FINAL TECHNICAL NOTE
NT/F/004/2017

2nd ORDINARY TARIFF REVISION OF SABESP: INITIAL STAGE

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PRELIMINARY TECHNICAL NOTE
2nd ORDINARY TARIFF REVISION OF SABESP: INITIAL STAGE
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1. INTRODUCTION

The purpose of this Technical Note is to present the final results produced by Arsesp for the initial stage of the 2nd Ordinary Tariff Revision (2nd OTR) - Initial Stage of the Companhia de Saneamento Básico do Estado de São Paulo - Sabesp, which already incorporate the contributions accepted by Arsesp under the public consultation.

In Arsesp Resolution No. 484/2014, which approves the conclusion of Sabesp's 1st Ordinary Tariff Revision, it was established the date of April 11, 2017 for the 2nd OTR. However, due to the delay as a result from the temporary suspension of the hiring process of the consulting firm to support Arsesp in carrying out the tariff revision, due to a court decision on an appeal filed by a bidder, and due to the responsibility given to the Agency to ensure the tariff's moderateness and the economic and financial balance of the service provision, Arsesp chose to carry out the 2nd OTR in two stages:

• Initial Stage: definition of the Maximum Average Preliminary Tariff (Preliminary P0) and the Weighted Average Cost of Capital (WACC);
• Final Stage: definition of the Maximum Average Final Tariff (Final P0) and calculation of the Productivity Factor (X Factor).

The detailed description of the scope of each stage is included in item 3.1 below.

The start of Sabesp's 2nd Ordinary Tariff Revision and the schedule of events of the initial stage were approved and published by Arsesp through Resolution No. 706/2017, which was subsequently amended by Resolution No. 720 of April 2017. In May, answering Sabesp's request to complement and submit new data, Arsesp again extended the period for the data analysis stage and changed the publication date of the Preliminary Technical Note, of the opening of the public consultation and of the disclosure of the final result of this initial stage, which was set to September 15, 2017. In July 2017, Sabesp submitted a new request for extension in order to present final clarifications on the content of the information previously submitted, which was approved by ARSESP, resulting in a further postponement of the date foreseen for the conclusion of the initial stage, which was set to October 03, 2017, according to ARSESP Resolution No. 748/2017.

In order to establish the preliminary tariff level, Arsesp initially used the historical data (2013-2016) and the 2017-2021 Business Plan delivered by Sabesp in January/2017, the additional information requested by Arsesp throughout the data analysis stage and, finally, the revised Business Plan delivered in June/2017, which includes all the adjustments made by Sabesp during the process. At Arsesp's request, the forecasts presented by Sabesp in the Business Plan include the 2017-2021 period, but in order to validate the date of this 2nd OTR, will be considered the 2017-2020 period, given that the tariff cycle is of 4 years.

In this initial stage of the 2nd Ordinary Tariff Revision, the methodology used in the process of the 1st Ordinary Tariff Revision was maintained. The preliminary results of this initial stage obtained by Arsesp were presented in the Preliminary Technical Note NT/F/003/2017, which was submitted to a consultation and public hearing to receive contributions. Public Consultation 01/207 was held from August 14, 2017 to September 4, 2017 and Public Hearing 02/2017 was held on August 31, 2017.

2. RETROSPECT OF THE TARIFF OF THE CYCLE CONCLUDED (AUG/2012-APR/2017)

Law No. 11445/2007, which establishes the national guidelines for basic sanitation, sets forth in Article38 that the tariff revisions should include the reassessment of the conditions of service provision and the tariffs adopted, and may be ordinary (periodic) revisions or extraordinary revisions. The purpose of the ordinary revisions is to distribute the productivity gains with the users and reevaluate the market conditions (Section I, Article38).

The regulatory entity is also responsible for issuing the rules regarding the regime, structure, tariff levels and subsidies, as well as the procedures and deadlines for its definition, readjustment and revision (Article 23, Section IV). The regulatory entity establishes the agenda of the ordinary revision, after hearing the owners, users and service providers (Article38, Paragraph 1).

The State Complementary Law 1025/2007 assigns to Arsesp the responsibility for regulating and inspecting, including those related to tariff issues, basic sanitation services owned by the state and in municipalities whose responsibility was assigned to the State, preserving municipal responsibilities and prerogatives.

2.1 Tariff revisions and adjustments

Based on the responsibilities assigned to Arsesp, in 2011, the Agency started the process of the 1st Ordinary Tariff Revision (1st OTR) for the 4-year tariff cycle, from August 2012 to August 2016. The methodology to be applied in the 1st OTR was published through Technical Note RTS/01/2012. Also in 2012, Arsesp authorized the annual tariff readjustment of 5.15% (Arsesp Resolution No. 353).

Due to the problems faced by Sabesp and Arsesp during the development of the works, mainly regarding the survey and validation of the assets base, the tariff revision was carried out in 2014. Prior to this, in April/2013, the Agency authorized the interim Tariff Repositioning Index of 2.3509%, anticipating the 1st OTR (Arsesp Resolution No. 406) and, in November/2013, granted the annual readjustment of the tariff of 3.1451% (Arsesp Resolution No. 435).

In April 2014, Arsesp then published the result of the 1st OTR, establishing the tariff repositioning index at 5.4408% over the tariffs in effect at the time, which ensured the concessionaire's economic and financial balance for the tariff cycle and the definition of the efficiency factor (X Factor) of 0.9386% to be applied in the next annual readjustments, in April 2015 and April 2016. It was also established that the cycle would be extended by 8 months, and that the next tariff revision would take place on April 11, 2017. The results were published by Arsesp through Resolution No. 484/2014 and Final Technical Note RTS/004/2014.

When the results were published by Arsesp, Sabesp began to adopt measures to encourage people to save water, which will be described below, due to the unfavorable water situation. Given this context, Arsesp allowed the concessionaire to apply at a later date the repositioning index resulting from the tariff revision (see Article 1 of ARSESP Resolution No. 484/2014).

On November 2014, Sabesp requested to Arsesp the application of the results of the OTR approved in April 2014. Arsesp authorized Sabesp to apply, as of December 27, 2014, the 6.4952% index, corresponding to the 5.4408% index approved at the end of the Tariff Revision in April, plus 1% to offset the postponement of its application, as published in Arsesp Resolution No. 520/2014.

It is worth noting that this authorized index did not incluse any compensation to Sabesp for losses of revenue from the Water Consumption Reduction Incentive Program that was in force. Tariff discounts regarding the maximum tariff approved by the regulator may be granted by the Concessionaire, but do not lead to a request for compensation.

With the lengthening of the water crisis, in March 2015, Sabesp requested to Arsesp the Extraordinary Tariff Revision (ETR), due to: i) an increase in the cost of electric power and ii) reduction in the demand resulting from the scarce supply due to the water crisis.

Arsesp decided to accept the request, promoting changes in the unit costs of electric power and in the components of the demand, in the business plan, maintaining the methodology used in the 1st OTR. The Extraordinary Tariff Revision (ETR) included the remaining period of the tariff cycle (2015-2016). The date scheduled for the 2nd OTR (April 2017) was maintained. After the public consultation and hearing, the results of the ETR were presented in the Final Technical Note RTS/004/2015, with the resulting Tariff Repositioning Rate of 6.9154% (Arsesp Resolution No. 561).

Arsesp also authorized the annual tariff adjustment for 2015, which was of 7.7875% (Arsesp Resolution No. 560) and the tariff adjustment for 2016, which was of 8.4478% (Arsesp Resolution No. 643).

2.2. Incentive Program to Reduce Water Consumption and Contingency Tariff

Early 2014, Sabesp requested an authorization to implement an Incentive Program of Water Consumption Reduction (bonus) for consumers in the Metropolitan Region served by the Cantareira System, due to the water crisis that occurred at the time. This program, approved by ARSESP Resolution No. 469/2014 of February/2014, had the purpose of granting a 30% discount in tariffs for users who reduced their monthly consumption by at least 20%, over the average consumption between February/2013 and January/2014.

The persistence of the water crisis resulted in the extension of the bonus concession to all cities in the São Paulo Metropolitan Region served by SABESP, which was approved by ARSESP Resolution No. 480/2014. After this, Sabesp was authorized to stagger the ranges of the tariff bonus of the Incentive Program of Water Consumption Reduction, including granting bonuses for users who had a reduction of over 10% in the consumptions as of November 1, 2014 (See ARSESP Resolution No. 514/2014).

In January/2015, given the continuity of the water crisis, Arsesp authorized the application of the Contingency Tariff for users that exceeded the established average consumption, pursuant to ARSESP Resolution No. 545/2015.

With the regularization of the supply, the Incentive Program of Water Consumption Reduction (bonus) and the Contingency Tariff were canceled in March 2016. The Table below summarizes the evolution of Arsesp's resolution regarding the tariff systems adopted.

Table 2.1: Evolution of the Incentive Program of Water Consumption Reduction and Contingency Tariff

Resolution	Description	Date of the Resolution
469/2014	Established the Incentive Program of Water Consumption Reduction: granting a 30% bonus to reduce consumption > 20% - applicable to users supplied by the Cantareira System	Feb/2014
480/2014	Expansion of the bonus for all users of the São Paulo Metropolitan Region	Apr/2014
514/2014	Staggering of the bonus for consumption reduction: - 10% to 15%: 10% bonus on the bill - 15% to 20%: 20% bonus on the bill - >20%: 30% bonus on the bill	Dec/2014
545/2015	Application of the contingency tariff for consumption increase: - Up to 20% of the average: increase of 40% in the water bill - Over 20% of the average: 100% increase in the water bill	Jan/2015
614/2015	Extension of the term of the contingency tariff up until December 31, 2016 or until a greater predictability regarding the water situation	Dec/2015
615/2015	Extension of the term of the Incentive Program of Water Consumption Reduction up until December 31, 2016 or until a greater predictability regarding the water situation	Dec/2015
640/2016	Cancellation of the contingency fee	Mar/2016
641/2016	Cancellation of the Incentive Program of Water Consumption Reduction	Mar/2016

3. THE SECOND ORDINARY TARIFF REVISION (APR/2017-APR/2021)

3.1 Scope

With the conclusion of the current tariff cycle, Sabesp's 2nd Ordinary Tariff Revision was scheduled to be completed on April 11, 2017, as established in Arsesp Resolution No. 484/2014.

During the tariff revision processes, Arsesp usually counts on the support of a technical consulting firm, always hired through a bidding process, which assists in the works. In the case of the 2nd OTR of Sabesp, the Agency carried out a bidding process, which was temporarily suspended due to an administrative appeal and then a court decision filed by a bidder. Thus, still without the support of the consultancy firm, the work of the 2nd OTR began and, considering the complexity and breadth of the tasks to be undertaken, it was decided to carry them out in two stages: the initial stage and the final stage.

In the initial stage, the Preliminary Maximum Average Tariff (Preliminary P0) and the respective Preliminary Tariff Repositioning Rate will be calculated. The scope of the initial stage is as follows:

• use of the same methodology adopted in Sabesp's 1st Ordinary Tariff Revision, included in Technical Notes RTS/001/2012 and RTS/004/2014;

• evaluation of the P0 components for the tariff cycle: OPEX, CAPEX, Demand, Revenue, Supply and Investments, based on the Business Plan presented by Sabesp within the 2nd OTR;

• definition of regulatory targets for the Water Loss Index and Irrecoverable Revenues;

• definition of the Weighted Average Cost of Capital (WACC) for the tariff cycle;

• definition of the Regulatory Remuneration Base, adding the Armored Base approved for the previous cycle by Technical Note RTS/004/2014 with the necessary updates (write-offs, depreciation and monetary correction) to the Additional Base presented by Sabesp.

The final stage, which is expected to be completed in April 2018, will include other factors involved in the OTR that were not included in the initial stage, any adjustments referring to the results obtained in the initial stage and analysis of the contributions received in the public consultation 01/2017. The scope this stage will be:

• analysis and revision of the methodology adopted in Sabesp's 1st Ordinary Tariff Revision;

• diagnosis of Sabesp's economic, financial and tariff situation in the tariff cycle ended in April 2017, including impacts arising from the water crisis and contingency tariff;

• definition of the compensatory adjustments related to the tariff cycle concluded, including those related to the Extraordinary Tariff Revision held in 2015;

• definition of productivity gains to be shared with users - X factor to be discounted in the annual readjustments - for the next tariff cycle;

• development of a Overall Indicator of Quality for the services provided by Sabesp to be considered in the Annual Tariff Adjustment Index;

• presentation of the final Regulatory Remuneration Base, duly verified through a field survey and accounting reconciliation;

• assessment of any compensatory adjustments related to the Preliminary P0 established in the initial stage of the 2nd Ordinary Tariff Revision.

• study on establishing a percentage of the revenue for expenditures with research, development and innovation.

3.2 Regulatory Model

As mentioned earlier, in the initial stage of the 2nd Ordinary Tariff Revision, Arsesp chose to maintain the methodology adopted in the 1st OTR, which was submitted to public consultation and hearing at the time, and is described in Technical Notes RTS/001/2012 and RTS/004/2014.

The regulatory model adopted for Sabesp consists in establishing a maximum price (P0), based on the guarantee of Sabesp's economic and financial balance in every area of activity and on efficient costs planned for the tariff cycle, in order to encourage the company to permanently seek the reduction of its costs. Thus, an average tariff, expressed in Reais per cubic meter, is obtained, which reflects the economic cost of providing water and sewage services for a certain tariff cycle.

Briefly, the definition of the P0 consists in the simulation of the economic and financial balance of the company through the Discounted Cash Flow methodology, thus allowing to ensure the economic sustainability of Sabesp. The Discounted Cash Flow technique to calculate the P0 can be observed in the following formula1:

$$P_0 = \frac{BRRL_0 - \frac{BRRL_T}{(1+r_{wacc})^T} + \sum_{t=1}^{T} \frac{(1-w).OPEX_t - w.D_t^C + CAPEX_t + VarWK_t}{(1+r_{wacc})^t}}{\sum_{t=1}^{T} \frac{(1-w).V_t}{(1+r_{wacc})^t}}$$

Where:

P_0 = Maximum Average Tariff (or Maximum Price) that ensures SABESP's economic and financial balance in the tariff cycle.

$BRRL_0$ = RAB_0 = Net Regulatory Remuneration Basis (i.e., net of depreciation), at the beginning of the cycle, to be established based on Arsesp Resolution No. 672/2016. RAB includes the initial inventory of Working capital.

RAB_T Net Regulatory Remuneration Basis at the end of the tariff cycle.

T = Duration in years of the tariff cycle.

V_t = Total billable volume for t year (corresponds to the sum of the billable volume of water and billable volume of sewage). The effects of collecting the minimum consumption in the current tariff structure are included.

$OPEX_t$ = Operating, administrative and marketing costs in t year.

$CAPEX_t$ = Investments disbursed in t year.

$VarWK_T$ = Variation in Remunerable Working capital in t year.

W = Income tax and social contribution on net income.

r_{wacc} = Cost of Capital.
D_t^C = Depreciation/Amortizations in t year.

The elements that make up the formula are estimated at constant prices for the whole cycle, which, in addition to avoiding the need to forecast the inflation and the exchange rate, calculates the appropriate value and allows more adequate estimates for each component.

The Tariff Revision includes the definition of three key components:
i) The initial value of the Maximum Average Tariff (P0) of Sabesp to be applied in the tariff cycle under study;
ii) The Efficiency Factor (X Factor) to be applied in the annual adjustments of P0 as of the second year of the tariff cycle;
iii) The new table of tariffs to be practiced by the Concessionaire.

[1]The purpose of this P_0 is to recover Direct Revenues (tariffs), which correspond to the Total Revenue after deducting indirect revenues (services) and other operating revenues.

During the tariff cycle, the Maximum Average Tariff is adjusted annually through a system composed of:
i) Update factor based on the evolution of the price index that avoids the inflation erosion of the company's revenue (for Sabesp, the IPCA was adopted);
ii) Efficiency Factor (X factor) that transfers the estimated productivity gains to the users, through annual real reductions in the tariff levels practiced; and
iii) Adjustment factor based on the evolution of the quality of the services rendered, in order to avoid that the reduction incentives of costs jeopardize the quality levels of the service rendered.

For the 2nd Ordinary Tariff Revision process, pursuant to the schedule of events established in Arsesp Resolution No. 706/2017, Sabesp sent to Arsesp the historical data regarding the tariff cycle concluded (2013-2016) and the Business Plan for the cycle beginning (2017-2020) which included, among others, the following information:

I) Market forecasts: coverage of services, evolution of demand for water and sewage;
ii) Water losses;
iii) Investment plan (Capex);
iv) Operating, non-operating and financial costs (Opex);
i) Direct and indirect revenues and other revenues.

During the information analysis stage (stage 2 of the schedule of events), Sabesp sent the additional information requested by Arsesp and rectified the forecasts in the original Business Plan. On May/2017, Sabesp requested an extension of the deadline to submit additional information, which was incorporated into a new revised Business Plan (consolidated version), sent on June 30, 2017, resulting in the rescheduling of the revision's activities. The details of the analysis of each component of the P0 is presented below.

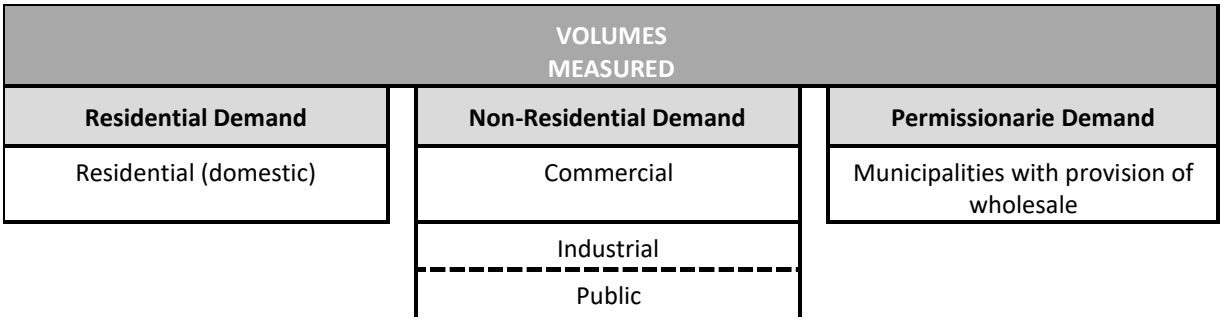
4. MARKET FORECAST

This chapter describes the methodology and market forecasts adopted by Sabesp in its Revised Business Plan, as well as the analyzes carried out by Arsesp for this initial stage.

For market forecasts, Sabesp based on estimates of growth of serviceable households and number of residential economies2, which are foreseen in accordance with the coverage and service targets of the services of water supply and sanitary sewage defined by the granting authorities.

Considering the different types of users and their uses, to facilitate the analysis, each market was categorized as residential, non-residential and permissionarie, as shown in Figure 4.1. The variables that make up the demand are detailed below.

Figure 4.1: Grouping of consumption categories



There is a stable behavior in the distribution of the number of water economies between residential and non-residential segments, and the residential category is more relevant over the market served by Sabesp, as shown below.

Table 4.1: Percentage of economies in the "Residential" and "Non-Residential" segments - 2012 to 2016

Breakdown	2012	2013	2014	2015	2016
1. Water Supply					
Residential	92.2%	92.3%	92.3%	92.4%	92.4%
Non-Residential	7.8%	7.7%	7.7%	7.6%	7.6%
2. Sanitary Sewage					
Residential	92%	92.1%	92%	92.1%	92.2%
Non-Residential	8.0%	7.9%	8.0%	7.9%	7.8%

[2] Each "economy" corresponds to a user unit. One connection may include several economies (for example, in the case of non-individualized residential condominiums).

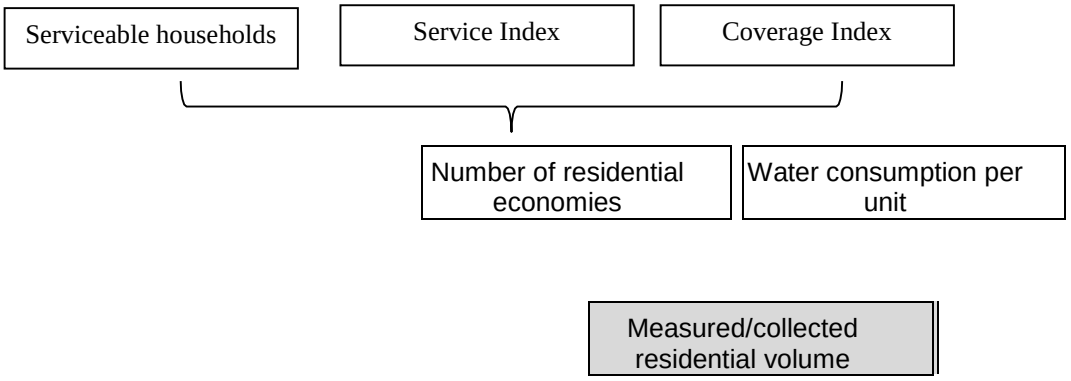
4.1 Residential Demand

In the initial stage of the 2nd Ordinary Tariff Revision, Arsesp chose to maintain the same logic adopted in the 1st OTR to analyze the demand foreseen by Sabesp, which is represented in Figure 4.2. The market forecasts include the expected evolution of the number of economies and connections, based on the projection of serviceable households and the evolution of the coverage and service levels of each service - water supply and sanitary sewage. In addition, an estimate of the average water consumption per economy is adopted, based on the consumption profile observed in the historical data.

The water crisis from 2014 to 2016 made it difficult to evaluate the historical data of demand in this initial stage of the 2nd OTR, since there was a change in the standard of water consumption by users, and it is not possible to state in what level the average consumption will stabilize after the regularization of supply.

In the Business Plan, Sabesp also takes into account the evolution of the number of inhabitants per household, designed by the Seade Foundation, to establish the unit's consumption. The analysis of the elements that make up the demand is summarized below.

Figure 4.2 - General logic of the calculation of the measured/collected residential volume



4.1.1 SERVICEABLE HOUSEHOLDS

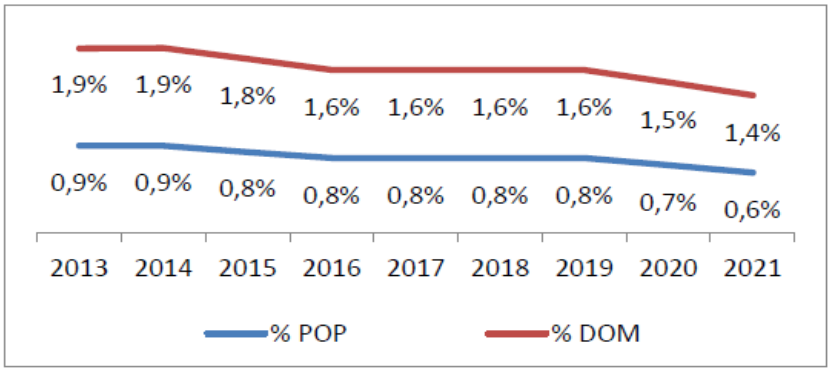
Sabesp presented in its Business Plan the estimate of serviceable households for 2017-2020, based on the estimates prepared by the Seade Foundation - "Projection of Population and Households for the Municipalities of the State of São Paulo - 2010-2050", which are shown in Table 4.2 below.

Table 4.2: Evolution of serviceable homes (2017-2020)

Breakdown	2017	2018	2019	2020
1. Water Supply				
Number of serviceable households (1,000)	10,668	10,841	11,017	11,183
Household growth rate		1.62%	1.62%	1.51%
2. Sanitary Sewage				
Number of serviceable households (1,000)	10,561	10,732	10,905	11,068
Household growth rate		1.62%	1.61%	1.49%

Chart 4.1 shows the growth curves of the population and urban households for 2012 to 2020.

Chart 4.1: Growth percentage of population and urban households (2013 to 2021)



Source: Sabesp's Business Plan.

Although the forecast of households reported by Sabesp is slightly different when compared to the figures released by the Seade Foundation, Arsesp considered Sabesp's projection to calculate the demand components.

According to Sabesp's Business Plan, there is an estimate of reduction in the number of inhabitants per household by approximately 1% per year. This estimate was obtained from the combination of growth rates of population and households estimated by the Seade Foundation. Although the service and coverage indexes show a growth trend, the decrease in the number of inhabitants interferes in the forecast of the average consumption by economy and, consequently, in the forecast of volume.

4.1.2 COVERAGE AND SERVICE INDEXES

The Water Coverage Index (ICA) and the Sewage Coverage Index (ICE) represent the availability of public networks for the provision of services in the serviceable area, which is equivalent to the service concession area. Fundamentally, this serviceable area is the urbanized area defined in the program contracts in agreement with the city halls, and may be altered over time due to its expansion. The ICA and the ICE are calculated using the following formula:

$$\text{Coverage Index} = \frac{\text{Residential Economies + Households with Availability of Service (A/E)}}{\text{Serviceable Households}} \text{ x100}$$

The Water Service (IAA) and Sewage Service (IAE) indexes represent the percentage of residential economies within the serviceable area that have actual access to water supply and sewage networks and are connected to the system. They are calculated using the following formula:

$$\text{Service Index} = \frac{\text{Residential Economies (A/E)}}{\text{Serviceable Households}} \text{ x100}$$

The following is an estimate of the evolution of the coverage and service indexes of water supply and sewage service for 2017-2020.

Table 4.3: Evolution of coverage and service indexes for 2017-2020

Breakdown	2017	2018	2019	2020
1. Water Supply				
Coverage Index	98.0%	98.3%	98.4%	98.6%
Service Index	95.1%	95.4%	95.6 %	95.7%
2. Sanitary Sewage				
Coverage Index	90.0%	90.7%	91.4%	92.2%
Service Index	83.3%	84.2%	85.1%	86.0%

4.1.3 SEWAGE TREATMENT INDEX

Sabesp informed Arsesp that, since December 2016, it has replaced the Sewage Treatment Index (ITEC) for the Index of Economies Connected to the Sewage Treatment (IEC), arguing that ITEC is a volumetric indicator sensitive to rainfall variations and can sometimes overestimate the result.

The IEC represents the relation between active economies of sewage whose volume is sent to treatment and the total of active sewage economies, represented by the formula:

$$\text{IEC} = \frac{\text{Active economies of sewage sent to treatment}}{\text{Total active sewage economies}}$$

The estimate of the evolution presented by Sabesp for this index is as follows:

Table 4.4: Forecast of the total measured volume of sewage for 2017-2020

Breakdown	2017	2018	2019	2020
International Electrotechnical Commission (IEC)	74.5%	75.6%	76.7%	80.0%

Arsesp clarifies that the analysis on the indicator of sewage treatment will be deepened in the final stage of the 2nd OTR.

4.1.3 RESIDENTIAL ECONOMIES

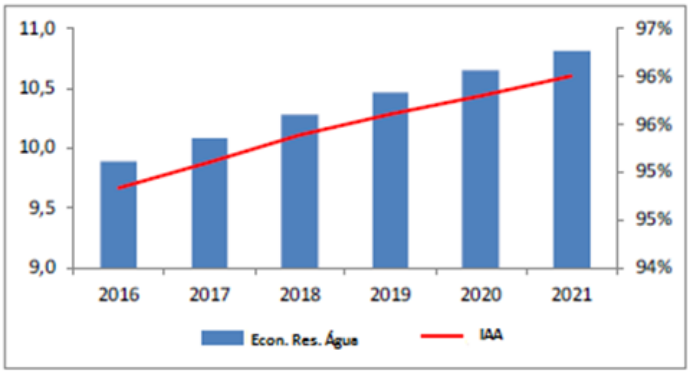
The number of residential economies is the result of the projection of serviceable households and the service index in each service, previously described. The projection presented by Sabesp in the Business Plan is shown in Table 4.5 below.

Table 4.5: Evolution of the amount of economies for 2017-2020

Breakdown	2017	2018	2019	2020
Residential Economies - Water Supply	10,075,494	10,270,762	10,461,711	10,642,554
Residential Economies - Sanitary Sewage	8,736,637	8,985,057	9,239,486	9,487,915

It is observed that there is a difference between the number of economies presented by Sabesp in the Business Plan and the values calculated from the two previously analyzed variables (household projection and service index). However, Sabesp's water supply and sewage service supply trajectory is compatible, respectively, with the evolution of the number of residential water and sewage economies for the same period, as shown in Charts 4.2 and 4.3 Next. Given that the estimate of households is an estimated number and that the serviceable area may vary according to the change of the urbanized area of the city, Arsesp chose to adopt the number of economies informed by Sabesp in the Business Plan.

