

ATTACHMENT 6
KEY PERFORMANCE STANDARDS

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1. Introduction

1.1. The KEY PERFORMANCE STANDARDS (KPI) described in this ATTACHMENT aims to assess the quality of the SERVICES provided by the CONCESSIONAIRE.

1.2. From the calculation of the GENERAL PERFORMANCE INDEX - IDG, the PERFORMANCE FACTOR (FD) shall be accounted for the calculation of the EFFECTIVE MONTHLY AVAILABILITY PAYMENT. EFFECTIVE MONTHLY AVAILABILITY PAYMENT to be paid by the GRANTING AUTHORITY to the CONCESSIONAIRE, as provided for in the PAYMENT MECHANISM.

2. GENERAL PERFORMANCE INDEX

2.1. The CONCESSIONAIRE's performance assessment will be carried out through the ascertainment, calculation and application of the GENERAL PERFORMANCE INDEX - IDG, number between 0 (zero) and 1 (one), relating to the quality in the performance of the services provided by the CONCESSIONAIRE belonging in the scope of the CONCESSION.

2.2. The composition of the GENERAL PERFORMANCE INDEX was based on the weighting of specific criteria. Each of these criteria has one or more performance indices, as detailed below:

- i. Availability Criteria (CD): Assesses the availability of lighting, formed by:
 - a. Light Availability Index – IDL: Checks if the STREET LIGHTING POINTS are effectively lit during the night;
- ii. Quality Criteria (CQ): Assesses the quality of the service provided and lighting levels, made up of:
 - a. Lighting Adequacy Index – IAL: Monitors the CONCESSIONAIRE regarding compliance with the minimum levels of illuminance and uniformity required and the Correlated Color Temperature (TCC), at STREET LIGHTING POINTS;
 - b. Data Quality Index – IQD: Checks whether the REGISTRY, prepared and maintained by the CONCESSIONAIRE, reliably accounts for the STREET LIGHTING assets installed in the field.
 - c. Special Lighting Quality Index – IQE: Checks if the places with SPECIAL LIGHTING comply with the projects approved by the GRANTING AUTHORITY and assesses the operation of the installed equipment.

- iii. Operating Criteria (CO): Assesses the availability of infrastructure and SERVICES, as well as compliance with the deadlines established for their performance, consisting of:
 - a. Daylighting Index – IAD Checks if the STREET LIGHTING POINTS are effectively off during the day;
 - b. Call Center Availability Index – IDC: Checks whether the call center system is available uninterruptedly and assesses the service provided;
 - c. Telemangement Availability Index – IDT: Checks whether the TELEMANAGEMENT SYSTEM implemented by the CONCESSIONAIRE, as well as whether the system’s functionalities are seamlessly available and in full operation;
 - d. Index of Compliance with the Operation & Maintenance Deadlines – ICPOM: Monitors the CONCESSIONAIRE’s compliance with deadlines for solving CORRECTIVE MAINTENANCE, EMERGENCY MAINTENANCE and TREE PRUNING calls.
- iv. Compliance Criteria (CC): Assesses compliance with deadlines and requirements pertaining to certificates and reports, made up of:
 - a. Certificate Compliance Index – ICC: Assesses the compliance of documents that prove services pertaining to environmental management, decontamination, and final destination of polluting waste.
 - b. Information Compliance Index - ICI: Assesses compliance with regard to the monthly delivery of Service Performance Reports by the CONCESSIONAIRE and the publicity of PPP information.

2.3. The GENERAL PERFORMANCE INDEX will be calculated based on the assessment and weighting of the specific criteria – CD, CQ, CO and CC. Each of the 4 (four) criteria will be obtained through the assessment of their respective indices and corresponding indicators, when applicable, multiplied by the respective weights.

2.4. From the results calculated for the Criteria, the GENERAL PERFORMANCE INDEX - IDG will be calculated, according to the following formulas and CONCESSION periods:

$$IDG = CD \times [(40\% \times CQ) + (50\% \times CO) + (10\% \times CC)]$$

where:

IDG = GENERAL PERFORMANCE INDEX

CD = Availability Criteria;
CQ = Quality Criteria;
CO = Operating Criteria; and
CC = Compliance Criteria.

2.5. The calculation of the GENERAL PERFORMANCE INDEX will be based on the QUARTERLY KPI REPORT, which will state the results of the measurement of all indicators. This shall be prepared by the INDEPENDENT CERTIFIER and delivered to the GRANTING AUTHORITY and the CONCESSIONAIRE. The INDEPENDENT CERTIFIER will be responsible for all field measurements to assess the CONCESSIONAIRE's performance in keeping with the guidelines and definitions of this ATTACHMENT.

2.6. For the final composition of the CONCESSIONAIRE's GENERAL PERFORMANCE INDEX, the CQ, CO and CC criteria will be assessed separately. In the event that the CONCESSIONAIRE obtains a score lower than 0.5 (five tenths) for CQ, CO or CC, the final calculated amount of IDG will be additionally reduced by 0.1 (one tenth) for each index that is below this threshold. In this way, the IDG score may be deducted, in total, by up to 0.3 (three tenths), if the individual score of the three criteria is less than 0.5 (five tenths). It should be noted that the minimum IDG amount is 0 (zero), that is, if the reduction addressed in this paragraph results in an IDG amount less than or equal to 0 (zero), the amount considered will be 0 (zero).

2.7. For the calculation of IDG, only two decimal places and the following rounding criteria should be considered:

- i. If the digit of the third decimal place is less than 5, the digit of the second decimal place does not change. Example: $0.642 = 0.64$.
- ii. If the digit of the third decimal place is greater than or equal to 5, the digit of the second decimal place is incremented by one. Example: $0.645 = 0.65$.
- iii. The same is valid for cases in which the IDG calculation results in a number with more than three decimal places. The rounding criteria above should be applied progressively until reaching the 2nd decimal place only in the final result.

2.8. The STREET LIGHTING POINTS that will be assessed should be randomly defined by the INDEPENDENT CERTIFIER for all indicators. The samples should be drawn separately for each Index assessed and the measurements may be monitored by the CONCESSIONAIRE and the GRANTING AUTHORITY. The checks shall occur on a day and time randomly sorted drawn the assessment period.

2.9. The results of indicators with half-yearly measurement will be applied to the 2 (two)

QUARTERLY KPI REPORTS for the period. The results of indicators with quarterly measurement will be applied in the QUARTERLY KPI REPORTS of the measurement period.

2.10. The QUARTERLY KPI REPORT should state, at a minimum:

- i. Consolidation of the registry of measurements carried out in the respective period, as well as the data source, responsible for the collection, in addition to the period and place of collection;
- ii. Result and indicator calculation report;
- iii. Full information and IDG calculation report;
- iv. History with the evolution of each indicator;
- v. Monitoring of the SOCIOENVIRONMENTAL MANAGEMENT SYSTEM (SGSA) implemented by the CONCESSIONAIRE and proposition of corrective actions, accordingly;
- vi. Calculation report of the PAYMENT MECHANISM for the period, including EFFECTIVE MONTHLY AVAILABILITY PAYMENT, BONUS ON THE ELECTRICITY BILL and CAPEX EXPANSION PAYMENT;
- vii. Monitoring the sharing of ACCESSORY REVENUE relating to RELATED ACTIVITIES.

