire shall have the right to terminate this Concession Agreement.

The Concessionaire shall not be excused for performing its obligations under this Concession Agreement upon the occurrence of a MAGA, unless the Material Adverse Effect caused the Concessionaire to fail to perform its obligations.

28. Performance Guarantee

28.1. Performance Guarantee

The Concessionaire shall deliver to LMC a duly executed performance bond in the form of bank guarantee in the format set out in Schedule 5 issued by a Nationalized/ scheduled commercial Bank having a branch at Ludhiana city, of an amount equal to 10% of the project value ("Performance Bank Guarantee"), from the date of receipt of the order valid for a period of 08 years and 6 months of lodgment period. The Performance Bank Guarantee shall be returned to the Concessionaire immediately after the expiry of the Term.

Till such time the Concessionaire provides the Performance Security, the Bid Security shall remain in full force and effect.

In case the Concessionaire fails to submit Performance Security within the time stipulated, the Authority at its discretion may cancel the LOA placed on the Concessionaire without giving any notice. Authority shall invoke Performance Security in case the Concessionaire fails to discharge their Concession Agreement obligations during the period or Authority incurs any loss due to Concessionaire's negligence in carrying out the project implementation as per the agreed terms & conditions.

The Performance Bank Guarantee shall secure the proper and timely performance of the Concessionaire's obligations as from the Commencement Date until the end of the Term, including the payment of Delay Liquidated Damages pursuant to clause 15.

All fees, taxes, costs and expenses associated with procuring, preparing, completing and stamping (if applicable) the Performance Bank Guarantee shall be the responsibility of and paid by the Concessionaire.

28.2. Notice

Authority shall, prior to making any demand under the Performance Bank Guarantee, send a written notice to the Concessionaire mentioning the existence of a Concessionaire Event of Default and providing a cure period of fifteen (15) days. If the Concessionaire does not remedy its Concessionaire Event of Default within these fifteen (15) days, then Authority shall be entitled to call part or full, as relevant, of the Performance Bank Guarantee.

28.3. Replacement

Where the Performance Bank Guarantee is subject, pursuant to its terms, to a fixed expiry date, the Concessionaire shall, not less than fifteen (15) days prior to such expiry date, amend or replace the Performance Bank Guarantee, as the case may be, with a duly executed amended or replacement guarantee. Any replacement Performance Guarantee must be issued for at least one (1) year by any Scheduled Bank having a branch at Ludhiana city, and should be on identical terms as original Guarantee issued. If the Concessionaire fails to

provide an amended or replacement Performance Bank Guarantee as required, Authority may issue a demand under the Performance Bank Guarantee for the full amount available and shall be entitled to hold such amount as security for the performance of the Concessionaire's obligations under this Concession Agreement until a replacement Performance Bank Guarantee is provided (whereupon such amounts shall be returned to the Concessionaire without any obligation to account for interest).

If the Concessionaire is unable to provide new Performance Bank Guarantee for a period of more than a month from its expiry date, the Authority has the right to terminate the Concession Agreement as per clause 12.4.1

29. Reporting

During the Term, the Concessionaire shall provide monthly reports to Authority with a separate copy to LMC about the following matters:

- a) Energy saving report including CCMS data
- b) Operation and maintenance services;
- c) Load reduction (as per clause 4.1.3 of RfP)
- d) Update on the assets;
- e) Any other relevant as said by LMC or Authority.

If the Concessionaire does not issue monthly reports within ten (10) days of the end of the relevant month for any three (3) consecutive months or there is major false information in more than three (3) reports during the Term of the Concession Agreement, this breach shall constitute a Concessionaire Event of Default.

30. Miscellaneous

30.1. Assignment

Neither LMC or Authority nor the Concessionaire shall without the expressed written consent of the other Party assign or charge to any third party this Concession Agreement or any part thereof, or any right, benefit, obligation or interest therein or thereunder.

30.2. Entire Agreement

This Concession Agreement constitutes the entire agreement between the Parties, and no alterations, changes or additions thereto shall be made, except in writing and approved by both Parties. This Concession Agreement supersedes all communication, negotiations and agreements (whether written or oral) between the Parties made prior to the Effective Date with respect to the Services.

30.3. Amendments

Any amendment, addition or variation to this Concession Agreement shall be valid and binding only if in writing and only if signed by the authorised representatives of both Parties.

30.4. Severability

Should any provisions in this Concession Agreement be invalid, illegal or unenforceable or be held invalid, illegal or unenforceable by any competent tribunal or court, the remaining provisions of this Concession Agreement shall remain valid and enforceable.

