FINAL TECHNICAL NOTE

RESULT OF SABESP'S 2nd ORDINARY TARIFF REVIEW - FINAL STAGE:

CALCULATION OF THE MAXIMUM AVERAGE TARIFF (P0)

May 2018

FINAL TECHNICAL NOTE
RESULTS OF SABESP'S 2nd ORDINARY TARIFF REVIEW: FINAL STAGE SUMMARY

1. INTRODUCTION

The purpose of this Technical Note is to present the final results of the calculation of the Maximum Average Tariff (P0) produced by Arsesp in the Final Stage of the 2nd Ordinary Tariff Review (2nd RTO) for Companhia de Saneamento Básico do Estado de São Paulo - Sabesp.

Law no. 11445/2007, which establishes the national guidelines for basic sanitation, in article 38 determines that tariff reviews should include a reassessment of the conditions of the provision of services and of the tariffs practiced, which can be either ordinary periodic reviews or extraordinary reviews. The purpose of the ordinary periodic reviews is to share the productivity gains with the users and to reassess the market conditions (sub-section I, article 38).

It is up to the regulatory body to issue rules regarding the regime, structure, and tariff levels, as well as the procedures and deadlines for their determination, adjustment and review (article 23, sub-section IV). The regulatory body defines the ordinary review schedule, after having heard the owners, users and providers of the services (article 38, §1).

State Complementary Law 1025/2007, in article 10, sub-section IV, and article 11 allocates to Arsesp the authority for regulation and inspection, including in connection with tariff issues, basic sanitation services which are state owned and in the municipalities which were delegated to the State, in accordance with municipal competencies and prerogatives.

In Arsesp Resolution no. 484/2014, which approved the conclusion of Sabesp's 1st Ordinary Tariff Review, it was established that the 2nd RTO would be concluded by April 11, 2017. The delay caused by the temporary suspension of the process of hiring a consulting company to help Arsesp with the tariff review, was due to a judicial decision in relation to an appeal filed by a bidder, which prevented the Agency from completing the tariff review process within the previously stipulated deadline. In view of the Agency's duty to ensure the affordability of the tariffs and guarantee the economic and financial balance of the provision of services, Arsesp then opted to carry out the 2nd RTO in two stages: Initial Stage and Final Stage.

Arsesp began the Initial Stage of the 2nd RTO in January/2017. During this stage, the Agency continued with the methodology used for the 1st Ordinary Tariff Review process and used the historical data (2013-2016) and the Business Plan for the period 2017-2021 that was delivered by Sabesp in January/2017, the supplementary information requested by Arsesp over the course of the analysis phase of the data and, at the end, the revised Business Plan which was delivered in June/2017, which includes all of the adjustments made by Sabesp during the process. The final results of this Initial Stage, presented in Preliminary Technical Note NT/F/004/2017, were approved in October/2017 by means of Arsesp Resolution No. 753/2017, with disclosure of the Preliminary Maximum Average Tariff (Preliminary P0) of R$3.63861/m³ and the resulting tariff repositioning index, which was 7.8888% applied on a straight-line basis to Sabesp's tariff table in force at the time. In Exhibit I of this Technical Note, a retrospect was undertaken of Sabesp's tariffs.

After the conclusion of the Initial Stage, work got underway on the Final Stage of the 2nd tariff review, which includes:

i. Review of the methodology used for the 1st RTO;

ii. Diagnosis of Sabesp's economic and financial and tariff situation during the tariff cycle ended in April/2017, including the impacts caused by the water crisis and the contingency tariff;

iii. Determination of the compensatory adjustments related to the latest tariff cycle, including those related to the Extraordinary Tariff Review that was carried out in 2015;

iv. Determination of the efficiency and productivity gains to be shared with the users - Factor X to be discounted in the annual adjustments - for the next tariff cycle;

v. Determination of the General Quality Index of the services provided by Sabesp to be taken into account in the Annual Tariff Adjustment Index from 2020 onward;

vi. Presentation of the definitive basis for Regulatory Remuneration, duly verified by means of field survey and accounting reconciliation;

vii. Verification of any compensatory adjustments related to the Preliminary P0 determined in the Initial Stage of the 2nd Ordinary Tariff Review; and

viii. Inclusion of a percentage of revenue for expenditure on research, development and innovation (PDI) from 2020 onwards.