2.11. The calculation report for the indicators shall be provided in a digital format that is of wide and easy use, preferably in an electronic spreadsheet compatible with Microsoft Excel or Open Document, so that the calculation of each indicator can be audited and tracked in its entirety.

2.12. The form and standard of the QUARTERLY KPI REPORT shall be previously presented by the INDEPENDENT CERTIFIER and approved by the GRANTING AUTHORITY before the beginning of the first calculation period. The form of presentation of the QUARTERLY KPI REPORT may be changed throughout the CONCESSION upon formal request by the GRANTING AUTHORITY in order to make the calculation of results clearer and more precise.

2.13. The CONCESSIONAIRE is responsible to provide the necessary information for the preparation of the QUARTERLY KPI REPORT by the INDEPENDENT CERTIFIER, granting the latter the freedom to carry out the necessary inspections to check the scores whenever necessary, including through unrestricted reading access in the information systems used by the CONCESSIONAIRE to provide the SERVICES.

2.14. During PHASE I, there will be no effective measurement and calculation of the indices listed below, starting only from the date of fulfillment of CONCESSION MILESTONE I by the CONCESSIONAIRE. Therefore, during the period prior to the issuance of the ACCEPTANCE TERM for the conclusion of CONCESSION MILESTONE I, the amount for these indices listed below will be set at 1 (one):

- i. Lighting Adequacy Index – IAL;
- ii. Telemanagement Availability Index – IDT.

3. Availability Criteria

3.1. The Availability Criteria is made up of the following index:

- i. Light Availability Index – IDL.

3.2. The Availability Criterion will be represented by a number from 0 (zero) to 1 (one), calculated by the amount measured by the respective index, obtained through the equation below:

$$CD = (100\% \times Final Score_{IDL})$$

Where:

CD = Availability Criteria;

IDL = Light Availability Index

3.3. Light Availability Index – IDL

3.3.1. IDL is made up of the following indicators:

- i. Indicator of Points Lit at Night (IPAN).

3.3.2. The IDL Form should consist of:

- i. Measurement Periodicity: Quarterly.
- ii. Analyzed Data Base: All STREET LIGHTING POINTS entered in the REGISTRY.
- iii. Analysis Sample: The sample size shall be as established in ABNT NBR 5426:1985 Standard, general inspection level 2 (two) and normal simple sampling plan.

iv. IDL Final Score Calculation Formula:

$$Final\ Score_{IDL} = Final\ Score_{IPAN}$$

3.4. Indicator of Points Lit at Night (IPAN)

3.4.1. The measurement of IPAN will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

3.4.2. The IPAN Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result IPAN \geq 98%	1.00
96% \leq % Measurement Result IPAN < 98%	0.95
94% \leq % Measurement Result IPAN < 96%	0.90
90% \leq % Measurement Result IPAN < 94%	0.85
85% \leq % Measurement Result IPAN < 90%	0.80
80% \leq % Measurement Result IPAN < 85%	0.70
75% \leq % Measurement Result IPAN < 80%	0.60
70% \leq % Measurement Result IPAN < 75%	0.50
65% \leq % Measurement Result IPAN < 70%	0.40
60% \leq % Measurement Result IPAN < 65%	0.30
55% \leq % Measurement Result IPAN < 60%	0.20
50% \leq % Measurement Result IPAN < 55%	0.10
% Measurement Result IPAN < 50%	0

3.4.3. To calculate the IPAN Measurement Result, the formula below should be applied:

$$Measurement\ Result_{IPAN} = \frac{Number\ of\ IP\ Points\ in\ compliance}{Total\ amount\ of\ IP\ Points\ in\ the\ sample}$$

3.4.4. The STREET LIGHTING POINT will be considered compliant if it is effectively lit during the night according to the check carried out in the field. However, the STREET LIGHTING POINT will be considered noncompliant if:

- i. The STREET LIGHTING POINT checked in the field is flashing or off at the time of the inspection. In this case, this STREET LIGHTING POINT shall only be accounted for in the formula's denominator.

- ii. The STREET LIGHTING POINT has not been found in the field (example: theft). In this case, this STREET LIGHTING POINT shall only be accounted for in the formula's denominator.

4. Quality Criteria

4.1. CQ consists of the following indices:

- i. Lighting Adequacy Index – IAL;
- ii. Data Quality Index – IQD;
- iii. Special Lighting Quality Index – IQE.

4.2. The Quality Criteria will be represented by a number from 0 (zero) to 1 (one), calculated by the equation below:

$$CQ = (60\% \times IAL) + (20\% \times IQD) + (20\% \times IQE)$$

Where:

CQ = Quality Criteria;

IAL = Lighting Adequacy Index;

IQD = Data Quality Index; and

IQE = Special Lighting Quality Index

4.3. Lighting Adequacy Index – IAL

4.3.1. IAL is made up of the following indicators:

- i. Illuminance and Uniformity Indicator (IIU); and
- ii. Indicator of Color Temperature (ITC).

4.3.2. The IAL Form should consist of:

- i. Measurement Periodicity: Half-yearly.
- ii. Analyzed Data Base:
 - a. Until the conclusion of PHASE II: All STREET LIGHTING POINTS after MODERNIZATION AND STREAMLINING ENERGY, including STREET LIGHTING POINTS from the EXPANSION OF THE MUNICIPAL STREET LIGHTING NETWORK.

- b. From the beginning of PHASE III: All STREET LIGHTING POINTS entered in the REGISTRY.
- iii. Analysis Sample: The sample size shall comply with the ABNT NBR 5426:1985 Standard, general inspection level 2 (two) and normal simple sampling plan.
- iv. IAL Final Score Calculation Formula:

$$Final\ Score_{IAL} = (90\% \times Final\ Score_{IIU}) + (10\% \times Final\ Score_{ITC})$$

4.4. Illuminance and Uniformity Indicator (IIU)

4.4.1. The measurement of IIU will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.4.2. The IIU Final Score should be defined according to the table below:

Measurement Result Ranges	Final Score
% Measurement Result IIU \geq 95%	1.0
92.5% \leq % Measurement Result IIU < 95%	0.9
90% \leq % Measurement Result IIU < 92.5%	0.8
87.5% \leq % Measurement Result IIU < 90%	0.7
85% \leq % Measurement Result IIU < 87.5%	0.6
80% \leq % Measurement Result IIU < 85%	0.5
75% \leq % Measurement Result IIU < 80%	0.4
70% \leq % Measurement Result IIU < 75%	0.3
60% \leq % Measurement Result IIU < 70%	0.2
50% \leq % Measurement Result IIU < 60%	0.1
% Measurement Result IIU < 50%	0

4.4.3. To calculate the IIU Measurement Result, the formula below should be applied:

$$Measurement\ Result_{IIU} = \frac{N^{\circ}\ of\ points\ of\ IP\ in\ compliance}{Total\ amount\ of\ IP\ Points\ in\ the\ sample}$$

- i. The STREET LIGHTING POINT will be considered compliant if it meets the minimum measurement result of 95% (ninety-five percent) of the level of Illuminance and Uniformity, pursuant to items 4.4.5 and 4.4.6, as per the LIGHTING CLASSES of the road where the STREET LIGHTING POINT is installed; or
- ii. If it is found that the STREET LIGHTING POINT checked in the field has an

inappropriate lighting project. Such finding shall be based on items 4.4.4, 4.4.5, 4.4.6, 4.4.7 and **Error! Reference source not found.** and in the field and documentary parameter analysis.