30.5. No Partnership

This Concession Agreement does not constitute a joint operation or partnership in the legal sense between the Parties. The Concessionaire is a service provider to Authority.

30.6. Schedules

This Concession Agreement includes the following Schedules, each of which is incorporated herein.

- Schedule 1 Scope of Services
- Schedule 2 Technical Specifications of the Project
- Schedule 3 Baseline energy consumption
- Schedule 4: Format for weekly reporting of fixture replacement
- Schedule 5: Template for bank guarantee
- Schedule 6: Letter of Award
- Schedule 7: Results of Live Demonstration

IN WITNESS WHEREOF, the Parties, intending to be legally bound, have caused this Concession Agreement to be executed in two (2) copies by their duly authorized representatives on ____ day of _____, 2017

| | |
|---|--|
| For and on behalf of the Ludhiana Smart City Limited | |
| Name: _____ Designation: _____ | |
| In the presence of | |
| Witness | |
| Sign: | |
| Name: | |
| Address: | |

| | |
|--|--|
| For and on behalf of the Ludhiana Municipal Corporation | |
| Name: _____ Designation: _____ | |
| In the presence of | |
| Witness | |
| Sign: | |
| Name: | |
| Address: | |

| | |
|---|--|
| For and on behalf of the Concessionair | |
|---|--|

| | |
|---|--|
| Name: _____ Designation: _____ | |
| In the presence of | |
| Witness Sign: Name: Address: | |

31. Schedules

31.1. Schedule 1: Scope of Services

The scope of services for the Concessionaire shall be as specified in clause 4 of the RFP.

31.2. Schedule 2: Technical specifications of the project

The scope includes design, development, manufacturing, testing and supply of energy efficient luminaire complete with all accessories, LED lamps with suitable current control driver circuit including mounting bracket for street light and High mast light. The luminaire shall be suitable for rugged service under the operational and environmental conditions encountered during service. The detailed technical specification for each component of the project i.e. LED Luminaire and CCMS is provided in subsequent section,

31.2.1. LED technical specification

| S. No. | Typical specifications of LED street lights | | Supporting document |
|--------|---|--------------------------|--|
| 1. | High bright white power LEDs shall be used in the luminaries and the wattage of these LEDs shall be < 3W | | LED Technical Data sheet |
| 2. | Life span of LEDs used in the Luminaire shall be more than 50,000 hours at 70% light output | | LM-80/IS16105,L70 & TM 21 Test Report test report including technical data sheet of LED Chip |
| 3. | Colour rendering index (CRI) of the LEDs used in the luminaire shall be greater than 70 | | |
| 4. | LED chip make – Nichia, Philip lumiled, Osram, CREE | | |
| 5. | LED chip efficacy shall be more than 135 Lumens/watt at Tj 25° C | | LED Technical Data Sheet |
| 6. | Junction Temperature (Tj) should be <105 ⁰ C | | Manufacturer self-certify |
| 7. | Photo Biological Safety Report for the LEDs as per IEC 62471 and assessment of blue light as per IEC/TR 62778 – Ed. 1.0 | | Photo Biological Safety Report |
| 8. | Colour temperature of the luminaire shall be in the range of nominal 3,000 K to 3,500 K for replacement of 250 W HPSV at main roads and 5000 K to 6000 K for balance LED's (CCT as per BIS only) | | LM-79 report for both type of LED's to be submitted by the Concessionaire |
| 9. | Power factor | > 0.95 | LM-79 report |
| 10. | System Efficacy (lumen/watt) | Shall be >100 lumen/watt | LM-79 report |
| 11. | CRI of Luminaries | > 70 | LM-79 report |
| 12. | Lumen depreciation for rated life <10% | | LM 80 Report to be submitted and Manufacturer has to self-certify |
| 13. | The luminaire light output (lumen) shall be constant. The voltage variations / fluctuations in the specified voltage range shall not impinge upon the lumen it produces. Maximum +/-2% is allowed throughout in the input operating voltage range | | LM-79 report |
| 14. | Operating voltage: 140 V to 270V universal electronic driver with internal surge protection of 4 KV (Applicability IS 15885, Driver Safety 16104-1/2) | | NABL accredited lab report |
| 15. | Overvoltage cutoff limit > 295 V | | NABL accredited lab report |
| 16. | Total Harmonic Distortion: < 10% THD - Test Method IEC:610003-2 | | NABL accredited lab report |
| 17. | LED Drive current | >=350 mA<1200 mA | LM-79 report |
| 18. | LED driver efficiency | > 85% | LM-79 report |