Chart 4.2: Evolution of residential economies of water (millions of dollars) and water supply index (%)



Source: Sabesp's Business Plan.

Chart 4.3: Evolution of residential economies of sewage (millions of units) and sewage service index

(%)
Source: Sabesp's Business Plan.

4.1.5 RESIDENTIAL UNIT CONSUMPTION

The historical data of the measured volume and the number of economies of the residential category were disaggregated in the Seaside, Countryside and Metropolitan Region groups of São Paulo, in order to facilitate the evaluation of the information. For the purpose of calculating the tariff, the total value of Sabesp is considered. The values observed from 2012 to 2016 are shown in Table 4.6 below.

Table 4.6: Historical data on residential water demand observed between 2012 and 2016

Breakdown	2012	2013	2014	2015	2016
1. Measured volume of residential water (m³)					
Seaside	127,008,299	128,936,804	131,636,191	123,581,819	124,214,362
Countryside	330,972,679	339,844,186	343,670,992	321,290,608	332,626,981
Metropolitan	906,225,607	921,741,994	867,342,670	760,115,020	813,924,927
Total Sabesp	1,364,206,585	1,390,522,984	1,342,649,853	1,204,987,447	1,270,766,270
2. Number of residential economies (No.)					
Seaside	942,028	959,690	979,044	996,173	1,012,711
Countryside	2,101,342	2,168,688	2,239,385	2,291,111	2,355,451
Metropolitan	5,737,714	5,907,639	6,203,784	6,373,669	6,517,045
Total Sabesp	8,781,084	9,036,017	9,422,213	9,660,953	9,885,207
3. Average unit consumption (m³/economy/month)					
Seaside	11.24	11.20	11.20	10.34	10.22
Countryside	13.13	13.06	12.79	11.69	11.77
Metropolitan	13.16	13.00	11.65	9.94	10.41
Total Sabesp	12.95	12.82	11.87	10.39	10.71

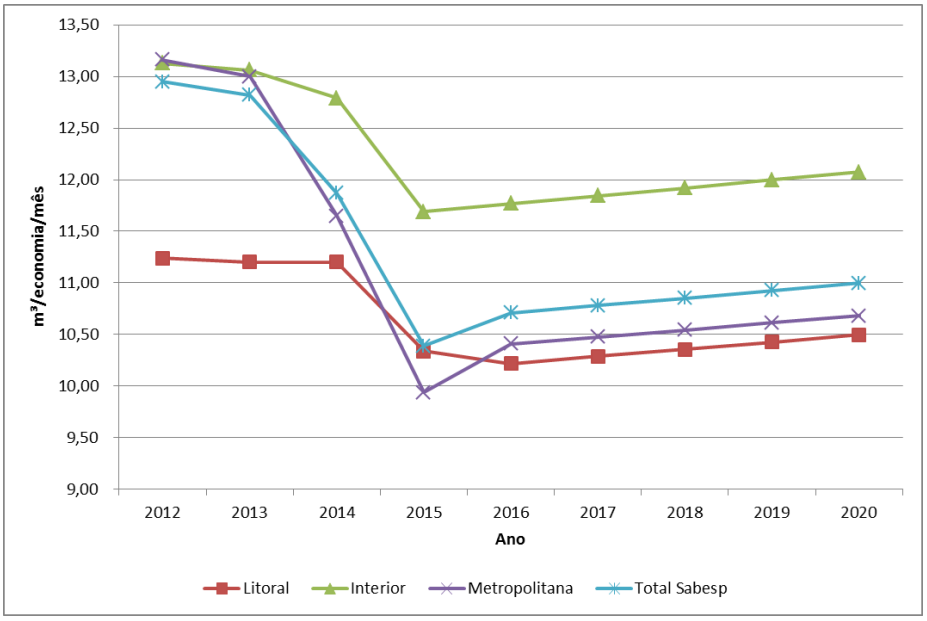
It is observed that the average monthly consumption of the residential category - total Sabesp - decreased from 12.95 m³/econ/month in 2012 to 10.39 m³/econ/month in 2015. This change in the consumption level is due to the water crisis in 2014-2015. In 2016, when the water supply was normalized and the tariff systems to encourage the reduction of water consumption were suspended, there was a slight recovery to 10.71 m³/econ/month. For the 2017-2020 period, Sabesp presented the estimates of residential water demand, which are presented in Table 4.7. From the relation between the estimates for residential measured volume and the number of residential economies, the respective estimate unit average consumption was calculated.

Table 4.7: Estimated residential water demand for 2017-2020

Breakdown	2017	2018	2019	2020
1. Measured volume of residential water (m³)				
Seaside	126,935,251	129,855,988	132,853,941	135,781,505
Countryside	341,562,644	350,716,439	360,098,394	369,190,819
Metropolitan	835,214,353	857,110,266	878,551,561	899,397,605
Total Sabesp	1,303,712,248	1,337,682,693	1,371,503,896	1,404,369,929
2. Number of residential economies (No.)				
Seaside	1,028,118	1,044,821	1,061,875	1,078,087
Countryside	2,403,219	2,451,802	2,501,246	2,547,970
Metropolitan	6,644,157	6,774,139	6,898,590	7,016,497
Total Sabesp	10,075,494	10,270,762	10,461,711	10,642,554
3. Average unit consumption (m³/econ/month)				
Seaside	10.29	10.36	10.43	10.50
Countryside	11.84	11.92	12.00	12.07
Metropolitan	10.48	10.54	10.61	10.68
Total Sabesp	10.78	10.85	10.92	11.00

In the forecast presented by Sabesp, the average unit consumption for 2017 is of 10.78 m³/econ/month, which represents an increase of 0.07 m³/econ/month over 2016 consumption (10.71 m³/econ/month). Sabesp also estimates gradual increases up to 2020, whose forecast is of 11 m³/econ/month. Considering the average consumption observed in 2012-2016, as well as the forecasts presented by Sabesp for the 2017-2020, we reached the following graphical comparison:

Chart 4.4: Average residential unit consumption (2012-2016) and forecast (2017-2020)



Seaside Countryside Metropolitan Total Sabesp

Given the recent end of the drought period (2016), it is still not possible to establish the profile of the consumption of users after the water crisis and, consequently, at what level the consumption will stabilize. Therefore, Arsesp chose to accept the measured volume of residential water designed by Sabesp. For the final stage of the 2nd Ordinary Tariff Revision, this component will be re-evaluated based on the consumption observed in 2017, which will be available for analysis.

To estimate the residential sewage volume, Arsesp adopts the estimated unit consumption of water applied to the number of residential sewage economies, given the high correlation between the variables and the fact that there is no measurement of the volume of sewage collected. Thus, Arsesp maintained the same methodology used in the 1st OTR, in which the unit contribution of sewage was considered by Arsesp as equal to the respective unit water consumption. The result of the estimate of the collected volume of residential sewage for the next tariff cycle is shown in table 4.8 below.

Table 4.8: Residential sewage collection volume estimated for 2017-2020

Breakdown	2017	2018	2019	2020
1. Average unit consumption of water (m³/econ/month)				
Seaside	10.29	10.36	10.43	10.50
Countryside	11.84	11.92	12.00	12.07
Metropolitan	10.48	10.54	10.61	10.68
Total Sabesp	10.78	10.85	10.92	11.00
2. Number of residential economies of sewage (No.)				
Seaside	798,857	821,930	845,230	867,744
Countryside	2,178,041	2,226,816	2,276,617	2,324,162
Metropolitan	5,759,739	5,936,311	6,117,639	6,296,009
Total Sabesp	8,736,637	8,985,057	9,239,486	9,487,915
3. Residential sewage volume (m³)				
Seaside	98,629,840	102,153,893	105,748,922	109.289.497
Countryside	309,558,739	318,533,461	327,759,095	336,761,921
Metropolitan	724,037,178	751,102,553	779,095,626	807,043,089
Total Sabesp	1,130,471,683	1,170,230,139	1,211,273,285	1,252,006,099

4.2 Non-residential demand

The estimate of non-residential demand presented by Sabesp considered Sabesp's commercial, industrial, public and private categories, based on the trend observed in 2015-2016, together with the relative participation in the total number of connections. For 2017-2020, Sabesp distributed the estimate of physical aggregates of the non-residential class by use categories, considering the relative participation observed from the historical data.

It can be observed, in the historical data recorded in 2012-2016, that the non-residential class corresponds to approximately 8% of the total number of water economies served by Sabesp. Sabesp presented the number of active non-residential economies for 2012-2016 and the estimate of economies of non-residential categories for the next tariff cycle, with the respective measured volumes of water, which are shown in Table 4.9 and 4.10.

Table 4.9: Measured volume of non-residential water observed in 2012-2016

Breakdown	2012	2013	2014	2015	2016
Active Non-Residential Water Economies (No.)					
Commercial	643,106	653,179	688.275	697,886	705,551
Industrial	60,955	61,875	65,619	65,430	64,643
Public	35,581	35,413	36,657	36,931	37,317
Total non-residential	739,642	750,467	790,551	800,247	807,511
Annual variation %	-	1.5%	5.3%	1.2%	0.9%
Measured Volume of Non-Residential Water (m³)					
Commercial	147,485,532	148,617,599	141,461,678	123,177,138	126,227,508
Industrial	35,786,713	37,940,481	35,375,363	28,445,867	27,879,178
Public	52,910,621	52,778,629	49,993,856	39,308,020	39,451,801
Total non-residential	236,182,866	239,336,709	226,830,897	190,931,025	193,558,487
Annual variation %	-	1.3%	-5.2%	-15.8%	1.4%

Table 4.10: Measured volume of non-residential water foreseen for 2017-2020

Breakdown	2017	2018	2019	2020
Active Non-Residential Water Economies (No.)				
Commercial	707,432	709,332	711,242	713,171
Industrial	64,456	64,270	64,087	63,905
Public	37,420	37,523	37,625	37,729
Total non-residential	809,308	811,125	812,954	814,805
Annual variation %	0.2%	0.2%	0.2%	0.2%
Measured Volume of Non-Residential Water (m³)				
Commercial	126,997,516	127,784,108	128,587,253	129,406,933
Industrial	28,140,028	28,415,744	28,706,959	29,014,324
Public	39,784,354	40,120,273	40,459,595	40,802,364
Total non-residential	194,921,898	196,320,125	197,753,807	199,223,621
Annual variation %	0.7%	0.7%	0.7%	0.7%

Regarding the forecast of the volume of non-residential sewage collected, the same methodology applied for the forecast of the water volume in this category was used. The historical and estimated amounts are shown in Tables 4.11 and 4.12 below.

Table 4.11: Measured volume of non-residential sewage observed in 2012-2016

Breakdown	2012	2013	2014	2015	2016
Active Non-Residential Sewage Economies (No.)					
Commercial	565,025	576,831	610,767	621,838	632,245
Industrial	51,361	52,054	55,451	55,468	55,216
Public	27,439	27,836	29,087	29,521	30,129
Total non-residential	643,825	656,721	695,305	706,827	717,590
Annual variation %	-	2.0%	5.9%	1.7%	1.5%
Measured Volume of Water of Connections with Non-Residential Sewage (m³)					
Commercial	137,625,703	140,209,373	135,219,312	119,808,511	123.001.083
Industrial	38,825,298	41,835,093	39,370,919	37,890,475	34,356,214
Public	41,386,937	41,395,800	38,915,624	32,581,689	35,025,973
Total non-residential	217,837,938	223,440,266	213,505,855	190,280,675	192,383,270
Annual variation %	-	2.6%	-4.4%	-10.9%	1.1%

Table 4.12: Measured volume of non-residential sewage foreseen for 2017-2020

Breakdown	2017	2018	2019	2020
Number of Active Non-Residential Sewage Economies (No.)				
Commercial	634,865	637,515	640,191	642,902
Industrial	55,165	55,115	55,071	55,031
Public	30,286	30,448	30,605	30,768
Total non-residential	720,316	723,078	725,867	728,701
Annual variation %	0.4%	0.4%	0.4%	0.4%
Measured Volume of Water of Connections with Non-Residential Sewage (m³)				
Commercial	123,810,377	124,645,072	125,505,042	126,390,204
Industrial	34,453,505	34,556,020	34,663,639	34,776,266
Public	35,408,003	35,794,880	36,186,665	36,583,440
Total non-residential	193,671,885	194,995,972	196,355,346	197,749,910
Annual variation %	0.7%	0.7%	0.7%	0.7%

For the non-residential segment, Arsesp chose to accept the volumes estimated by Sabesp. In the final stage of the 2nd Ordinary Tariff Revision, this component will be re-evaluated based on the consumption observed in 2017, which will be available for analysis.

4.3 Demand of the permissionaires

Sabesp provides wholesale water and provides sewage treatment to some municipalities, called permissionaires. Until March 2014, the municipalities of Diadema, Guarulhos, Mauá, Mogi das Cruzes, Santo André and São Caetano do Sul were served in this segment. In March 2014, Sabesp took over the water supply and sewage services in Diadema, resulting in a higher growth rate of connections and economies in that year in retail and, consequently, a reduction in the population served at the wholesale level.

For the forecast of billed volumes, Sabesp used as a basis the population forecast of the Seade Foundation of the permissionarie municipalities, and the number of inhabitants of Diadema was considered proportional to the three months in which it was served at wholesale (see Table 4.13).

Table 4.13: Evolution of the population served at the wholesale level in 2012-2020

Year	Diadema	Guarulhos	Mauá	Mogi das Cruzes	Santo André	S. Caetano do Sul	Total	Variation annual
2012	389,963	1,247,299	425,776	396,499	679,933	149,751	3,289,221	-
2013	392,042	1,260,840	430,448	401,201	681,819	150,035	3,316,385	0.8%
2014	98,533[1]	1,274,528	435,171	405,959	683,709	150,319	3,048,219	-8.1%
2015		1,288,364	439,947	410,774	685,606	150,605	2,975,296	-2.4%
2016		1,300,708	443,910	415,107	687,250	150,732	2,997,707	0.8%
2017		1,313,169	447,911	419,486	688,899	150,860	3,020,325	0.8%
2018		1,325,750	451,947	423,912	690,551	150,988	3,043,148	0.8%
2019		1,338,452	456,020	428,384	692,207	151,116	3,066,179	0.8%
2020		1,351,275	460,132	432,905	693,867	151,244	3,089,423	0.8%

Source: http://produtos.seade.gov.br/produtos/projpop/index.php.
(1) 2014 - Population proportional to three months of wholesale service.

Wholesale water and sewage services were also heavily influenced by the drought period, indicating a decrease of 33% in the water volume and 12.3% in the sewage volume in 2015 over 2012, as shown in Table 4.14.

Table 4.14: Measured volume of wholesale water and sewage in 2012-2016

Breakdown	2012	2013	2014	2015	2016
Water volume - Wholesale (m³)	297,011,659	299,432,333	246,838,502	200,192,228	219,192,825
Annual variation %	-	0.8%	-17.6%	-18.9%	9.5%
Sewage volume - Wholesale (m³)	27,336,208	29,395,996	24,238,626	23,974,955	27,675,938
Annual variation %	-	7.5%	-17.5%	-1.1%	15.4%

Sabesp's forecast for 2017-2020 on wholesale water and sewage volumes was obtained by means of a time series methodology, indicating a trend of small recovery of the volume, the results of which are presented in Table 4.15.

Table 4.15: Measured volume of wholesale water and sewage foreseen for 2017-2020

Breakdown	2017	2018	2019	2020
Water volume - Wholesale (m³)	220,995,664	222,798,502	227,254,472	231,799,562
Annual variation %	0.8%	0.8%	2.0%	2.0%
Sewage volume - Wholesale (m³)	28,229,456	28,794,046	29,369,926	29,957,325
Annual variation %	2.0%	2.0%	2.0%	2.0%

Arsesp chose to accept the volumes designed by Sabesp for the permissionaires. In the final stage of the 2nd Ordinary Tariff Revision, this component will be re-evaluated based on the consumption observed in 2017, which will be available for analysis.

4.4 Total Demand Forecast

From the consumption forecast of each category, the total demand for water and sewage is obtained for the next tariff cycle. For the forecast of the billed volume to be considered by Arsesp, the same relation between the billed and measured volumes presented by Sabesp in the Business Plan for the residential and non-residential segments was applied (see Table 4.16). For the permissionaires, the measured volume is equal to the billed volume.

Table 4.16: Relationship between billed volume and measured volume of the residential and and non-residential segments for 2017-2020

Breakdown	2017	2018	2019	2020
Billed Volume/Measured Volume of water	1,2038	1,2055	1,2071	1,2087
Billed Volume/Measured Volume of sewage	1,1965	1,1984	1,2002	1,2020

The billed volume, which is about 20% higher than the measured volume, results from the minimum billing of 10 m3/month, even for lower monthly consumptions.

The total demand for water and sewage (measured volume) in 2017-2020, and the respective billed volumes, are shown in Tables 4.17 and 4.18 below.

Table 4.17: Forecast of total water demand for 2017-2020

Breakdown	2017	2018	2019	2020
1 - Residential (m³)	1,303,712,248	1,337,682,693	1,371,503,896	1,404,369,929
2 – Non-Residential (m³)	194,921,898	196,320,125	197,753,807	199,223,621
3 - Permissionaires (m³)	220,995,664	222,798,502	227,254,472	231,799,562
4 - Total measured volume of water (m³)	1,719,629,810	1,756,801,320	1,796,512,175	1,835,393,112
5 - Total billed volume of water (m³)	2,025,087,140	2,071,983,753	2,121,512,633	2,170,142,481

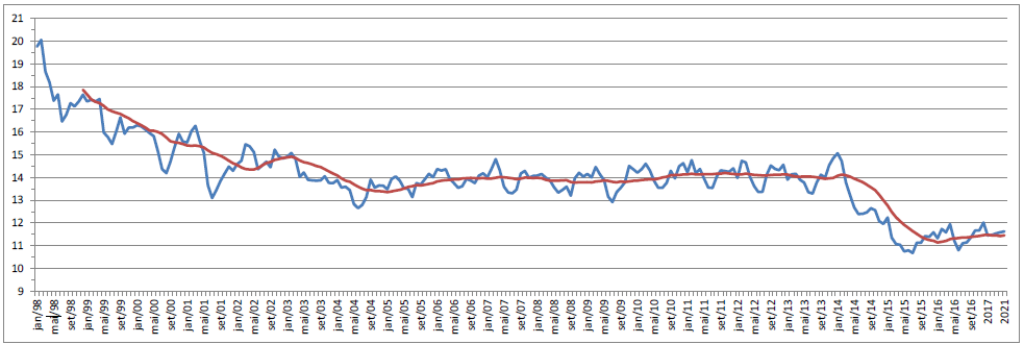
Table 4.18: Forecast of the total measured volume of sewage for 2017-2020

Breakdown	2017	2018	2019	2020
1 - Residential (m³)	1,130,471,683	1,170,230,139	1,211,273,285	1,252,006,099
2 – Non-Residential (m³)	193,671,885	194,995,972	196,355,346	197,749,910
3 - Permissionaires (m³)	28,229,456	28,794,046	29,369,926	29,957,325
4 - Total collected volume of sewage (m³)	1,352,373,025	1,394,020,157	1,436,998,557	1,479,713,334
5 - Total billed volume of sewage (m³)	1,612,581,365	1,664,816,386	1,718,789,330	1,772,600,280

4.5 Mechanism for market revision

Considering the historical series of the behavior of the measured volume of water per economy, it is verified that there are periods with variations in the consumption profile, followed by periods of stability until a new event.

Chart 4.5: Average residential unit consumption (m3) - historical series



Source: Sabesp's Business Plan.

Sabesp presented in the Business Plan a proposal to make the market forecast revision when the aggregate water demand is less than 10 m^3/economy or more than 13 m^3/economy.

Arsesp understands that the mechanism may be interesting, but it will be debated and evaluated for the definition of the definitive P0 in the final stage of the 2nd OTR.

5. WATER SUPPLY FORECAST

In order to measure the volume of water to be produced in order to meet the estimated water demand, the volume corresponding to the losses occurring throughout the distribution process must be included, however, based on the water supply systems that meet efficiency standards, in order to achieve and maintain loss levels within regulatory acceptable limits.

In addition to the water losses, the volumes produced should include the volumes destined to activities denominated special, that correspond to the social, emergency, operating and own uses.

5.1 Water losses

Water losses are related to the conditions of the installed infrastructure and to the operating and commercial efficiency of the supply systems and are divided into two parts: actual (physical) losses and apparent (non-physical) losses.

The actual losses correspond to the volume of water that is not consumed, as they are lost in leaks before being delivered to the users.

The apparent losses correspond to the volume of water that are consumed, but are not measured, mainly due to fraud, irregularities and under-measurement of the hydrometers.

The tariff regime used defines a maximum price mechanism based on the company's efficient costs estimated for the tariff cycle. The control of water losses has a direct impact on production costs, since higher losses require a greater production of water, which influences the consumption of electric power, chemical products, among others with a strong participation in the cost structure. There is also an impact on revenue, due to apparent or commercial losses, such as consumption under-measurement, for example.

The recognition of these costs implies the definition of an efficient level of losses, which Arsesp calls "Regulatory Losses", which is defined in each tariff cycle.

The difference between the volume of water produced and the volume of water consumed usually represents both physical and non-physical water losses. Mathematically, the percentage of water loss is represented by the following relation, always concerning a given period:

$$IPM = \frac{Vol.\ Prod. - Vol.\ Cons. - Vol.\ Other\ Uses}{Vol.\ Prod.}$$

Where:

- IPM is the percentage of water loss in distribution (%)
- Vol. Prod. is the total volume of water produced by Sabesp (m^3)
- Vol. Cons. is the total volume of water consumed (m^3 measured)
- Vol. Other Uses refers to volumes related to social, operational and emergency uses (m^3).

Arsesp will adopt the indicator of losses in liters/connection/day to evaluate the performance of service providers, as it allows to measure in a more precise manner the volume of losses in relation to the number of connections of the several systems. This indicator is not subject to variations in the volume produced, such as occurred during the critical period of water availability and which, in a certain way, masks the actual volume of losses when evaluated merely with the percentage indicator.

The loss indicator in L/con./day is recommended by the IWA – International Water Association, as it allows comparisons between operators of the water distribution systems that adopt this methodology, which is widely known and recognized worldwide. It is also used in the National System on Sanitation Information (SNIS) 3, linked to the National Secretariat of Environmental Sanitation (SNSA) of the Ministry of Cities (MCidades).

The contracts of program of the municipalities convened and regulated by Arsesp, which are operated by Sabesp, present the indicator of losses in liters/connection/day.

The calculation of this indicator takes into account the same variables of the percentage index, besides the number of active water connections of the distribution system, as represented below:

$$IPDt = \frac{Vol.\ Prod. - Vol.\ Cons. - Vol.\ Other\ Uses}{Number\ of\ connections}\ X\ 1000/365$$

Where:

- IPDt is the water loss index in the distribution, in liters/connection/day
- Vol. Prod. is the total volume of water produced by Sabesp (m^3)
- Vol. Cons. is the total volume of water consumed (m^3 measured)
- Vol. Other Uses refers to volumes related to social, operational and emergency uses (m^3).
- Number of connections - refers to the number of active connections of the water distribution system

In line with the contracts of program, Arsesp starts to consider the level of losses expressed in the liters/connection/day unit, however, while also indicating the corresponding percentage index, since it is a more widespread indicator among users.

We highlight that there is no direct correspondence between the two indicators, since the index expressed in L/con./day varies according to the number of active water connections and the index expressed as a percentage varies with the volume of water produced.

The estimate of the level of regulatory losses of the 1st OTR considered the initial loss level and the definition of a trajectory of this regulatory level during the tariff cycle.

[3]The purpose of the SNIS is to be a tool to support the: planning and execution of public sanitation policies; guidance on the application of resources; understanding and evaluation of the sanitation sector; performance evaluation of service providers; management improvement; guidance on regulatory and inspection activities; and exercise of social control.

The production of water recognized in the definition of the tariff is a role of the volume of water consumed and other uses of water, and of regulatory losses each year, according to the data presented by Sabesp and the analysis and adjustments made by Arsesp. Formally we have:

$$Vol\ Produ_t^{Agua} = \frac{VolCon^{Agua} + VolOutrosUsos^{Agua}}{\left(1 - \%_{perda_t}\right)}$$

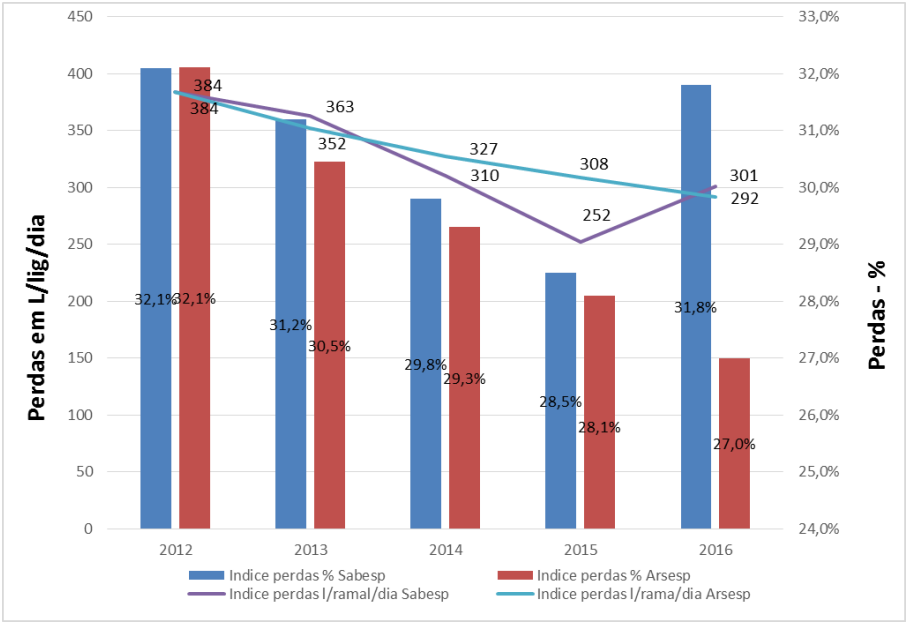
The term "Other Uses" consists of the volume of water related to social, operational, emergency and own uses. Arsesp's analysis for this component is presented in item 5.2.

The following table presents the loss indexes verified in the previous tariff cycle and the indexes recognized by Arsesp as regulatory losses in the 1st Ordinary Tariff Revision.

Table 5.1: Loss indexes of the 1st tariff cycle -% and liters/connection/day

Breakdown	2012	2013	2014	2015	2016
IPM-Sabesp	32.1%	31.2%	29.8%	28.5%	31.8%
IPM-Arsesp - Regulatory	32.1%	30.5%	29.3%	28.1%	27.0%
IPDt Sabesp - L/connection/day	384	363	310	252	301
IPDt -Arsesp - L/connection/day	384	352	327	308	292
Difference (% points)	0	-0.7	-0.5	-0.4	-4.8
Difference (L/connection/day)	0	-11	17	57	-9

Chart 5.1: Actual loss index from 2012 to 2016



% Sabesp Loss Index
Sabesp Loss Index L/branch/day

% Arsesp Loss Index
Arsesp Loss Index L/branch/day

Sabesp's loss index (IPM-Sabesp) was of 31.2% in 2013 and reached 28.5% in 2015, a year highlighted by the strong impacts of the draught and measures to reduce consumption and pressure on distribution networks. In 2016, IPM-Sabesp registered 31.8%, being above the index of the first year of the cycle (2013) and 4.8 p.p. above the regulatory target. In L/con./day, the IPDt for this period was of 301, slightly above the target of 292 L/con./day.

According to Sabesp's business plan, the loss estimated for 2017-2020 is presented in Table 5.2 below.

Table 5.2: Loss index estimated by Sabesp for 2017-2020

Breakdown	2017	2018	2019	2020
IPM-Sabesp	31.7%	31.3%	30.6%	29.9%
IPDt-Sabesp (l/con./day)	303	297	289	281

For the preliminary stage, Arsesp evaluated the targets of the 276 contracts of program of the municipalities, including the metropolitan region of São Paulo, and calculated a weighted average considering the number of active connections in December 2016 to establish the weight of the participation of each municipality in the total.

For 2017, the target calculated is of 308 L/con./day, while for 2020 is of 273 L/con./day. Considering that not all contracts have targets exactly in the years of 2017 and 2020, for some municipalities the closest targets were used (2015/2016 or 2019, respectively).