4.4.4. The assessment of compliance of each STREET LIGHTING POINT is binary, that is, if the lighting parameters assessed on the street meet the criteria established in item 4.4.3.i., the STREET LIGHTING POINT is compliant, and the unit value shall be added to the formula numerator and denominator. Otherwise, the STREET LIGHTING POINT is accounted for in the denominator of the formula.

4.4.5. Measurements at the STREET LIGHTING POINT shall be carried out in accordance with the purpose of the STREET LIGHTING POINT:

- i. Street with lane(s) and sidewalk(s) for pedestrians: measurement of illuminance and uniformity for LIGHTING CLASSES for Vehicles and Pedestrians;
- ii. Street with lane(s) and no sidewalk for pedestrians: measurement of illuminance and uniformity for the LIGHTING CLASS of Vehicles;
- iii. Address for exclusive pedestrian circulation (sidewalks, squares, parks, etc.): measurement of illuminance and uniformity for Pedestrian LIGHTING CLASS;
- iv. CROSSWALK: measurement of vertical illuminance;
- v. BIKE LANES: measurement of illuminance and uniformity for BIKE LANES.

4.4.6. The STREET LIGHTING POINT shall meet the minimum levels of illuminance and uniformity required in accordance with the respective LIGHTING CLASSES of the location where the STREET LIGHTING POINT is installed, as defined in the SERVICES AND INVESTMENTS SPECIFICATIONS.

- i. Table of minimum average illuminance and uniformity for LIGHTING CLASS of vehicles and pedestrians.

LIGHTING CLASS of Vehicles	Average Minimum Illuminance	Minimum Uniformity Factor
	$E_{med,min}(lux)$	$U = E_{min}/E_{med}$
V1	30	0.4

LIGHTING CLASS of Vehicles	Average Minimum Illuminance	Minimum Uniformity Factor
	$E_{med,min}(lux)$	$U = E_{min}/E_{med}$
V2	20	0.3
V3	15	0.2
V4	10	0.2
V5	5	0.2

LIGHTING CLASS of Pedestrians	Average Minimum Illuminance	Minimum Uniformity Factor
	$E_{med,min}(lux)$	$U = E_{min}/E_{med}$
P1	20	0.30
P2	10	0.25
P3	5	0.20
P4	3	0.20

- ii. Average minimum vertical illuminance table for LIGHTING CLASS of vehicles for exclusive STREET LIGHTING POINTS for CROSSWALKS.

LIGHTING CLASS of Vehicles	Average vertical minimum illuminance
	$E_{v,med}(lux)$
V1	22.5
V2	20.0
V3	20.0
V4	20.0
V5	20.0

- iii. Table of minimum average illuminance and uniformity for exclusive STREET LIGHTING POINTS for BIKE LANES.

CLASS OF ILLUMINATION	Average Minimum Illuminance	Minimum uniformity factor
	$E_{med}(lux)$	$U_{min} = E_{min} / E_{med}$
C1	15	0.20
C2	10	0.20

4.4.7. Measurements shall comply with the following guidelines:

- i. Field measurements of lighting requirements, such as illuminance and uniformity factor, should follow the procedures set in ABNT NBR 5101:2018. In the case of omissions in the ABNT NBR 5101:2018 Standard, the procedures shall be defined by the INDEPENDENT CERTIFIER. These procedures should also be applied for the issuance of the ACCEPTANCE TERM.
- ii. For the IIU compliance analysis, only in relation to the illuminance requirement, the adjustment of the luminous flux resulting from the dimming through the TELEMANAGEMENT SYSTEM should be considered, if applied by the CONCESSIONAIRE, according to the LIGHTING CLASS of the STREET LIGHTING POINT, as well as the time of the day, following the definitions of the SERVICES AND INVESTMENTS SPECIFICATIONS.
- iii. The measurement of the illuminance and the uniformity factor should be carried out only in the span adjacent to the right of the STREET LIGHTING POINT drawn.
 - a. If the point drawn for check is a TERMINAL STREET LIGHTING POINT, the measurement shall be carried out in the span adjacent to the point in the direction of the pole at less than 90 (ninety) meters on the same road.
 - b. If the point drawn for check is an ISOLATED STREET LIGHTING POINT, the measurement shall be carried out considering a measuring grid 17.5 meters from the point, only to the right. In this case, the illuminance and uniformity levels to be met by the CONCESSIONAIRE shall be at least 50% of the levels foreseen for the road according to the Minimum Average Illuminance and Uniformity Table for each LIGHTING CLASS shown below (example: An ISOLATED STREET LIGHTING POINT on a V5 road should meet the Minimum Average Illuminance = 2.5 and Uniformity Factor = 0.1).

4.4.8. If the INDEPENDENT CERTIFIER finds, in the field, the obstruction of the luminous flux of the STREET LIGHTING POINT in the measurement span, by external elements (such as signage signs, private lighting), and this information is not included in the REGISTRY for the STREET LIGHTING POINT under analysis during the measurement period, the INDEPENDENT CERTIFIER shall carry out field measurements of illuminance and uniformity levels, not being applied in this situation the procedures of the item **Error!**
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4.4.9. If the INDEPENDENT CERTIFIER finds, in the field, the obstruction of the luminous flux of the STREET LIGHTING POINT in the measurement span, by external elements (such as signage, private lighting), and this information appears in the STREET LIGHTING POINT REGISTRY under analysis in the measurement period, the procedures below will be applied in this situation:

- i. If the subsequent span (first to the right, and then to the left on the same road) to the measurement site does not show interference from the luminous flux of the STREET LIGHTING POINT by external elements, it should be measured in the field using this span as a reference.
- ii. If the subsequent spans (right or left on the same road) also show interference from the luminous flux of the STREET LIGHTING POINT by external elements, the document analysis described below will be carried out.
 - a. For the document analysis, the following information from the STREET LIGHTING POINT should be collected in the field:
 - LUMINAIRE Model;
 - LUMINAIRE Power;
 - Installation height of the LUMINAIRE: divergence of up to 5% (five percent) between the project information and the field checking of this measurement will be considered as compliant;
 - Horizontal projection of the LUMINAIRE: divergence of up to 10% (ten percent) between the project information and the field checking of this measurement will be considered as compliant;

