CONCESSION OF THE REGIONAL PROVISION OF WATER SUPPLY AND SEWAGE UTILITIES AND COMPLEMENTARY SERVICES FOR THE MUNICIPALITIES OF THE STATE OF AMAPÁ

ANNEX III

PERFORMANCE INDICATORS AND SERVICE TARGETS

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1. Performance Indicators

A system of performance measurement by indicators was developed, aiming to ensure compliance with the maintenance quality standards of the elements required in ANNEX IV – CONCESSION TECHNICAL SPECIFICATIONS, as well as with the current standards and certification standards required by the relevant agencies. These standards are associated with the availability, quality, and sustainability of water supply and sewage services in the MUNICIPALITIES of the State of Amapá that will be served by the future CONCESSIONAIRE.

The use of performance indicators is essential to assess the quality of water supply and sewage services, as this requires constant monitoring, allowing the improvement and observation of the enforcement of the targets defined in the concession agreements, identification and dissemination of best practices. The use of indicators is also relevant as an incentive scheme for the improvement and rationalization of oversight activities, facilitating the generation of annual diagnoses that are available to the REGULATORY AGENCY and supervisory entities, and may also serve as a basis for the formulation of public policies in the sector.

In addition, performance indicators act as an incentive for the service provider to be efficient, since worse indicators imply worse remuneration for the operation, when linked to tariff revision mechanisms. Finally, the measurement of indicators allows an assessment of the evolution of each aspect in time, as well as a comparison of the CONCESSIONAIRE'S performance with other organizations in the sector.

It is emphasized that the indicators proposed in this ANNEX were selected from market research in which it was possible to verify those that have been adopted in water and sewage projects in the country, based mainly on tender notices from the sector and indicators contained in the National Sanitation Information System (SNIS).

1.1 Selection of Indicators

In the selection of indicators, we sought to cover the most relevant dimensions of the provision of water supply and sewage services, in order to ensure that the most significant information for the assessment of the CONCESSIONAIRE'S performance will be made available, taking into account both oversight activities and social interests. Therefore, the choice of indicators took into account both requirements relating to each indicator individually and relating to all indicators.

For the individual selection of indicators, the following aspects were considered:

- Possibility of calculation without significant additional effort;
- Ease and simplicity of interpretation and acquisition;
- Strict definition, concise purport, and unambiguous interpretation;

- Objective and unbiased measurement of a specific aspect of the CONCESSIONAIRE'S performance, in order to avoid subjective or distorted judgments;
- Ease of access to data, verification, and external auditing.
- Validity, communicability, and reliability;
- Validation by independent verifying entity allowed.

Collectively, indicators capable of meeting the following requirements were sought:

- Reflect the main aspects of the management entity's performance, allowing a global representation;
- Avoid overlap in objectives or in meaning between indicators.

1.2 Performance Indicators Framework

The proposed indicators comprise a Performance Indicators Framework (QID), as fully presented in Appendix I, containing description, calculation formula, indicator components, unit of measure, periodicity, and source of data collection.

Seeking better visualization and organization of the assessment process, the Performance Indicators were classified into three (3) distinct groups, both for water and sewage:

- Operational Performance Indicators (water and sewage);
- Customer Service Quality Indicators; and
- Environmental Performance Indicators.

Each indicator has a specific formula, whose calculation usually consists of a relationship between two variables, seeking to determine actual performance against optimal performance. For most of them, the unit of measure is percentage, with few being measured as a factor (number). The following table shows the indicators that make up the QID.

Table 1 – Performance Indicators Framework

		Performance Indicator		Description	Formula		Units of Measure	Measurement Periodicity	Description
Operational Performanc	Water	IAA		Urban Water Coverage Index	100*(AG013/ G003)		%	Annual	AG013: Amount of residential water savings with feasible connection G003: Amount of total residential urban savings
		IPD	Losses in the Distribution Index	100*(AG006 + AG018 - AG010-AG024)/(AGOO6+AG018-AG024)	%	Annual	AG006: Volume of water produced AG010: Volume of water consumed AG018: Volume of treated water imported AG024: Volume of service water		
		IDA	Water Supply Discontinuity Index	100*NRCprazo/NRCregistro	%	Annual	NRCprazo: Number of complaints regarding discontinuity of supply met within the deadline (48h) NRCregistro: Number of complaints and requests recorded		
		IQA	Water Quality Index	100*QD007/QD006	%	Daily	QD 006 – Sum of the amount of residual chlorine, turbidity, color, and odor samples at the ETA output QD 007 – Sum of the amount of residual chlorine, turbidity, color, and odor samples at the ETA output with results within the standard		
	Sewage	IAE	Urban Sewage Service Index – IN047	100*(ES003/ G003)	%	Annual	ES003: Amount of residential sewage savings with feasible connection G003: Number of total residential urban savings		
		IQE	Sewage Treatment Non-	100*A/B	%	Monthly	A – Number of 24-hour composite samples of DBO5 with result within the standard		