It is worth noting that Sabesp's estimated loss index for 2017 is of 303 L/con./day, lower than the weighted average of the targets of the contracts of program of the municipalities convened with Arsesp. Thus, Arsesp adopted as a target for 2017 the index already made by Sabesp, with a gradual reduction until 2020, when it must meet, at least, the targets of the contracts of the municipalities.

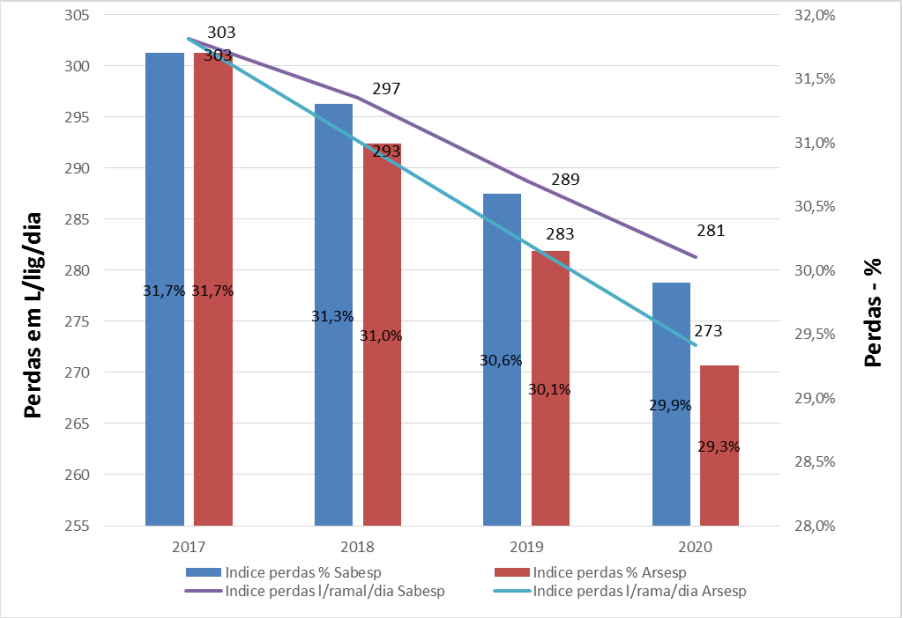
Considering that the loss index is established for all Sabesp's operating area, Arsesp understands that Sabesp must meet the same criteria of control and reduction of losses in municipalities that do not have yet an agreement with Arsesp. For this reason, the weighted average of the targets of the program's contracts was consolidated for Sabesp's entire service area. Thus, for the estimate of efficient costs, Arsesp considered the following loss indexes:

Table 5.3: Loss index estimated by Arsesp for 2017-2020

Breakdown	2017	2018	2019	2020
Arsesp IPM-Estimated	31.7%	31.0%	30.1%	29.3%
Arsesp IPDt-Estimated (l/con./day)	303	293	283	273

It is worth highlighting that, in this initial stage, Arsesp did not evaluate any adjustments resulting from the non-compliance with regulatory targets of losses of the previous tariff cycle, which will be addressed at the final stage of the 2nd OTR, scheduled to be completed in April 2018. Chart 5.2 shows the loss indexes estimated for the next tariff cycle.

Chart 5.2: Regulatory loss index estimated for 2017-2020



% Sabesp Loss Index
Sabesp Loss Index L/branch/day

% Arsesp Loss Index
Arsesp Loss Index L/branch/day

Arsesp has scaled the impact of the decrease of losses in the volume of water produced and in operating costs, as a result of the regulatory targets established in this initial stage in comparison with those proposed in Sabesp's Business Plan. The amounts obtained are shown in Table 5.4 below.

Table 5.4: Impact of the decrease of loss in the water production and OPEX

Breakdown	Unit	2017	2018	2019	2020
1. Reduction in the Need for Water Production					
Vol. Produced w/ Losses PN Sabesp	1000 m³	2,771,797	2,802,774	2,836,508	2,872,778
Vol. Produced w/ Losses Arsesp	1000 m³	2,771,797	2,790,301	2,818,170	2,846,562
Decrease of Produced Volume	1000 m³	-	12,473	18,338	26,216
2. Impact on Opex					
Unit Opex - Production Stage	R$/1000m³	586.8	620.7	619.0	638.7
Opex Sabesp - Production Stage	R$ thousand	1,626,581	1,739,791	1,755,824	1,834,861
Opex Arsesp - Production Stage	R$ thousand	1,626,581	1,732,048	1,744,473	1,818,117
Opex Decrease	R$ thousand	-	7.743	11,351	16,744

5.2 Special uses

The volume for special uses corresponds to the volume of water intended to social, operational, emergency and own uses. The volume considered as social uses is related to the estimated volume clandestinely consumed in irregular communities, which have some type of water supply, however, there is no billing by Sabesp. The volumes used by the Fire Department are also considered as social uses. The operational uses are related to the discharges of networks, cleaning of reservoirs and the like. The volumes of water used to wash filters or any activity in the production stage are also considered in the "operational uses", but are not part of the loss indicator.

To estimate this volume, Sabesp started from the premise that its over time value follows the growth estimated for the demand of water for other uses.

The volume of water for special uses for 2013-2016, informed by Sabesp, is shown in Table 5.5 below. The average of 8.75% of the total measured volume of water was maintained.

Table 5.5: Volume for special uses for 2013-2016

Breakdown	Unit	2013	2014	2015	2016
1- Total Water Volume	1000 m^3	2,100,284	1,993,945	1,763,529	1,838,810
2- Volume for Special Uses	1000 m^3	170,992	177,626	167,418	155,292
3 - Percentage of demand	%	8.14%	8.91%	9.49%	8.45%

In the Business Plan, Sabesp presented the estimate of volume for special uses, which was considered acceptable by Arsesp, since the participation in the total measured volume is at the same level as the historical values. The average participation estimated is 8.88%, as shown in the following table.

Table 5.6: Volume estimated for special uses for 2017-2020

Breakdown	Unit	2017	2018	2019	2020
1- Total Water Volume	1000 m^3	1,893,137	1,925,506	1,968,537	2,013,817
2- Volume for Special Uses	1000 m^3	173,508	168,704	172,024	178,424
3 - Percentage of demand	%	9.17%	8.76%	8.74%	8.86%

5.3 Forecast of the total volume of water produced

According to the methodology adopted in the 1st OTR, the annual volume of water produced is estimated from the sum of the volumes corresponding to:

- Total demand estimated for residential, non-residential and permissionaires;
- Volumes for special uses; and
- Regulatory losses.

Thus, considering the forecast of the measured volume of water approved by Arsesp (see item 4.4), the annual loss index (see item 5.1) and the volume for special uses (see item 5.2), the total produced volume recognized by Arsesp for the next tariff cycle is presented in the following table.

Table 5.7: Results of Arsesp's estimates for the volume of water produced (1000 m³/year)

Breakdown	Unit	2017	2018	2019	2020
1 - Total measured volume of water	1000 m³	1,719,630	1,756,801	1,796,512	1,835,393
2- Volume for Special Uses	1000 m³	173,508	168,704	172,024	178,424
3 - Regulatory Losses	1000 m³	878,660	864,795	849,633	832,745
4 - Volume Produced of Water (1+2+3)	1000 m³	2,771,797	2,790,301	2,818,170	2,846,562

6. OPERATING COSTS AND EXPENSES (OPEX)

This chapter presents the analysis of the operating costs and expenses (OPEX) estimated by Sabesp and the adjustments to be made by Arsesp in this initial stage of the 2nd Ordinary Tariff Revision. The concept of Operating Costs and Expenses includes all expenses related to the operation and maintenance of the systems, as well as the administrative, financial and commercial management of the water and sewage services rendered by Sabesp.

Expenses with Regulatory Rate and Cofins/Pasep, whose amounts depend on the revenue, are not included in this analysis, and are considered separately in Chapters.

The analysis of the estimated Operating Costs and Expenses was based on the information sources described below:

• Historical data referring to the tariff cycle concluded (2012-2016);
• Detailed report of expenditures (2012-2016);
• Expenses estimated by Arsesp, according to the methodology established in the 1st OTR, for the next tariff cycle (2017-2020);
• Expenses estimated by Sabesp for the next tariff cycle (2017-2020).

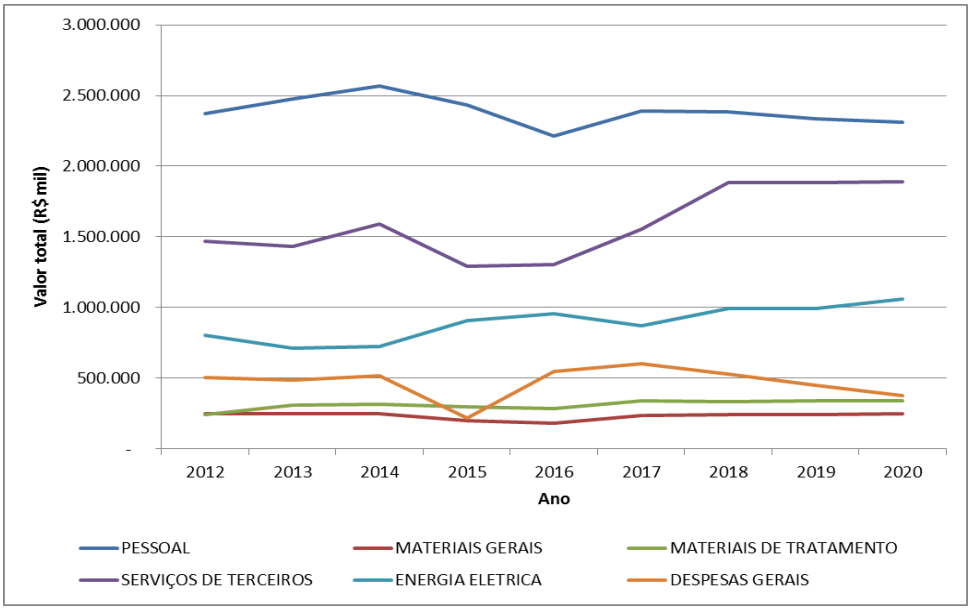
6.1 OPEX estimated in the Sabesp Business Plan

Sabesp's estimate for Operating Costs (OPEX) of the next tariff cycle is shown in the table and chart below.

Table 6.1: OPEX informed by Sabesp in the Business Plan for 2012-2020 (R$ thousand Dec/2016)

Category	Background					Forecast			
	2012	2013	2014	2015	2016	2017	2018	2019	2020
PERSONNEL	2,372,207	2,475,511	2,565,096	2,430,620	2,212,383	2,387,888	2,381,372	2,337,804	2,308,317
GENERAL MATERIALS	247,995	248,513	244,193	197,884	182,797	234,372	240,551	243,774	247,287
TREATMENT MATERIALS	242,087	309,225	315,556	298,384	284,446	338,184	334,672	336,598	336,469
THIRD PARTY SERVICES	1,467,289	1,428,648	1,588,531	1,288,234	1,303,086	1,555,467	1,880,849	1,883,555	1,890,394
ELECTRIC POWER	804,877	710,194	723,715	905,840	952,772	868,711	989,173	992,993	1,059,492
GENERAL EXPENSES	504,390	482,770	516,736	218,989	544,855	599,032	527,827	448,948	375,851
TOTAL	**5,638,845**	**5,654,862**	**5,953,826**	**5,339,950**	**5,480,339**	**5,983,654**	**6,354,444**	**6,243,673**	**6,217,810**

Chart 6.1: Evolution of actual (2012-2016) and estimated (2017-2020) operating costs informed by Sabesp (R$ thousand - Dec/2016)



Personnel | General Materials | Treatment Materials
Third Party Services | Electric Power | General Expenses

As described in the Business Plan, Sabesp estimated the OPEX of the next tariff cycle based on the Multi-Year Budget Plan of the period. The original value by nature of the Multi-Year Budget and the relative weight of each Business Unit were maintained. Sabesp's total amounts of OPEX for 2015 and 2016 were compared with the respective balance sheets and it was found that the reported amounts were consistent. In the table below, the participation of each expenditure category in the period evaluated is calculated.

Table 6.2: Participation of expenditure categories in the total OPEX informed by Sabesp

Category	Background					Forecast			
	2012	2013	2014	2015	2016	2017	2018	2019	2020
PERSONNEL	42.1%	43.8%	43.1%	45,5%	40.4%	39.9%	37.5%	37.4%	37.1%
GENERAL MATERIALS	4.4%	4.4%	4.1%	3.7%	3.3%	3.9%	3.8%	3.9%	4.0%
TREATMENT MATERIALS	4.3%	5.5%	5.3%	5.6%	5.2%	5.7%	5.3%	5.4%	5.4%
THIRD PARTY SERVICES	26.0%	25.3%	26.7%	24.1%	23.8%	26.0%	29.6%	30.2%	30.4%
ELECTRIC POWER	14.3%	12.6%	12.2%	17.0%	17.4%	14.5%	15.6%	15.9%	17.0%
GENERAL EXPENSES	8.9%	8.5%	8.7%	4.1%	9.9%	10.0%	8.3%	7.2%	6.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The historical analysis of the OPEX in the last tariff cycle (Table 6.3) shows the oscillations occurred due to the water crisis experienced in the period, such as the reduction of expenses due to the lower supply of water and the increase in the category of treatment materials.

Table 6.3: Historical horizontal analysis of OPEX - Index 2012 = 100

Category	Background				
	2012	2013	2014	2015	2016
PERSONNEL	100.0	104.4	108.1	102.5	93.3
GENERAL MATERIALS	100.0	100.2	98.5	79.8	73.7
TREATMENT MATERIALS	100.0	127.7	130.3	123.3	117.5
THIRD PARTY SERVICES	100.0	97.4	108.3	87.8	88.8
ELECTRIC POWER	100.0	88.2	89.9	112.5	118.4
GENERAL EXPENSES	100.0	95.7	102.4	43.4	108.0
TOTAL	100.0	100.3	105.6	94.7	97.2

In the estimate of operating expenses for the next tariff cycle (see Table 6.4), according to the data provided in the company's PN, the categories of Third Party Services and General Materials presented an increase in relation to the other items. At the end of the cycle (2020), the General Materials expenditure category shows a growth of 35% over last year (2016), which reflects a recovery of the reduction resulting from the period of the water crisis, since in the previous cycle this category had a loss of 27% over the start of the cycle (2012-2016).

The Third Party Services category shows a growth of 45% at the end of the cycle (2017-2020) over 2016. The estimated increase of 19% in 2017 over 2016 indicates the resumption of expenses over the period of the water crisis, while the estimated increase of R$68,362,000 (sixty-eight million, three hundred and Sixty-two thousand reais) for 2018-2020 is due to the inclusion of part of the consideration of the Public Private Partnership - PPP of the São Lourenço System, which is related to service expenses. There is also a reduction in the projection for General Expenses by 30% up to the end of the cycle, as well as a reduction with personnel expenses in relation to the Total OPEX by approximately 5%.

Table 6.4: Horizontal analysis of Sabesp's OPEX proposed - Index 2016 = 100

Category	Forecast				
	2016	2017	2018	2019	2020
PERSONNEL	100.0	107.9	107.6	105.7	104.3
GENERAL MATERIALS	100.0	128.2	131.6	133.4	135.3
TREATMENT MATERIALS	100.0	118.9	117.7	118.3	118.3
THIRD PARTY SERVICES	100.0	119.4	144.3	144.5	145.1
ELECTRIC POWER	100.0	91.2	103.8	104.2	111.2
GENERAL EXPENSES	100.0	109.9	96.9	82.4	69.0
TOTAL	100.0	109.2	115.9	113.9	113.5

Regarding the total operating cost, Sabesp estimated a growth of approximately 13% at the end of the tariff cycle when compared to the actual amounts of 2016. As for the market and water supply estimates, already detailed in Chapter 4 and 5, Sabesp estimated for the same period a 9% increase in the amount of economies, of 10.8% in the total volume (measured of water/collected of sewage), of 6.5% in the volume of water produced and 20.4% in the volume of sewage treated.

6.2 Adjustments in OPEX

Arsesp analyzed the data submitted by Sabesp in the Business Plan and, following the same methodology adopted in the 1st Ordinary Tariff Revision for the projection of the amounts, made adjustments to the accounts basis provided by the Concessionaire.

6.2.1 TREATMENT OF THE PRIVATE PUBLIC PARTNERSHIP OF THE SÃO LOURENÇO SYSTEM IN THE TARIFF CALCULATION

In August 2013, Sabesp formalized a Public Private Partnership (PPP), through an Administrative Concession, with Specific Purpose Society (SPE) led by Camargo Corrêa and Andrade Gutierrez to build the São Lourenço Producer System and service rendering of the operation of the system of dehydration, drying and final disposal of sludge and maintenance of the São Lourenço Producer System, being up to the SPE to enable, capture, apply and manage the necessary financial resources to provide the services and make the necessary investments. The SPE undertakes all the responsibilities and charges related to the execution of the works and to the rendering of the services under the concession agreement.

The estimated value of the Concession Agreement is of R$6,045,746,601, on the base date of January 1, 2013, corresponding to the sum of estimated revenues to be received by the SPE during the term of the administrative concession. The contract amounts to a total of 300 months (25 years).

It was originally set that the services would be provided over a period of 248 months. During this period, counted after completion of the works and the start of the execution of the object of this concession agreement, Sabesp must pay to the SPE a monthly consideration, which will be used to remunerate all services for the operation and maintenance of the São Lourenço Producer System provided for in the contract, as well as the investments incurred, including the construction works under the bid, in order to guarantee a certain Internal Rate of Return. Briefly, this consideration includes the costs of the permanent investments and the operational and maintenance costs. The consideration offered is of R$24,378,010.49 (twenty-four million, three hundred and seventy-eight thousand, ten reais and forty-nine cents) per month at January/2013 prices. The Concession Agreement will be applied, on a yearly basis, to readjust prices according to the IPCA variation, as of the reference price date.

This amount of the remuneration to be paid on a monthly basis, remunerates the SPE according to performance criteria and within a period compatible with the amortization of the investments made, as specified in the said contract. At the time of the advent of the contractual term, at the time of the reversal, the investments of the SPE that have been carried out with the purpose of guaranteeing the continuity and currentness of the service must already be amortized.
This concession includes all assets acquired, extended or build, by the SPE, throughout the term of the Administrative Concession, used in the rendering of services under the contract, namely construction works, equipment, machines, appliances, software, rights, licenses and accessories, which allowed the rendering of the services, as well as all those assets undertaken by it as a result of the Administrative Concession, and that, upon termination of the Administrative Concession, return to Sabesp the movable and immovable assets, equipment, facilities and other goods ("reversible assets"), free of any liabilities or charges, including social and labor, rights and privileges linked to the service granted and free of charge, since all disbursements are expected to be made within the term of the Administrative Concession.

In its Business Plan, Sabesp included the amount of part of the PPP consideration, as of 2018, in the Third Party Services category, which would correspond to the provision of the maintenance services after the system was in operation, and included another part of the amount of the consideration in the CAPEX disbursement.

Given the characteristics of the Administrative Concession contract of this PPP, Arsesp decided to include the total value of the consideration prominently in the OPEX. The amount adopted by Arsesp will comply with the disbursement flow established in the agreement, updated at December 2016 prices. The inclusion of the total annual value referring to the consideration of São Lourenço PPP of R$374,012,903, updated at December 2016 (IPC-FIPE), represented an increase of R$242,169,903 in the OPEX when compared to the amounts estimated by Sabesp for this item. The adjustments made to CAPEX disbursements are detailed in Chapter 6.

The investments made by São Lourenço PPP will not comprise the Regulatory Asset Base considered in the tariff for remuneration purposes, since according to the Concession Agreement the amounts will be amortized within the term of the Administrative Concession. The assets will be incorporated at the end of the administrative concession as non-eligible assets.

Arsesp must monitor the implementation of the SPE Business Plan, provided for in the agreement, and at the time of the tariff revisions, analyze its performance in the tariff cycle concluded for eventual end-of-cycle adjustments.

The Agency also understands that Alto Tietê PPT should have the same treatment given to São Lourenço PPP, corresponding to amounts paid as OPEX. As the assets of Alto Tietê PPP were included in the Incremental Compensation Basis presented by Sabesp, which will still be subject to inspection by Arsesp, the adjustments related to the Alto Tietê PPP in the several components of the P0 will be carried out in the final stage of the 2nd OTR.

6.2.2 OPEX ADJUSTMENTS NOT RECOGNIZED

During the analysis of the operational costs reported by Sabesp in its Business Plan, Arsesp individually evaluated more than 300 accounts in the OPEX category, which are presented in Attachment IV, with the purpose of identifying those that, due to their nature, are not key to the provision of water and sewage services and, therefore, should not be considered, totally or partially, in the calculation of the Maximum Average Tariff (P0). The last year (2016) was used as the basis for the OPEX estimate.

Initially, accounts with a sporadic effect were excluded so as not to create tariff fluctuations (see Table 6.5). The balances presented by these accounts were negative and could also cause distortions in the preparation of the cash flow.

Table 6.5: OPEX categories excluded from the estimated base - Sporadic items

Description	OPEX Item
GENERAL EXPENSES	INDEMNITY FOR ENVIRONMENTAL DAMAGES
GENERAL EXPENSES	EXPENSES WITH DISAPPROPRIATIONS
PERSONNEL	RETIREMENT PROVISION (CURRENT)

The lack of more detailed information on the composition and nature of some estimated accounts impaired the approval of their connection to the provision of water supply and sewage services, being at first excluded from the composition of OPEX. The excluded accounts are shown in Table 6.6.

Table 6.6: OPEX categories excluded from the estimated basis - Estimated items

Description	OPEX Item
PERSONNEL	ESTIMATE OF OTHER PERSONNEL EXPENSES
MATERIALS	ESTIMATED OF EXPENSES WITH MATERIALS
SERVICES WITH THIRD PARTIES	ESTIMATE OF EXPENSES WITH SERVICES
ELECTRIC POWER	ESTIMATE OF EXPENSES WITH ELECTRIC POWER AND LIGHT
GENERAL EXPENSES	ESTIMATE OF GENERAL EXPENSES
GENERAL EXPENSES	ESTIMATE OF GENERAL EXPENSES - RECLASS COMER

In addition, Arsesp identified the inclusion of accounts not connected to the provision of water supply and sewage services, and in the 1st OTR some of them had not been recognized by the Agency. In the opinion of Arsesp, these expenses should not be included in the calculation basis for the next tariff cycle or present excessive amounts, being therefore adjusted. The unrecognized accounts and the resulting impact summary for each category of the OPEX in the base year are shown in Tables 6.7 and 6.8, respectively.

Table 6.7: Unrecognized OPEX categories

Description	OPEX Item
PERSONNEL	PROFIT SHARING
PERSONNEL	BONUS TO THE EXECUTIVE BOARD
PERSONNEL	AWARD PROGRAM
PERSONNEL	TERM OF ADJUSTMENT OF BEHAVIOR - RETIRED PEOPLE
PERSONNEL	SABESPREV MAIS - SPONSORING INCENTIVE
PERSONNEL	SABESPREV MAIS - DEFICIT SPONSOR
PERSONNEL	COMPLEMENTARY PENSION - G0
PERSONNEL	PAID SABBATICAL
SERVICES WITH THIRD PARTIES	PRINTING OF CORPORATE SYSTEM REPORTS
GENERAL EXPENSES	DONATIONS
GENERAL EXPENSES	INSTITUTIONAL SUPPORT

Table 6.8: Percentage of unrecognized expenses in the 2016 base year (R$ Dec/2016)

Exploration Expenses - OPEX	% Unwarranted Deduction	Gross Amount *	Unwarranted Deduction	Net Amount
Personnel	15%	2,478,764,503	372,893,682	2,105,870,821
General Materials	0%	182,833,226	-	182,833,226
Treatment Materials	0%	284,446,064	-	284,446,064
Services (without compensation PPP Alto Tietê)	0%	1,232,147,091	2,813,975	1,229,333,116
Electric Energy and Light	0%	947,786,763	-	947,786,763
General Expenses	1%	552,700,549	7,741,964	544,958,585
Total	7%	5,678,678,197	383,449,621	5,295,228,576

(*) Gross amount includes the actual OPEX amount of 2016, excluding sporadic items and estimated items.

6.2.3 ESTIMATIVE METHODOLOGY USED BY ARSESP

As explained earlier, in this initial stage, Arsesp opted to adopt the same methodology adopted in the 1st Ordinary Tariff Revision (see Technical Notes RTS/001/2012 and RTS/004/2014). In the case of OPEX, through an economic and financial estimative model (MEF), ARSESP estimated the Operating Costs disaggregated by expense items and components of the systems based on unit costs observed in 2016 and estimated drivers obtained from the market variables referred to in Chapter 4. Unit costs for 2016 were obtained from the disaggregated expense amounts per business unit and production stage, both provided by Sabesp. Table 6.9 illustrates the level of disaggregation of the estimates and the drivers used for each component and Attachment V shows the unit costs adopted. It is worth noting that the produced volume of water used in the OPEX driver is the one recalculated by Arsesp from the regulatory losses defined in the 2nd OTR, detailed in Chapter 5.

It should be noted that the methodology adopted by Arsesp differs from the one used by Sabesp to estimate the operating costs for the 2nd OTR (2017-2020). As described in the Business Plan, the estimates of OPEX informed by Sabesp were based on the Multi-Year Budget Plan of the period, preserving the original value by nature of the Multi-Year Budget and the relative weight of each Business Unit.

Table 6.9: Drivers used to estimate operating costs (OPEX)

Water Supply Systems		
PURPOSE	**Production**	**Distribution**
PERSONNEL	Produced Volume of Water	Water Connections
GENERAL MATERIALS	Produced Volume of Water	Water Connections
MATERIALS TREATMENT	Produced Volume of Water	Measured Volume of Water
SERVICES	Produced Volume of Water	Water Connections
ELECTRIC POWER AND LIGHT	Produced Volume of Water	Measured Volume of Water
GENERAL EXPENSES	Produced Volume of Water	Water Connections
Sanitary Sewage Systems		
PURPOSE	**Collection**	**Treatment**
PERSONNEL	Sewage Connections	Treated Volume of Sewage
GENERAL MATERIALS	Sewage Connections	Treated Volume of Sewage
MATERIALS TREATMENT	Collected Volume of Sewage	Treated Volume of Sewage
SERVICES	Sewage Connections	Treated Volume of Sewage
ELECTRIC POWER AND LIGHT	Collected Volume of Sewage	Treated Volume of Sewage
GENERAL EXPENSES	Sewage Connections	Treated Volume of Sewage
Commercial and Administrative Systems		
PURPOSE	**Commercial**	**Central Management**
PERSONNEL	Water Connections	Fixed
GENERAL MATERIALS	Water Connections	Fixed
MATERIALS TREATMENT	Water Connections	Fixed
SERVICES	Water Connections	Fixed
ELECTRIC POWER AND LIGHT	Water Connections	Fixed
GENERAL EXPENSES	Water Connections	Fixed

6.2.4 SUMMARY OF OPEX AND ADJUSTMENTS CARRIED OUT

To design the OPEX to be recognized by Arsesp in the calculation of the Maximum Average Tariff for the next tariff cycle (2017-2020), Arsesp considered the following aspects:

• use of the estimative methodology adopted in the 1st OTR;

• market variables validated by Arsesp in this OTR, described in Chapter 4;

• annual regulatory targets for the Loss Index established by the Agency under this Tariff Revision (see Chapter 5);

• amounts referring to OPEX accounts unrecognized or excluded from the estimative basis;

• use of the amounts estimated by Sabesp for electric energy expenses, replacing the amounts initially estimated by Arsesp, given that electric energy expenses are connected to agreements of purchase and sale of electric energy, thus complying with the contribution made in the public consultation;

• regulatory treatment adopted for the Public-Private Partnership of the São Lourenço Producer System.

Excluding the effects of the treatment given by Arsesp to the São Lourenço System PPP, the adjustments made by the Agency represented an 8.7% reduction in operating costs when compared to the values reported by Sabesp in the Business Plan, as shown in table 6.10. Considering the total OPEX amounts, which include the PPPs, the reduction was of 4.9% in the tariff cycle (see Table 6.11).