| S. No. | Typical specifications of LED street lights | | Supporting document |
|--------|---|---|--|
| 19. | Heat dissipation / heat sink: Well-designed thermal management system with defined heat sink | | NABL accredited lab report |
| 20. | The luminaire housing shall be made up of corrosion free High Pressure Aluminum die cast thus conforming the luminaire to minimum IP-66 for all wattages and safety as per IEC 60598/IS 10322. (Only single housing Luminaire allowed). | | NABL accredited lab report |
| 21. | The luminaire shall be equipped with distortion free, clear, heat resistant, toughened, UV stabilized glass / Poly-carbonate cover in the front fixed to the die cast Aluminum frame which shall be fixed to the housing by means of Corrosion resistant or Brass screws for areas not inside IP66 rated chamber. Zinc plated steel or equivalent screws can be applied inside sealed chambers. | | NABL accredited lab report |
| 22. | The luminaire shall be built in such a way that it can withstand wind speed of 150 kmph. (Impact resistance >=IK05) | | NABL accredited lab report |
| 23. | Frequency | 50Hz +/- 3% | |
| 24. | Operating temperature | Range: -10C to +50C | NABL accredited lab report |
| 25. | Protections | IP66 for all type of lamps to be installed Surge protection 4 kV, IEC61000-4-5 | NABL accredited lab report |
| 26. | Working humidity | 10% to 90% RH | |
| 27. | Conformation standards of luminaire (Test reports of luminaire) | The luminaire should conform to IEC 60598/ IS:10322 The luminaire should be tested as per IEC 60598-2-3:2002/ IS:10322 Part 5 Sec-3 standards and following test reports should be submitted: Thermal Test, Ingress Protection Test, Electrical / Insulation Resistance Test, Endurance Test, Humidity Test , Photometry Test (LM79 report), Vibration Test | From NABL Certified TPL Test report TEST REPORT as per IS:10322 part 5 Sec-3 /IEC:60598-2-3 |
| 28. | Finish | Aesthetically designed housing with corrosion resistant polyester powder coating | Self-Declaration |
| 29. | Luminaire configuration / technical requirement | Side entry type. Shall consist of separate optical and control gear compartments. It should be easy replaceable in the field condition. | Self-Declaration |
| 30. | Compliance | RoHS/CE/ERTL/ERDI | Confirmation |
| 31. | Surge Protection | External Surge protection of minimum 10 kV/ 10 kA to be separately installed with the each Luminaire, if required. | As per ANSI C 136.2-2014 |

NOTE:

- All Tests have to be confirmed and appropriate TEST REPORT has to be submitted at the time of bid submission.
- Authority is free to draw samples after start of supplies from the supplied quantity and subject the same to test in a NABL Accredited Lab. Authority will bear the cost of testing of such sample. The decision of Authority on the same shall be binding on the Concessionaire. Failure of the sample will invite strict penalty and disqualify the Concessionaire from future tenders also.

³ The sample size shall not be more than 0.5% per lot.

31.2.2. CCMS

CCMS having following features needs to be installed by the Concessionaire.