			Conformity Index – IN 100			*B – Number of 24-hour composite samples for DBO5 determination*	
Customer Service Quality Indicators		*ISU*	*User Satisfaction Index*	*100*QSA/QST*	*%*	*Annual*	*QSA: Satisfaction surveys that meet quality standards* *QST: Total satisfaction surveys*
		RDR	*Efficiency Index for Clearance Repair in the Network or Water Extensions*	*100*A/B*	*%*	*Annual*	*A – Number of services performed within the time limit defined in the Service Order* *B – Number of total services*
Environmental Performance Indicator		*IRD*	*Documental Regularity Index*	*100*QLV/QIT*	*%*	*Annual*	*QLV: Number of facilities with operating license or grants in force* *QIT: Number of total facilities*

Source: Consortium
(1) Feasible connection savings are those in which there is technical and economic feasibility for connecting to the public network. The REGULATORY AGENCY will define the specific feasibility criteria in each municipality with the CONCESSIONAIRE.

2. Form of Measurement of Indicators

One of the difficulties that can arise in a system of performance measurement by indicators is how to measure them. The variables that make up the indicator formula are not always easily obtained and, when they are, one should be careful to read the measured parameters correctly in order to portray a system's operational reality.

Another important aspect is the periodicity of measurement, which should be established according to each indicator's peculiar characteristics. Finally, it is essential that the responsibilities of the parties involved in the process be defined, in order to make their respective functions clear and thus avoid future impasses that may compromise the measurement of indicators.

The following items are dedicated to addressing these topics in further detail.

2.1 Source for Data Collection

The data for calculating the indicators can be obtained internally or externally. The data are considered internal when generated and controlled directly by the CONCESSIONAIRE, such as the number of samples in accordance with current standards, for instance. The external ones are those that must be obtained from third parties, as in the case of the amount of total savings in the location of the concession, which is obtained by the municipalities.

Internal data can be obtained with the use of:

- Field inspection verifications;
- CONCESSIONAIRE records:
- Technical and commercial records of the CONCESSIONAIRE;
- Operational Reports;
- Physicochemical, bacteriological, and microbiological analyses in the laboratory and in the field;
- Records of environmental audits carried out; and
- Records of complaints via the Call Center System.

External data will be obtained from consultation with external sources, such as:

- National Water Agency (ANA);
- State Agencies and State Secretariats for the Environment;
- Brazilian Institute of Geography and Statistics (IBGE) – Demographic Census or National Household Survey (PNAD);
- Municipalities covered by the Project;
- National Sanitation Information System (SNIS).

2.2 Performance Indicators Target

An indicator's result by itself has no meaning, and should always be compared with some reference value or target. The definition of targets must be linked both to the good practices observed in the market in question and be in accordance with the values deemed achievable by the REGULATORY AGENCY, in addition to being aligned with the AGREEMENT.

The sources consulted for the definition of Reference Values/Targets were:

1. Current legislation;
2. Technical standards related to the indicators presented in this report;
3. History of Indicators of the National Information System (SNIS);
4. Good national and international practices adjusted to the Provider's reality; and
5. International Water Association (IWA), taking into account the Provider's reality.

The criteria adopted for the establishment of the targets addressed here were:

- Adjusted to reality: It should be taken into account that the defined targets have to be stipulated in such a way that they are achievable by the CONCESSIONAIRE. To this end, it is necessary to know the legislation in force and the practices found in the market.
- Optimistic but realistic: The targets should be optimistic and challenging, but should also avoid a possible loss of motivation on the part of the CONCESSIONAIRE. Therefore, high-reach or even unattainable targets should not be adopted, but one should rather seek to meet the conditions that characterize the service provided.
- Gradual: It is reasonable to define a period of maturing of the systems in question. Thus, we seek to establish gradual goals for the early years of the CONCESSION until the system reaches its maturity, and thus the targets become constant.
- Reliable and available information: It is essential that the information that will serve as a basis for the definition of the performance indicators targets is reliable and available. The National Sanitation Information System (SNIS) is a relevant tool to assess the reality of water and sewage service providers in different Brazilian states and/or municipalities and, therefore, is a reliable and available source of information to be considered for the definition of targets.
- *Benchmarking*: The targets/reference values defined from comparison with other realities have as an advantage the robustness of the results and potential correction and adaptation to the operational environment of the provider in question.
- Experience: Alternative approach in the absence of reliable information that can serve as a basis for setting targets. This is a qualitative method that is based on the experience and knowledge of an expert in the subject. It is worth mentioning the subjective and biased character of an opinion, which may result in a distancing from reality.