Table 6.10: Statement of regulatory adjustments in OPEX estimated for 2017-2020 - Excluding PPPs (R$thousand Dec/2016)

Category	Criteria	2017	2018	2019	2020	TOTAL
PERSONNEL	1 - Sabesp's Business Plan	2,387,888	2,381,372	2,337,804	2,308,317	9,415,381
	2 - Arsesp's Estimate	2,162,456	2,194,300	2,228,881	2,299,592	8,885,229
GENERAL MATERIALS	1 - Sabesp's Business Plan	234,372	240,551	243,774	247,287	965,984
	2 - Arsesp's Estimate	188,641	191,700	194,980	202,452	777,773
MATERIALS OF TREATMENT	1 - Sabesp's Business Plan	338,184	334,672	336,598	336,469	1,345,923
	2 - Arsesp's Estimate	293,828	297,291	301,458	310,953	1,203,530
THIRD PARTY SERVICES (Excluding PPP)	1 - Sabesp's Business Plan	1,491,986	1,749,006	1,751,712	1,758,551	6,751,256
	2 - Arsesp's Estimate	1,261,919	1,281,265	1,301,354	1,346,851	5,191,389
ELECTRIC POWER	1 - Sabesp's Business Plan	868,711	989,173	992,993	1,059,492	3,910,369
	2 - Arsesp's Estimate	868,711	989,173	992,993	1,059,492	3,910,369
GENERAL EXPENSES	1 - Sabesp's Business Plan	599,032	527,827	448,948	375,851	1,951,658
	2 - Arsesp's Estimate	552,884	557,224	561,976	572,006	2,244,090
TOTAL OPEX	1 - Sabesp's Business Plan	5,920,173	6,222,601	6,111,830	6,085,967	24,340,570
	2 - Arsesp's Estimate	5,328,439	5,510,953	5,581,641	5,791,347	22,212,380
OPEX Difference		-10.0%	-11.4%	-8.7%	-4.8%	-8.7%

Table 6.11: Statement of regulatory adjustments in the total OPEX estimated for 2017-2020 (R$ thousand Dec/2016)

Category	Criteria	2017	2018	2019	2020	TOTAL
OPEX	1 - Sabesp's Business Plan	5,920,173	6,222,601	6,111,830	6,085,967	24,340,570
	2 - Arsesp's Estimate	5,328,439	5,510,953	5,581,641	5,791,347	22,212,380
PUBLIC-PRIVATE PARTNERSHIPS	1 - Sabesp's Business Plan	63,481	131,843	131,843	131,843	459,010
	2 - Arsesp's Estimate	63,481	437,494	437,494	437,494	1,375,963
TOTAL	1 - Sabesp's Business Plan	**5,983,654**	**6,354,444**	**6,243,673**	**6,217,810**	**24,799,580**
	2 - Arsesp's Estimate	**5,391,920**	**5,948,446**	**6,019,135**	**6,228,841**	**23,588,342**
Total Difference		-9.9%	-6.4%	-3,6%	0.2%	-4.9%

As previously described in this Technical Note, the final stage of the 2nd OTR provides for a revision of the detailed methodology for the tariff revision process. In this way, the OPEX may undergo further adjustments in the final stage.

7. OTHER OPERATING COSTS

7.1 Costs with Non-Payment: Uncollectable Revenues

The uncollectable revenues correspond to the part of the billed revenue, not received as a result of the users' non-payment. It is legitimate to recognize as cost to be reimbursed by the tariffs a limit value for accounts considered uncollectible, called Uncollectable Regulatory Revenues. The recognition of this limit in the tariff is valid provided that the commercial system meets the desirable standards of efficiency, especially in the billing and collection processes of the services provided.

In the 1st Ordinary Tariff Revision, Arsesp used the indexes observed in the previous period's balances to determine the percentage of Uncollectable Regulatory Revenues. The index was of 2.2% in 2013 and the gradual reduction of this percentage until reaching the 1.8% target for 2016, as an incentive to reduce uncollectable revenues throughout the tariff cycle.

Based on the historical data submitted by Sabesp within the scope of the 2nd Ordinary Tariff Revision, it was observed that the index obtained by Sabesp was lower than the one established by Arsesp, as shown in Table 7.1 below.

Table 7.1: Non-payment rates observed in the cycle concluded - 2013 to 2016 (R$ thousand Dec/2016)

	Breakdown	2013	2014	2015	2016
1.	Direct Revenue (R$ thousand)	12,349,011	10,847,419	10,055,581	11,494,039
2.	Provisions Doubtful Accounts / Credit Write-Offs (R$ thousand)	-133,417	-168,634	-2,681	-92,205
3.	**% Non-Payment Rate (% Direct Revenue)**	**1.08%**	**1.55%**	**0.03%**	**0.80%**
4.	**Uncollectable Regulatory Revenues 1st OTR (% Direct Revenue)**	**2.20%**	**2.07%**	**1.94%**	**1.80%**

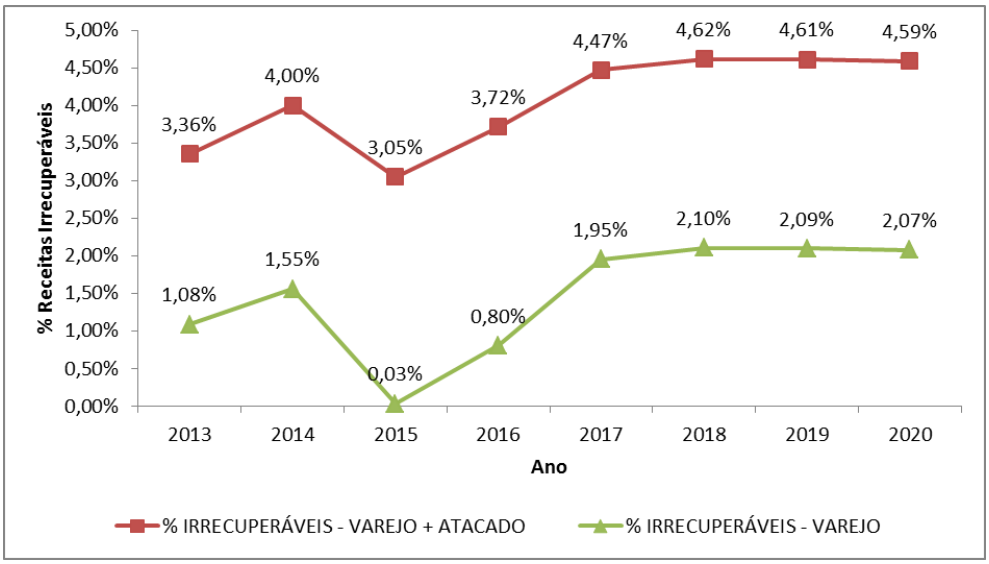
In Sabesp's Business Plan, the uncollectable revenue index presented for the next tariff cycle (2017-2020) includes unrecognized wholesale revenues, raising the percentage to an average of 4.6%. Arsesp understands that the same methodology adopted in the 1st OTR should be used, in which only the "retail" non-payment rate is considered. Therefore, the indexes presented by Sabesp were recalculated, based on the estimated amounts of provision for doubtful accounts and credits write-off, which are presented in Table 7.2.

Table 7.2: Uncollectable revenues estimated by Sabesp in the Business Plan recalculated - 2017 to 2020 (R$ thousand Dec/2016)

	Breakdown	2017	2018	2019	2020
1.	Direct Revenue (R$ thousand)	12,075,047	12,321,528	12,574,771	12,802,751
2.	Provisions Doubtful Accounts / Credit Write-Offs (R$ thousand)	-235,857	-259,233	-263,303	-265,423
3.	**% Non-Payment Rate (% Direct Revenue)**	**1.95%**	**2.10%**	**2.09%**	**2.07%**

There is an increase in the percentage estimated by Sabesp for the next tariff cycle, when compared to the indexes observed in the last tariff cycle, as shown in Figure 7.1.

Chart 7.1: Evolution of % actual (2013-2016) and estimated (2017-2020) uncollectable revenues by Sabesp



For the calculation of the Maximum Average Tariff in this initial stage, Arsesp recognized as uncollectable regulatory revenues the average of the percentage observed in the cycle concluded (2013-2016), excluding the outlier of 0.03% referring to 2015, as it was affected by the recovery of debits related to consumption in 1996 and 2000, resulting from a negotiation between Sabesp and the City of Santos (see Sabesp's financial statements of 2015), which is an atypical event that interferes with the average of the period. The index adopted by Arsesp for 2017-2020 was 1.15%. The resulting amounts are shown in the following table.

Table 7.3: Uncollectable regulatory revenues - 2017 to 2020 (R$ thousand Dec/2016)

Breakdown	2017	2018	2019	2020
Non-Payment Rate (% Direct Revenue)	1.15%	1.15%	1.15%	1.15%
Uncollectable Revenues: Non-Payment Rate	150,202	154,296	158,569	162,799

8. ANALYSIS OF CAPITAL EXPENDITURES (CAPEX)

It is important to clarify that the Sabesp's Investment Plan results from te plan for the provision of water supply, collection and treatment of sewage and related services, established between the service provider and the granting powers, and the regulatory agency is not responsible for making the plan.

Thus, the focus of the analysis carried out by Arsesp was the disbursement plan that is part of the Investment Plan for 2017-2020. The same methodology was adopted for Sabesp's 1st Ordinary Tariff Revision (OTR), in which the investment disbursement plan, which totals R$11,736,610,322 (prices of Dec/2016), is used to define the Maximum Average Tariff for next tariff cycle. The investment immobilization plan was not included in this analysis.

The Agency's analysis sought to confirm the consistency of the investment plan with the physical targets for 2017-2020. Thus, for each of the programs of the investment plan, the estimated amounts were compared with the physical details of the respective programs. This analysis was not carried out for programs that did not have physical details presented by Sabesp. A comparison was also carried out for the level of investments of the 1st and 2nd Ordinary Tariff Revision (OTR) of Sabesp.

8.1 Investment plan

In the Business Plan of the 2nd OTR, Sabesp presents the Corporate and Structuring Programs, which total the aforementioned disbursements of R$11,736,610,322 for 2017-2020, presented in Table 8.1. These amounts do not include capitalizable expenses.

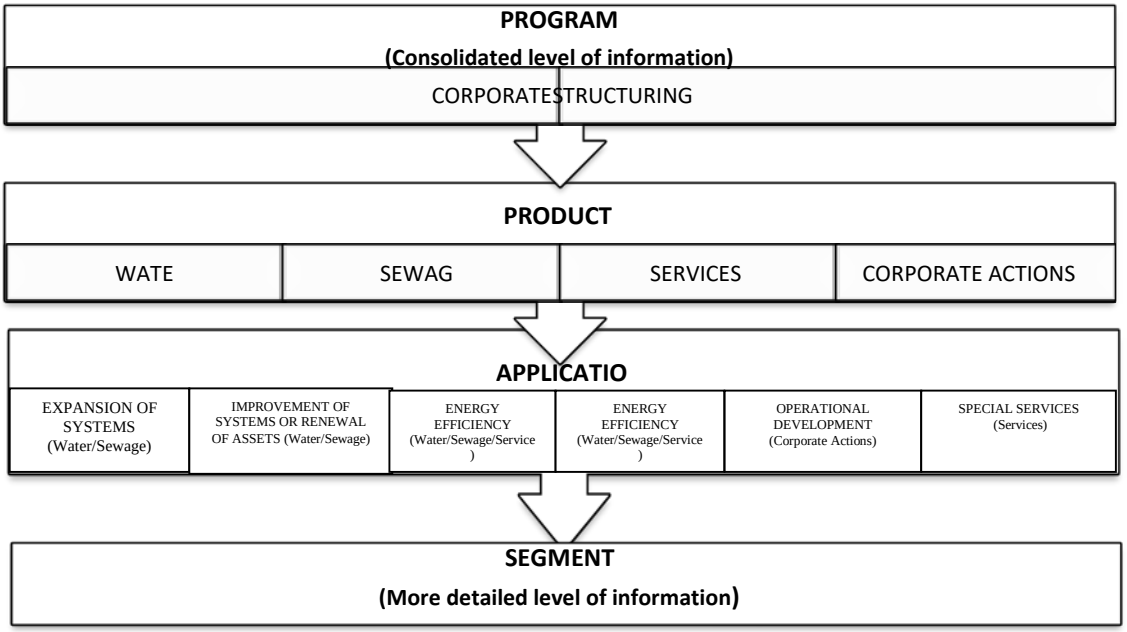
Table 8.1: Disbursements of CAPEX by program for 2017-2020 (R$ thousand Dec/2016)

Program	Products	2017	2018	2019	2020	Total	%
CORPORATE	REDUCTION AND CONTROL OF LOSSES	467,862	757,106	610,594	530,472	2,366,033	20.2%
CORPORATE	VEGETATIVE GROWTH OF SEWAGE	169,829	161,316	180,471	172,729	684,345	5.8%
CORPORATE	VEGETATIVE GROWTH OF WATER	138,353	136,424	146,456	159,541	580,774	4.9%
CORPORATE	INFORMATION TECHNOLOGY	120,117	93,920	81,609	97,245	392,890	3.3%
CORPORATE	SERVICES AND TECHNICAL STUDIES	59,528	98,326	90,816	99,851	348,521	3.0%
CORPORATE	ADMIN. INSTALLATIONS AND EQUIPMENT	17,536	16,443	28,036	21,149	83,163	0.7%
CORPORATE	OPERATIONAL SUPPORT	16,066	15,704	16,211	17,045	65,026	0.6%
CORPORATE	ENERGY EFFICIENCY	2,108	3510	8,720	8,720	23,058	0.2%
CORPORATE	FLEET	2,200	330	1,304	1,000	4,834	0.0%
CORPORATE	NEW BUSINESSES	1,331	150	1,000	1,000	3,481	0.0%
STRUCTURING	TIETÊ PROJECT	319,371	672,301	741,613	908,879	2,642,165	22.5%
STRUCTURING	METROPOLITAN PROGRAM OF WATER	1,318,807	326,955	147,871	96,490	1,890,123	16.1%
STRUCTURING	ONDA LIMPA BAIXADA SANTISTA (CLEAN WAVE)	94,498	131,345	121,068	217,730	564,640	4.8%
STRUCTURING	RMSP'S SEWAGE PROGRAM	45,088	114,427	120,822	124,119	404,456	3.4%
STRUCTURING	SEASIDE WATER PROGRAM	65,178	125,155	151,765	136,664	478,762	4.1%
STRUCTURING	SEASIDE SEWAGE PROGRAM	49,922	52,363	69,619	117,176	289,079	2.5%
STRUCTURING	COUNTRYSIDE SEWAGE PROGRAM	83,476	58,948	60,922	59,175	262,521	2.2%
STRUCTURING	COUNTRYSIDE WATER PROGRAM	28,899	74,981	67,338	54,117	225,336	1.9%
STRUCTURING	PRÓ-BILLINGS	6,932	41,797	85,019	58,415	192,164	1.6%
STRUCTURING	NEW LIFE (SPRING WATER)	11,900	22,424	32,658	19,235	86,216	0.7%
STRUCTURING	RIBEIRA VALLEY PROGRAM	12,456	16,820	21,282	22,215	72,773	0.6%
STRUCTURING	CLEAN STREAM	8,000	9,000	23,803	26,033	66,836	0.6%
STRUCTURING	CLEAN WAVE NORTH SEASIDE	4,565	4,849	-	-	9,413	0.1%
	GRAND TOTAL	3,044,022	2,934,593	2,808,996	2,948,999	11,736,610	100.0%

In the 2017-2020 period, approximately 32% of the investments are allocated to programs connected to the water supply service, 44% to the sewage collection and treatment service and 24% to corporate action programs and services. In 2017, investments associated with the water supply service were prioritized. This ratio is reversed in the 2018-2020 period, with the amount allocated to projects connected to sewage services being higher.

The investment plan is structured as follows Programs>Products>Applications>Segments, as the detail of the information increases, as shown in Figure 8.1 below.

Figure 8.1: Structure of the investment plan presented by Sabesp



The Structuring Programs are directly linked to infrastructure investments to carry out the construction works required to meet the estimated demand for drinking water supply services, from water collection to building connections, and the sanitary sewage service, consisting of operating activities, infrastructures and facilities of collection, transportation, treatment and adequate final disposal for sanitary sewages, ranging from building connections to their final disposal into the environment.

The Corporate Programs are continuous, of improvement or of replacement of the company's assets and other sets of investments related to the reduction and control of losses, vegetative growth, operational support, renewal of operational and administrative assets and the fleet and in information technology.

The Structuring Programs concentrate 61.2% of the investments planned for the cycle and the Corporate Programs represent 38.8% of the total. Three programs concentrate almost 60% of the investments planned: Tietê Project, Reduction and Control of Losses and Metropolitan Water Program - PMA.
Attachment I describes the analysis made by Arsesp, in the initial stage of the 2nd OTR, of each program of the Investment Plan.

8.2 Evolution of the investments of the 1st and 2nd Ordinary Tariff Revisions

The comparison of the level of investments of the 1st and 2nd Ordinary Tariff Revisions (OTRs) of Sabesp was made based on the evolution of investments foreseen and approved by Arsesp in the 1st OTR, the actual historical amounts of Sabesp in the 2013-2016 period and the investments planned by Sabesp for the 2017-2020 period in the Business Plan.

The values related to the 1st OTR - estimated and actual - are presented in Table 8.2. The investments planned by Sabesp in the Business Plan for the next tariff cycle (2017-2020) are shown in Table 8.3. All prices are December 2016 prices and include the capitalizable expenses.

Table 8.2: Estimated and actual investments in the 2013-2016 period - R$ thousand Dec/2016

Investments	2013	2014	2015	2016	TOTAL
Estimated	3,186,199	3,017,127	2,818,654	3,142,025	12,164,005
Actual	3,148,623	3,403,904	3,291,621	3,128,831	12,972,978

Table 8.3: Investments estimated by Sabesp for 2017-2020 - R$ thousand Dec/2016

Investments	2017	2018	2019	2020	TOTAL
Sabesp's Business Plan	3,231,728	3,222,299	2,996,702	3,136,706	12,487,436

Considering all the amounts in the same price base (December 2016), it can be observed that the investments made in the tariff cycle being concluded (2013-2016) were 7% higher than the amountsapproved in the 1st OTR for that period. It is also noted that the investments foreseen by Sabesp for the next tariff cycle (2017-2020) are 4% below the actual amounts in the previous cycle, as summarized in Table 8.4.

Table 8.4: Estimated and actual investments in the 2013-2020 period - R$thousand Dec/2016

Sabesp's Investments	Total	Variation %
Estimated - 1st OTR (2013-2016)	12,164,005	
Actual - 1st OTR (2013-2016)	12,972,978	6.65%
Estimated - 2nd OTR/PN Sabesp (2017-2020)	12,487,436	-3.74%

8.3 Capitalizable Expenses

According to the Business Plan of the 2nd Ordinary Tariff Revision, the capitalizable expenses correspond to the human and material resources that Sabesp mobilizes on a permanent basis in carrying out its activities aimed at the expansion of the systems. They correspond to the activities of planning, financing and contracting of investments for new systems and for their institutional development. These expenses were not considered in the 2017-2020 estimative of operating expenses and should be added to the investment estimative, as they will be subsequently incorporated into the asset base.

The concessionaire presented the capitalizable expenses incurred in 2012-2016, updated at December 2016 prices, which comprised the annual average of R$187,706,485. Sabesp considers this average from the previous cycle for purposes of annual estimative of this annual average for the next tariff cycle (2017-2020). Arsesp considers it valid to adopt the historical average as a parameter to estimate the capitalizable expenses for the next tariff cycle, since there was no significant change in the level of total investments, with a variation of only 3% between the tariff cycles.

8.4 Public-Private Partnership of the São Lourenço System

In the Metropolitan Water Program (PMA), one of the main construction works and actions planned is the implementation of the São Lourenço Producer System, which is being built through a Public-Private Partnership, with the private partner having all the necessary investments.

In addition to the construction of the project, the administrative concession agreement provides for the provision of operating services of the system of dehydration, drying and final disposal of sludge and maintenance of the São Lourenço Producer System, being up to the Specific Purpose Company (SPE) to enable, capture, apply and manage the necessary financial resources to provide the services and carry out the administrative concession. The detail of this PPP is described in item 6.2 of this Technical Note.

As explained above, it is up to Sabesp to pay a monthly consideration during the period of 248 months after the completion of the construction works and start of the execution of the object under this concession agreement, which will be used to pay all services for the operation and maintenance of the São Lourenço Producer System, as well as the investments incurred. Briefly, this consideration includes the costs of the permanent investments and the operational and maintenance costs. It is provided in the agreement that the investments of the SPE that have been made to provide the services must be amortized within the term of the administrative concession.

As a conclusion, Arsesp understood that for the purposes of the tariff revision, the CAPEX disbursements of the São Lourenço Producer System should not be considered, since the monthly consideration was included in the OPEX. Therefore, Arsesp made the necessary adjustments to the investment plan designed by Sabesp using the amounts of PPP disbursement informed by the company, presented in Table 8.5.

Table 8.5: Disbursements of the São Lourenço Producer System for 2017-2020 - R$ thousand Dec/2016

DESCRIPTION	2017	2018	2019	2020	TOTAL
TOTAL DISBURSEMENTS	710,271	80,128			790,399

8.5 Arsesp's remarks on the investment plan

The Business Plan prepared by Sabesp presents, for the main proposed programs, financial and physical quantitative estimative related to the main stages of water supply and sanitary sewage services (capture, adduction, distribution, collection, treatment and final disposal), estimating the implementation requirements of water production units, distribution and adduction systems, household connections, sewage collection networks, trunk collectors and sewage treatment units together with the needs of service expansion, vegetative growth, expansion and renewal of assets.

Another important factor to consider is the regional nature of some investments, especially those carried out in the São Paulo Metropolitan Region and the need to continue with and conclude the construction works already started in the previous cycle.

Based on a preliminary analysis of the information provided by Sabesp in the Business Plan estimated for 2017-2020, comparing to each program the respective physical detailing and estimated financial disbursements, were not found important or critical inconsistencies that questioned the assumptions adopted in the company's plan and, therefore, it is possible to adopt the proposed disbursement plan for most programs at the initial stage of the ongoing tariff revision process.

However, according to the specific analysis of the São Lourenço PPP agreement, CAPEX disbursements referring to the São Lourenço system should not be contemplated, since the Agency's understanding is that the OPEX considers the full value of the consideration of the concession agreement. Therefore, to calculate the P0, Arsesp adjusted the amounts presented by Sabesp referring to CAPEX disbursements, which are presented in Table 8.6 below.

Table 8.6: Statement of regulatory adjustments in the CAPEX estimated for 2017-2020 (R$ thousand Dec/2016)

DESCRIPTION	2017	2018	2019	2020	Total
1- CAPEX - Disbursement Plan PN SABESP	3,044,022	2,934,593	2,808,996	2,948,999	11,736,610
2 - Disbursements S. S. Lourenço Production System	710,271	80,128	-	-	790,399
3 - Adjustment ARSESP (1-2)	2,333,751	2,854,466	2,808,996	2,948,999	10,946,211
4.% CAPEX Recognized	76.7%	97.3%	100.0%	100.0%	93.3%
5. Capitalizable Expenses	187,706	187,706	187,706	187,706	750,826
6. Total amount of CAPEX (3+5)	2,521,457	3,042,172	2,996,702	3,136,706	11,697,037

In the final stage of the 2nd OTR, Arsesp will continue the analyzes of Sabesp's Investment Plan, to confirm the coherence of the projection model of the expenditures from the comparison between the estimates of physical and financial investment. The amount of disbursements related to the structuring programs New Life Spring Water (Vida Nova Manancial) and Clean Stream (Córrego Limpo), and to the corporate programs Technical Services and Studies, Administrative Facilities and Equipment, Operational Support, Energy Efficiency and New Businesses, for which Sabesp has not presented estimates of physical quantitative or assumptions of how the disbursement estimates were made, were considered by Arsesp on a provisional basis to establish the P0 at this initial stage. The maintenance of these values in the final stage is subject to the submission of the details of these Programs by Sabesp for Arsesp's analysis.

9. WEIGHTED AVERAGE COST OF CAPITAL - WACC

The National Sanitation Law, in its Article 29, establishes that water and sewage services must have economic and financial sustainability guaranteed through the collection of tariffs (Section I), which will have, among others, the recovery of costs incurred in the provision of the service, in efficiency regime, and the adequate remuneration of the capital invested by service providers (Sections V and VI of
Paragraph 1).

In the tariff revision process, it must be established the rate of capital cost to be applied to the remuneration that integrates the calculation of its tariffs, in order to meet one of the key assumptions of the model, which is the financial sufficiency of the concessionaire. To do this, providers must be guaranteed a return compatible with the opportunity costs faced by an investor who can invest its resources in activities of comparable risk.

The international regulatory practice to establish the capital cost shows a greater consensus on the use of standardized parametric methods, which seek to strengthen the best regulatory practices in the segments of public network service, promoting transparency and providing greater certainty as to what are the drivers in the return rate recognized. Thus, by observing the criteria, it is intended to increase the competition in investment flows, as well as to convey confidence to investors, whether shareholders, debenture holders or creditors.

Establishing the weighted average cost of capital in companies providing basic infrastructure services through fixed networks is extremely important because the fixed capital is high, the assets are specific (they cannot be used for other purposes and represent sunk costs), and the remuneration is of long term. Thus, the capital remuneration will depend on the definition of the payable capital base and the profitability rate applied on that basis.

Considering that the expansion, operation and maintenance of the network infrastructure systems are financed with equity and indebtedness, most regulatory agencies, both national and international, adopt the regulatory practice of establishing the return rate on capital by calculating the Weighted Average Cost of Capital (WACC).

In this initial stage of the 2nd Sabesp's Ordinary Tariff Revision, Arsesp established the Weighted Average Cost of Capital to be applied in the next tariff cycle (2017-2020). For this, the methodology adopted in the 1st OTR, described in Technical Note RTS/01/2011 was revised and adjusted. The new Arsesp's proposal is detailed in Attachment II of this Technical Note.

Table 9.1 below summarizes the variables that compose the calculation of the Preliminary Weighted Average Cost of Capital for the next tariff cycle.

Table 9.1: Summary of the Weighted Average Cost of Capital of Sabesp for the 2nd OTR

DESCRIPTION	2nd OTR
Capital Structure 2nd OTR	
(A) Participation of Equity	58.83%
(B) Participation of Debt	41.17%
Cost of Equity (Ke)	
(1) Free Risk Rate	5.09%
(2) Return Rate of the Market	11.50%
(3) Market Risk Premium = (2) - (1)	6.42%
(4) Deleveraged Beta	51.77%
(5) IR + CSLL	34.00%
(6) Leveraged Beta = (4)*[1+(((B)/(A))*(1-(5)))]	75.68%
(7) Business and Financial Risk Premium = (6) * (3)	4.86%
(8) Brazil Risk Premium	2.56%
(9) American Inflation Rate	2.11%
(10) Ke Par Value = (1)+(7)+(8)	12.50%
(11) Actual Ke = [(10)+1]/[1+(9)]-1	10.18%
Cost of Third Party Capital (Kd)	
(12) Free Risk Rate = (1)	5.09%
(13) Brazil Risk Premium = (8)	2.56%
(14) Credit Risk	3.52%
(15) Kd Par Value before taxes = (12)+(13)+(14)	11.16%
(16) Net Nominal Kd after Taxes = (15)*[1-(5)]	7.37%
(17) Actual Net Kd after Taxes = [1+(16)]/[1+(9)]-1	5.15%
WACC	
(18) WACC = (A) x (11)+ (B) x (17)	**8.11%**

The definitive regulatory remuneration basis will be validated by Arsesp within the final stage of the 2nd Ordinary Tariff Revision. Therefore, the WACC may change, given that the capital structure will be recalculated from the validated data of regulatory remuneration basis.

10. DEFINITION OF THE REGULATORY REMUNERATION BASIS

Under the 2nd Ordinary Tariff Revision, Arsesp updated the methodology and general criteria for updating the Regulatory Remuneration Basis, through ARSESP Resolution No. 672/2016, published after Public Consultation No. 03/2016. This resolution established the conditions for updating the armored base, validated in the 1st OTR, and the incremental basis, which comprised the assets that came into operation from September 2011 to June 2016.

10.1 Incremental Basis referring to investments made, to be included in the regulatory remuneration basis

In Public Consultation No. 03/2016, carried out from June 30, 2016 to July 15, 2016, ARSESP proposed the methodology and general criteria for updating the Regulatory Remuneration Basis of the 2nd Ordinary Tariff Revision (OTR) of Companhia de Saneamento Básico do Estado de São Paulo – Sabesp, embodied in ARSESP Resolution No. 672, of October 14, 2016.