The proposed methodology for the Final Stage of the 2nd RTO was presented by Arsesp in Technical Note NT.F-0001-2018, which was opened for public consultation from January 17 to February 25, 2018 and presented at a public hearing on 01/29/2018. All the contributions were analyzed by the Agency and the answers, properly substantiated, are contained in the detailed report of the contributions received NT.F-0002-2018. The final methodology approved and adopted for this tariff cycle (2017-2020) is included in the Final Technical Note NT.F-0003-2018, which contains a description of all the aspects and components necessary for establishing the final Tariff Repositioning Index of this 2nd RTO.

Afterwards, Arsesp drafted a proposal for the calculation of the Maximum Average Tariff (P0), described in Preliminary Technical Note NT.F-0004-2018, which was submitted to public consultation and hearing in order to obtain contributions. Public Consultation no. 03/2018 was held in the period from 03/27/2018 to 04/17/2018 and Public Hearings 02/2018 were held on 04/09/2018 in the Municipality of São José dos Campos, on 04/10/2018 in the Municipality of São Paulo and on 04/12/2018 in the Municipality of Itapetininga. All of the contributions received were analyzed by Arsesp and the answers, duly substantiated, are contained in the detailed report No. NT.F-0005-2018. The final values produced are presented in this Technical Note.

In order to make it easier to understand the calculations made and the figures used, the Agency will make available, together with this Technical Note, the economic and financial model developed for this 2nd RTO with the final values. All the material will be made available on Arsesp's website (www.arsesp.sp.gov.br).

2. REGULATORY MODEL OF THE SECOND ORDINARY TARIFF REVIEW

The methodology adopted by Arsesp is based on a Discounted Cash Flow model, the objective of which is to calculate the maximum average equilibrium tariff (P0), which is based on the operating costs, remuneration and recovery of investments and other costs, and the expected market. The Net Present Value (NPV) of the tariff cycle is equal to zero, taking into account a rate of return equal to the Weighted Average Cost of Capital (WACC).

For this Final Stage of the 2nd RTO, the Agency revised the methodology used for the previous tariff cycle and proposed adjustments in the treatment of each component of the P0's calculation, in addition to introducing other items such as the Fund for Research, Development and Innovation, the General Quality Index, Funds for Expenditure on Municipal Obligations in Sanitation, and the "Risk Matrix" of the services provided.

The final detailed methodology is described in Technical Note NT.F-0003-2018, which has already been issued, on which the calculations presented in this document were based.

In summary, the elements that make up the formula are estimated at constant prices for the entire cycle, which avoids any need for inflation projections. Cash flow is calculated in terms of calendar years and the adjustments to the base date are made only in inflationary terms.

The P0 calculated by the Tariff Review is then compared to the current tariff, which results in a percentage variation or Tariff Repositioning Index (IRT) which is applied on a straight line basis to the tariff table (provided there is no review of the tariff structure). During the tariff cycle, the tariff value is updated on an annual basis by the accumulated inflation (IPCA) discounted by a productivity factor, Factor X, in the Annual Tariff Adjustment (RTA) processes. In this cycle, the values for the General Quality Index, Factor Q, will be monitored, which will have a tariff impact from 2020 onwards, and which will also be discounted from or added to the IPCA (broad consumer price index).

In the RTO, the P0 was calculated at December 2016 prices and has to be corrected, based on the IPCA, for the original forecast date (April 2017). The compensations for the differences calculated between the preliminary P0, which was published in October 2017, and this new P0 which has been calculated in the Final Stage, will be the subject of compensatory adjustment, details of which will be provided later on in a specific section. The main information base used for the calculation of the cycle's tariff is the Business Plan presented by Sabesp. In addition, an analysis is made of historical information regarding the evolution of certain components and for the definition of the targets and standards to be achieved in the tariff cycle, as indicated throughout this Technical Note.