- Road width: divergence of up to 10% (ten percent) between project information and field checking, that is, road width less than or equal to 110% of the road width informed in the project;
 - Distance between the STREET LIGHTING POINT and adjacent poles: divergence of up to 5% (five percent) between project information and field checking, that is, distance between poles less than or equal to 105% of the distance between poles informed in the project.
- b. The information will be compared with the information recorded in the MODERNIZATION AND STREAMLINING ENERGY project for the STREET LIGHTING POINT. For this analysis, the project approved by the GRANTING AUTHORITY will be used. If at least one of the 6 (six) pieces of information does not comply with the project, the STREET LIGHTING POINT will be considered noncompliant and counted only in the formula denominator.
- c. Coupled with the assessment of the 6 (six) mentioned pieces of information, the LIGHTING CLASSES of vehicles and pedestrians for the STREET LIGHTING POINT and their respective Minimum Uniformity Factors required shall also be spotted, which will be assessed in comparison with the Uniformity Factor Minimum recorded in the project. If the project figures do not meet the minimum amounts provided for in the Minimum Average Illuminance and Uniformity Table pursuant to the LIGHTING CLASSES of the road, the STREET LIGHTING POINT shall be considered noncompliant and counted only in the formula denominator.
- d. The STREET LIGHTING POINT will only be considered compliant if all 6 (six) information collected in the field match the data contained in the project and, additionally, if the Minimum Uniformity Factor recorded in the project is equal to or greater than the minimum amounts of the Minimum Uniformity Factor foreseen in the Table of Minimum Average Illuminance and Uniformity according to the LIGHTING CLASSES of the road, and, in this case, the STREET LIGHTING POINT will be accounted for in the formula numerator and denominator.

4.5. Indicator of Color Temperature (ITC)

4.5.1. The measurement of ITC will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.5.2. The ITC Final Score should be defined according to the table below:

Measurement Result Ranges	Final Score
% Measurement Result ITC \geq 98%	1.0
97% \leq % Measurement Result ITC $<$ 98%	0.9
96% \leq % Measurement Result ITC $<$ 97%	0.8
95% \leq % Measurement Result ITC $<$ 96%	0.7
94% \leq % Measurement Result ITC $<$ 95%	0.6
93% \leq % Measurement Result ITC $<$ 94%	0.5
91% \leq % Measurement Result ITC $<$ 93%	0.4
89% \leq % Measurement Result ITC $<$ 91%	0.3
87% \leq % Measurement Result ITC $<$ 89%	0.2
85% \leq % Measurement Result ITC $<$ 87%	0.1
% Measurement Result ITC $<$ 85%	0

4.5.3. To calculate the ITC Measurement Result, the formula below should be applied:

$$\text{Measurement Result}_{ITC} = \frac{\text{Number of IP Points in compliance}}{\text{Total amount of IP Points in the sample}}$$

- i. The STREET LIGHTING POINT will be considered compliant if it meets the Color Temperature level. For Color Temperature, it is considered compliant when the Color Temperature amount measured in the field presents a maximum variation of more or less 300K over the amount defined for the STREET LIGHTING POINT according to the SERVICES AND INVESTMENTS SPECIFICATIONS.

4.6. Data Quality Index – IQD

4.6.1. IQD is made up of the following indicators:

- i. Location Characterization Compliance Indicator (ICCL);
- ii. Total Power Compliance Indicator (ICPT);
- iii. Compliance Indicator of Other Registry Information (ICDIC).

4.6.2. The IQD Form should consist of:

- i. Measurement Periodicity: Half-yearly.

- ii. Analyzed Data Base: All STREET LIGHTING POINTS entered in the REGISTRY.
- iii. Analysis Sample: The sample size shall be as established in ABNT NBR 5426:1985 Standard, general inspection level 2 (two) and normal simple sampling plan.
- iv. IQD Final Score Calculation Formula:

$$\begin{aligned}
 & \textit{Final Score}_{IQD} \\
 &= (20\% \times \textit{Final Score}_{ICCL}) + (70\% \times \textit{Final Score}_{ICPT}) \\
 &+ (10\% \times \textit{Final Score}_{ICDIC})
 \end{aligned}$$

4.6.3. The measurement of IQD will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.6.4. Considering that there are several pieces of information in the REGISTRY and that each one has different relevance, for each STREET LIGHTING POINT in the sample, the following will be checked:

- i. Compliance of the characterization of the location (neighborhood, street, STREET LIGHTING POINT number, and georeferenced position), through comparison between REGISTRY data and information checked in the field;
- ii. Compliance of the total power of the STREET LIGHTING POINT, through comparison between the REGISTRY data and information checked in the field;
- iii. Compliance with the following information from the registry of STREET LIGHTING POINTS, through the comparison between REGISTRY data and information checked in the field:
 - a. Characterization of STREET LIGHTING POINT in conventional, TERMINAL STREET LIGHTING POINT or ISOLATED STREET LIGHTING POINT;
 - b. Number of STREET LIGHTING POINTS on the pole;
 - c. Indication on the existence of interference in the luminous flux per individual tree.

4.7. Location Characterization Compliance Indicator (ICCL)

4.7.1. The measurement of ICCL will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.7.2. The ICCL Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result ICCL \geq 95%	1.0
92.5% \leq % Measurement Result ICCL < 95%	0.9
90% \leq % Measurement Result ICCL < 92.5%	0.8
87.5% Measurement Result ICCL < 90%	0.7
85% \leq % Measurement Result ICCL < 87.5%	0.6
80% \leq % Measurement Result ICCL < 85%	0.5
75% \leq % Measurement Result ICCL < 80%	0.4
70% \leq % Measurement Result ICCL < 75%	0.3
60% \leq % Measurement Result ICCL < 70%	0.2
50% \leq % Measurement Result ICCL < 60%	0.1
% Measurement Result ICCL < 50%	0

4.7.3. To calculate the ICCL Measurement Result, the formula below should be applied:

$$\text{Measurement Result}_{ICCL} = \frac{\text{Number of IP Points in compliance}}{\text{Total amount of IP Points in the sample}}$$

- i. The STREET LIGHTING POINT will be considered compliant if it is found that the characterization of the location (street, neighborhood, STREET LIGHTING POINT number and georeferenced position), through the comparison between the REGISTRY data and information ascertained in person in the field are in compliance. Otherwise, the STREET LIGHTING POINT shall be accounted for only in the denominator of the formula.