The procedure for recognition and inclusion, in the SABESP's Regulatory Remuneration Basis, of the incremental investment carried out in the previous cycle, provides that the investment must be the object of an Appraisal Report prepared by a specialized valuation company, using as methodology the New Value of Replacement (VNR). The Report sent by SABESP will then be analyzed by ARSESP before being definitely included in the Remuneration Basis.

Due to difficulties encountered in the scope of the Asset System, SABESP itself informed, in meetings held at Arsesp, that the Appraisal Report sent by it does not adequately reflects the amounts actually invested in the cycle, recorded in the accounting system. For this reason, SABESP sent, for comparison purposes, the information regarding accounting values included in the Balance Sheet, audited by KPMG. The value of the assets (VNR) considered in the Appraisal Report is of R$9.5 billion, while the corresponding book values, adjusted by the IPCA and depreciated, reach R$12.6 billion at June 2016 prices. Therefore, it is necessary to correct the inconsistencies and incorporate the corresponding adjustments in the Asset Control System in order to fully reflect what is recorded in the accounting system, as recognized by SABESP itself.

It is worth noting that ARSESP Resolution No. 672 provides, in its Article 5, that:

Article 5 For the purposes of the tariff revision, Sabesp must carry out the reconciliation of the asset database, for the accounting data to reflect the assets actually in service.

Considering that the incorporation of these values will only take place in the Final Stage of the Revision, in April 2018, this will have an impact on the tariff repositioning of the final stage - together with other necessary adjustments, besides the correction of tariffs due to the annual readjustment based on the IPCA variation (from April 2017 to April 2018), Arsesp's Collegiate Board of Directors decided to consider in the Preliminary Stage, after examining the information that SABESP presented, the equivalent of 48.85% of the difference between the restated and depreciated accounting values and the current interim Appraisal Report (see Table 10.1).

Therefore, we consider that the amounts reported in the Report submitted by SABESP are still provisional, and it is up to the concessionaire to proceed with the necessary updating and complementation of the Appraisal Report, as applicable, for its use in the Final Stage of the Ordinary Tariff Revision.

ARSESP Resolution No. 672 itself provided, in Paragraph 4 of its Article 1, that:

"Paragraph 4. In the event that Sabesp does not carry out the appraisal of the assets and the submission of the information, under the terms established in this Resolution and within the period established by Arsesp, the Agency will be responsible for arbitrating the regulatory remuneration basis to be considered in the tariff revision."

Due to this being the initial stage, the final value to be considered is conditioned to the future submission by Sabesp of an Appraisal Report that includes the complementary values to be identified, which will be audited by Arsesp before being included in the Regulatory Remuneration Basis.

Arsesp's detailed analysis and remarks on the data submitted by Sabesp for this initial stage are described in Attachment III of this Technical Note. The following table presents the summary of the values of the regulatory remuneration basis adopted by Arsesp in this initial stage.

Table 10.1: Net Assets Basis in Service until June/2016

Breakdown	R$ thousand Jun/2016
Armored Base - until Sep/2011	27,169,186
Incremental Base - Sep/2011 to Jun/2016 (report)	9,542,563
Difference between the Report and the Accounting Balance	1,556,661
Assets Base in Service in June/2016	**38,268,410**

10.2Assets incorporated and depreciation after the assets report up to December/2016

To update the assets base for the period from July to December 2016, the incorporations carried out in the period, as well as the depreciation related to the 6-month period, were considered.

The incorporations were estimated based on the amount of investments made in the period from July to December 2016, reported by Sabesp. Regarding the depreciation, the average number of years of useful life of the assets was adopted as reference: 44 years for incorporations and 25.6 years for the asset base.

The following table presents the values resulting from the update calculation of the asset base for December 2016.

Table 10.2: Net Assets Basis in Service until December/2016

Breakdown	R$ thousand Jun/2016	R$ thousand Dec/2016
1. Assets Base in Service in June/2016	38,268,410	38,954,480
2. Incorporations in the period from July 2016 to December 2016	-	1,517,678
3. Depreciation in the period from July 2016 to December 2016	-	768,236
3.1 Base of Assets in Service	-	759,612
3.2 Incorporations	-	8,623
Base of Assets in Service on Dec/2016 (1+2-3)	**-**	**39,703,922**

10.3 Regulatory Working capital

According to the methodology adopted in the 1st OTR, the Net Regulatory Remuneration Basis (RAB) must include the amount of resources required to finance the continuity of short-term activities related to the provision of water and sewage services. This permanent inventory of resources is scaled according to the characteristics of the systems of operation and commercialization of the services and includes only operating assets and liabilities, that is, those that are directly involved in the business cycle, subject to the efficiency limits established for the management.

The inventory of Regulatory Working capital (RCC) to be considered in RAB0 is obtained by the difference between the Current Operating Assets (ACO) and the Current Operating Liabilities (PCO), extracted from the 2016 Balance Sheet. The following accounts are included in the ACO: operating inventories, accounts receivable from clients, other accounts receivable, and a part related to the available, which is subject to the regulatory limit equivalent to one month of the operating cost (Opex) of 2016. The PCO includes the accounts: contractors and suppliers; wages, provisions and social contributions; taxes and collectable contributions; accounts payable and other obligations.

Based on the indicators and parameters observed in 2016 for each component of current assets and liabilities (see October 10.1), the estimate of CCR inventory is prepared for each year of the tariff cycle.

According to the update rule of the RAB_0, each year the annual variations of the regulatory working capital are added to the remuneration basis. In addition, the estimated annual variations from 2017 are considered in the calculation of the Initial Maximum Price (P0).

The following table presents a statement of the composition of the regulatory working capital included in RAB 0, as well as the estimates of its components for the tariff cycle.

Table 10.3: Regulatory Working capital (R$ thousand Dec/2016)

Breakdown	Parameter	2016	2017	2018	2019	2020
I - CURRENT ASSETS		2,109,419	2,397,685	2,494,900	2,553,948	2,625,228
1. Available	Opex	441,269	449,327	495,704	501,595	519,070
2.4 Accounts receivable from clients	Rev. Operational	1,557,472	1,835,795	1,885,823	1,938,056	1,989,754
3. Operating Inventories	Exp. Materials	58,002	59,887	60,697	61,621	63,728
4. Other accounts receivable	Constant	52,676	52,676	52,676	52,676	52,676
II - CURRENT LIABILITY		1,484,633	1,497,127	1,545,309	1,565,603	1,623,468
1. Contractors and suppliers	Opex (excl.Personnel)	311,960	313,917	324,669	328,834	341,188
2. Wages, provisions and social contrib.	Exp. Personnel	458,299	470,614	477,544	485,070	500,458
3. Taxes and contributions to be collected	Opex	168,757	169,815	175,632	177,885	184,568
4. Accounts payable	Opex (excl.Personnel)	460,054	456,682	478,416	483,624	503,674
5. Other liabilities	Opex	85,563	86,100	89,049	90,191	93,580
III - REGULATORY WORKING CAPITAL						
1. Inventory		624,786	900,557	949,590	988,345	1,001,760
2. Variation ($Inventory_t$ - $Inventory_{t-1}$)		-	275,771	49,033	38,755	13,415

Table 10.1: Parameters used in the calculation of Regulatory Working capital

Account	Amount	Calculation formula
Accounts Receivable	51.1 days	= (Accounts Receivable[1]/Operating Revenue[1]) x 365
Inventories	12.4%	= Inventories[1]/(Gen.Exp.Mat. + Exp.Mat.Treatment (Opex 2016))
Other accounts receivable	constant	= Other accounts receivable[1]
Contractors and suppliers	21.5 days	= (Contractors and suppliers[1]/ (Opex 2016 - Exp. personnel)) x 365
Wages, provisions and social contrib.	21.8%	= Wages, prov., social contrib.[1]/ Exp. personnel (Opex 2016)
Taxes and contributions payable	3.2%	= Taxes and contrib. payable[1]/ Opex 2016
Accounts Payable	52.7 days	= (Accounts Payable[1]/ (Opex 2016 - Exp. Personnel)) x 365
Other obligations	5.9 days	= (Other obligations[1]/ Opex 2016) x 365

(1) Balance Sheet Sabesp 2016.

10.4 Initial Regulatory Remuneration Basis- RAB_0

The Initial Net Regulatory Remuneration Basis to be considered for the tariff cycle is of R$38,505,786 thousand, expressed at December 2016 prices. The RAB0 includes the Asset Base in Service and the Regulatory Working capital, as shown in Table 10.4 below.

Table 10.4: Initial Regulatory Remuneration Basis- RAB_0

Breakdown	R$ thousand Dec/2016
1. Assets Base in Service in Dec/2016	39,703,922
2. Regulatory Working capital	624,786
3. Initial Net Regulatory Remuneration Basis	**40,328,708**

10.5 Mechanism of annual update of the RAB

RAB's annual update throughout the tariff cycle, as established in the methodology of the 1st OTR, includes the incorporation, based on previous year, of new investments that come into service and the variations in the working capital of each year and the deduction of the annual depreciation, as indicated in the following formula:

$$RAB_t = RAB_{t-1} + INCORP_t + \Delta WCR_t - D_t$$

Where:

RAB_t = Net Regulatory Remuneration Basis of t year;
$INCORP_t$ = Incorporations of new investments in t year, which include interest on construction works in progress (JOAR) during the construction period;
ΔWCR_t = Variation in Remunerable Working capital in t year.
D_t = Technical depreciation for t year.

As in the 1st OTR, for the next cycle, the value of annual incorporations ("fixed assets") in the asset in service will be equivalent to the corresponding investment disbursement for the same year. In addition to the investments, the respective interest related to the construction period, called Interest of Construction Works in Progress, is included in the RAB update; however, it is subject to the following regulatory criteria: rate equal to the Weighted Average Cost of Capital (WACC) applied over a construction period of up to 18 months. The evolution of RAB throughout the tariff cycle is presented in the table below.

Table 10.5: Evolution of the Net Regulatory Remuneration Basis - RAB (R$ thousand Dec/2016)

Breakdown	2017	2018	2019	2020
1. Net Regulatory Remuneration Basis in the previous year	40,328,708	41,700,447	43,330,764	44,829,770
2. Incorporations of Investments	2,674,816	3,227,201	3,178,966	3,327,485
2.1 Investments Concluded	2,521,457	3,042,172	2,996,702	3,136,706
2.2 Interest on Construction Works in Progress	153,359	185,029	182,264	190,779
3. Variation in the Regulatory Working capital	275,771	49,033	38,755	13,415
4. Technical Depreciation	1,578,849	1,645,917	1,718,714	1,792,651
5. Net Regulatory Remuneration Basis (1+2+3-4)	41,700,447	43,330,764	44,829,770	46,378,019

The RAB amount estimated for the last year of the cycle (2020), calculated according to the aforementioned update rule, is of R$46,378,019 thousand, which converted to the present value of Dec/2016 results in R$33,951,290 thousand, value considered in the calculation of the P0, according to the Discounted Cash Flow presented in Chapter 14.

11. TAXES AND CONTRIBUTIONS

According to the methodology of the 1st OTR, taxes related to the provision of water and sewage services are considered in the calculation of the P0, either explicitly or as components of the OPEX. The other charges resulting from any legal impositions specific to each jurisdiction (municipality) will be considered outside of the Maximum Average Tariff (P0) and highlighted in the bills of the users of the specific jurisdiction that originated them.

11.1 Cofins/Pasep

Contributions to Cofins/Pasep have a rate of 7.6% and 1.65%, respectively, totaling 9.25% of the operating revenue. Considering that there are deductible credits, the effective rate of Sabesp is lower. Therefore, in the estimative of these expenses, the rate to be considered must be net of these credits.
In the 1st OTR, the average rate of 7.3% on the revenue was adopted, based on the observations of the previous period (2007-2011) and the estimates made by Sabesp in its Business Plan. The actual amount for the 2012-2016 period, obtained in the balance sheets, are shown in Table 11.1 below.

Table 11.1: Historical data of expenses related to Cofins/Pasep - 2012 to 2016

Breakdown	2012	2013	2014	2015	2016
Gross Operating Revenue - R$ thousand	8,926,737	9,540,021	8,905,335	8,946,825	11,122,232
Cofins/Pasep	653,588	669,189	610,155	571,972	756,901
Cofins/Pasep rate -%	7.32%	7.01%	6.85%	6.39%	6.81%

For the estimate of expenses with Cofins/Pasep in the 2nd OTR, Arsesp adopted the average rate calculated from Sabesp's proposal in its Business Plan, which is 6.56%. Based on this criterion, the corresponding expenses estimated by Arsesp for the next cycle are shown in Table 11.2.

Table 11.2: Estimative of expenses related to Cofins/Pasep for 2017-2020 (R$ thousand Dec/16)

Breakdown	2017	2018	2019	2020
Gross Operating Revenue	13,470,800	13,833,420	14,212,039	14,586,767
Cofins/Pasep	884,055	907,853	932,700	957,293
Cofins/Pasep Rate* -%	6.56%	6.56%	6.56%	6.56%

* Average of the rates estimated by Sabesp for the years of 2017, 2018, 2019 and 2020 (PN-Sabesp).

11.2 Income Tax and Social Contribution on Net Income - IRPJ/CSLL

The IRPJ/CSLL expense corresponds to 34% of the estimated net income for each year of the tariff cycle. The tax base is obtained by deducting from the total revenue the costs related to Cofins/Pasep, operating costs (Opex), unrecoverable revenues, accounting depreciation and regulation fee, whose calculation is detailed in item 11.2.1.

The Income Tax calculation in the Discounted Cash Flow statement is presented in the following table.

Table 11.3: Statement of IRPJ/CSLL Calculation (R$ thousand Dec/2016)

Breakdown	2017	2018	2019	2020
1. Total Revenue (Direct + Indirect + Others)	13,470,800	13,833,420	14,212,039	14,586,767
2. Deductible Costs for IRPJ/CSLL	7,698,381	8,351,492	8,525,797	8,839,941
2.1-Cofins/Pasep	884,055	907,853	932,700	957,293
2.2-Operating Costs (Opex + PPP)	5,391,920	5,948,446	6,019,135	6,228,841
2.3-Unrecoverable Revenues (Uncollectable)	150,202	154,296	158,569	162,799
2.4-Accounting Depreciation	1,212,522	1,279,590	1,352,388	1,426,325
2.5-Regulation Fee of ARSESP	59,681	61.307	63,004	64,684
3. Basis of IR/CSLL Calculation	5,772,420	5,481,928	5,686,242	5,746,826
4. Income Tax + Social Contribution (34%)	1,962,623	1,863,855	1,933,322	1,953,921

11.2.1 REGULATION, CONTROL AND INSPECTION FEE

According to the current legislation, the value of the Regulation, Control and Inspection Fee (TRCF) was set at 0.50% of the annual revenue directly obtained with the provision of the service, excluding the amounts of taxes incurring on it. The amount of the annual revenue will correspond to the gross operating revenue for the last fiscal year, as calculated in the financial statements, deducting, in accordance with the applicable legislation, the following taxes: (i) Tax on Circulation of Goods and Provision of Services - ICMS (does not incur in water and sewage); (ii) Contribution to PIS/Pasep; and (iii) Contribution to Social Security Financing - COFINS.

The charge related to this Regulation Fee will only incur on Municipalities with services regulated by Arsesp and, therefore, were not considered directly in the calculation of P0, as they will be included in the accounts of the respective users. However, as detailed in this chapter, the effect of this regulation fee is considered in the definition of operating income, which is the calculation basis for the Income Tax and Social Contribution Tax considered in the calculation of P0. The values of the regulation fee estimated by Arsesp for the next tariff cycle are shown in the Table 11.4 below.

The type of charge of the TRCF by Sabesp to users located in the applicable municipalities must comply with the guidelines set forth in Arsesp Resolution No. 407 of March 22, 2013.

For the revenue of regulated municipalities, the percentage of total revenue (95.95%) observed in 2016 was considered and, for expenses with Cofins/Pasep expenditure, the average rate estimated by Sabesp for the tariff cycle (6.56%) was considered.

Table 11.4: Estimate of the regulation fee of Arsesp (R$ thousand Dec/2016)

Breakdown	2017	2018	2019	2020
1. SABESP's Total Revenue	13,470,800	13,833,420	14,212,039	14,586,767
2. Regulated Municipalities Revenue (95.95%)	12,774,652	13,122,581	13,485,862	13,845,409
3. Cofins/Pasep (6.56%)	838,368	861,202	885,043	908,640
4. Calculation Basis of the Regulation Fee	11,936,284	12,261,379	12,600,819	12,936,770
5. Regulation Fee of Arsesp (0.5%)	59,681	61.307	63,004	64,684

12. OTHER REVENUES

In addition to direct revenues or revenues with tariffs, other revenues related to the provision of water supply and sewage services were considered, affecting the definition of the Maximum Average Tariff (P0), analyzed below.

12.1 Indirect revenues

The indirect revenues refer to those obtained by the company as a result of the collection of the following additional or complementary services:

- Connections and reconnections of water and/or sewage
- Expansion of water and/or sewage networks;
- Repair and replacement of boxes for hydrometers;
- Repairs in water and/or sewage networks;
- Increase due to the late payment of bills;
- Inspection, certificates and others.

The collection for the complementary services listed above is intended to cover the corresponding costs. Considering that, in the calculation of the P0, these costs are included in the estimated OPEX, Arsesp fully deducts the value of these indirect revenues from the estimated direct revenue required for the next tariff cycle.

In the 1st OTR, for the estimate of the amounts corresponding to the indirect revenues, a percentage was defined on the direct revenue of water and sewage based on the historical average observed in the previous period. For indirect water revenue, a percentage of 2.3% on direct water revenue was established and, for indirect sewage revenue, the percentage of 1.5% on direct sewage revenue was established.

For the 2nd OTR, the same system will be adopted, updating the percentages to be adopted for the next tariff cycle. The values observed in the 2013-2016 period are shown in Table 12.1 below.

Table 12.1: Historical data of indirect water and sewage revenues for 2013-2016 (R$ Dec/2016)

Breakdown	2013	2014	2015	2016	TOTAL
TOTAL DIRECT REVENUE	**12,349,010,694**	**10,847,418,817**	**10,055,581,071**	**11,494,038,837**	**44,746,049,420**
Indirect Water Revenue	121,432,098	114,876,272	109,942,320	122,839,642	469,090,332
Indirect Sewage Revenue	64,939,392	60,957,597	51,464,437	51,288,373	228,649,798
TOTAL INDIRECT REVENUE	**186,371,490**	**175,833,868**	**161,406,757**	**174,128,015**	**697,740,129**
Indirect % of water	1.75%	1.89%	1.90%	1.91%	1.86%
Indirect % of sewage	1.20%	1.27%	1.20%	1.01%	1.17%
TOTAL INDIRECT %	**1.51%**	**1.62%**	**1.61%**	**1.51%**	**1.56%**

The percentages obtained in the 2013-2016 period are below what was established in the 1st OTR (2.3% for water and 1.5% for sewage). The average for the period was of 1.86% for water and 1.17% for sewage.

As described in Sabesp's Business Plan, for the next tariff cycle, indirect revenues were estimated based on the percentages observed in the previous period. The amounts estimated by Sabesp, as well as the respective percentages on the direct revenue estimated for the next tariff cycle are shown in Table 12.2 below. The average percentage of 1.90%, estimated for indirect water revenues is equal to the average percentage observed in the previous cycle, while the percentage of sewage (1.28%) is slightly above the one observed in the previous period, which is 1.24%.

Table 12.2: Indirect revenues estimated by Sabesp for 2017-2020 (R$ Dec/16)

Breakdown	2017	2018	2019	2020	TOTAL
TOTAL DIRECT REVENUE	**12,075,046,505**	**12,321,528,252**	**12,574,771,492**	**12,802,751,064**	**49,774,097,313**
Indirect Water Revenue	129,696,659	132,344,091	135,064,147	137,512,848	534,617,745
Indirect Sewage Revenue	67,472,965	68,850,256	70,265,329	71,539,233	278,127,783
TOTAL INDIRECT REVENUE	**197,169,624**	**201,194,346**	**205,329,475**	**209,052,082**	**812,745,527**
Indirect % of water	1.90%	1.90%	1.90%	1.90%	1.90%
Indirect % of sewage	1.28%	1.28%	1.28%	1.28%	1.28%
TOTAL INDIRECT %	**1.63%**	**1.63%**	**1.63%**	**1.63%**	**1.63%**

In this 2nd OTR, Arsesp decided to maintain the system used in the 1st OTR. Therefore, for the next tariff cycle, the average percentages observed in the previous tariff cycle were adopted, which were of 1.86% for water and 1.27% for sewage. Table 12.3 below presents the results of the indirect revenue estimates for the 2017-2020 period, calculated based on the direct revenue estimated by Arsesp.

Table 12.3: Indirect revenues estimated for 2017-2020 (R$ thousand Dec/2016)

Breakdown	2017	2018	2019	2020
TOTAL INDIRECT REVENUE	**204,240**	**209,598**	**215,208**	**220,750**
Water (1.86%)	136,109	139,261	142,590	145,858
Sewage (1.17%)	68,131	70,338	72,618	74,892

12.2 Other revenues to be considered

As described in the Business Plan, Sabesp has other non-operating revenues, which are earned by the Company, derived from the following events:

- Disposal of assets;
- Scrap;
- Notices;
- Fines and bonds;
- Technical Services;
- Sale and lease of real estate;
- Reuse water;
- Project Rational Use of Water Program (Pura).

Sabesp presented the values observed in the tariff cycle concluded and the amounts estimated for 2017-2020. It can be seen in the following tables that Sabesp is estimating a significant reduction in other revenues, to levels well below the historical amounts observed.

Table 12.4: Historical amounts for 2013-2016 (R$ thousand Dec/2016)

Breakdown	2013	2014	2015	2016	TOTAL
Total Direct Revenue	12,349,011	10,847,419	10,055,581	11,494,039	44,746,049
Total Indirect Revenue	186,371	175,834	161,407	174,128	697,740
Other Revenues	82,560	149,459	235,690	77,846	545,555

Table 12.5: Amounts estimated by Sabesp for 2017-2020 (R$ thousand Dec/2016)

Breakdown	2017	2018	2019	2020	TOTAL
Total Direct Revenue	12,075,047	12,321,528	12,574,771	12,802,751	49,774,097
Total Indirect Revenue	197,170	201,194	205,329	209,052	812,746
Other Revenues	23,820	7,493	8,888	6,118	46,319

As there is still no regulatory accounting system that allows the identification of the shared costs specific to obtain these other non-operating revenues, Arsesp will maintain in this initial stage of the 2nd OTR the same criteria adopted in the 1st OTR, which considers the average revenue observed in the last two years (2015-2016) as a constant annual estimate for the next tariff cycle. The annual amount recognized by Arsesp for 2017-2020 is of R$156,768 thousand, which will be deducted from the revenue requirements, for the purpose of establishing the required revenue.

13. DEFINITION OF THE PRELIMINARY MAXIMUM INITIAL PRICE (P0)

The Preliminary Maximum Initial Price (P0) was established based on the Discounted Cash Flow (CDF) generated by Arsesp's Economic and Financial Model (MEF), the same used in the 1st OTR, supplied with the data presented by Sabesp in the Business Plan, at December 2016 prices, adjusted by the Agency according to the regulatory criteria presented in this Technical Note and contributions accepted in the public consultation.

The following table shows the estimates of the components of the discounted cash flow (CDF) and the resulting P0, which is of R$3.6039 per m³, expressed at December 2016 prices. Considering that Sabesp's base date is April 10, 2017, the IPCA variation for the Dec/16-Mar/17 period was applied to this result, resulting in the Maximum Price (P0) of R$3.63861

Table 13.1: Discounted Cash Flow for the calculation of P0

Breakdown	Current Value 2016	Tariff Cycle - R$ thousand Dec/2016			
		2017	2018	2019	2020
Billed Volume (A + E) - (1000m3)	12,487,621	3,637,669	3,736,800	3,840,302	3,942,743
+ Direct Required Revenue (tariff)	45,004,133	13,109,793	13,467,053	13,840,063	14,209,250
+ Indirect Revenue	700,173	204,240	209,598	215,208	220,750
+ Other Revenues	517,972	156,768	156,768	156,768	156,768
- COFINS/PASEP	3,033,452	884,055	907,853	932,700	957,293
- Operating Expenses (OPEX)	18,300,947	5,328,439	5,510,953	5,581,641	5,791,347
- Expenses PPPs Consideration	1,099,552	63,481	437,494	437,494	437,494
- Unrecoverable Revenues (uncollectable)	515,624	150,202	154,296	158,569	162,799
- Income Tax / Social Contribution	6,370,574	1,962,623	1,863,855	1,933,322	1,953,921
- Investments (Capex)	9,603,106	2,521,457	3,042,172	2,996,702	3,136,706
- Interest Construction Works in Regulatory Progress	584,075	153,359	185,029	182,264	190,779
- Variation in the Working capital	337,530	275,771	49,033	38,755	13,415
- Initial Capital Base	40,328,708	-	-	-	-
+ Final Capital Base	33,951,290	-	-	-	46,378,019
= Free Cash Flow + Capital Base - VLP	-40.328.708	1,971,531	1,439,753	1,543,740	35,373,684
P_0 calculated (prices of December 2016) = 3.60390		**TIR = 8.11%**			

In the Preliminary Technical Note NT/F/003/2017, in order to calculate the Tariff Repositioning Index (IRT), Arsesp adopted the current average tariff of R$3.47484 corresponding to the monetary update of the tariff calculated in the Extraordinary Tariff Revision held in 2015 (Final Technical Note RTS/004/2015), according to Arsesp Resolution No. 643.

After assessing the contributions received in the public consultation, Arsesp acknowledges that there was a significant change in the consumption profile due to the water crisis, characterized mainly by the migration of users to lower consumption ranges, and agrees that the gap between the new standards observed and the profile of consumption in force at the time of the 1st OTR (2012) is detrimental to obtaining the required revenue approved in this initial stage of the 2nd OTR. In this sense, it was decided to consider the average price actually obtained in the calculation of the IRT in this initial stage, calculated from the consumption histograms and corresponding amounts billed from July 2016 to June 2017, made available by Sabesp, in order to ensure the revenue required and the economic and financial balance of the provision of services in the tariff cycle. We clarify that Sabesp's Business Plan did not specifically address the issue of the change in the consumption standards in the recent period.

The current average tariff obtained through consumption histograms is of R$3.37255 (see Table 13.2). Therefore, the resulting Tariff Repositioning Index, to be applied linearly across all categories of users and tariff groups, is of 7.8888% (Table 13.3).

Table 13.2: Calculation of the average tariff from July 2016 to July 2017

Breakdown	Billed volume (m3)	Billed amount (R$)
Residential	2,874,410,247	7,319,359,427
Commercial	289,484,446	2,359,627,578
Firm Commercial Demand	29,575,561	347,622,026
Industrial	56,055,865	548,055,188
Firm Industrial Demand	12,426,045	132,289,907
Public	76,676,331	945,151,739
Truck	215,452	4,956,248
Wholesale	265,985,001	500,409,448
TOTAL	3,604,828,948	12,157,471,559
Average tariff from July 2016 to June 2017 (R$) = 3.37255		

Table 13.3: IRT of the initial stage of the 2nd OTR

Tariff Repositioning Index	
P_0 calculated (R$ Apr/2017)	3.63861
Average tariff Jul/2016 to Jun/2017	3.37255
IRT	7.8888%

The compensatory adjustment referring to the application of the P0 in the month after the base date will be calculated in the final stage of the 2nd OTR, together with any compensatory adjustments due from the previous tariff cycle.

The results presented in this Technical Note refer to the initial stage of the 2nd Ordinary Tariff Revision, which results from the maintenance of the same methodology adopted in the 1st OTR. In the final stage, these results may change, given the possible changes in the tariff revision methodology and, consequently, the need for complementary analyzes of the values presented by Sabesp in the Business Plan, in addition to the calculation of compensatory adjustments at the end of the cycle.

ATTACHMENT I

ANALYSIS OF PROGRAMS THAT COMPOSE SABESP'S INVESTMENT PLAN

2nd ORDINARY TARIFF REVISION OF SABESP:
INITIAL STAGE

1. STRUCTURING PROGRAMS

SABESP informed that the business plan is based on structuring targets and programs in order to facilitate the planning of the projects and actions involved, obtaining the results and raising the necessary resources.
The Structuring Programs foresee an investment of R$7,184,485,399 between 2017 and 2020 (prices of Dec/2016). This amount is equivalent to 61.2% of the company's total investment value for the same period.