It is important to highlight that, even if the CONCESSIONAIRE has the duty to issue reports from the first (1st) year of the concession, a grace period of at least two (2) years from the start of the operation was established so that the measurement of the indicators presented here has an impact on the ACTUAL TARIFF to be validated for the CONCESSIONAIRE. This aims at the adequacy of the systems and operations to be undertaken by the CONCESSIONAIRE, so that only

from the third (3rd) year of the concession there will be indicators that will effectively have an impact on the ACTUAL TARIFF. This aspect will be presented in greater detail later in this ANNEX.

A service curve was established for water and sewage services, as shown in Appendix II. Thus, the project begins with lower levels of service until operational maturity is reached and a constant level of service is reached until the end of the term of the AGREEMENT. This is directly reflected in the targets established for the water and sewage universalization indicators, and indirectly in all those that tend to make progress as investments are made and the operation is expanded.

There are also indicators that will have fixed reference values, which are independent of the time of operation. This is the case of quality indicators, whose targets will be equal throughout the term of the agreement, except for the first two (2) years, as mentioned above.

Indicators should consider the following guidance:

- Urban water coverage index – IAA

It measures the coverage index through the relationship between the total amount of savings that can to be connected to the distribution network and the total amount of savings in the concession area.

The CONCESSIONAIRE shall validate the initial service index, based on the commercial reregistration of the system to be carried out by the CONCESSIONAIRE within two (2) years from taking over the services, which must be approved by the REGULATORY AGENCY.

The methodology for determining both parameters should be proposed by the CONCESSIONAIRE, which must be approved by the REGULATORY AGENCY.

- Losses in Distribution Index – IPD

This index reflects the efficiency of the water collection, consumption, and billing process.

The CONCESSIONAIRE shall validate the initial water loss index based on the macro-measurement and micro-measurement assessment, or another methodology to be proposed by the CONCESSIONAIRE that must be approved by the REGULATORY AGENCY.

- Water Supply Discontinuity Index – IDA

This index aims to measure the discontinuity of the water supply service to the population through the complaints submitted by the population, related to the lack of water due to system inoperability or low manometric pressure in the water supply network.

The service level target is 98%.

- Water Quality Index – IQA

For this level of service, the CONCESSIONAIRE must guarantee 98% of the compliant samples.

This quality indicator does not exempt the CONCESSIONAIRE from complying with ANNEX XX of Consolidation Ordinance No. 5 of the Ministry of Health, dated 10/03/17.

- Urban Sewage Coverage Index – IAE

Measures the coverage index through the relationship between the total amount of savings that can be connected to the sewage collection network and the total amount of savings in the concession area.

The CONCESSIONAIRE shall validate the initial service index, based on the commercial reregistration of the system, which must be approved by the REGULATORY AGENCY.

The methodology for determining the total amount of savings that can be connected to the sewage collection network and the total amount of savings in the concession area should be proposed by the CONCESSIONAIRE, which must be approved by the REGULATORY AGENCY.

- Sewage Treatment Efficiency and Improvement Index – IQE

Among the dozens of quality control parameters of a sewage treatment plant, the biochemical oxygen demand of five (5) days at 20ºC is adopted.

The analyses of the DBO5.20 concentration shall be performed according to the methods described in the latest edition of the *Standard Methods for the Examination of Water and Wastewater* of the American Public Heath Association.

For a better characterization of the average quality of raw sewage and treated sewage, the composite analysis should preferably be performed hourly, for twenty-four (24) hours in a row and never at intervals longer than every two hours.

For this level of service, the classification of non-compliance that will be used, including for the enforcement of the appropriate penalties, is as follows:

The service level target is 98% of compliant samples.

This quality indicator does not exempt the CONCESSIONAIRE from complying with the current legislation regarding the quality of the treated effluent.

- Customer Satisfaction Index – ISU

The user satisfaction index should measure their level of satisfaction with the service provided.

The data to make up the index should be obtained by sampling, in sufficient quantity that guarantees the representativeness of the universe of requests.

The service level target is 90% satisfaction.

- Efficiency index for clearance in the network or sewage extension – RDR

The time period elapsed between the service request and the effective completion date will be measured.

The service level defined as acceptable is 98% of requests resolved in up to twenty-four (24) hours for locations with up to one hundred thousand (100,000) inhabitants and 48 (forty-eight) hours for locations with more than one hundred thousand (100,000) inhabitants.

The targets of the IAA – Urban Water Service Index and IAE – Urban Sewage Service Index indicators are presented year by year in Appendix II to this ANNEX, divided by MUNICIPALITY. In the grace period of each indicator, for the purposes of calculating the Overall Performance Indicator (IDG), it will be considered that it was fully achieved.