4.8. Total Power Compliance Indicator – ICPT

4.8.1. The measurement of ICPT will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.8.2. The ICPT Final Score should be defined according to the table below:

Measurement Result Ranges	Final Score
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% Measurement Result ICPT \geq 95%	1.0
92.5% \leq % Measurement Result ICPT $<$ 95%	0.9
90% \leq % Measurement Result ICPT $<$ 92.5%	0.8
87.5% \leq % Measurement Result ICPT $<$ 90%	0.7
85% \leq % Measurement Result ICPT $<$ 87.5%	0.6
80% \leq % Measurement Result ICPT $<$ 85%	0.5
75% \leq % Measurement Result ICPT $<$ 80%	0.4
70% \leq % Measurement Result ICPT $<$ 75%	0.3
60% \leq % Measurement Result ICPT $<$ 70%	0.2
50% \leq % Measurement Result ICPT $<$ 60%	0.1
% Measurement Result ICPT $<$ 50%	0

4.8.3. To calculate the ICPT Measurement Result, the formula below should be applied:

$$\text{Measurement Result}_{ICPT} = \frac{\text{Number of IP Points in compliance}}{\text{Total amount of IP Points in the sample}}$$

- i. The STREET LIGHTING POINT shall be considered compliant if the compliance of the total power of the STREET LIGHTING POINT is found through the comparison between the REGISTRY data and information checked in person in the field. Otherwise, the STREET LIGHTING POINT shall be considered only in the denominator of the formula.

4.9. Compliance Indicator of Other Registry Information (ICDIC)

4.9.1. The measurement of ICDIC will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.9.2. The ICDIC Final Score should be defined according to the table below:

Measurement Result Ranges	Final Score
% Measurement Result ICDIC \geq 95%	1.0
92.5% \leq % Measurement Result ICDIC $<$ 95%	0.9
90% \leq % Measurement Result ICDIC $<$ 92.5%	0.8
87.5% \leq % Measurement Result ICDIC $<$ 90%	0.7
85% \leq % Measurement Result ICDIC $<$ 87.5%	0.6
80% \leq % Measurement Result ICDIC $<$ 85%	0.5
75% \leq % Measurement Result ICDIC $<$ 80%	0.4
70% \leq % Measurement Result ICDIC $<$ 75%	0.3

60% ≤ % Measurement Result ICDIC < 70%	0.2
50% ≤ % Measurement Result ICDIC < 60%	0.1
% Measurement Result ICDIC < 50%	0

4.9.3. To calculate the ICDIC Measurement Result, the formula below should be applied:

$$\text{Measurement Result}_{ICDIC} = \frac{\text{Number of IP Points in compliance}}{\text{Total amount of IP Points in the sample}}$$

- i. The STREET LIGHTING POINT shall be considered compliant if the conformity of all 3 (three) pieces of information of the STREET LIGHTING POINTS below is found through the comparison between the REGISTRY data and information checked in person in the field.
 - a. Characterization of STREET LIGHTING POINT: Conventional STREET LIGHTING POINT, TERMINAL STREET LIGHTING POINT OR ISOLATED STREET LIGHTING POINT.
 - b. Number of STREET LIGHTING POINTS on the pole;
 - c. Indication on the existence of interference in the luminous flux per individual tree.
- ii. If one piece or more pieces of information of the STREET LIGHTING POINT does not comply with the REGISTRY data, the STREET LIGHTING POINT checked will be noncompliant and considered only in the formula denominator.

4.10. Special Lighting Quality Index – IQE

4.10.1. IQE is made up of the following indicators:

- i. Indicator of Compliance of Special Lighting (ICE);
- ii. Indicator of Operation of Special Lighting (IFE).

4.10.2. The IQE Form should consist of:

- i. Measurement Periodicity: Quarterly.
- ii. Analyzed Data Base: All SPECIAL LIGHTING locations implemented by the CONCESSIONAIRE, as provided for in the SERVICES AND INVESTMENTS SPECIFICATIONS.

iii. Analysis Sample: The sample size shall be as established in ABNT NBR 5426:1985 Standard, general inspection level 2 (two) and normal simple sampling plan.

iv. IQE Final Score Calculation Formula:

$$Final\ Score_{IQE} = 40\% \times Final\ Score_{ICE} + 60\% \times Final\ Score_{IFE}$$

4.11. Indicator of Compliance of Special Lighting (ICE)

4.11.1. The measurement of ICE will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.11.2. The ICE Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result ICE \geq 98%	1.0
97% \leq % Measurement Result ICE < 98%	0.9
96% \leq % Measurement Result ICE < 97%	0.8
95% \leq % Measurement Result ICE < 96%	0.7
94% \leq % Measurement Result ICE < 95%	0.6
93% \leq % Measurement Result ICE < 94%	0.5
91% \leq % Measurement Result ICE < 93%	0.4
89% \leq % Measurement Result ICE < 91%	0.3
87% \leq % Measurement Result ICE < 89%	0.2
85% \leq % Measurement Result ICE < 87%	0.1
% Measurement Result ICE < 85%	0

4.11.3. To calculate the ICE Measurement Result, the formula below should be applied:

$$Measurement\ Result_{ICE} = \frac{Places\ with\ Special\ Lighting\ in\ compliance}{Total\ amount\ of\ places\ with\ Special\ Lighting\ drawn}$$

- i. SPECIAL LIGHTING will be considered compliant if the SPECIAL LIGHTING is in accordance with the project approved by the GRANTING AUTHORITY. The analysis will be binary in relation to the four (4) information below. If any information of any SPECIAL LIGHTING POINT does not conform to the project, the location will be considered noncompliant;
 - a. Lamp type (RGB reflector, standard reflector, decorative light fixture, spot,

linear light fixture);

- b. Power (W);
- c. Color Correlated Temperature (TCC);
- d. Installation location defined in the project.

4.12. Indicator of Operation of Special Lighting (IFE)

4.12.1. The measurement of IFE will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.

4.12.2. The IFE Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result IFE \geq 98%	1.0
97% \leq % Measurement Result IFE $<$ 98%	0.9
96% \leq % Measurement Result IFE $<$ 97%	0.8
95% \leq % Measurement Result IFE $<$ 96%	0.7
94% \leq % Measurement Result IFE $<$ 95%	0.6
93% \leq % Measurement Result IFE $<$ 94%	0.5
91% \leq % Measurement Result IFE $<$ 93%	0.4
89% \leq % Measurement Result IFE $<$ 91%	0.3
87% \leq % Measurement Result IFE $<$ 89%	0.2
85% \leq % Measurement Result IFE $<$ 87%	0.1
% Measurement Result IFE $<$ 85%	0

4.12.3. To calculate the IFE Measurement Result, the formula below should be applied:

$$\text{Measurement Result}_{IFE} = \frac{\text{Places with Special Lighting in compliance}}{\text{Total amount of places with Special Lighting drawn}}$$

- i. SPECIAL LIGHTING will be considered compliant in the serviced location if at least 95% of the STREET LIGHTING POINTS are on at the time of the inspection. That is, compliant if the following equation is true:

$$\frac{\text{Amount of lit IP points}}{\text{Amount of IP points provided on site}} \geq 95\%$$

- ii. If the STREET LIGHTING POINT checked in the field is flashing or off at the time of the inspection, it will not be considered as lit, being counted only in the formula denominator.
- iii. If the STREET LIGHTING POINT has not been found in the field (for instance: owing to theft or lack of device), it will not be considered as lit, being counted only in the formula denominator.