1.1 Tietê Project

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
The entire population of RMSP - approximately 20 million people	Improve the water quality of the Tietê river basin through the expansion of the infrastructure of collection and treatment of sewage from this region	Sewage networks and connections, lift stations, collectors and interceptors for seclusion and sewage treatment plants.	2,642,165

The Tietê Project concentrates 22.5% of the total investments planned in the cycle. The main actions foreseen are the expansion of the ETEs Barueri, Parque Novo Mundo and ABC, increasing by 8.35 m³/sec the treatment capacity, almost 300 kilometers of interceptors and trunk collectors, 65 km of collection network and 10,000 residential sewage connections.

This program is in its third stage, which is expected to be completed by 2020 and, at the same time, the 4th stage has begun, which should be completed after 2021.

1.2 Metropolitan Program of Water (PMA)

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
20 million inhabitants of the municipalities of the Metropolitan Region of São Paulo, both for those operated directly by SABESP and those served at the wholesale level.	Ensure the continuity of the regular supply of treated water	Raw water inputs to increase the water availability of RMSP production systems, increase the capacity to produce, channel and storage water, lift stations, network and connections.	1,890,123

The Metropolitan Program of Water concentrates 16.1% of the total investments planned in the cycle. The main actions are the implantation of the São Lourenço Production System and integration into the Integrated System through treated water channels, interconnection between the Jaguari (Paraíba do Sul Basin) and Atibainha (Cantareira System) dams and transfer of the Itapanhaú river to increase the water safety, increasing in almost 13 m³/sec the capture capacity (ETA) in Vargem Grande Paulista (6 m³/sec), extension of the sector reserve of treated water (264,000 m³), lift stations of raw water and treated water and improvement and renewal of assets in the RMSP water production system.

This program is in its 3rd phase, with works and actions planned beyond 2021, being under revision to define the 4th phase.

1.3 Onda Limpa (Clean Wave) Program Baixada Santista

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
Three million people (resident and floating population)	Increase the collection rate and maintain the current treatment index of 100% collected sewage in the Metropolitan Region of Baixada Santista.	Collecting networks, households' connections, trunk collectors, repression lines, treatment plants, preconditioning stations, land outfalls and submarine outfalls.	564,640

The Clean Wave Program of Baixada Santista represents 4.8% of the total investments planned in the cycle. The main actions are: 6 km of trunk collectors, almost 66 km of collecting networks, 9,600 sewage connections, sewage lift stations (EEE), implementation of the extension of ETEs 245 L/sec, start of the construction works on Pre-Conditioning Stations -EPCs of Systems 1 and 2 of Praia Grande and improvement and renewal of assets in the sewage system.

This program is in the stage of complementary construction works, with completion of the scope of the 1st Stage scheduled for 2018 and the EPCs of Praia Grande after 2021.

1.4 RMSP's Sewage Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
The entire population of RMSP - approximately 20 million people.	Complementary construction works of the sanitary sewage of the RMSP that are not part of the other sewage programs of RMSP (Tietê Project, Pró-Billings, Water Springs and Clean Stream).	Sewage networks and connections, collectors and interceptors for seclusion and sewage treatment plants of isolated systems.	404,456

The RMSP's Sewage Program represents 3.4% of the total investments planned in the cycle. The main actions are collectors and network of Fazendinha's sewage system (Santana de Parnaíba), ETEs Mairiporã Sede and Terra Roxa and completion of the Vargem Grande Paulista ETE running 2.4 km of trunk collectors, almost 308 km of collecting networks, 81,228 sewage connections, 80 L/sec of sewage treatment, sewage lift stations and improvement and renewal of assets in the sewage system.

1.5 Seaside Water Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
More than four million people, between resident and floating population.	Expand the production and distribution capacity to ensure the availability of treated water in the seasonal period.	Expansion of production capacity, improved quality of treated water, channeling, treated water storing, distribution network and households' connections.	478,762

The Água do Litoral (Seaside Water) Program represents 4.1% of the total investments planned in the cycle. The main actions are in Baixada Santista: 2nd Stage of ETA Mambu-Branco (Itanhaém), ETA Melvi (Praia Grande), ETA Peruíbe, the raw water reservoir (Cava da Pedreira) in Guarujá and the Itapanhaú production system in Bertioga. In the North Seaside: Boiçucanga Water Supply System and São Francisco Production System in São Sebastião, Maranduba System in Ubatuba and Desalination System in Ilhabela.

The construction of 2 km of raw water channels, an increase in treatment capacity by 340 L/sec, 47 km of water distribution networks, 9 km of treated water supply, 4,000 new households water connections, 16,000 m³ of storing, improvement and renewal of assets in the water supply system.

1.6 Seaside Sewage Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
More than four million people, including resident and floating population.	To increase the collection index and treatment of sewage in the municipalities of São Paulo's Seaside.	Sewage networks and connections, collectors and repression lines for seclusion, preconditioning stations and sewage treatment stations.	289,079

The Seaside Sewage Program represents 2.5% of the total investments planned in the cycle. The main actions are construction works of collection and seclusion of sewage, being:
• Baixada Santista: Collection and removal of sewage in Santos, São Vicente, Cubatão and Bertioga;
• North Seaside: collection and seclusion in Barra do Una (São Sebastião), northern region of Ilhabela and Itaguá/Estufa (Ubatuba), ETE Itatinga (São Sebastião) and EPC Itaquanduba (Ilhabela);
• South Seaside: collection and removal in the neighborhood Caravelas (Cananéia) and Barra do Ribeira (Iguape);
Construction of 1.2 km of trunk collectors, 306 L/s of sewage treatment capacity, 130 km of collecting networks, 20,173 sewage connections, 1 km of outfalls, sewage lift stations, improvement and renewal of assets in the sewage supply system.

1.7 Countryside Sewage Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
Approximately 6 million people.	Expand the capacity of sewage collection and treatment and promote improvements in the sewage systems in the municipalities located at the Countryside of the State.	Sewage networks and connections, lift stations, collectors, interceptors and sewage treatment plants, line repression line, outfalls, treatment of sludge.	262,521

The Countryside Sewage Program represents 2.2% of the total investments planned in the cycle. The main actions are: sewage collection and treatment system in the municipalities of Timburi, Alumínio, Tatuí, Nipoã and Auriflama and in the Alto da Brancal neighborhoods in Itapeva, Ribeirão Branco in Itaporanga, District of Ameliópolis in Presidente Prudente and several other extensions in sewage collection and treatment systems of municipalities located at the countryside.

Construction of 41 km of trunk collectors, 1,025 L/s of sewage treatment capacity, 94 km of collecting networks, 12,554 sewage connections, 10 km of outfalls, sewage lift stations, improvement and renewal of assets in the sewage supply system.

1.8 Countryside Water Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
More than 6 million people.	Expand the production and distribution capacity and promote improvements in water systems to ensure the availability of treated water in the municipalities of the State.	Expansion of production, improvement of the quality of treated water, increase the channels and storing capacity of treated water, water lift, sectorization, expansion of the distribution network and households' connections.	225,336

The Água do Litoral (Seaside Water) Program represents 1.9% of the total investments planned in the cycle. The main actions are: Sapucaí Mirim water production system in Franca; expansion of the SAAs of Cajuru, Espírito Santo do Pinhal, Itatiba; and other extensions and improvements in the production and water supply systems for municipalities located at the countryside.

The construction of 10 km of raw water channeling, increasing the treatment capacity in 3,400 L/sec, 55.4 km of water distribution networks, 16 km of treated water supply, 4,023 new household water connections, 9,600 water measurement units -UMA, 23,167 m³ of storing, investments in material acquisition and small construction works of capture and water springs in several municipalities, improvement and renewal of assets in the water supply system.

1.9 Pró-Billings Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
780,000 people.	Implement the sewage system in the northern part of the Billings dam, in the municipality of São Bernardo do Campo, to take the sewage to the existing treatment plants.	Trunk collectors, sewage lift stations, repression lines, collection networks and household connections.	192,164

The Pró-Billings program represents 1.6% of the total investments planned in the cycle. The main actions are: trunk collector Couros and its secondary, 39 lift stations, networks and connections.

It was planned the construction of 25.4 km of trunk collectors, almost 38 km of collecting networks, 7,532 sewage connections, 37 sewage lift stations (EEEs) with capacities between 10 and 250 L/sec.

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
200,000 people.	To improve the quality of life of the population residing in areas of water springs, to recover and protect the dams used for the water supply of the RMSP.	Supporting, monitoring, control and feasibility instruments of the program; environmental preservation and recovery actions; and environmental sanitation actions	86,216

The New Life Program (Water Springs) represents 0.7% of the total investments planned in the cycle. The main actions of the program were not detailed in the business plan.

1.11 Ribeira Valley Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
Approximately 200,000 people.	Intensify the actions of water and sewage to reach the service targets, under the aspects of quantity and quality.	For the water system, water channels and lift stations for raw water and treated water, water treatment plants, reservoirs and distribution network and household connections. For the sewage system, collection network and connections, repression lines, sewage treatment plants, as well as construction works and actions for the operational improvement of the systems.	72,773

The Ribeira Valley Program represents 0.6% of the total investments planned in the cycle. The main actions are the Expansion of SES of the municipalities of Registro, Apiaí, Cajati, Cananéia, Itariri, Jacupiranga, Ilha Comprida and Juquiá.

In the sewage service, it was planned the construction of 142 km of collecting networks, 16,569 sewage connections, 54 L/s of sewage treatment capacity and sewage collection stations. In the water supply service, investments were planned to capture and lift raw water, storing and improving and renewing assets in the water supply and sewage system.

1.12 Clean Stream Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
Approximately 11 million people.	Clean up urban streams.	Improvement of the sewage system, the elimination of sewage release in streams and rain water galleries, cleaning riverbanks and riverbeds, as well as the removal and resettlement of properties located on the riverbanks.	66,836

The Clean Stream Program represents 0.6% of the total investments planned in the cycle. The main actions are the elimination of clandestine connections, but it was not presented the forecast of the physical quantitative of these actions. The next stage is currently being structuralized with the São Paulo City Hall (PMSP).

1.13 Clean Wave North Seaside Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
Approximately 1 million people will benefit.	Increase the collection index and the treatment index of the sewage collected in the 4 municipalities of the North Seaside of the state of São Paulo.	Collecting networks, household connections, trunk collectors, repression lines, lift stations, treatment stations, preconditioning stations, land outfalls.	9,413

The Clean Wave North Seaside Program represents 0.1% of the total investments planned in the cycle. The main actions are: carrying outstudies and projects to hire the construction works foreseen in the Seaside Sewage Program for 2017-2021.The program is being structured.

2. CORPORATE PROGRAMS

The Corporate Programs are continuous. These are investments made by Sabesp for the improvement or replacement of the company's assets and other sets of investments related to the Company. These include continuous investments in reduction and control of losses, vegetative growth, operational support, renewal of administrative operational and assets and the fleet and in Information Technology.

The Corporate Programs foresee an investment of R$4,552,124,923 between 2017 and 2020 (prices of December 2016), equivalent to 38.8% of the company's total investment for the same period.

2.1 Reduction and Control of Losses Program

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
The entire population of the 367 municipalities operated by SABESP, approximately 25 million people.	Control and reduce water losses through operational improvement and gradual renewal of assets.	Replacement of water networks, water branches and hydrometers, regularization of connections in slums (favela), sectorization, installation of pressure reducing valves - VRP and implementation of Measurement and Control Districts (DMC).	2,366,033

The project for reduction and control of losses concentrates 20.2% of the total investments planned in the cycle. The main actions foreseen are sectorization, exchange of branches and hydrometers, search for leaks, replacement of distribution networks.

The program plans investments in improving or renewing assets in approximately 1,440 km of distribution networks, 3 km of treated water channels, 2,103,299 household connections, 1,501,583 hydrometers, 70 Sectorizations, 16 Boosters, 399 DMC (Measurement and Control Districts), 150 Pressure Regulating Valves and 218 installation and adjustment of macrometers.

2.2 Vegetative Growth of Water and Sewage

Population Served	Purpose	Installation Type	2017-2020 Amount (R$ thousand)
Not informed.	Maintenance of current service indicators in the supply systems of water and sanitary sewage.	Investments in the execution of networks and household connections of water and sewage.	1,265,119

The project Vegetative growth of water and sewage concentrates 10.8% of the total investments foreseen in the cycle. The main actions planned are investments in the execution of networks and household connections necessary to maintain the current service indicators in water supply and sewage systems.

Construction of approximately 1,253 water distribution networks, 613,482 new water connections with hydrometers, 1,043 km of sewage collection networks and 664,603 new sewage connections were planned.

2.3 Corporate Programs - Other investments

Finally, were made investments that are not directly linked to the stages of the production process (capture, channeling, distribution, collection, treatment and final disposal), but are necessary for the provision of the service, for example: administrative facilities, administrative assets, vehicles, automotive equipment, information technology and operational support equipment (hammers, compactors, generators, etc.).

These programs are:

Program	Products	2017	2018	2019	2020	Total	%
CORPORATE	INFORMATION TECHNOLOGY	120,117	93,920	81,609	97,245	392,890	3.3%
CORPORATE	SERVICES AND TECHNICAL STUDIES	59,528	98,326	90,816	99,851	348,521	3.0%
CORPORATE	ADMINISTRATIVE FACILITIES AND EQUIPMENT	17,536	16,443	28,036	21,149	83,163	0.7%
CORPORATE	OPERATIONAL SUPPORT	16,066	15,704	16,211	17,045	65,026	0.6%
CORPORATE	ENERGY EFFICIENCY	2,108	3510	8,720	8,720	23,058	0.2%
CORPORATE	FLEET	2,200	330	1,304	1,000	4,834	0.0%
CORPORATE	NEW BUSINESSES	1,331	150	1,000	1,000	3,481	0.0%
	GRAND TOTAL	218,886	228,383	227,695	246,010	920,973	7.8%

Together, these programs represent 7.8% of the total investments planned in the cycle. For the Technical Services and Studies, Administrative Facilities and Equipment, Operational Support, Energy Efficiency and New Businesses programs, a physical quantitative estimate of these actions or the assumptions of how the estimated amounts were defined were not presented. In the particular case of the New Business program, the purpose of this program was not informed.

ATTACHMENT II

METHODOLOGY TO CALCULATE THE PRELIMINARY WEIGHTED AVERAGE COST OF CAPITAL (WACC) OF SABESP

2nd ORDINARY TARIFF REVISION OF SABESP: INITIAL STAGE

1. PURPOSE

Submit a proposal of methodology and calculation to establish the cost of capital of Companhia de Saneamento Básico do Estado de São Paulo – Sabesp, to be preliminarily adopted by Arsesp. This rate will be used in the calculation of the remuneration of the recognized or regulatory investment and will compose, together with other costs incurred in the provision of water supply and sanitary sewage services, the average reference tariff (P0) of the concessionaire.

It should be noted that the Cost of Capital that will be in force during Sabesp's next tariff cycle (2017/2021) will be definitively known in the final stage of the 2nd OTR, which is expected to be completed by April 2018.

2. METHODOLOGICAL APPROACH

2.1 The Chosen Model of WACC/CAPM

Arsesp, pursuant to a procedure adopted by most regulatory agencies, chose for the application of the WACC/CAPM model. This model assumes that the return rate of an investment corresponds to the weighted average of the costs of the different types of capital (equity or debt), with weights corresponding to the capital structure, that is, the participation of each type of capital in the total value of the invested asset. That is, it seeks to reflect the average cost of the different financing alternatives available for the investment.

The formula below shows the calculation of the WACC after tax, that is, it considers the effective cost of the debt discounted from the tax benefit. Therefore, it is necessary to know the cost of equity and cost of debt, as well as to estimate the capital structure for weighing these costs and the applicable tax rates.

$$WACC = Ke * We + Kd * Wd * (1 - T) \Rightarrow (1)$$

Where:

- WACC: weighted average cost of capital;
- Ke: cost of equity;
- Kd: cost of debt before taxes.
- We = E/ (D+E): equity participation, where E and D are the amounts of equity (E) and debt (D) respectively
- Wd = D/ (D+E): debt participation, where E and D are the amounts of equity (E) and debt (D) respectively
- T: tax rate (IR + CSLL).

To obtain the Cost of Equity, that is, of the return required by the shareholders, the CAPM - Capital Asset Pricing Model method will be used, fully accepted by most regulatory agencies, one of its advantages being that it allows the comparison of the case under analysis with companies belonging to the same industry and that carry out activities in conditions of similar risk.

This model is built on the assumption that the variance of returns is an appropriate measure of business risk. However, only the part of the variance that cannot be diversified is recognized for remuneration purposes, that is, the part of the risk that cannot be eliminated through a correct diversification of the investor's portfolio.

Thus, the CAPM covers two basic types of investments: a risk-free investment whose yield is known with certainty and a portfolio of shares represented by all the available shares that are in the hands of the public, weighted according to their market price. The main idea is that, given a risk-averse investor, there is a balance between risk and expected return. In the market balance, a given investment is expected to yield an income proportional to its systematic risk (that is, that risk that cannot be avoided through the diversification of shares). The higher the systematic risk, the higher the return expected by investors, that is, the size of the risk premium is proportional to the systematic risk taken by the investor. The cost of equity calculated by the original CAPM is represented by the formula below:

$$Ke = R_f + \beta \, x \, (R_m - R_f) \Rightarrow (2)$$

where:

Ke: opportunity cost of equity;

β: Systematic risk of the industry under analysis;

R_f: rate of return of a risk-free asset;

R_m: : Stock market return rate (diversified portfolio)

Arsesp will adopt for Sabesp's calculation of cost of equity the CAPM version known as "Country Spread Model", which incorporates the Country Risk to the original formula. The addition of the Country Risk is also called "internationalization" of the CAPM method and is expressed by the formula (3) below:

$$Ke = R_f + \beta \, x \, (R_m - R_f) + R_p \Rightarrow (3)$$

where:

R_p: additional premium for country risk.

The Cost of Debt is the return required by the debt creditors of the company holding the asset, from the assessment of the business and the performance of the company. Consistent with the estimate of cost of equity, Arsesp will use the methodology known as CAPM of the debt4, also incorporating the country risk. Thus, the indebtedness cost for SABESP will be estimated from the following algebraic expression:

$$K_d = R_f + R_c + R_p \Rightarrow (4)$$

Where

K_d: Cost of Debt or CAPM of the Debt

R_f: rate of return of a risk-free asset;

R_c: premium risk of credit or additional spread due to the qualification of the business ("rating")

R_p: premium risk of the country

Regarding the definition of the capital structure, that is, the composition of equity and debt in the financing of the investments made by the concessionaire, the following considerations must be taken into account.

This definition is of utmost importance, given that the weitghs between funding sources affect the WACC outcome in two ways: a) in the weighting of costs of equity and of debt; and b) in the calculation of the leveraged Beta, which signals the business risk.

In general, the cost of debt is lower than the cost of equity, therefore, the greater its weight in the composition of funding sources, the lower the required remuneration. At the same time, the higher the percentage of debt, the greater the business risk, which would increase the WACC.

There are two ways to address the capital structure: verify the current financing structure of the concessionaire or, alternatively, adopt an optimal capital structure, that is, a composition considered adequate and compatible with the company and the sector to which it operates5. The latter is usually established through a financial benchmarking approach, which consists of comparing it with the accounting information of companies in the same industry. Arsesp, in this preliminary stage of Sabesp's tariff revision process, opted for the first type.

[4] CAPM of Debt is the most widely used method for establishing the cost of debt for regulatory purposes. It consists of an adaptation of the general CAPM model, representing the rate at which the company can raise funds for the leverage level considered. In its basic formula, it expresses the marginal cost of indebtedness. In its adaptation to emerging countries, is added the country risk premium (r_p) to its original formula.

[5] In this case, there are incentives for the concessionaire to adopt such a structure as a target. However, there is a risk that the concession will not be remunerated properly and, consequently, it will not make the necessary investments or worsen the quality of the service.

In short, following the trend of several regulatory agencies in many parts of the world, Arsesp will use the Weighted Average Cost of Capital (WACC) method combined with the CAPM model to calculate the return on investments rate of Sabesp.

2.2 Of the Time Series, Measures of Mid-Trend and Reference Market

Before detailing the calculation of each variable of formulas (1), (3) and (4), it is important to explain the definition of the time frames and the choice of the mid-trend measure to be used to demonstrate the consistency of the analyzes. As well as the choice of the reference market for the choice of variables to be used in the WACC calculation.

At first, we sought to use only the arithmetic average as a measure of mid-trend of the data series used in the WACC/CAPM calculation. However, observing the behavior over time of the chosen data series, it is verified that, although the arithmetic average is the measure of mid-trend most used to measure the expected return, in case there is a considerable asymmetry it can be overcome by the median or specialty as the best trend measure, that is, a better measure of the expected value7.

Reinforcing this argument, ANEEL explained in its Technical Note No. 180/2014 that: "Regarding measures of mid-trend, one should bear in mind that the WACC/CAPM model estimates variables associated with expectations. There is no certainty as to the best way to reflect an expectation, and there are several possible and justifiable measures to be implemented. It is possible to use the last available data of the series, border data or data from some quartile, or even some statistical inference... The practice has been to use mid-trend measures of the historical series of the variables of interest to estimate the expectations associated to the definition of the cost of capital. By choosing the mid-trend measures as appropriate to reflect the expectations, the choice of measure no longer has a degree of subjectivity... This choice should observe the profile of the series in order to avoid the exaggerated distortion caused by extreme data"

Taking into account these considerations, after the main series of data underwent an analysis of asymmetry and standard deviation, in order to verify if the dispersion of data over the years would allow us, with reasonable certainty, to establish a reliable mid-trend, Arsesp chose the following time frames and mid-trend measures to be used in the WACC calculation.

In the case of the definition of the Free Return of Risks (R_f) and Market Return (R_m), Arsesp opted for the use of the arithmetic average as a measure of mid-trend and time frames of 30 years. It should be noted that these frames explain the macroeconomic behavior and conditions within the terms of the concessions of Sabesp and, therefore, consider the behavior of the variables over the useful life of the assets that will be remunerated by the WACC calculation.

[6] Great Britain (OFGEM), Australia (AER), Brazil (ANEEL and ARSESP - Piped Gas), Colombia (CREG), Guatemala, New Zealand, among others (Cepa, 2010).

[7] See Copeland et. Al, Financial Theory and Corporate Policy, pg 104.

In the case of the Country Risk Award, EMBI+Br[8], Arsesp opted for the use of the median as a measure of mid-trend and a time frame of 15 years, given the high degree of asymmetry presented in the measurements of its historical series, as will be seen later.

Regarding the choice of the reference market, it was decided to use international statistics, having as reference market the US, due to its size, its degree of competition and the availability of information, to choose the variables to be used in the calculation of WACC. The following is the definition and the estimates made for the calculation of the variables that make up the WACC/CAPM model.

3. CALCULATION OF WACC/CAPM MODEL VARIABLES

3.1 Capital Structure

In order to establish the capital structure, it was first analyzed the companies of the sanitation sector in Brazil with greater similarities with Sabesp, in the case of Sanepar (PR) and Copasa (MG) (Table 3.1). The indicator chosen was the ratio of Onerous Liability (Short-term and Long-term Loans and Financing) and Intangible Non-Current Assets of companies [9]. The average leverage of the three companies was of 38.72%. However, this analysis is hindered by the lack of a regulatory accounting in the sanitation sector that standardizes the accounting criteria, giving more homogeneity to the parameters compared.

Arsesp chose to use Sabesp's own capital structure, that is, assumed the ratio of Onerous Liability/Intangible Assets as an indicator of the company's degree of financial leverage, in which the intangible asset is used as a proxy for the Regulatory Asset Basis10 (Fixed Assets in Services). The result of this choice was a capital structure with a participation of 41.17% of debt and 58.83% of equity, which will be used to calculate the WACC.

[8] The EMBI+, an acronym for the Emerging Markets Bond Index, created by J.P. Morgan Bank, measures the daily performance of debt securities of emerging market over the average daily return on prices of similar securities of the United States (benchmark for the market of extremely low risk securities). The greater the difference, the more acute the investors' perception of risk in relation to a certain type of security. The formula created by J.P. Morgan is limited to calculating the difference and its variation from day to day.

[9] The data were taken from the Corporate Balance Sheets of the last five years of the respective companies.

[10] The Fixed Assets is being used to cover the absence of a definitive data on the Regulatory Asset Basis, since the additions and write-offs of regulatory assets that started operating during the last tariff cycle (Incremental Asset Basis) are still being evaluated by ARSESP, the result of which will be reflected in the final result of Sabesp's tariff revision, with completion scheduled for April 2018.

Table 3.1 Capital Structure

SABESP

Amounts in current R$ thousand

Years	Fixed Asset	Debt = Onerous Liability	PO/AI = D/AI
2012	21,967,526	8,875,255	40.40%
2013	23,846,331	9,450,074	39.63%
2014	25,979,526	10,785,817	41.52%
2015	28,513,626	13,121,600	46.02%
2016	31,246,788	11,964,145	38.29%
Average	23,311,159	10,839,378	41.17%

Source: SABESP's Balance Sheets: 2012, 2013, 2014, 2015 and 2016.
Note: Debt = Onerous Liabilities = Short and Long Term Loans and Financing

SANEPAR

Amounts in current R$ thousand

Years	Fixed Asset	Debt = Onerous Liability	PO/AI = D/AI
2012	4,963,649	960,479	19.4%
2013	5,566,335	1,465,820	26.3%
2014	6,188,632	1,872,503	30.3%
2015	6,761,600	2,336,008	34.5%
2016	7,199,393	2,681,512	37.2%
Average	6,135,922	1,863,264	29.5%

Source: SANEPAR's Balance Sheets: 2012, 2013, 2014, 2015 and 2016.
Note: Debt = Onerous Liabilities = Short and Long Term Loans and Financing

COPASA

Amounts in current R$ thousand

Years	Fixed Asset	Debt = Onerous Liability	PO/AI = D/AI
2012	4,463,360	3,059,321	47.3%
2013	6,900,755	3,157,700	45.8%
2014	7,558,577	3,437,330	45,5%
2015	7,982,931	3,591,557	45.0%
2016	7,833,795	3,430,925	43.8%
Average	7,347,884	3,335,367	45,5%

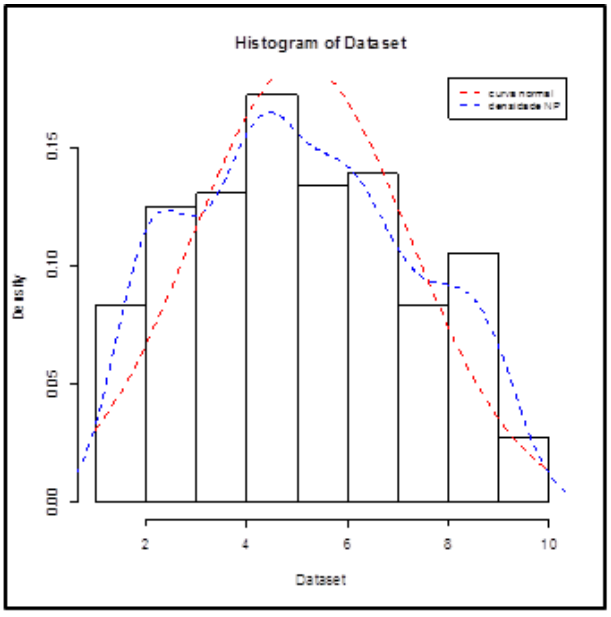
Source: COPASA's Balance Sheets: 2012, 2013, 2014, 2015 and 2016.
Note: Debt = Onerous Liabilities = Short and Long-Term Loans and Financing

It is worth highlighting, in order to improve the calculation methodology of the WACC, that after the definitive implementation of the company's regulatory accounting, should be sought an indicator that considers the part of debt in proportion to the value of the Net Regulatory Remuneration Basis of assets of the company. In addition, efforts should be made to improve the studies so that the Agency can establish an optimal structure of ratio that allows Sabesp's cost of capital to be minimized, considering the business risk and the tax benefits of using debt11.