It is emphasized that any non-compliance with the targets that is due to facts not attributable to the CONCESSIONAIRE will not be considered in the calculation of the indicators. The CONCESSIONAIRE shall justify non-compliance with information that proves the occurrence of these non-attributable facts. The REGULATORY AGENCY shall consider the justifications presented by the CONCESSIONAIRE and express its agreement with the arguments presented. If the REGULATORY AGENCY disagrees with the CONCESSIONAIRE's statement, the procedure provided for in sub-clause 28.11 of the AGREEMENT shall apply.

2.3 Attribution of Responsibilities

The assessment process consists of three (3) entities and covers the measurement, monitoring, and calculation of indicators, as listed below:

- CONCESSIONAIRE: Responsible for measuring the indicators, preparing the indicator reports, and providing the necessary information to the REGULATORY AGENCY and to the Independent Verifying Entity.
- REGULATORY AGENCY: Responsible for monitoring the CONCESSIONAIRE'S performance, and should request and receive additional information from the CONCESSIONAIRE whenever needed.
- Independent Verifying Entity: Specialized company responsible for verifying the indicator report and for field investigations necessary to check the measured results. This is a company not connected to the CONCESSIONAIRE, which must verify the process and the acuity of the collection of data to be provided by the CONCESSIONAIRE, validating the performance achieved in a given period of time independently. The INDEPENDENT VERIFYING ENTITY shall be hired in accordance with ANNEX V – PROVISIONS FOR HIRING INDEPENDENT VERIFYING AND CERTIFYING ENTITY.

3. Overall Performance Indicator

Analyzing an indicator alone and out of context can lead to incorrect or distorted interpretations. Therefore, it is recommended that indicators be analyzed as a whole and associated with the context in which they are included.

Therefore, in order to translate, in a synthetic way, the most relevant aspects about the quality of the services provided by the CONCESSIONAIRE, a methodology was defined to calculate an Overall Performance Indicator (IDG) from the set of performance indicators presented in Chapter 5 herein.

3.1 Calculation Methodology

The calculation procedure consists of the following steps:

1) Assignment of weights to indicators;
2) Normalization of indicators;
3) Adjustment to the periodicity of the indicators;
4) Calculation of the IDG.

3.1.1 Assignment of Weights

The following table shows the weights of each indicator in the calculation of the IDG.

Table 2– Indicator Weights

Indicator	Weight
Urban Sewage Service Index – IAA	20.0%
Losses in Distribution Index – IPD	10.0%
Water Supply Discontinuity Index – IDA	5.0%
Water Quality Index – IQA	15.0%
Urban Sewage Service Index – IAE	20.0%
Sewage Treatment Efficiency and Improvement Index – IQE	15.0%
User Satisfaction Index	5.0%
Efficiency Index for Clearance Repair in the Network or Water Extensions – RDR	5.0%
Document Regularity Index – IRD	5.0%
Total	100%

Source: Consortium

The water and sewage universalization, water quality, and sewage treatment indicators have the highest weights, which is due to their greater relevance to the perceptions of both the government and consumers of the quality of the service provided.

It is noteworthy that meeting the targets for the performance indicators, in addition to impacting the ACTUAL TARIFF to be charged by the CONCESSIONAIRE, is an incentive for the CONCESSIONAIRE to comply with legal requirements determined by supervisory bodies. This is due to the fact that, often, the penalties to be applied do not have a significant financial impact on the CONCESSIONAIRE, whereas, by linking the ACTUAL TARIFF to these aspects, it starts to have a global financial impact by non-compliance with the law.

3.1.2 Standardization

Considering that the benchmarks/performance targets differ between the indicators, it is necessary to standardize them so that they are on the same basis for comparison.

The formula for indicator standardization is the following:

$$ID_i^{Norm} = \frac{X_{ID} - X_{pp}}{X_{meta} - X_{pp}}$$

In which:

- ID_i^{Norm} – Standardized Performance Indicator i.
- X_{ID} – Measured value of Performance Indicator i.
- X_{pp} – Worst possible value of Performance Indicator i.
- X_{meta}– Performance Indicator i Target Value.

The indicators measured at each period will be inserted in the following table in order to generate the respective standardized values from the worst possible values and target values stipulated for each indicator.
For some indicators, the worst case would be to maintain the current situation, so in these cases the worst possible value will not be 0%.

Table 3 – Standardization of Performance Indicators

Indicator	Indicator Value (X_{id})	Worst Possible Value (X_{pp})	Target Value (X_{meta})	Standardized Value
IAA		50%	99%	
IPD		70%	30%	
IDA		0%	98%	
IQA		10%	98%	
IAE		0%	90%	
IQE		0%	98%	
ISU		0%	90%	
RDR		0%	98%	
IRD		0%	100%	

Source: Consortium

If the standardized value exceeds 100%, in which case $X_{ID} > X_{Meta,}$, the target is considered fully achieved and, therefore, ID_i^{Norm} is equal to 1.