5. Operating Criteria

5.1. CO is ascertaining by evaluating the correlated items, consisting of the indices:

- i. Daylighting Index – IAD;
- ii. Call Center Availability Index – IDC;
- iii. Telemangement Availability Index – IDT;
- iv. Index of Compliance with the Operation & Maintenance Deadlines – ICPOM.

5.2. The Operating Criteria will be represented by a number from 0 (zero) to 1 (one), calculated by the equation below:

$$CO = 20\% \times IAD + 15\% \times IDC + 15\% \times IDT + 50\% \times ICPOM$$

Where:

CO = Operating Criteria;

IAD = Daylighting Index;

IDC = Call Center Availability Index;

IDT = Telemangement Availability Index;

ICPOM = Index of Compliance with the Operation & Maintenance Deadlines.

5.3. Daylighting Index – IAD

5.3.1. IAD is made up of the following indicators:

- i. Indicator of Points Off During the Day (IPADD).

5.3.2. The IAD Form should consist of:

- i. Measurement Periodicity: Half-yearly.

- ii. Analyzed Data Base: All STREET LIGHTING POINTS entered in the REGISTRY.
- iii. Analysis Sample: The sample size shall be as established in ABNT NBR 5426:1985 Standard, general inspection level 2 (two) and normal simple sampling plan.
- iv. IAD Final Score Calculation Formula:

$$Final\ Score_{IAD} = Final\ Score_{IPADD}$$

5.4. Indicator of Points Off During the Day (IPADD)

- 5.4.1. The measurement of IPADD will be carried out through in-person checks in the field at the STREET LIGHTING POINTS in the sample.
- 5.4.2. The IPADD Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result IPADD \geq 98%	1.0
96% \leq % Measurement Result IPADD < 98%	0.9
94% \leq % Measurement Result IPADD < 96%	0.8
92% \leq % Measurement Result IPADD < 94%	0.7
90% \leq % Measurement Result IPADD < 92%	0.6
88% \leq % Measurement Result IPADD < 90%	0.5
86% \leq % Measurement Result IPADD < 88%	0.4
84% \leq % Measurement Result IPADD < 86%	0.3
82% \leq % Measurement Result IPADD < 84%	0.2
80% \leq % Measurement Result IPADD < 82%	0.1
% Measurement Result IPADD < 80%	0

- 5.4.3. To calculate the IPADD Measurement Result, the formula below should be applied:

$$Measurement\ Result_{IPADD} = \frac{Number\ of\ IP\ Points\ in\ compliance}{Total\ amount\ of\ IP\ Points\ in\ the\ sample}$$

- i. The STREET LIGHTING POINT will be considered compliant if it is effectively off during the day, according to the on-site verification in the field. Otherwise, it should be considered noncompliant.

5.5. Call Center Availability Index – IDC

5.5.1. IDC is made up of the following indicators:

- ii. Call Center Availability Indicator (IDCDA);
- iii. Waiting Time Compliance Indicator (ITE).

5.5.2. The IDC Form should consist of:

- i. Measurement Periodicity: Half-yearly.
- ii. IDC Final Score Calculation Formula:

$$Final\ Score_{IDC} = (70\% \times Final\ Score_{IDCDA}) + (30\% \times Final\ Score_{ITE})$$

5.6. Call Center Availability Indicator (IDCDA)

5.6.1. In order to measure IDCDA checks shall be carried out through the Call Center System Log. As established in the SERVICES AND INVESTMENTS SPECIFICATIONS, the Call Center shall operate twenty-four (24) hours a day, seven (07) days a week, throughout the CONCESSION. The “Total number of hours of operation planned for the semester” is calculated by multiplying 24 (twenty-four) hours by the number of days in the assessment period.

5.6.2. The IDCDA Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result IDCDA \geq 98%	1.0
97% \leq % Measurement Result IDCDA < 98%	0.9
96% \leq % Measurement Result IDCDA < 97%	0.8
95% \leq % Measurement Result IDCDA < 96%	0.7
94% \leq % Measurement Result IDCDA < 95%	0.6
93% \leq % Measurement Result IDCDA < 94%	0.5
91% \leq % Measurement Result IDCDA < 93%	0.4
89% \leq % Measurement Result IDCDA < 91%	0.3
87% \leq % Measurement Result IDCDA < 89%	0.2
85% \leq % Measurement Result IDCDA < 87%	0.1
% Measurement Result IDCDA < 85%	0

5.6.3. To calculate the IDCDA Measurement Result, the formula below should be applied:

*Measurement Result*_{IDSGC}

$$= \frac{\text{Total Hours of Real Availability system for receiving calls}}{\text{Total amount of hours of operation planned for the semester}}$$

5.7. Waiting Time Indicator (ITE)

5.7.1. In order to measure the ITE, checks shall be carried out using the Call Center System Log. The waiting time is counted from the entry of the call until the transfer, via URA - Audible Response Unit, to the attendant, or until the call is closed, if it does not reach the attendant due to caller withdrawal.

5.7.2. The ITE Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result ITE \geq 95%	1.0
92.5% \leq % Measurement Result ITE < 95%	0.9
90% \leq % Measurement Result ITE < 92.5%	0.8
87.5% \leq % Measurement Result ITE < 90%	0.7
85% \leq % Measurement Result ITE < 87.5%	0.6
80% \leq % Measurement Result ITE < 85%	0.5
75% \leq % Measurement Result ITE < 80%	0.4
70% \leq % Measurement Result ITE < 75%	0.3
60% \leq % Measurement Result ITE < 70%	0.2
50% \leq % Measurement Result ITE < 60%	0.1
% Measurement Result ITE < 50%	0

5.7.3. To calculate the ITE Measurement Result, the formula below should be applied:

$$\text{Measurement Result}_{ITE} = \frac{\text{Amount of calls answered within 60 seconds}}{\text{Total amount of calls answered over the period}}$$

5.8. Telemanagement Availability Index – IDT

5.8.1. IDT is made up of the following indicators:

- i. Indicator of Availability of Telemanagement System Data (IDDST);
- ii. Indicator of Availability of Telemanagement System Features (IDFST).

5.8.2. The IDT Form should consist of:

- i. Measurement Periodicity: Half-yearly.
- ii. Universe of Analysis:
 - a. Until the conclusion of PHASE II: All STREET LIGHTING POINTS ON MAIN ROADS with TELEMAGEMENT SYSTEM installed until the beginning of the checking period, for the two index indicators.
 - b. At the start of PHASE III: All STREET LIGHTING POINTS ON MAIN ROADS registered in the REGISTRY.
- iii. Analysis Sample: The sample size shall be as established in ABNT NBR 5426:1985 Standard, general inspection level 2 (two) and normal simple sampling plan.
- iv. IDT Final Score Calculation Formula:

$$Final\ Score_{IDT} = (50\% \times Final\ Score_{IDDST}) + (50\% \times Final\ Score_{IDFST})$$

5.9. Telemangement System Data Availability Indicator (IDDST)

5.9.1. In order to measure IDDST, checks shall be carried out using the Telemangement System Log, assessing whether the STREET LIGHTING POINTS with TELEMAGEMENT SYSTEM had their data collected daily.