3.2 Risk Free Return Rate (Rf)

The risk-free return rate represents the remuneration of the investor for maintaining a financial asset that presents no risk, that is, it represents, from an intertemporal view, the opportunity cost of waiving the liquidity in the future. In general, the yield of sovereign instruments issued by countries with a low probability of non-payment is used to establish the risk-free rate. In order to establish the risk-free return rate, the historical series of 10-year US Treasury Bonds were used12, and three time series (10, 20 and 30 years) of these securities were analyzed, with a cutoff date of December 2016. In the analysis of each series, it was verified its asymmetry and standard deviation to use the mid-trend (average) to represent the value of the return of this asset in the WACC calculation (as shown in Charts 3.1, 3.2 and 3.3).

Chart 3.1: USGG10YR Index - 30 years



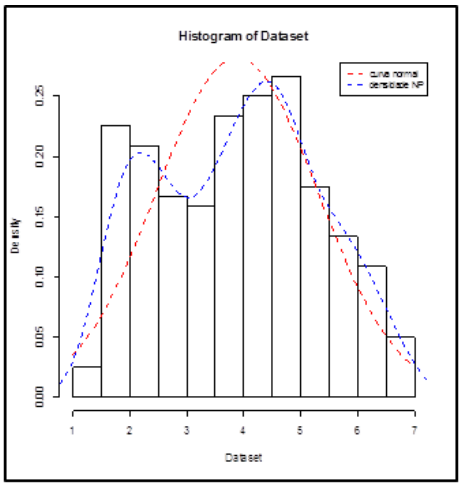
Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
1.4531	5.085445	4.89195	9.587	2.15485	0.16396	- 0.971801

11 The definition of this optimal capital structure should take into account that companies are constantly seeking to reduce their financial costs by adopting an adequate composition between equity and debt. That is, they seek an optimal level of indebtedness and the improvement of their final profitability.

12 Source: https://www.bloomberg.com/quote/USGG10YR:IND.

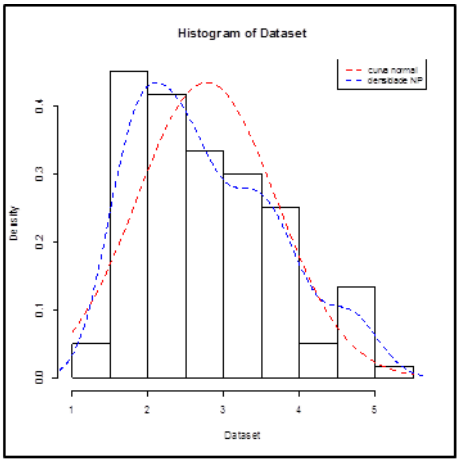
USGG10YR - The index of US government bonds with a 10-year maturity (10-year bonds or in general 10-year treasuries). It measures the generic government 10-year yield for US issues of treasuries and provides the benchmark for various fixed-income instruments from corporate bonds to mortgages. It is used to find out yield spreads for a host of fixed-income instruments with 10-year maturities.

Chart 3.2: USGG10YR Index - 20 years



Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
1.4531	3.883405	3.97005	6.903	1.415952	0.034218	-1.011726

Chart 3.3: USGG10YR Index - 10 years



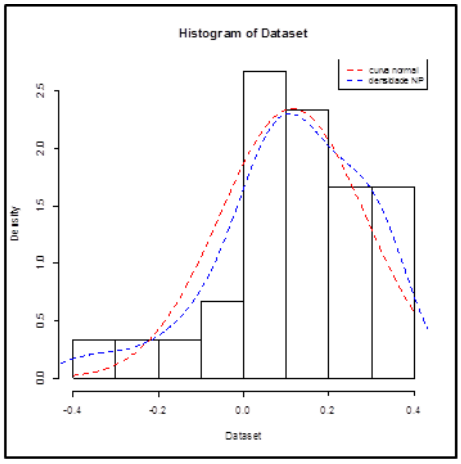
Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
1.4531	2.775147	2.58775	5.0244	0.918414	0.582137	-0.603608

Looking at the charts above, it can be seen that the 20 and 30-year series present low asymmetry and standard deviation, especially the 20-year series. However, due to the prioritization of the use of longer series to represent the concession's historical context, previously explained, we chose the 30-year series, which still maintains a high level of symmetry and low standard deviation for the use of the mid-trend (arithmetic average) as a parameter of the Free Risk Return in the WACC calculation. Therefore, the resulting Free Risk Return Rate (Rf) was 5.09%, to be applied in the calculation of Sabesp's cost of capital.

3.3 Market Risk Premium (Rm - Rf)

To establish the return on exposure to market risk, were used the historical returns series of the S&P 50013 of the New York Stock Exchange. Here too three series of these data (10, 20 and 30 years) were analyzed, maintaining the cutoff date in December 2016.

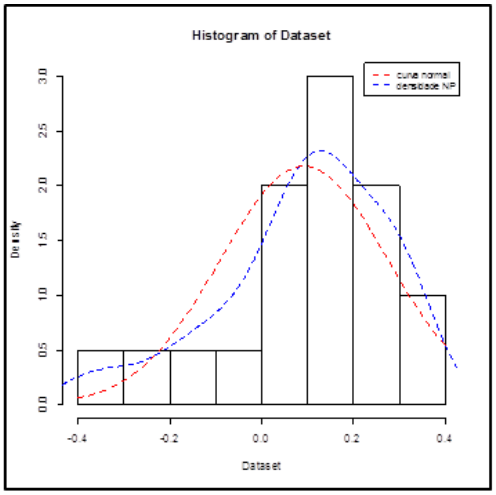
Chart 3.4: S&P 500 - 30 years



Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
-0.365523	0.115044	0.126324	0.371952	0.170229	-0.751406	0.369667

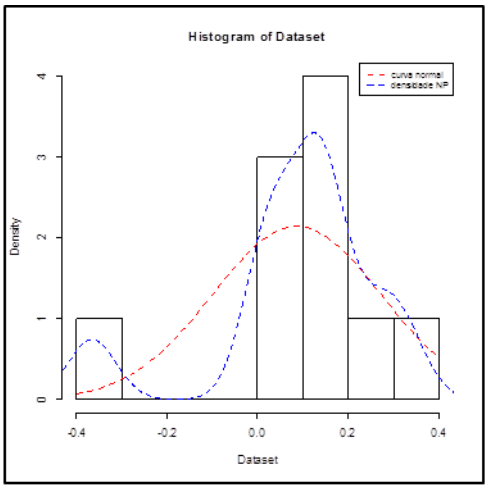
13 S&P 500, an abbreviation for Standard & Poor's 500, is an index composed of 500 assets (shares) listed on the New York Stock Exchange (NYSE) and NASDAQ, qualified according to market size, liquidity and industrial group. It is a weighted index of market value (asset value multiplied by the number of shares outstanding) with the weight of each asset in the index proportional to its market price. Source: http://pages.stern.nyu.edu/~adamodar/

Chart 3.5: S&P 500 - 20 years



Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
-0.365523	0.092736	0.126324	0.331037	0.183209	-0.787981	-0.05332

Chart 3.6: S&P 500 - 10 years



Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
-0.365523	0.086447	0.126324	0.321451	0.186308	-1.1461	0.798831

The result of this analysis shows that the series of 20 and 30 years, once again, presents low asymmetry and low standard deviation, even considering that these are market returns that, due to their nature, have greater variability than other series. Here too the longest series (30 years) was prioritized, using the arithmetic average as a parameter of Market Risk in the calculation of the cost of equity. Thus, the market return rate (Rm) found was of 11.50% and, therefore, the Market Risk Premium (Rm-Rf) is of 6.42%.

3.4 Beta Coefficient (β)

The CAPM methodology uses the Beta coefficient to measure the sensitivity of a given investment's returns against market returns, expressing the systematic risk of an asset, which implies paying a premium above the profitability of risk-free assets. Therefore, the Beta coefficient is a measure of the systematic risk of an action in relation to the relevant market. To estimate the Beta of an asset (or company) one should measure the stock price variations in relation to the movements of the global stock market.

In the estimation of the Beta (β) coefficient for Sabesp, we initially analyzed 22 companies from the water supply and sanitary sewage (water utilities) sectors listed on the New York Stock Exchange, as listed below:

Table 3.2: US Sanitation Companies

Companies Analyzed	
Global Water Technologies, Inc	American Water Works
Alanco Technologies, Inc	Aqua America Inc
Bravo Enterprises Ltd	American States Water Company
Aqua4, Inc	California Water Service Group
The Torrington Water Company	Artesian Resources Corporation
Two Rivers Water & Farming Company	Middlesex Water Company
Ecosphere Technologies, Inc	Connecticut Water Service, Inc
Empire Water Corporation	The York Water Company
Sionix Corp	SJW Group
Aqua Venture Holdings Limited	Global Water Resources Inc
Cadiz Inc	Consolidated Water Co. Ltd.
Pure Cyrcle	

Source: Aswath Damodoran: http//www.stern.nyu.edu/pc/datasets/

In order to find only companies with activities similar to those of Sabesp, a detailed analysis was made of each company listed in Table 3.2 and those with other activities other than those related to water supply and sewage services were removed from the list. The final list was reduced to 12 companies, as shown in Table 3.

The next step was to find the Betas of these 12 companies14 and then proceed to deleverage them by their respective capital structures15. Once obtained the deleveraged Betas from all 12 companies, the arithmetic average of these Betas (average$\beta = 0.52$) is used (Table 3.3).

14 Historical betas were obtained using the following source: Bloomberg Professional Terminal.

Table 3.3: Sanitation companies selected for the Beta calculation

Code	Name	Beta Deleveraged
AWK	American Water Works	**0.27**
WTR	Aqua America Inc	**0.40**
AWR	American States Water Company	**0.51**
CWT	California Water Service Group	**0.48**
ARTNA	Artesian Resources Corporation	**0.40**
MSEX	Middlesex Water Company	**0.59**
CTWS	Connecticut Water Service, Inc	**0.40**
YORW	The York Water Company	**0.68**
SJW	SJW Group	**0.57**
GWRS	Global Water Resources Inc	**0.48**
CWCO	Consolidated Water Co. Ltd.	**0.78**
PCYO	Pure Cyrcle	**0.64**
	AVERAGE	**0.52**

In order to find the Beta to be used in the calculation of Sabesp's WACC, it is necessary to re-leverage the average unleveraged Beta of North American companies using the capital structure defined for Sabesp (41.17% debt to 58.83% equity))16 and a tax rate of 34%17. Thus, the Beta of 0.76 is obtained, to be considered in Sabesp's 2nd Ordinary Tariff Revision, as shown in Table 4.

15 The choice for the deleveraged Beta is due to the fact that, when one intends to calculate the Beta of a sector in which each company operates with a diverse capital structure, its risks and, therefore, its Betas, are not comparable. It is therefore necessary to deleverage each Beta, that is, to purge the effects of the financial indebtedness (Hamada, R.S. (1972) "The Effect of the Firm's Capital Structure on the Systematic Risk of Common Stocks, " The Journal of Finance, 27(2):435-452.).

16 See item 3.1

17 This tax rate is composed of the sum of the Corporate Income Tax (IRPJ) rate with the Social Contribution rate on Net Income (CSLL) applied in Brazil.

Table 3.4: Estimates of the Beta coefficient of Sabesp

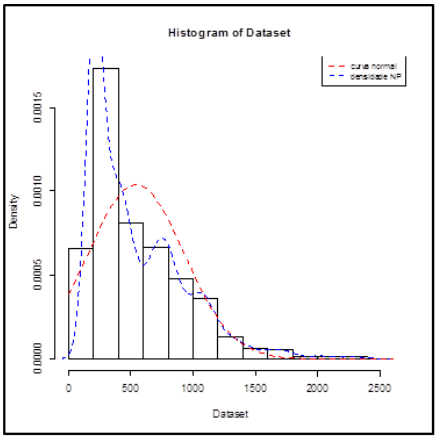
Average Historical Beta 12 water utilities USA	**0.68**
Average Deleveraged Beta 12 water utilities USA	**0.52**
D/ (D+E) **D/E** **Taxes (T)**	**0.41** **0.70** **0.34**
SABESP Re-Leveraged Beta = Beta Deleveraged USA * (1 + D/E * (1 – T))	**0.76**

Source: self-elaboration

3.5 Country Risk Premium (Rp)

For the analysis of the Country Risk Premium, as previously seen, the EMBI+Br18 index, obtained from the IPEADATA system of the Institute of Applied Economic Research (IPEA19) was chosen. Like the other parameters used in the CAPM calculation, three-time series of this index were analyzed, the longest of which was only 23 years, since the EMBI+Br series started in 1994. The results are shown in Charts 3.7, 3.8 and 3.9.

Chart 3.7: EMBI+BR 23 years

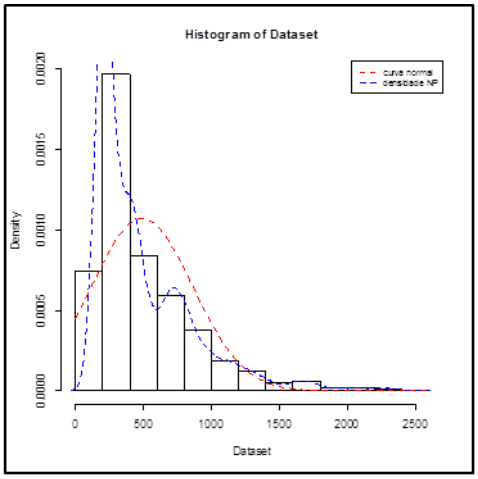


Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
136	541.611426	415	2436	383.99006	1.365929	2.046868

18 See footnote No. 6.

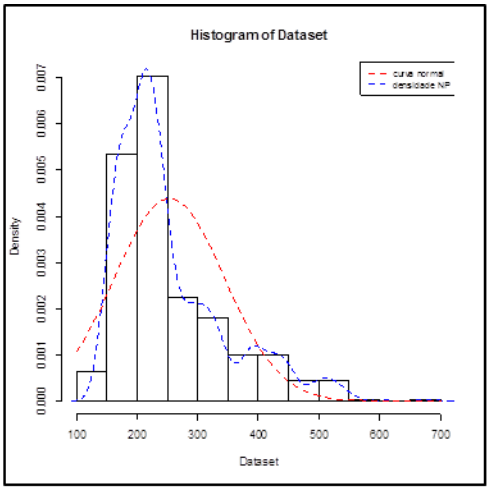
19 Available at: http://www.ipeadata.gov.br/ExibeSerie.aspx?serid=40940&module=M.

Chart 3.8: EMBI+BR 20 years



Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
136	491.128571	370	2436	373.608207	1.80426	3.790162

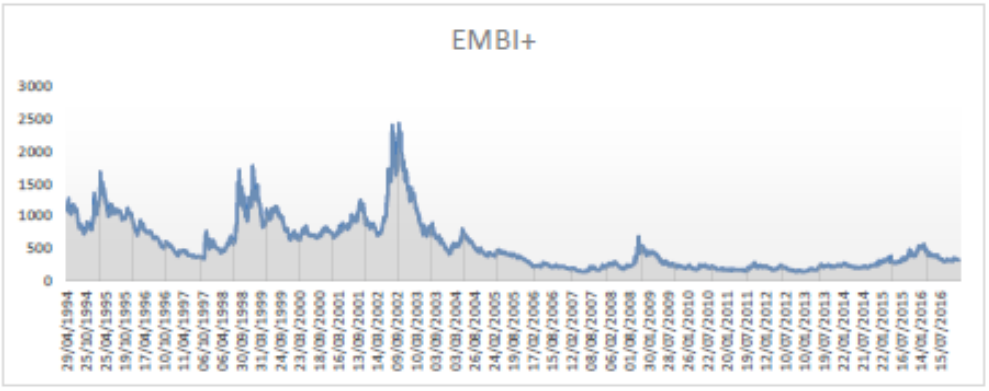
Chart 3.9: EMBI+BR 10 years



Minimum	Average	Median	Maximum	Standard Deviation	Asymmetry	Kurtosis
136	253.192029	225	688	90.897648	1.346502	1.429245

Differently from the other indexes analyzed previously, it is verified that the three series have high levels of asymmetry and of standard deviation. In addition, the simple observation of Chart 3.10 below reveals the existence of very large variations at the beginning of the series (1994/1995), at the end of the nineties (1999) and later in the early 2000s (Mid-2002 and early 2003), when the largest of all variances occurs.

Chart 3.10: Variation History of EMBI+



Source: IPEADATA

Therefore, in the specific case of this index, the adoption of the arithmetic average as a measure of mid-trend implies that the result can be strongly influenced by these points well out of normality. This behavior of the EMBI+Br is due to the fact that in the case of Brazil, as is the case with other Latin American countries, the country risk is a variable with high volatility, which fluctuates between extreme values in short periods of time. In a stable macroeconomic context, the spread tends to decrease, while during a period in which the economic or political cycle is unfavorable, the spread increases.
Thus, Arsesp chose to use the following criteria:

• the median as a measure of mid-trend to mitigate the effects on the index of extreme values verified, mainly, during the economic and political crisis from mid-2002 until the first months of 2003. This fact is no longer repeated, not even when the President was impeached in 2016 and with the economic downturn after 2015, to the present day; and,

• 15-year time frame, coinciding with the beginning of Sabesp's stock trading on the New York Stock Exchange (NYSE).

It should be noted that these criteria undertaken by Arsesp are the same as those used by Aneel for the calculation of the WACC of the electric power distributors and by Arsesp itself for the calculation of the piped gas distribution companies. Thus, the premium estimated by the Country Risk for SABESP is 2.56%.

3.6 Credit Risk Premium (Rc)

In July 1988, after an intense discussion process, the Basel Agreement was signed, which defined mechanisms for measuring credit risk and established the minimum capital requirement to bear risks. The credit risk can be established as "the potential of a borrower to fail to meet the contractual commitments of a credit agreement" (Basel, op. cit.: 1). Thus, based on credit risk analysis criteria, international agencies classify the credit rating, whose purpose is to assign a non-payment risk score to certain assets. The following table shows the rating of Sabesp classified by the three main international rating agencies in the market.

Table 3.5: SABESP Rating

Credit Rating Agencies	National Scale	Global Scale
Standard & Poors	**brAA-**	**BB**
Fitch Rating	**AA (bra)**	**BB**
Moody's Latin America	**Aa2.br**	**Ba2**

Source: SABESP

In the analysis of Sabesp's Credit Risk, as a component of the Cost of Debt (Kd), the Global Rating was assigned to the company in December 2016 (BB20), and based on this classification was used the average spread of the risk ratio referring to its classification of the last 5 years, using benchmarking of securities with a rating similar to the one of the Company. Thus, the value of 3.52% was reached for the Sabesp's Credit Risk Premium.

3.7 Inflation rate

Arsesp, when partially accepting the suggestions received in the public consultation, will use as inflation rate reference to be applied in the calculation of the real WACC, the US CPI - Consumer Price Index. The value of the inflation rate of 2.1087% to be applied corresponds to the arithmetic average of the annual variations from December to December observed in the period of 15 years - 2002 to 2016. The data were obtained on the website INFLATION.EU - World Inflation Data (http://pt.inflation.eu/taxas-d-inflacao/estados-unidos/inflacao-historica/ipc-inflacao-estados-unidos.aspx - accessed in September 29, 2017).

4. CALCULATION OF WACC

Finally, after establishing the parameters of each variable of formulas (3) and (4) for both the Cost of Equity (Ke) and the Cost of Debt (Kd), we arrive at the final percentage of the WACC calculated for Sabesp, as shown in Table 4.1. The final result: actual WACC of 8.01% 21, having December 2016 as base date of calculation of all indicators and parameters of the formula.

20 Sabesp Website -> IR -> Rating

Table 4.1: WACC Calculation Statement

BREAKDOWN	2nd OTR
Capital Structure 2nd OTR	
(A) Equity Interest	58.83%
(B) Third-Party Capital Interest	41.17%
Cost of Equity (Ke)	
(1) Free Risk Rate	5.085%
(2) Return Rate of the Market	11.50%
(3) Market Risk Premium = (2) - (1)	6.42%
(4) Deleveraged Beta	51.77%
(5) IR + CSLL	34.00%
(6) Leveraged Beta = (4)*[1+(((B)/(A))*(1-(5)))]	75.68%
(7) Business and Financial Risk Premium = (6) * (3)	4.86%
(8) Brazil Risk Premium	2.56%
(9) American Inflation Rate	2.11%
(10) Nominal Ke = (1)+(7)+(8)	12.50%
(11) Actual Ke = [(10)+1]/[1+(9)]-1	10.18%
Cost of Third Party Capital (Kd)	
(12) Free Risk Rate = (1)	5.09%
(13) Brazil Risk Premium = (8)	2.56%
(14) Credit Risk	3.52%
(15) Nominal Kd before taxes = (12)+(13)+(14)	11.16%
(16) Nominal Kd after Taxes = (15)*[1-(5)]	7.37%
(17) Actual Kd after Taxes = [1+(16)]/[1+(9)]-1	5.15%
WACC	
(18) WACC = (A) x (11)+ (B) x (17)	**8.11%**

Source: self-elaboration

In the table below, we present the summary of the data series used in the WACC calculation.

Table 4.2: Periods by component

Component	Source	Period
Equity Participation	SABESP Financial Statements	Average 5 years
Third-Party Interest	SABESP Financial Statements	Average 5 years
Free Risk Rate	USGG10YR Index	Average 30 years
Market Risk Premium	Damodaran	Average 30 years
Beta	Bloomberg	Average 4 years
Country Risk	EMBI + BR	Average 15 years
US Inflation	CPI USA Dec to Dec	Average 15 years
Credit Risk	IGUUC510 Index	Average 5 years

ATTACHMENT III

ASSESSMENT OF THE REGULATORY REMUNERATION BASIS

2nd ORDINARY TARIFF REVISION OF SABESP: INITIAL STAGE

1. CONTEXTUALIZATION

On the 1st Ordinary Tariff Revision, Sabesp presented the Appraisal Report of Assets in Service. This report was then analyzed by Arsesp with the support of Ernst & Young. As a result of this revision, the original values presented by the concessionaire were reduced, according to table 17.15 of the Final Technical Note RTS/004/2014, the main one being in the item Pipes due to the revision of the values used for the valuation of the network and connections kits (set of values used to fix the cost per kilometer, in R$/km) of the different types of pipes. Regarding the estimates of the values of the iron pipes, they were reviewed by Arsesp for considering, therefore, that they could be replaced by new materials of lower cost. Adjustments were also made for wells, hydrometers, household connections and others. These adjustments resulted in the recognition by Arsesp of an amount of R$22.981 billion for Sabesp's Regulatory Remuneration Basis of R$30.021 billion (at September 2011 prices) presented by the concessionaire.

For this 2nd Ordinary Tariff Revision, Arsesp Resolution No. 672/2016, which establishes the general criteria for updating the Regulatory Remuneration Basis, defined that the Regulatory Remuneration Basis (BRR) will be obtained by adding up the updated values of the armored base of the previous cycle with the values of inclusions occurred between October 2011 and June 2016 - incremental basis. The same resolution established the delivery of the Appraisal Report of Assets after 120 (one hundred and twenty days) of its publication.

On March 31, 2017, through Official Letter PR-357/2017, Sabesp presented the Appraisal Report of Assets, with further complements and updates that are reflected in the amounts presented in this technical note. This report, prepared by the company hired by it, will be subject to Arsesp's analysis and manifestation in order to establish the value of the definitive maximum average tariff (final P0) in the final stage of the 2nd OTR.

2. ARMORED BASE

The armored base corresponds to the amounts approved in the last tariff revision, associated with the assets in operation, except for the changes occurred (write-offs and depreciation) and their respective updating.

For the 2nd OTR, the value of the BRR considered in the 1st OTR was monetarily adjusted for June 2016, according to the variation in the IPCA-IBGE (Extended Consumer Price Index, published by the Brazilian Institute of Geography and Statistics). In addition, the depreciation was applied on this asset base and the write-offs were made.

However, since Sabesp's starting point was the full value of the asset base presented in the 1st OTR, a value that disregards the unwarranted deductions presented in Technical Note RTS/004/2014, we present in Table 2.1 the proportional calculation to be considered in this stage and Sabesp must make adjustments for the final stage of the 2nd OTR.

Table 2.1: Changes/updates to the armored base

	Report submited by Sabesp (R$ *1000)	Arsesp's Recalculation	
		Amount (R$*000)	Variation (R$*1,000)
Land			
New Replacement Value (VNR) of the 1st Cycle	3,692,461	3,692,461	0
Write-offs	11,263	11,263	0
New Replacement Value (VNR) updated	5,147,972	5,147,972	0
Depreciation Updated (1st Cycle)	0	0	0
Incremental period depreciation	0	0	0
Accumulated depreciation	0	0	0
Market-in-Use Value (VMU) Updated	5,147,971	5,147,971	0
Depreciated part of the Utilization Index (IA)	1,364,883	1,364,883	0
Remuneration Basis Value (VBR) updated	3,783,088	3,783,089	0
Structures			
New Replacement Value (VNR) of the 1st Cycle	6,225,679	6,225,679	0
Write-offs	49,506	49,506	0
New Replacement Value (VNR) updated	8,637,069	8,637,069	0
Depreciation Updated (1st Cycle)	4,304,219	4,304,219	0
Incremental period depreciation	795,046	795,046	0
Accumulated depreciation	5,099,265	5,099,264	0
Market-in-Use Value (VMU) Updated	3,537,804	3,537,804	0
Depreciated part of the Utilization Index (IA)	223,545	223,545	0
Remuneration Basis Value (VBR) updated	3,314,259	3,314,259	0
Wells			
New Replacement Value (VNR) of the 1st Cycle	344,699	329,838	-14,861
Write-offs	7,946	7,604	-343
New Replacement Value (VNR) updated	470,931	450,628	-20,303
Depreciation Updated (1st Cycle)	249,857	239,085	-10,772
Incremental period depreciation	95,138	91,037	-4,102
Accumulated depreciation	344,995	330,122	-14,874
Market-in-Use Value (VMU) Updated	125,936	120,507	-5,429
Depreciated part of the Utilization Index (IA)	159	152	-7
Remuneration Basis Value (VBR) updated	125,777	120,355	-5,423
Networks			
New Replacement Value (VNR) of the 1st Cycle	34,967,807	24,552,968	-10,414,839
Write-offs	170,082	119,425	-50,657
New Replacement Value (VNR) updated	48,662,878	34,169,089	-14,493,790
Depreciation Updated (1st Cycle)	20,668,823	14,512,805	-6,156,018
Incremental period depreciation	4,509,632	3,166,480	-1,343,152
Accumulated depreciation	25,178,455	17,679,284	-7,499,171
Market-in-Use Value (VMU) Updated	23,484,423	16,489,804	-6,994,619
Depreciated part of the Utilization Index (IA)	629	442	-187
Remuneration Basis Value (VBR) updated	23,483,794	16,489,363	-6,994,432
Hydrometers			
New Replacement Value (VNR) of the 1st Cycle	600,971	510,372	-90,599
Write-offs	318,491	270,478	-48,014
New Replacement Value (VNR) updated	395,033	335,480	-59,553
Depreciation Updated (1st Cycle)	129,970	110,376	-19,593
Incremental period depreciation	168,317	142,942	-25,374
Accumulated depreciation	298,286	253,319	-44,968
Market-in-Use Value (VMU) Updated	96,747	82,162	-14,585
Depreciated part of the Utilization Index (IA)	0	0	0
Remuneration Basis Value (VBR) updated	96,747	82,162	-14,585
Household Connections			
New Replacement Value (VNR) of the 1st Cycle	4,730,765	4,477,705	-253,060
Write-offs	535,137	506,511	-28,626
New Replacement Value (VNR) updated	5,867,376	5,553,516	-313,860
Depreciation Updated (1st Cycle)	2,635,404	2,494,430	-140,974
Incremental period depreciation	538,772	509,952	-28,820
Accumulated depreciation	3,174,176	3,004,382	-169,794
Market-in-Use Value (VMU) Updated	2,693,200	2,549,134	-144,066
Depreciated part of the Utilization Index (IA)	72	69	-4
Remuneration Basis Value (VBR) updated	2,693,127	2,549,065	-144,062
Other			
New Replacement Value (VNR) of the 1st Cycle	2,791,540	2,774,715	-16,825
Write-offs	264,949	263,352	-1,597
New Replacement Value (VNR) updated	3,533,311	3,512,015	-21,296
Depreciation Updated (1st Cycle)	1,970,224	1,958,349	-11,875
Incremental period depreciation	648,911	645,000	-3,911
Accumulated depreciation	2,619,135	2,603,349	-15,786
Market-in-Use Value (VMU) Updated	914,176	908,666	-5,510
Depreciated part of the Utilization Index (IA)	78,244	77,773	-472
Remuneration Basis Value (VBR) updated	835,932	830,893	-5,038
TOTAL			
New Replacement Value (VNR) of the 1st Cycle	53,353,922	42,563,738	-10,790,184
Write-offs	1,357,375	1,228,139	-129,236
New Replacement Value (VNR) updated	72,714,571	57,805,769	-14,908,802
Depreciation Updated (1st Cycle)	29,958,498	23,619,265	-6,339,233
Incremental period depreciation	6,755,816	5,350,456	-1,405,360
Accumulated depreciation	36,714,313	28,969,720	-7,744,593
Market-in-Use Value (VMU) Updated	36,000,258	28,836,049	-7,164,209
Depreciated part of the Utilization Index (IA)	1,667,532	1,666,863	-670
Remuneration Basis Value (VBR) updated	**34,332,725**	**27,169,186**	-7,163,539

In the Final Technical Note of the 1st OTR, with regard to the item Pipes, Arsesp foresaw the possibility of reconsidering the values with unwarranted deduction for the price of the factory of iron pipes, conditioned to the presentation by the concessionaire of a reasoned study.