3.1.3 Tolerance

In order to circumvent any limitations in the measurements of the indicators, a tolerance of up to one percent (1%), more or less depending on the case, on the value of the indicator, will be adopted. That is, if the measured value differs by less than one percent (1%) from the target value, it will be considered full service.

For example, if in a year in which the sewage service target is seventy-five percent (75%), the CONCESSIONAIRE reaches seventy-four percent (74%), it will not suffer any deduction related to this indicator. Likewise, if, in a given year, the rate of leaks is three percent (3%), with the target at two percent (2%).

In addition to this tolerance, in the first occurrence of an IDG of less than one (1), the calculated reduction will be mitigated by being multiplied by twenty-five percent (25%), so that it serves more as a warning than as a punishment for not achieving the targets. However, this will only happen once throughout the entire term of the AGREEMENT. That is, if this mitigating factor is used in the third (3rd) year of the concession, in the other years the IDG will be applied in full according to the detailed calculation below.

3.1.4 Adjustment to Periodicities

The calculation of the IDG is done annually, therefore, as there are indicators whose measurement periodicities are less than one (1) year, it is necessary to adjust them to their respective periodicities in order to obtain an annualized value for each of them.

Therefore, for such indicators, the average of the values measured over the twelve (12) months prior to the calculation of the IDG should be calculated. Thus, if an indicator has a quarterly periodicity, an average of the four (4) measurements taken over one (1) year will be calculated, whereas for an indicator with semiannual measurement, the average of the two (2) measurements taken in the year in question will be calculated.

It is noteworthy that this is a weighted average in which higher weights will be assigned to the measurements closest to the date of adjustment, capturing the impact of the trajectory of the indicators on the tariff adjustment, since if the evolution is positive throughout the year, the CONCESSIONAIRE will benefit, while downward trajectories will tend to penalize it.

For each indicator the adjustment will be made as follows:

$$ID_a^{Norm} = \frac{\sum_{j=1}^{n} ID_j^{Norm}\ x\ j}{\sum_{j=1}^{n} j}$$

In which:

- ID_a^{Norm} – Adjusted and standardized Performance Indicator.
- ID_j^{Norm} – Standardized Performance Indicator of the "j th" annual measurement.
- n - Number of measurements taken over the course of a year.

Returning to the previous example in which the indicator has quarterly measurement periodicity, the calculation would be:

$$ID_a^{Norm} = \frac{ID_1^{Norm}\ x\ 1 + ID_2^{Norm} x\ 2 + ID_3^{Norm} x\ 3 + ID_4^{Norm} x\ 4}{10}$$

3.1.5 Calculation of the IDG

Once standardized, adjusted to the respective periodicities, and the respective weights has been established, the IDG is calculated according to the following formula:

$$IDG = \sum_{i=1}^{n} P_i\ x\ ID_a^{Norm} i$$

In which:

- IDG – Overall Performance Indicator;
- P_i – Performance Indicator i weight;
- $ID_a^{Norm} i$– Standardized and adjusted Performance Indicator i; and
- n – Number of Performance Indicators.

Thus, the CONCESSIONAIRE must present a table as follows, including standardized and adjusted weights and values for the calculation of the IDG according to the previous equation.

Table 4 – IDG Calculation

Indicator	Weight	Standardized and Adjusted Value
IAA	20.0%	
IPD	10.0%	
IDA	5.0%	
IQA	15.0%	
IAE	20.0%	
IQE	15.0%	
ISU	5.0%	

Indicator	Weight	Standardized and Adjusted Value
RDR	5.0%	
IRD	5.0%	

Source: Consortium

An IDG should be prepared for each MUNICIPALITY. The calculation of the consolidated IDG should consider the weights described in the Appendix III table for each MUNICIPALITY, according to the following formula:

$$IDGconsolidado = \frac{\sum_{i=1}^{n} Peso_i \; x \; IDGi}{T_p}$$

In which:

- $IDGconsolidado$ – Overall Performance Indicator of the CONCESSIONAIRE;
- $Peso_i$ – Weight of the MUNICIPALITY i in the calculation of the consolidated IDG;
- $IDGi$– IDG of the MUNICIPALITY i; and
- n – Number of municipalities in the block.

Tp– Sum of the weights of each MUNICIPALITY of the BLOCK

3.2 Indicators Report

Although some of the indicators are measured with a periodicity of less than one (1) year, the CONCESSIONAIRE shall prepare an annual indicator report to be analyzed by the INDEPENDENT VERIFYING ENTITY and the REGULATORY AGENCY. This report shall contain:

- Detailed information on the calculation of all performance indicators, such as the methodology adopted for the calculation of each of them and also their consolidation in a General Performance Indicator (IDG) for the block in question;
- Detailed history of each indicator, with all measurements taken in the period; and
- Methodology for calculating the financial reducer, which will be a function of the Overall Performance Indicator, as well as its result and impact on the tariff adjustment.