| S. No | Features | Description |
|-------|--|---|
| 1 | Operational Features | <ul style="list-style-type: none"> • The CCMS unit should be capable of switching ON and OFF the lights of a particular switching point and/or networked switching points from Central Control Station instantaneously or automatically throughout the year on basis of Sunrise and sunset time depending on the geographical location of the switching point. • The CCMS unit should be a GPRS and/or GSM (with IMEI number) proven technology based remote streetlight monitoring system with capacity for self-protection from short-circuit, over voltage and anti-theft alert. • The CCMS unit should have a battery backup of at least 12 hours. • The CCMS shall have optically isolated communication port to fetch data (this is required for safe data transfer and to protect unauthorized access) • The rating of the CCMS units should be at least twice that of the lighting load |
| 2 | Energy measurement and communication features | <ul style="list-style-type: none"> • The control panel at each of the switch point/ feeder should have a 3-phase energy meter. The detailed specifications of these meters are: ISI Marked, LT AC 3-Phase, 4-Wire CT operated, Static, DLMS Compliant, Energy Meters (Category-C1) of ratio 100/5A & 200/5A of Accuracy Class-0.5S (for both active and reactive energy) with 'Optical port' & 'RS-232 port' along with Compatible Software, to be installed in CCMS panels. More details are available in Annexure VIII of the RfP, titled as "PSPCL 3-phase meter specifications". • The control panel at each of switch point/feeder should have following but not limited to : <ul style="list-style-type: none"> ○ MCB, Contactor, transformer, controller, relays, etc. • The CCMS unit Should be able to capture (record) and provide following parameters at variable time-intervals (Individual switching point wise and/or networked switching points) : <ul style="list-style-type: none"> ➤ Voltages ➤ Current ➤ Power Factor ➤ Active Power (kW) ➤ Apparent Power (kVA) ➤ Metering kWh cumulative ➤ Metering kVAh cumulative • Number of hours of a group of LED luminaires connected with each switch controller was glowing • Number of hours the power supply was unavailable • Special emergency on/off facility with wireless control. • Benchmarking capacity so as to generate alert SMS for: <ul style="list-style-type: none"> ➤ Phase-wise currents on crossing threshold values* ➤ Phase-wise voltages on crossing threshold values* ➤ MCB trips ➤ Theft alerts ➤ Group failure of lights ➤ No output supply • Alert SMS shall be forwarded to five (5) phone numbers. • CCMS should have provision for incorporating monitoring and control of smart solutions like environmental meters, wifi hotspots, etc. • Class 1.0 accuracy Energy Meter with ISI marking/IS-13779 is to be used for power measurement. Type testing report from NABL Accredited Lab to be provided. It is to be calibrated annually. <p>* Please refer the technical specifications for designing the threshold values for voltage and current.</p> |

| | | |
|---|--------------------------------|--|
| 3 | Web based - Application | <p>Central Control and Monitoring System functionalities</p> <ul style="list-style-type: none"> • CCMS shall have a web-server to receive and record all data with time stamping from the streetlight controllers. • It should be able to communicate with any individual switching points or collectively amongst networked switching points for control and monitoring. • It should be able to record LED luminaires glowing and non-glowing hours of a particular switching point. • It should be able to display the power failure details of a particular switching point and the relevant luminaires. • It should register all fault conditions like excess voltage/current drawn, no-power supply, etc. through the instantaneous alert messages sent by the CCMS unit. • Reports such as energy saving report, lamp failure report, actual hours of operation, uptime (%), etc. should be generated on a daily basis from the data/readings received from the CCMS units. • Different user authorization levels should be settable and the central server should be capable of handling heavy traffic, i.e. the number of LED street lights installed in wards under this program. • GIS Mapping should be done covering all switching points and the details of each switch point shall be viewable in the web application software through a Google-map interface or web based digital map. • All the CCMS units should be remotely configured from the Central Control Unit: <ul style="list-style-type: none"> • Setting new ON/OFF timings • Setting the Response Time Count (RTC) time of Automation unit • Knowing the current status of any particular switching point. • Reset the unit. • The minimum interval for the update of data should be 15 minute but programmable up to 1 minute. • Auto synchronization of controller with server timing to be further synchronized with standard GPS clock timing. • The system monitors all the following from the CCMS unit <ul style="list-style-type: none"> • Voltages each phase • Current each phase • PF each phase • Metering kWh cumulative • Metering kVAh • Further system is able to indicate various faults <ul style="list-style-type: none"> • Failure of contactor • Status of the incoming supply (power failure) • High /low voltage • Overload on the phases • The central CCMS unit is capable of handling minimum 2500 number switching point units. • CCMS shall have server preferably dedicated server set-up or cloud based arrangement to ensure 100% guarantee of the data transmission and real time data storage for last 2 years (24 Months) and archived data for the Concession Agreement period. • Data authenticity and validation has to be ensured. Reports to be submitted in a common CVS format. • Cyber security, safe database management, data retrieval and trouble free operation of software and allied systems (24*7) to be ensured. • CCMS system should have a self-healing mechanism and in case of failure, Concessionaire to ensure resumption of service within 24 hours. Till resumption of full services, the default settings of the CCMS should ensure timely ON/ OFF operation of the street lights. • System to report Jamming/ hacking attempts and maintain status-quo in case of Jamming/ hacking attempts i.e. if lights are ON, they should remain ON till the default OFF time recorded in the system. In case lights |
|---|--------------------------------|--|

| | | |
|--|--|--|
| | | are OFF at the time of Jamming attempt/ hacking, lights should remain OFF till default ON time recorded in the system. |
|--|--|--|

Note:

1. **Concessionaire will manage (warranty, operation, maintenance, web-based portal, communication charges) the installed CCMS units for the Concession Agreement period.**
2. The main control room and main system of CCMS should have adequate features (open APIs, Ports, etc.) to communicate with Integrated Command Control Center envisaged under Ludhiana Smart City Project.
3. The feature proposed for CCMS is indicative. However, Concessionaires are free to offer their lighting control technology which should encompass all key features as above.
4. The Concessionaire will have to submit Bill of Material and technical specifications for CCMS along with tender.
5. The Concessionaire will have to transfer the rights of usage of web-based application & necessary software used for CCMS operation on completion of Concession Agreement period.