As a result, in May/2017 SABESP presented the "Technical Report on the unwarranted deductions applied by Arsesp in pipelines in the 1st Tariff Revision", with the data base of tax receipts (invoices) for the acquisition of cast iron in recent years and examples of as-built projects executed in the incremental period of seated networks using cast iron. The Technical Note "Analysis of the use of Cast Iron and PVC Pipes" was also presented in July/2017 corroborating with the other information provided regarding the continuity of the use of iron pipes.

Considering the information sent by Sabesp, it has been demonstrated that cast iron pipes cannot be replaced in all situations by other materials (HDPE or PVC), and relevant aspects must be taken into account such as market diameters, application, chemical resistance, hydrostatic resistance, impact resistance and tensile strength.

Thus, for the use of the VNR methodology, Arsesp reconsidered the unwarranted deduction made in the 1st OTR regarding the replacement of cast iron for other materials, understanding that there are at present no instruments that indicate that part of the cast iron pipes in operation can automatically be replaced by another material.

According to Sabesp's Technical Note "Use Analysis of Cast Iron and PVC Pipes", there is a gradual increase in the use of PVC pipes in water distribution networks by Sabesp, indicating that, where possible, the new technology has been adopted. As new materials and technologies are adopted, the BRR will be updated considering the VNR of these materials.
Thus, Arsesp decided to revise the R$980 million (in September 2011) write-off made at the Factory Price of the Property Unit (UP) Pipes in the 1st OTR. The recalculated amounts are shown in Table 2.2 below. Due to the change in the Factory Price (VF), the cost of Additional Equipment (EA) and Interest on Construction Works in Progress (JOA) were also adjusted.

Table 2.2: New Replacement Value of 1st OTR recalculated

Revision of VNR of the 1st Cycle for Pipes (at September 2011 prices)	Presented by Sabesp (R$*000)	Technical note RTS/004/2014 (R$*000)	Revised amounts (R$*000)
Factory Price (VF)	6,534,547	5,554,365	6,534,547
Additional Equipment (EA)	233,937	166,631	196,036
Additional Costs (CA)	26,645,495	16,939,491	16,939,491
Interest on Construction Works in Progress (JOA)	1,553,817	845,236	882,894
New Replacement Value (VNR) of the 1st Cycle recalculated	**34,967,796**	**23,505,723**	**24,552,968**

Therefore, the New Replacement Value - VNR of the 1st Cycle considered as the starting point for the item Pipes in Table 2.2 was revised to R$24,552,968 thousand, at September 2011 prices.

3. INCREMENTAL BASIS

The inclusions between the previous and current tariff revision, provided that they include assets still in operation, make up the Incremental Basis, and will be incorporated after an evaluation process established under the terms of ARSESP Resolution No. 672/2016, published after the Public Consultation No. 03/2016.

Once the valuation of these investments is completed with reference to the New Replacement Value, they will be incorporated into the Sabesp's Remuneration Basis.

According to what was informed in the Official Letter PR-357/2017 of March 2017, SABESP faced difficulties in obtaining part of the technical information (plants, projects, etc.), problems located in technical records and in the process of physical-accounting reconciliation, having conservatively chosen to evaluate a set of assets using the lowest value in the prices bank or the lowest budget of the good of the same type in the case of civil structure. In addition, in the same correspondence, it requested the authorization of this Agency to restate a new position of these assets for a final tariff revision.

The concessionaire presented the Appraisal Report of Assets for this preliminary revision, prepared by the company contracted by it, which will be subject to the analysis and manifestation of Arsesp to establish the final maximum average tariff (final P0). The amounts presented in this report total R$9.5 billion and are shown in Table 3.1 below.

Table 3.1: Incremental basis

Asset Report	Amount (R$*1000)
Land	
New Replacement Value (VNR) updated	0
Accumulated depreciation updated	0
Market-in-Use Value (VMU) Updated	0
Utilization Index	0
Remuneration Basis Value (VBR)	0
Structures	
New Replacement Value (VNR) updated	959,098
Accumulated depreciation updated	52,161
Market-in-Use Value (VMU) Updated	906,937
Utilization Index	146,758
Remuneration Basis Value (VBR)	760,179
Wells	
New Replacement Value (VNR) updated	31,383
Accumulated depreciation updated	3,533
Market-in-Use Value (VMU) Updated	27,849
Utilization Index	0
Remuneration Basis Value (VBR)	27,849
Networks	
New Replacement Value (VNR) updated	6,298,506
Accumulated depreciation updated	541,255
Market-in-Use Value (VMU) Updated	5,757,251
Utilization Index	0
Remuneration Basis Value (VBR)	5,757,251
Hydrometers	
New Replacement Value (VNR) updated	242,607
Accumulated depreciation updated	63,596
Market-in-Use Value (VMU) Updated	179,011
Utilization Index	0
Remuneration Basis Value (VBR)	179,011
Household Connections	
New Replacement Value (VNR) updated	1,614,591
Accumulated depreciation updated	102,808
Market-in-Use Value (VMU) Updated	1,511,783
Utilization Index	0
Remuneration Basis Value (VBR)	1,511,783
Other	
New Replacement Value (VNR) updated	1,761,549
Accumulated depreciation updated	399,296
Market-in-Use Value (VMU) Updated	1,362,253
Utilization Index	55,763
Remuneration Basis Value (VBR)	1,306,490
TOTAL	
New Replacement Value (VNR) updated	10,907,734
Accumulated depreciation updated	1,162,650
Market-in-Use Value (VMU) Updated	9,745,085
Utilization Index	202,521
Remuneration Basis Value (VBR)	**9,542,563**

Due to this context, in July/2017, Sabesp presented the Technical Note "Use of accounting information to establish the value of the Regulatory Remuneration Basis" in order to recognize part of the value not yet reported in the Appraisal Report of Assets due to the problems faced during its preparation.

By means of this Technical Note, SABESP requests that the assets value of the adjusted and depreciated balance sheet be considered, whose difference over the amount verified in the Appraisal Report is of R$3,186 million.

As provided for in ARSESP Resolution No. 672/2016, Arsesp decided to consider 48.85% of the difference between the interim report and the accounting balance in the Incremental Asset Basis. Therefore, to be included in the Regulatory Remuneration Basis in this initial stage, are presented in the following Table 3.2 the values based on June/2016.

Table 3.2: Net Basis of Assets in Service

Breakdown	R$ thousand Jun/2016
Armored Base - until Sep/2011	27,169,186
Incremental Base - Sep/2011 to Jun/2016 (report)	9,542,563
Difference between the Report and the Accounting Balance	1,556,661
Assets Base in Service in June/2016	**38,268,410**

After the delivery of the final report and analysis by Arsesp for validation, the recognized values will then be considered for the composition of the final basis, with the corresponding adjustments regarding the preliminary values.

ATTACHMENT IV

LIST OF SABESP'S EXPENDITURE ACCOUNTS

2nd ORDINARY TARIFF REVISION OF SABESP: INITIAL STAGE

1. PURPOSE

Answering the contribution received under the public consultation, Arsesp presents, in the tables below, the list of Sabesp's expenditure accounts, classified by expense category.

PERSONNEL	
0001 WAGES	0116 SESI/SESC
0002 OVERTIME	0117 FEES ANNUAL PAID LEAVE - OFFICERS
0003 BONUS	0199 OTHER CHARGES
0005 PROVISION FOR 13TH SALARY	0202 BASIC FOOD BASKET
0006 OFFICERS' FEES	0203 FOOD ALLOWANCE
0007 PROVISION FOR THE 13th FEE OF THE EXECUTIVE BOARD	0206 HEALTH INSURANCE (HEALTH PLAN)
0008 FEES OF THE BOARD OF DIRECTORS	0207 SOCIAL ASSISTANCE
0009 FEES OF THE FISCAL COUNCIL	0208 MEALS (SUBSIDIES)
0010 VACATION BONUS	0209 TRANSPORTATION VOUCHER
0011 VACATION BONUS	0210 INTERNAL COMPUTER COURSES
0017 PROFIT SHARING	0211 EXTERNAL COMPUTING COURSES
0018 REPLACEMENT WAGE	0212 INTERNAL COURSES
0020 HAZARD ADDITIONAL PAYMENT	0213 EXTERNAL COURSES
0021 HAZARD ADDITIONAL PAYMENT	0214 PRIVATE PENSION PLAN
0022 NIGHT-SHIFT BONUS	0215 PROVISION FOR PRIVATE PENSION PLAN
0023 NIGHT-SHIFT BONUS	0216 PRODUCTS BASKET
0024 REMOTE ON-DUTY SERVICES	0217 MEDICATION BASKET
0026 ASSISTANCE FOR DAYCARE CENTER	0227 DISTANCE LEARNING
0027 BONUS TO THE EXECUTIVE BOARD	0228 BUSINESS UNIVERSITY
0028 BONUS BOARD OF DIRECTORS	0229 QUALITY MANAGEMENT
0029 BONUS ANNUAL PAID LEAVE - OFFICERS	0230 LOSS CONTROL COURSES
0030 TERM OF ADJUSTMENT OF BEHAVIOR - RETIRED PEOPLE	0231 RETIREMENT PROVISION (CURRENT)
0033 EXTENSION MATERNITY LEAVE	0233 BONUS PROGRAM
0101 INSS	0252 SABESPREV MAIS - REGULAR CONTRIBUTIONS SPONSOR
0102 FGTS	SABESPREV MAIS - SPONSOR INCENTIVE
0103 WORK ACCIDENT INSURANCE	0254 SABESPREV MAIS - DEFICIT SPONSOR
0104 FGTS (FINE)	0255 SABESPREV MAIS - SPONSOR ADMINISTRATIVE FEE
0105 TERMINATION NOTICE	0256 SABESPREV MAIS - RISK SPONSOR
0109 SALARY EDUCATION	0257 SABESPREV MAIS - 13TH SALARY SPONSOR
0110 PROVISION FOR VACATION	0262 COMPLEMENTARY PENSION - G0
0113 SEBRAE	0263 PAID SABBATICAL
0114 INCRA	0281 ESTIMATE OF OTHER PERSONNEL EXPENSES
0115 SENAI/SENAC	

GENERAL MATERIALS	TREATMENT MATERIALS
0303 CUT AND SUPPRESSION	0401 SAND
0304 FUELS AND LUBRICANTS (EQUIPMENT)	0402 LIME
0305 SMALL CONSUMABLES TOOLS	0403 ACTIVE CARBON
0306 CONSERVATION OF PROPERTIES AND FACILITIES	0404 CHLORINE
0307 CONSERVATION OF FURNITURE AND EQUIPMENT - OFFICE	0405 SODIUM HYPOCHLORITE
0308 CONSERVATION OF OTHER FURNITURE AND EQUIPMENT	0406 POLYELECTROLYTE
0309 LAB MATERIAL	0407 ALUMINUM SULFATE
0310 SAFETY AND PROTECTION MATERIAL	0409 COPPER SULFATE
0313 HYGIENE AND CLEANING MATERIAL	0410 IRON SULFATE
0314 KITCHEN MATERIAL	0411 SODIUM HYDROXIDE
0315 RECORD AND DRAWING MATERIAL	0412 FLUORINE
0316 TELECOMMUNICATION MATERIAL	0413 OXYGEN
0318 PHOTOGRAPHIC AND CINEMATOGRAPHIC MATERIAL	0414 FERRIC CHLORIDE
0319 DATA PROCESSING MATERIAL	0416 SULFURIC ACID
0321 MAINTENANCE OF COMPUTING EQUIPMENT	0418 ALUMINUM POLYCHLORIDE
0322 FUELS AND LUBRICANTS (VEHICLES)	0419 SODIUM CARBONATE
0323 CONSERVATION AND MAINTENANCE OF VEHICLES	0420 AMMONIUM NITRATE
0324 UNIFORMS AND CLOTHING	0421 CARBON GAS
0325 MAINTENANCE OF SYSTEMS-AG	0422 SODIUM HEXAMETAPHOSPHATE
0327 CONSERVATION OF AUTOMOTIVE EQUIPMENT	0424 NITROGEN GAS
0331 ENVIRONMENT	0426 HYDROGEN PEROXIDE
0334 WORK SAFETY MATERIAL	0428 CALCIUM NITRATE
0335 MATERIAL OF WORK MEDICINE	0429 ODOR NEUTRALIZER
0338 MAINTENANCE OF DOMICILIARY WATER CONNECTIONS	0430 TRICHLOROISOCYANURIC ACID
0339 MAINTENANCE OF DOMICILIARY SEWAGE CONNECTIONS	0431 CATIONIZED ALUMINUM HYDROXIDE
0340 MAINTENANCE OF WATER NETWORKS	0499 OTHER TREATMENT MATERIALS
0341 MAINTENANCE OF SEWAGE NETWORKS	
0344 SYSTEM MAINTENANCE (PROPERTIES AND FACILITIES)	
0345 SYSTEM MAINTENANCE (EQUIPMENT)	
0346 LOSS REDUCTION - MAINTENANCE DOMIC. WATER CONN.	
0347 LOSS REDUCTION - MAINTENANCE OF WATER NETWORKS	
0348 ENVIRONMENT - OTHER MATERIALS	
0349 ENVIRONMENT - REGULARIZATION ENVIRONMENTAL LICENSE	
0357 RESEARCH, DEVELOPMENT, INNOV.	
0358 PROJECT PURA	
0381 ESTIMATED OF EXPENSES WITH MATERIALS	
0399 OTHER MATERIALS	

ELECTRIC POWER AND LIGHT	
0601	ELECTRIC POWER
0602	ELECTRIC ENERGY (OPERATION)
0603	NATURAL GAS
0604	ELECTRIC ENERGY (FREE MARKET)
0605	CONNECTION AND USE OF DIST. SYSTEM OF ELECTRIC ENERGY
0606	ELET. ENERGY SOURCE INC
0706	CONN. USE SYST. DIST. BE
0681	ESTIMATE OF EXPENSES WITH ELECTRIC POWER AND LIGHT

SERVICES	
0501 RENTAL OF PROPERTIES	0543 TESTS AND ANALYSIS
0502 RENTAL OF MACHINES AND EQUIPMENT	0544 RENTAL OF AUTOMOTIVE EQUIPMENT
0503 ADVERTISEMENTS AND NOTICES	0545 PRINTING OF CORPORATE SYSTEM REPORTS
0504 RENTAL OF COMPUTER EQUIPMENT	0548 CANALIZATION OF STREAMS
0505 CCI MANAGEMENT	0549 COMMUNICATION FOR QUALITY
0506 CONSERVATION OF TELECOMMUNICATIONS EQUIPMENT	0551 RECOVERY OF CREDIT
0507 CONSERVATION OF PROPERTIES AND FACILITIES	0554 MAINTENANCE OF DOMICILIARY WATER CONNECTIONS
0508 CLEANING OF PROPERTIES AND CONSERVATION OF GARDENS	0555 MAINTENANCE OF DOMICILIARY SEWAGE CONNECTIONS
0509 CONSERV. AND MAINT. OF FURNITURE AND EQUIPMENT SEVERAL	0556 RECOVERY OF CREDIT (JUDICIAL)
0510 RENTAL INTERNET	0557 REUSE OF WATER
0511 LOSS CONTROL	0558 PURA PROJECT
0512 CONSERVATION OF PROPERTIES AND FACILITIES IN GENERAL-AG	0559 MAINTENANCE OF WATER NETWORKS
0513 WATER TREATED	0560 MAINTENANCE OF SEWAGE NETWORKS
0514 COPIES AND REPRODUCTIONS	0561 ENVIRONMENT
0515 MAIL POST AND TELEGRAPH	0562 REHABILITATION OF WATER NETWORKS AND PIPELINES
0516 SOFTWARE MAINTENANCE	0563 RENTAL OF HOT BEVERAGE MACHINES
0517 CONSERV. AND MAINT. OF COMPUTER EQUIPMENT	0565 FIGHTING FRAUDES
0518 CLOSING AND REOPENING CONNECTIONS	0566 RESEARCH, DEVELOPMENT, INNOV.
0519 INTERNS	0567 CONS MAIN EQUIP SERVICE DIV WORK SAFETY
0520 GAS	0568 CONS MAIN EQUIP SERV DIV WORK HEALTH
0521 READING OF HYDROMETERS AND DELIVERY OF BILLS	0569 OTHER ENVIRONMENTAL EXPENSES
0522 FAST DELIVERIES	0571 MAIN CYLINDERS FOR CHEMICAL STORAGE
0523 INTEROFFICE MAIL	0573 TREATMENT AND DISPOSAL OF SLUDGE
0524 SPECIFIC SOFTWARE	0574 PROVISION AGREEMENT SABESP/PMSP
0525 MANPOWER HIRED	0575 MON. PHONE MONIT. VEHIC.
0526 PAVEMENT AND REPLACEMENT OF SIDEWALKS	0576 SYSTEM MAINTENANCE (PROPERTIES AND FACILITIES)
0528 ADVERTISING AND PROMOTION	0577 SYSTEM MAINTENANCE (EQUIPMENT)
0529 TELEPHONY	0578 TRANSPORTATION OF WATER
0530 SURVEILLANCE	0579 TRANSPORTATION OF SLUDGE
0531 RENTAL OF VEHICLES	0580 ENVIRONMENT - REGULARIZATION ENVIRONMENTAL LICENSE
0532 CONSERVATION AND MAINTENANCE OF VEHICLES	0581 ESTIMATE OF EXPENSES WITH SERVICES
0533 PARKING	0582 LOSS REDUCTION - EQUIPMENT MAINTENANCE
0534 FREIGHT AND CARRIER	0583 LOSS REDUCTION - TECHNICAL AND PROFESSIONAL SERVICES
0535 MILEAGE REIMBURSEMENT	0584 LOSS REDUCTION - PAVEMENT REPLAC SIDEWALKS

0536 COMMUNICATION OF DATA	0585 LOSS REDUCTION - MAINTENANCE OF WATER NETWORKS
0537 TECHNICAL AND PROFESSIONAL SERVICES	0586 LOSS REDUCTION - MAINTENANCE DOMIC. WATER CONN.
0538 RENTAL OF COPYING MACHINES	0588 NEGAT. CUSTOMERS IN DEBT
0539 CONSERVATION AND MAINTENANCE OF EQUIPMENT AUTOMOTIVE	0591 APLIC PROD CHEM REPRES
0540 CONS. AND MAINT. OF FURNITURE AND EQUIPMENT - OFFICE	0599 OTHER SERVICES

GENERAL EXPENSES	
0701 INDEMNITIES FOR DAMAGES TO THIRD PARTIES	0726 INTERNATIONAL EXPENSES
0702 RECEIVED FROM WATER BILLS	0727 OTHER EXPENSES WITH LABOR SAFETY
0703 TRANSPORTATION	0728 OTHER EXPENSES WITH WORK HEALTH
0705 TRADE UNION CONTRIBUTION	0729 WORKERS' INDEMNIFICATION
0706 LEGAL EXPENSES	0730 INDEMNITY FOR ENVIRONMENTAL DAMAGES
0707 DONATIONS	0731 PROGRAM'S CONTRACT
0708 NEWSPAPERS, BOOKS AND MAGAZINES	0733 BUFFET AND COFFEE-BREAKS
0709 RECEPTIONS AND EXHIBITIONS	0736 PRESEARCH, DEVELOPMENT, INNOV.
0710 GENERAL INSURANCE	0738 AIRFARE
0711 TRAVEL AND ACCOMMODATION	0781 ESTIMATE OF GENERAL EXPENSES
0712 TRAVEL AND ACCOMODATION WITHOUT PROOF TO IR	0782 ESTIMATE OF GENERAL EXPENSES - RECLASS COMER
0713 MEALS AND SNACKS	OTHER GENERAL EXPENSES
0714 VEHICLE LICENSING	0808 PROV ENVIRONMENTAL ACC
0715 VEHICLE INSURANCE	0809 PROV CIVIL ACC
0716 INDEMNIFICATION TO THIRD PARTIES (VEHICLES)	0810 PROV LABOR ACC
0717 JUDICIAL COLLECTION	0811 FINANCIAL PROVISION
0718 EXPENSES WITH DISAPPROPRIATIONS	0812 PROV OTHER LOSSES
0719 BUSINESS EVENTS	0813 PROV TAX ACC
0720 INSTITUTIONAL SUPPORT	0951 IPVA
0721 TOLL	0952 IPTU
0723 OTHER EXPENSES WITH QUALITY MANAGEMENT	0959 OTHER TAXES AND STATE TAXES
0724 BASIC SOFTWARE	0981 TAX AND FEES ON GOODS AND SERVICES IMPORT
0725 USE OF WATER	0983 MUNICIPAL TAXES AND FEES

ATTACHMENT V

2016 UNIT COSTS USED FOR THE OPEX FORECAST

2nd ORDINARY TARIFF REVISION OF SABESP: INITIAL STAGE

1. PURPOSE

Answering the contribution received under the public consultation, Arsesp presents below the unit costs used to forecast the Operating Costs, which were obtained from the information provided by Sabesp.

Unit cost Opex 2016 - R$ thousand Dec/2016

Breakdown	Dots	RV	RT	RS	RR	RN	RM	RJ	ID	RB	ENROLLMENT	M
PRODUCTION												
PERSONNEL	Vol. Water Produced (thousand m^3)	206.42	387.49	224.25	557.60	369.74	382.62	282.56	391.46	309.59	368.86	172.82
GENERAL MATERIALS	Vol. Water Produced (thousand m^3)	19.44	47,99	34.16	52.60	39.94	38.33	30.13	39.41	41.00	39.09	10.64
MATERIALS TREATMENT	Vol. Water Produced (thousand m^3)	68.68	18,70	130.71	35.94	42.93	102.45	132.97	129.53	69.75	83.43	65.12
SERVICES	Vol. Water Produced (thousand m^3)	82.78	87.32	98.00	176.72	122.60	73.17	72.23	72.33	112.32	94.06	50.89
ELECTRIC POWER AND LIGHT	Vol. Water Produced (thousand m^3)	242.39	293.30	138.94	160.33	131.16	329.92	298.10	454.82	235.87	328.01	197.76
GENERAL EXPENSES	Vol. Water Produced (thousand m^3)	29.81	21.34	35.67	30.21	47.70	43.99	28.73	16.75	29.88	23.09	37.42
DISTRIBUTION												
PERSONNEL	Water Connection	64.27	86.24	62.28	103.61	84.76	89.73	63.85	89.85	66.57	67.77	40.03
GENERAL MATERIALS	Water Connection	7.93	9.29	10.58	10,06	10.88	10.93	8.03	9.13	8.35	8.28	6.37
MATERIALS TREATMENT	Vol. Measured Water (thousand m^3)	41.22	12-36.	0.00	51.80	20.59	83.58	39.63	18.89	13.76	52.48	1.69
SERVICES	Water Connection	41.69	15.70	38.47	33.26	36.58	23.29	24.19	24.16	27.34	24.70	29.71
ELECTRIC POWER AND LIGHT	Vol. Measured Water (thousand m^3)	207.39	139.08	69.98	202.92	147.47	283.40	268.70	161.90	301.16	258.07	75.97
GENERAL EXPENSES	Water Connection	6,99	3.90	4,95	5.72	12.30	9.81	4,87	3.73	6.75	4,79	5.16
COLLECTION												
PERSONNEL	Sewage Connection	50.44	69.77	53.07	107.40	79.94	91.93	50.29	61.87	62.76	63.73	40.91
GENERAL MATERIALS	Sewage Connection	3.70	7.73	8.47	10.07	7.86	7.09	5.01	5.48	7.24	6.11	3.47
MATERIALS TREATMENT	Vol. Sewage Collected (thousand m^3)	15.26	7.93	0.00	32.52	66.61	11.23	4.36	20.89	6.13	4,27	1.93
SERVICES	Sewage Connection	43.07	14.94	47.64	33,75	36.84	22.22	20.20	12.49	29.18	18.29	32.53
ELECTRIC POWER AND LIGHT	Vol. Sewage Collected (thousand m^3)	88.75	121.97	93.42	321.26	173.15	212.27	73.22	50.65	162.64	112.69	19.39
GENERAL EXPENSES	Sewage Connection	3.60	3.78	5.39	6.25	13,34	10.46	3,79	3.82	6.76	5.11	S.49

Unit cost Opex 2016 - R$ thousand Dec/2016

Breakdown	Dots	RV	RT	RS	RR	RN	RM	RJ	ID	RB	EN ROL LM ENT	M
TREATMENT												
PERSONNEL	Vol. Sewage Treated (thousand m^3)	314.74	437.29	486.94	798.69	1,116.52	624.15	411.95	528.77	421.07	461.42	339.63
GENERAL MATERIALS	Vol. Sewage Treated (thousand m^3)	27.23	48.81	79.76	75.46	70.52	49.44	45.45	50.18	42.32	47.89	39,27
MATERIALS TREATMENT	Vol. Sewage Treated (thousand m^3)	273.06	6.19	122.80	25.89	326.64	19.93	164.29	36.43	17,26	3.51	46.58
SERVICES	Vol. Sewage Treated (thousand m^3)	408.00	94.34	350.41	253.84	461.79	156.64	302.25	168.86	166.38	146.12	236.45
ELECTRIC POWER AND LIGHT	Vol. Sewage Treated (thousand m^3)	146.61	95.18	240.99	255.70	625.56	235.43	256.69	191.79	156.22	89.50	149,46
GENERAL EXPENSES	Vol. Sewage Treated (thousand m^3)	20.90	23.95	38.23	47.16	87.31	71.63	25.04	25.51	43.76	36.82	49.34
COMMERCIALS												
PERSONNEL	Water Connection	30.05	13.96	27.32	8.38	39.60	5.50	19.04	22.49	23.28	24.94	40.83
GENERAL MATERIALS	Water Connection	0.72	0.15	0.11	0.01	0.03	0.01	0.11	0.07	0.02	0.54	0.76
SERVICES	Water Connection	22.22	5.98	12.46	7.91	6.89	0.84	22.19	11.60	5.31	10,02	46.36
ELECTRIC POWER AND LIGHT	Water Connection	0.14	0.01	0.00	0.35	0.00	0.01	0.11	0.10	0.01	0.01	0.12
GENERAL EXPENSES	Water Connection	9.38	5,75	9.70	4.40	10.07	7.12	9.44	9.30	7.76	6.37	10.69
ADM CENTRAL												
PERSONNEL	Fixed	12,390,520	6,956,445	11,474,578	2,541,533	2,658,763	7,315,391	6,359,672	7,828,031	9,253,865	7,597,654	113,535,114
GENERAL MATERIALS	Fixed	173,710	97,526	160,869	35,631	37,275	102,559	89,160	109,746	129,735	106,516	1,591,713
SERVICES	Fixed	10,003,387	5,616,230	9,263,909	2,051,886	2,146,531	5,906,022	5,134,430	6,319,898	7,471,034	6,133,905	91,661,662
ELECTRIC POWER AND LIGHT	Fixed	122,865	68,980	113,782	25,202	26,364	72,540	63,063	77,623	91,761	75,338	1,125,816
GENERAL EXPENSES	Fixed	16,825,575	9,446,429	15,581,781	3,451,248	3,610,439	9,933,857	8,636,049	10,629,991	12,566,188	10,317,152	154,173,793