The format of the indicator report shall be shared with the REGULATORY AGENCY for approval prior to the start of the operation, and may be modified throughout the AGREEMENT as necessary to make the calculation of the results clearer and more accurate. Modifications should be discussed between the PARTIES in order to assess any financial and/or operational impact of a change in parameters. Changes resulting in financial impacts shall be included in a potential contractual rebalancing process.

This report and all the information contained therein will necessarily go through a verification process to be carried out by the INDEPENDENT VERIFYING ENTITY, contracted as indicated in the Agreement.

Revisions of the indicators and their respective weights will be provided for in the AGREEMENT, the first of which is expected to take place 5 years after the issue date of the AGREEMENT, aiming at better meeting the targets of the Performance Measurement System.

4. Use of the Overall Performance Indicator for Periodic Adjustments

Full compliance with the performance targets established for each indicator will imply obtaining an IDG equal to 1, which, in turn, will allow the CONCESSIONAIRE to receive the maximum possible adjustment in the year in question, while users benefit from the quality gains in the service provided.

The procedure for calculating the tariff adjustment and the enforcement of the IDG in the adjustment are described in the following items.

4.1 Adjustment

According to the AGREEMENT, the values of the TARIFFS, as well as the COMPLEMENTARY SERVICES will be adjusted every twelve (12) months from the date of submission of the commercial proposal in the bidding. Such adjustment shall comply with the following parametric formula:

$$\text{TARIFF}_{n} = \text{TARIFF}_{n-1} * \text{IRC}$$

In which:

- **TARIFF $_n$:** Tariff to be calculated.
- **TARIFF $_{n-1}$**: Tariff in force in the previous year.
- **IRC**: Contractual Adjustment Index;

The IRC, in turn, will be calculated as follows:

$$\text{IRC} = [P1 \times (Ai/Ao) + P2 \times (Bi/Bo) + P3 \times (Ci/Co) + P4 \times (Di/Do)]$$

In which:

- **P1, P2, P3, and P4**: Weighting factors to be applied on the indexes used in the formula, whose values are shown in Table 5. The sum of weighting factors should be equal to 1.
- **Ai**: is the index "ICC – Labor – labor index (column 56) published by Fundação Getulio Vargas – FGV", corresponding to the fourth month before the date of the tariff adjustment;
- **Ao**: is the same index above, corresponding to the fourth month preceding the date of the last adjustment made;
- **Bi**: is the average of the values of the electricity tariff referring to "Group A – Conventional, Subgroup A4 (2.3 kV to 25kV)", off-peak, consumption value in MWh, practiced by the local power distribution concessionaire, on the 1st day of the 12 months prior to the date of the tariff

adjustment. The average tariff flags for the 12-month period prior to the date of the tariff adjustment should also be considered.

- Bo: is the same index above, practiced by the local concessionaire, on the 1st day of the 12 months prior to the date of the last tariff adjustment performed.
- Ci: is the index "IPA – Origin – OG-DI – Industrial Products – Manufacturing Industry – Chemicals (1006820)", corresponding to the fourth month preceding the date of tariff adjustment;
- Co: is the same index above, corresponding to the fourth month preceding the date of the last tariff adjustment performed;
- Di: is the index "INCC – National Civil Construction Index, column 1A of *Revista de Conjuntura Econômica* of Fundação Getulio Vargas", corresponding to the fourth month prior to the date of the tariff adjustment.
- Do: is the same index above, corresponding to the fourth month preceding the date of the last tariff adjustment performed.

Table 5 – Definition of Weighting Factors

	Item	Year 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 12	Years 13 to 15	Years 16 to 18	Years 19 to 21	Years 22 to 24	Years 25 to 27	Years 28 to 30	Years 31 to 33	Years 34 and 35
P1	Labor[1]	18.6%	18.0%	26.2%	34.0%	38.2%	43.4%	44.2%	54.4%	52.9%	56.0%	54.3%	57.0%
P2	Electric Power	6.6%	6.2%	9.2%	12.5%	14.8%	17.2%	17.3%	21.2%	20.5%	21.5%	20.8%	21.7%
P3	Industrial Products	4.6%	4.1%	5.3%	6.5%	7.2%	8.2%	8.2%	10.0%	9.7%	10.2%	9.8%	10.3%
P4	CAPEX (Civil Construction)	70.2%	71.7%	59.3%	47.0%	39.8%	31.2%	30.3%	14.4%	16.9%	12.3%	15.1%	11.0%

Source: Consortium

(1) The operational and administrative labor was considered
(2) Expenses with chemicals, laboratory tests, and sludge treatment were considered.

[1] The operational and administrative labor was considered.