31.3. Schedule 3: Baseline energy consumption

The baseline energy consumption has been estimated from the total power consumption of the existing street lighting luminaires including the ballast losses. There were 2 options of estimating the baseline energy consumption i.e.

1. Based on the actual energy bills switch controllers wise for the last year
2. Based on the rated power consumption and ballast losses of the total population of street lighting luminaires (105,236)

The merits and demerits of both the options were explored. One way to estimate the baseline energy consumption is going by the aggregation of the annual energy consumption of all the switch controllers. In this scenario, the annual baseline energy consumption for the year 2016 comes out to be **40,896,861 kWh/ year**.

In order to make a realistic assessment of the actual energy consumption for street lighting, the theoretical baseline energy consumption has been estimated from the total power consumption of the existing street lighting luminaires including the ballast losses.

As the Concessionaire will ensure the performance standards mentioned in this tender after implementation of this street lighting project, the baseline has been estimated for those particular performance standards and it comes out to be **47,037,528 kWh/year**. This baseline is more than the actual energy bills of street lighting (because here 100% glowing of lamps have been considered) in last year but more relevant as the last year bills might be lower on account of some of the non-running electric meters, lighting luminaires and addition of new light points in later months of the last year. The baseline for replacement of conventional street lights with energy efficient LEDs thus arrived at is **47,037,528 kWh/year** for the mentioned number of lamps **(105,236)**. The baseline will be adjusted for any increase or decrease in actual number of lamps corresponding to their rating and number after the implementation of the project.

Energy Tariff:

Based on the last 12 months electricity bills provided by Authority officials, the average energy tariff applicable for street lighting comes out to be **Rs. 6.69/kWh**.

Tariff hike:

During the first year of concession period for energy saving payment, tariff rate would be considered **Rs. 6.69/kWh** and tariff hike of **3% every year** will be considered in the remaining years of Concession Agreement period for energy saving payments to Concessionaire.

31.4. Schedule 4: Format for weekly reporting of fixture replacement

LUDHIANA SMART CITY LIMITED

WEEKLY REPORT OF FIXTURES REPLACEMENT

Date: DD/MM/YYYY

Number of fixtures dismantled till last week =
Number of fixtures handed-over till last week =
Number of fixtures for which sign-off obtained from Authority till last week =
Number of fixtures dismantled this week =

Signature of Concessionaire

{Name}

{Designation}

31.5. Schedule 5: Template for Bank Guarantee

To,
Ludhiana Smart City Ltd (LSCL)
Zone D Municipal Corporation Office,
Sarabha Nagar, Ludhiana

Whereas, <name of the supplier and address> (hereinafter called “the Concessionaire”) has undertaken, in pursuance of Concession Agreement no. <Insert Concession Agreement No.> dated. <Date> to provide Implementation services for ‘Selection of Concessionaire for Implementing Smart LED Street Lights and Centralized Control & Monitoring Centre for Ludhiana on Concessionaire (pay from savings) model’ to Ludhiana Smart City Ltd (hereinafter called “the beneficiary”)

And whereas it has been stipulated by in the said Concession Agreement that the Concessionaire shall furnish you with a bank guarantee by a recognized bank for the sum specified therein as security for compliance with its obligations in accordance with the Concession Agreement;

And whereas we, <Name of Bank> a banking company incorporated and having its head /registered office at <Address of Registered Office> and having one of its office at <Address of Local Office> have agreed to give the supplier such a bank guarantee.

Now, therefore, we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of INR <Insert Value> (Rupees <Insert Value in Words> only) and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the Concession Agreement and without cavil or argument, any sum or sums within the limits of INR <Insert Value> (Rupees <Insert Value in Words> only) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Concessionaire before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Concession Agreement to be performed there under or of any of the Concession Agreement documents which may be made between you and the Concessionaire shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This Guarantee shall be valid until <Insert Date>)

Notwithstanding anything contained herein:

- I. Our liability under this bank guarantee shall not exceed INR. <Insert Value> (Rupees <Insert Value in Words> only).
- II. This bank guarantee shall be valid up to <Insert Expiry Date>)
- III. It is condition of our liability for payment of the guaranteed amount or any part thereof arising under this bank guarantee that we receive a valid written claim or demand for payment under this bank guarantee on or before <Insert Expiry Date>) failing which our liability under the guarantee will automatically cease.