5.9.2. The IDDST Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result IDDST \geq 98%	1.0
95% \leq % Measurement Result IDDST < 98%	0.9
92% \leq % Measurement Result IDDST < 95%	0.8
89% \leq % Measurement Result IDDST < 92%	0.7
86% \leq % Measurement Result IDDST < 89%	0.6
83% \leq % Measurement Result IDDST < 86%	0.5
80% \leq % Measurement Result IDDST < 83%	0.4
70% \leq % Measurement Result IDDST < 80%	0.3
60% \leq % Measurement Result IDDST < 70%	0.2
50% \leq % Measurement Result IDDST < 60%	0.1
% Measurement Result IDDST < 50%	0

5.9.3. To calculate the IDDST Measurement Result, the formula below should be applied:

*Measurement Result*_{IDDST}

$$= \frac{\text{Number of remote – manageable STREET LIGHTING POINTS that had their data collected by the TELEMANAGEMENT SYSTEM at least once a day throughout the semester}}{\text{Total amount of STREET LIGHTING POINTS remote – manageable in the checking period}}$$

5.10. Indicator of Availability of Telemangement System Features (IDFST)

5.10.1. In order to measure IDFST, on-site checks of STREET LIGHTING POINTS with telemangement shall be carried out. The three functionalities that shall be in operation when checking the STREET LIGHTING POINT are:

- i. Compliance between the status of field devices (lamp on, lamp off, online, offline and dimmed) recorded in the TELEMANAGEMENT SYSTEM and checked in person in the field;
- ii. Updated record in the TELEMANAGEMENT SYSTEM of the real electricity consumption of the inspected STREET LIGHTING POINT;
- iii. Operation of Remote Operation via TELEMANAGEMENT SYSTEM (allowing turning on/off and dimming the STREET LIGHTING POINTS inspected at the time of check).

5.10.2. The IDFST Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result IDFST \geq 95%	1.0
92.5% \leq % Measurement Result IDFST < 95%	0.9
90% \leq % Measurement Result IDFST < 92.5%	0.8
87.5% \leq % Measurement Result IDFST < 90%	0.7
85% \leq % Measurement Result IDFST < 87.5%	0.6
80% \leq % Measurement Result IDFST < 85%	0.5
75% \leq % Measurement Result IDFST < 80%	0.4
70% \leq % Measurement Result IDFST < 75%	0.3
60% \leq % Measurement Result IDFST < 70%	0.2
50% \leq % Measurement Result IDFST < 60%	0.1
% Measurement Result IDFST < 50%	0

5.10.3. To calculate the IDFST Measurement Result, the formula below should be applied:

$$\text{Measurement Result}_{IDFST} = \frac{\text{N}^{\circ} \text{ of points of IP likely to telemanagement in compliance}}{\text{Total amount of points of IP contained in sample}}$$

5.10.4. The STREET LIGHTING POINT will be considered compliant if all three functionalities of the STREET LIGHTING POINT with TELEMANAGEMENT SYSTEM are in operation. If any of the functionalities are not working, the STREET LIGHTING POINT will be considered noncompliant.

5.11. Index of Compliance with the Operation & Maintenance Deadlines – ICPOM

5.11.1. ICPOM is made up of the following indicators:

- i. Indicator of Compliance with the Operation & Maintenance Deadlines (IPOM);
- ii. Indicator of Performance of Schedule of Pruning of Trees (ICPPA).

5.11.2. The ICPOM Form should consist of:

- i. Measurement Periodicity: Half-yearly.
- ii. Analyzed Data Base:
 - a. For IPOM: amount of all CORRECTIVE MAINTENANCE and EMERGENCY MAINTENANCE calls: (i) open during the measurement period; (ii) opened in previous periods and closed in the measurement period; (iii) opened in previous periods and not yet closed.
 - b. For ICPPA: number of TREE PRUNING services provided for the measurement period, according to the Management Program for Activities Relating to Vegetation.
- iii. ICPOM Final Score Calculation Formula:

$$\text{Final Score}_{ICPOM} = (70\% \times \text{Final Score}_{IPOM}) + (30\% \times \text{Final Score}_{ICPPA})$$

5.12. Indicator of Compliance with the Operation & Maintenance Deadlines (IPOM)

5.12.1. In order to measure IPOM, checks shall be carried out using the Call Management System Log and consider the definitions below:

- a. The service time (deadline for resolution) shall start to be measured from the moment the call is received by the SERVICE CHANNELS, identification by the TELEMAGEMENT SYSTEM or pointing by the motorized patrol, being used what occurs first. The service time will end on the date and time of the performance of the maintenance service in the field by the CONCESSIONAIRE.
- b. In case of duplicate opening calls for a single STREET LIGHTING POINT for the same occurrence, only the first open call will be considered in the calculation of the indicator.
- c. In the event that a call is not answered within the period set in the SERVICES AND INVESTMENTS SPECIFICATIONS, the call will be additionally considered in the formula denominator for each 24-hour period in which the call was not resolved. For instance: a call with a deadline of 24 hours that is resolved in 70 hours will be considered 3 times in the formula denominator.

5.12.2. The IPOM Final Score should be defined according to the table below.

Measurement Result Ranges	Final Score
% Measurement Result IPOM \geq 95%	1.0
92.5% \leq % Measurement Result IPOM < 95%	0.9
90% \leq % Measurement Result IPOM < 92.5%	0.8
87.5% \leq % Measurement Result IPOM < 90%	0.7
85% \leq % Measurement Result IPOM < 87.5%	0.6
80% \leq % Measurement Result IPOM < 85%	0.5
75% \leq % Measurement Result IPOM < 80%	0.4
70% \leq % Measurement Result IPOM < 75%	0.3
60% \leq % Measurement Result IPOM < 70%	0.2
50% \leq % Measurement Result IPOM < 60%	0.1
% Measurement Result IPOM < 50%	0

5.12.3. To calculate the IPOM Measurement Result, the formula below should be applied:

*Measurement Result*_{IPOM}

$$= \frac{\text{Number of calls of CORRECTIVE MAINTENANCE and EMERGENCY MAINTENANCE solved on time in the quarter}}{\left(\text{Total amount of calls of CORRECTIVE MAINTENANCE and EMERGENCY MAINTENANCE open in the quarter} + \text{Additional amount of calls that exceeded 24 hours} \right)}$$