4.2 Enforcement of Performance Indicators in the Tariff

The enformecement of the IDG to the TARIFF will take place from the third year of operation of the system and the ACTUAL TARIFFS will be determined annually, at the same time as the tariff adjustment, from the incidence of performance targets, which will be measured by the INDEPENDENT VERIFYING ENTITY.

In the first two years of operation of the system, the value of the ACTUAL TARIFF will coincide with that of the TARIFF, duly adjusted. The ACTUAL TARIFFS will be calculated based on the following formula:

$$TARIFF_e = TARIFF_b * IDG + TARIFF_b * ITS$$

In which:

- **$TARIFF_e$:** Actual Tariff
- **$TARIFF_b$:** Base tariff, calculated according to item 4.1 herein.
- **IDG:** Overall Performance Indicator, which will assume the role of financial reducer if performance targets are not met.
- **ITS:** Social Tariff Index, which will be explained below.

In order to consider a threshold for the IDG that does not make the CONCESSIONAIRE'S operation impossible in that year so that it can recover in the following year, a minimum threshold of 0.90 was established. Therefore, the IDG will be the result of the formula in section 3.1.5 or 0.90, whichever is greater.

On the other hand, for contractual purposes it will also be considered that if the CONCESSIONAIRE reaches the IDG below the minimum of 0.90 in two (2) consecutive years or three (3) non-consecutive times in less than five (5) years, the forfeiture of the AGREEMENT may be declared.

Finally, the CONCESSIONAIRE will have the opportunity to seek, after three (3) months from a tariff reduction for the enforcement of the IDG, a new IDG calculation and, if the performance failure has been remedied, the Actual Tariff will be recalculated to consider the new IDG calculated.

It is noteworthy that the adjustment of the base tariff and the calculation of the Actual Tariffs will be approved by the REGULATORY AGENCY through a single administrative procedure, with the support of the INDEPENDENT VERIFYING ENTITY. The TARIFF will be calculated by the REGULATORY AGENCY, while the actual tariff will be calculated by the CONCESSIONAIRE, and the respective calculation worksheet shall be forwarded to the REGULATORY AGENCY, with a copy to the STATE, within sixty (60) days before the planned date for the adjustment, as established in the AGREEMENT.

4.3 Social Tariff Index (ITS)

The Purpose of the Social Tariff Index is to provide for an additional increase in the USER tariff if the percentage of savings benefiting from the social tariff, granted according to the criteria established by state regulations, exceeds the limit established in the agreement, which is twenty-two and six tenths percent (22.6%) of the total active savings.

Therefore, it will always be equal to zero if the percentage of savings benefiting from the social tariff in the scope of the CONCESSION is less than twenty-two and six tenths percent (22.6%) of the total active savings.

If the percentage exceeds the threshold of twenty-two and six tenths percent (22.6%), the ITS will be calculated according to the formula below:

$$ITS = \frac{0{,}6 * TS - 11{,}3\%}{88{,}7\%}$$

In which:

- TS: Percentage of savings benefiting from the Social Tariff in the scope of the CONCESSION.

To ensure that there is always a correct measurement of the percentage of savings benefiting from the Social Tariff and that the USER TARIFF does not receive an annual adjustment greater than necessary, the CONCESSIONAIRE shall perform an annual re-registration of beneficiaries two (2) months before the time of the adjustment.

The possible adjustment referring to the social tariff will only be obtained on the condition of the prior realization of this reregistration.

The above formulation was obtained from the logic that the average tariff of users follows the composition below:

Average Tariff (TM) = 77.4% * Reference Tariff (TR) + 22.6% * Social Tariff (TS)

And that TS = 0.4 * TR, therefore:

TM = 77.4% * TR + 22.6% * 0.4 * TR = 86.44% * TR

For example, in a hypothetical case in which the percentage of savings benefiting from the social tariff reaches 30%:

TM = 70% * TR + 30% * 0.4 * TR = 82% * TR

Therefore, in this example, the Average Tariff was reduced by 4.44% x TR, which would represent:

$$\frac{4{,}44\% * TR}{88{,}7\% * TR} = 5\%$$

Using an unknown in place of the percentage of the social tariff that is above the 22.6% threshold and doing the proper mathematical calculations, the ITS formula was reached.

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ADASA Resolution No. 08/2016 – Provides for the methodology for evaluating the performance of water and sewage supply services – 2016

Appendix I – Performance Indicator Targets

Table 6 - Goal of performance indicators

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
IDA	N/A	N/A	N/A	N/A	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
IQA	N/A	N/A	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
IPD	N/A	N/A	60%	55%	50%	45%	40%	35%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
IQE	N/A	N/A	N/A	N/A	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
ISU	N/A	N/A	N/A	N/A	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
RDR	N/A	N/A	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
IRD	N/A	N/A	N/A	N/A	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Year	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
IDA	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
IQA	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
IPD	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
IQE	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
ISU	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
RDR	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
IRD	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Appendix II – Water and Sewage Service Indicators Targets