(Authorized Signatory of the Bank)

Seal:

Date:

31.6. Schedule 6: Letter of Award

31.7. Schedule 7: Results of Live Demonstration

Street lights

Date:

Lux measurement results

| Live Demonstration Measurement Sheet | | | | | | | | | | | | |
|--|----|----|--------------|----|-----------------------|----|---------------------|----|------------------|-------------------|---|-------------|
| Site Location : | | | | | | | | | | | | |
| Luminaire Details, | | | Pole Details | | Identification Number | | Mounting Height (m) | | Pole Spacing (m) | | Mounting Angle (Deg) | Boom Length |
| Wattage of Existing Luminaire: | | | Pole A | | | | | | | | | |
| Wattage of Proposed LED Luminaire: | | | Pole B | | | | | | | | | |
| Illuminance by 9 point method (Lux) | | | | | | | | | | | | |
| | A1 | A2 | B1 | B2 | C1 | C2 | C3 | C4 | D | Average Lux Level | Uniformity Ratio (Minimum Lux level/ Average Level) | |
| Existing Luminaire | | | | | | | | | | | | |
| LED Luminaire | | | | | | | | | | | | |

| SL No. | CCMS Validation for 3-phase and single phase | Available | |
|--------|---|-----------|----|
| | | Yes | No |
| 1. | Access to monitoring and control screen developed for the live demonstration (User ID and Password). | | |
| 2. | Dashboard: Monitoring and central controlling screen shall have following screens/icons | | |
| | a. Display live status of the switching points | | |
| | b. Live readings of energy consumption details (meter packets) with current time stamps. | | |
| | c. Configure or reset the timings etc. | | |
| | d. Page/screen with GIS mapping | | |
| | e. Page/screen with power failure information | | |
| | f. Page/screen with lamp failure details | | |
| | g. Page/screen for reports | | |
| 3. | Operation Features | | |
| | a. GPRS /GSM | | |
| 4. | Timer Operation – Refer Test Methodology | | |
| | a. On/off operation of switching point | | |
| | b. Time setting operation – Set the RTC | | |
| | c. Scheduling the ON and OFF timings | | |
| | d. Check the real time or present status of the switching point. | | |
| | e. Reset the unit – Time | | |
| | f. Auto Recovery after power failure | | |
| 5. | Meter Operations | | |
| | a. Meter readings are reflected in the server | | |
| | b. Periodicity of Meter Packet should be configurable from server | | |
| | c. Meter Parameters - KWH, KVAH, V, Ah, Power Factor, Active power and Apparent Power | | |
| 6. | Reports Downloading | | |
| | a. Energy saving report - yearly, monthly, weekly or daily basis | | |
| | b. Error reports – No of lights off and Panel Door Opened with Timing etc. | | |
| | c. Power failure report etc. | | |

| | | | |
|-----|--|--|--|
| 7. | Time Sync/Auto synchronization in case of time skip | | |
| | a. If the server time is 5:00 pm, we have set the time to 5:30 pm. However, the sync should revert back to 5:00 pm | | |
| 8. | Fault Detections in terms of failures for the followings with inclusive SMS alerts | | |
| | a. Number of lights in glowing and non- glowing | | |
| | b. High/low voltage | | |
| | c. Overload on the phases | | |
| | d. Theft alerts | | |
| | e. Group failure of lights | | |
| | f. No output supply | | |
| | g. Power Failure | | |
| 9. | CCMS System Battery | | |
| | a. Battery performance in case of Power Failure | | |
| | b. Batter backup or UPS backup of 12 hrs (Minimum) | | |
| 10. | CCMS System Hardware: | | |
| | a. System box with Corrosion-resistant metal enclosure with proper lock arrangement | | |
| | b. Energy Meter with ISI (Class 1.0accuracy or better energy meter) | | |
| | c. Proper Earthing System | | |
| | d. IP 55 or 65 for complete CCMS system | | |
| | e. Single Phase system - 5kVA | | |
| | f. Three Phase system – 10kVA | | |
| | g. Emergency on/off switch | | |