5.13. Indicator of Performance of Schedule of Pruning of Trees (ICPPA)

5.13.1. In order to measure ICPPA, checks shall be carried out using the Ticket Management System Log.

5.13.2. The ICPPA Final Score should be defined according to the table below:

Measurement Result Ranges	Final Score
% Measurement Result ICPPA ≥ 95%	1.0
92.5% ≤ % Measurement Result ICPPA < 95%	0.9
90% ≤ % Measurement Result ICPPA < 92.5%	0.8
87.5% ≤ % Measurement Result ICPPA < 90%	0.7
85% ≤ % Measurement Result ICPPA < 87.5%	0.6
80% ≤ % Measurement Result ICPPA < 85%	0.5
75% ≤ % Measurement Result ICPPA < 80%	0.4
70% ≤ % Measurement Result ICPPA < 75%	0.3
60% ≤ % Measurement Result ICPPA < 70%	0.2
50% ≤ % Measurement Result ICPPA < 60%	0.1
% Measurement Result ICPPA < 50%	0

5.13.3. To calculate the ICPPA Measurement Result, the formula below should be applied:

*Measurement Result*_{ICPPA}

$$= \frac{\text{N° of services of TREE PRUNING performed in quarter}}{\text{Total amount of TREE PRUNING services planned in the quarter according to the Annual Tree Pruning Schedule}}$$

- i. The pruning will be considered as performed if there is, for each scheduled pruning, the record of service performance by the CONCESSIONAIRE and the communication sent to the GRANTING AUTHORITY, informing the accomplishment.
- ii. If the TREE PRUNING is cancelled, at the request of the GRANTING AUTHORITY, less than 30 (thirty) days in advance of the expected date of performance of the service, this TREE PRUNING service shall not be accounted for in the formula numerator and denominator estimated for ICPPA.

6. Compliance Criteria

6.1. CC is ascertaining by evaluating the correlated items, consisting of the indices:

- i. Certificate Compliance Index – ICC;
- ii. Information Compliance Index - ICI.

6.2. The Compliance Criterion will be represented by a number from 0 (zero) to 1 (one), calculated by the equation below:

$$CC = (50\% \times ICC) + (50\% \times ICI)$$

Where:

CC = Compliance Criteria;

ICC = Certificate Compliance Index;

ICI = Information Compliance Index.

6.3. Certificate Compliance Index – ICC

6.3.1. ICC is made up of the following indicators:

- i. Indicator of Compliance with Treatment and Disposal of Materials (ICTDM);

6.3.2. The ICC Form should consist of:

- i. Measurement Periodicity: Quarterly.
- ii. Analyzed Data Base: All polluting waste from equipment removed or replaced from the MUNICIPAL STREET LIGHTING NETWORK during the measurement period.

6.3.3. ICC Final Score Calculation Formula:

$$Final\ Score_{ICC} = Final\ Score_{ICTDM}$$

6.4. Indicator of Compliance with Treatment and Disposal of Materials (ICTDM)

6.4.1. For the purpose of ascertaining the amount of polluting waste decontaminated and correctly disposed of, the CONCESSIONAIRE shall enter on the REGISTRY, shortly after the performance of any of the SERVICES under its responsibility, all components removed from the STREET LIGHTING POINTS, which contain waste pollutants. Thus, when measuring the related compliance indicator, the amount of decontamination services and disposal of polluting waste certified by the CONCESSIONAIRE will be compared with the total number of components that showed polluting waste and that were removed from the MUNICIPAL STREET LIGHTING NETWORK in the period. Over PHASES I and II, the contaminating waste generated should be certified every semester. As of PHASE III, the certification submitted by the CONCESSIONAIRE may be every 12 months.

6.4.2. The ICTDM Final Score should be defined according to the table below:

Binary Indicator	Final Score
If a valid certificate is submitted for the period, issued by an accredited and authorized company, for the decontamination and final destination of 100% (one hundred percent) of the polluting waste removed from the MUNICIPAL STREET LIGHTING NETWORK, as defined in the SOCIOENVIRONMENTAL SPECIFICATIONS.	1
Otherwise	0

6.5. Information Compliance Index - ICI

6.5.1. ICI is made up of the following indicators:

- i. Indicator of Compliance of Service Performance Reports (ICRES).
- ii. PPP Transparency Indicator (ITPPP).

6.5.2. The ICI Form should consist of:

- i. Measurement Periodicity: Half-yearly.

6.5.3. ICI Final Score Calculation Formula:

$$Final\ Score_{ICI} = (40\% \times Final\ Score_{ICRES}) + (60\% \times Final\ Score_{ITPPP})$$

6.6. Indicator of Compliance of Service Performance Reports – ICRES

6.6.1. The ICRES Final Score should be defined according to the table below:

$$Final\ Score_{ICRES} = \frac{No.\ of\ Compliant\ Reports}{Total\ amount\ of\ Reports\ that\ should\ have\ been\ delivered\ in\ the\ quarter}$$

6.6.2. A service performance report shall be considered compliant if it is delivered on time and in full, in keeping with the requirements of the SERVICES AND INVESTMENTS SPECIFICATIONS.

6.7. PPP Transparency Indicator (ITPPP)

6.7.1. For the purpose of measuring PPP Transparency Indicator, it should be checked whether the CONCESSIONAIRE made it available within the deadline and followed the guidelines established in the SERVICES AND INVESTMENTS SPECIFICATIONS throughout the CONCESSION TERM regarding all of the following items:

- i. ONLINE PORTAL for information sharing;
- ii. OPERATION AND MAINTENANCE PLAN;
- iii. MODERNIZATION PLAN;
- iv. Monthly Report of Performance of STREET LIGHTING SERVICES;
- v. QUARTERLY KPI REPORT;
- vi. ACCEPTANCE TERM issued;
- vii. CONTRACT AGREEMENT and its ATTACHMENTS;
- viii. Amendments to the CONTRACT AGREEMENT, as well as the studies that supported each Amendment;
- ix. RELATED ACTIVITIES Contract Agreements;
- x. FINANCIAL Contract Agreements;

- xi. Disclosure of TRANSACTION POLICY WITH RELATED PARTIES;
- xii. CONCESSIONAIRE's Financial/Accounting Statements;
- xiii. Photos and videos showing the evolution of MODERNIZATION AND STREAMLINING ENERGY of the MUNICIPAL STREET LIGHTING NETWORK;
- xiv. Schedule with graphical visualization (dashboard).

6.7.2. The ITPPP Final Score should be defined according to the table below:

Binary Indicator	Final Score
<p>ITPPP will be considered compliant, if it is found that all the demands below relating to the PPP transparency process were fully carried out over the checking period:</p> <ul style="list-style-type: none"> • The ONLINE PORTAL published all the information inherent to the CONCESSION, including contract agreements, reports, plans, and amendments. • All videos and photos have been released. • The graphical view timeline (dashboard) has been updated. • All requirements of the item “PPP Transparency Process” in the SERVICES AND INVESTMENTS SPECIFICATIONS have been met. 	1
<p>Otherwise, that is, if one or more obligations have not been met within the checking period, ITPPP shall be considered noncompliant.</p>	0