Table 7 - Goals of IAA Indicators - Urban Water Service Index

Ano	Amapá	Calçoene	Cutias	Ferreira Gomes	Itaubal	Laranjal do Jari	Macapá	Mazagão	Oiapoque	Pedra Branca do Amapari	Porto Grande	Pracuúba	Santana	Serra do Navio	Tartarugalzinho	Vitória do Jari
Concession start	24%	13%	75%	46%	70%	30%	38%	23%	10%	6%	5%	43%	43%	60%	26%	56%
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	38%	24%	88%	56%	80%	50%	57%	38%	28%	26%	25%	54%	63%	67%	41%	65%
4	45%	33%	99%	62%	85%	60%	67%	46%	37%	35%	34%	60%	73%	71%	48%	69%
5	53%	43%	99%	67%	89%	70%	77%	53%	46%	44%	43%	66%	83%	75%	55%	73%
6	61%	52%	99%	72%	94%	80%	87%	61%	55%	53%	53%	71%	93%	79%	63%	78%
7	68%	62%	99%	78%	99%	90%	97%	69%	64%	62%	62%	77%	99%	83%	70%	82%
8	76%	71%	99%	83%	99%	99%	99%	76%	72%	72%	71%	82%	99%	87%	77%	86%
9	84%	80%	99%	88%	99%	99%	99%	84%	81%	81%	80%	88%	99%	91%	84%	90%
10	91%	90%	99%	94%	99%	99%	99%	91%	90%	90%	90%	93%	99%	95%	92%	95%
11	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
12	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
13	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
14	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
15	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
16	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%

17	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
18	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
19	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
20	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
21	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
22	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
23	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
24	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
25	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
26	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
27	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
28	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
29	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
30	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
31	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
32	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
33	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
34	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
35	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%

Table 8 - Goals of the IAE Indicators - Urban Sewage Service Index

Ano	Amapá	Calçoene	Cutias	Ferreira Gomes	Itaubal	Laranjal do Jari	Macapá	Mazagão	Oiapoque	Pedra Branca do Amapari	Porto Grande	Pracuúba	Santana	Serra do Navio	Tartarugalzinho	Vitória do Jari
Início Concessão	5%	0%	0%	0%	0%	0%	11%	3%	2%	0%	0%	0%	1%	58%	0%	0%
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A	N/A	20%	N/A	N/A	N/A	N/A	N/A	20%	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	30%	N/A	N/A	N/A	N/A	N/A	30%	N/A	N/A	N/A
6	20%	20%	20%	20%	20%	20%	40%	20%	20%	20%	20%	20%	40%	61%	20%	20%
7	30%	30%	30%	30%	30%	30%	50%	30%	30%	30%	30%	30%	50%	63%	30%	30%
8	40%	40%	40%	40%	40%	40%	55%	40%	40%	40%	40%	40%	55%	66%	40%	40%
9	50%	50%	50%	50%	50%	50%	60%	50%	50%	50%	50%	50%	60%	68%	50%	50%
10	55%	55%	55%	55%	55%	55%	65%	55%	55%	55%	55%	55%	65%	70%	55%	55%
11	60%	60%	60%	60%	60%	60%	70%	60%	60%	60%	60%	60%	70%	73%	60%	60%
12	65%	65%	65%	65%	65%	65%	75%	65%	65%	65%	65%	65%	75%	75%	65%	65%
13	70%	70%	70%	70%	70%	70%	80%	70%	70%	70%	70%	70%	80%	78%	70%	70%
14	75%	75%	75%	75%	75%	75%	83%	75%	75%	75%	75%	75%	83%	80%	75%	75%
15	80%	80%	80%	80%	80%	80%	85%	80%	80%	80%	80%	80%	85%	83%	80%	80%
16	83%	83%	83%	83%	83%	83%	88%	83%	83%	83%	83%	83%	88%	85%	83%	83%
17	87%	87%	87%	87%	87%	87%	90%	87%	87%	87%	87%	87%	90%	88%	87%	87%

18	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
19	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
20	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
21	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
22	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
23	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
24	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
25	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
26	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
27	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
28	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
29	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
30	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
31	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
32	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
33	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
34	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
35	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%

Appendix III – Weight of the municipalities for the composition of the consolidated IDG

Table 9 – Weights of the municipalities for the composition of the consolidated IDG

Municipality	Weight
Amapá	1.0
Calçoene	1.0
Cutias	1.0
Ferreira Gomes	1.0
Itaubal	1.0
Laranjal do Jari	1.5
Macapá	2.5
Mazagão	1.5
Oiapoque	1.5
Pedra Branca do Amapari	1.0
Porto Grande	1.5
Pracuúba	1.0
Santana	2.0
Serra do Navio	1.0
Tartarugalzinho	1.0
Vitória do Jari	1.0