In accordance with Technical Note NT.F-003-2018, the formula used to calculate the P0 in this 2nd RTO is as follows:

$$RR = BRRL_0 - \frac{BRRL_T}{(1 + r_{WACC})^T} + \sum_{t=1}^{T} \frac{COP_t + OPEX_t + PPP_t + RINC_t + CAPEX_t + IRCS_t + VarWK_t + FMS_t + PDI_t - RI_t - OR_t}{(1 + r_{WACC})^t}$$

$$P0 = \frac{RR}{\sum_{t=1}^{T} \frac{V_t}{(1 + r_{WACC})^t}}$$

Where:

RR	= Revenue required in the tariff cycle.
$BRRL_0$	= Initial basis for regulatory remuneration net of depreciation, which includes the initial stock of working capital
$BRRL_T$	= Net basis for regulatory remuneration at the end of the tariff cycle, updated by a rolling forward mechanism, under which the accumulated technical depreciation is deducted and investments and the variation in working capital are added.
T	= Number of years of the tariff cycle (equal to 4).
R_{wacc}	= Remuneration Rate corresponding to the Weighted Average Cost of Capital.
COP_t	= Cofins/PASEP in year t.
$OPEX_t$	= Operating, administrative and commercialization costs in year t.
PPP_t	= Consideration from the public-private partnerships in year t.
$RINC_t$	= Irrecoverable revenues in year t.
$CAPEX_t$	= Investments in fixed assets in year t, plus Interest on Construction Work in Regulatory Progress (JOAR).
$IRCS_t$	= Income tax and social contribution in year t.
$VarWK_t$	= Variation in remunerated working capital in year t.
FMS_t	= Expenditure of municipal sanitation funds in year t.
PDI_t	= Costs of research, development and innovation in year t.
RI_t	= Indirect regulatory revenues in year t.
OR_t	= Other regulatory revenues in year t.
P0	= Maximum average tariff (or Maximum Price) that ensures Sabesp's economic-financial equilibrium in the tariff cycle.
V_t	= Total billable volume for year t (taking into account the effects of charging the minimum consumption existing in the current tariff structure).

It should be borne in mind that the Agency continued to make use of the amounts projected for 2017 in the Initial Stage of this 2nd RTO, in this way maintaining consistency with the discounted cash flow methodology. Nevertheless, at Arsesp's request, Sabesp sent partial information for the year 2017 for some items and these, whenever necessary, were used to verify the consistency and adjust the projections.

3. MARKET PROJECTION

The market variables used to carry out the market projection include the number of households, the number of connections and the volumes of water measured and billed and the volumes of sewage collected and billed. The total volume of water and sewage billed is used as the basis for calculating direct revenue, as it is multiplied by the P0 determined in the cash flow, repetitively. The other information, in addition to being used in the calculation of the volume itself, also includes the unit cost indicators that are used to calculate the efficient operating costs. As indicated in NT.F-0003-2018, the volumes measured are broken down into Residential, Non Residential and Permissionaires.

3.1. Residential Demand

For the projection of the volume of water and sewage measured in the Residential segment, usage was made of assumptions in relation to the change in the water and sanitary sewage service ratio, the number of households capable of being served and the average consumption per household. The water and sewage service ratios were projected by Sabesp in its Business Plan and, due to the fact that they were deemed to be appropriate by Arsesp, were used to forecast residential demand. The program contracts have individual targets for each municipality, being subject to inspections at regular intervals by Arsesp, and failure to provide the service is grounds for a disciplinary process.

The table below shows the projected water and sewage service ratios for Sabesp's service area for the period from 2016 to 2020.

Table 3.1: Water and Sewage Service Ratio

Description	Unit	Source	2016	2017	2018	2019	2020
Water Service Ratio	%	Sabesp	94.9%	95.1%	95.4%	95.6%	95.7%
Sewage Service Ratio	%	Sabesp	82.4%	83.3%	84.2%	85.1%	86.0%

The area capable of being served is the set of regular urbanized areas along with those to be regularized, to be served by Sabesp with a public water and sewage supply system, defined by common agreement between the parties (Sabesp's business unit and city hall). This area may be altered over the course of time on account of the expansion of the urbanized and regularized area. The projection of households capable of being served is presented in the table below. This projection is obtained by the ratio between the households projected by Sabesp and the water and sewage service ratios, presented in the Business Plan.

Table 3.2: Households capable of being Served with Water and Sewage

Description	Unit	2016	2017	2018	2019	2020
Number of households capable of being served with water	thousand units	10,416	10,595	10,766	10,943	11,121
Number of households capable of being served with sewage	thousand units	10,313	10,488	10,671	10,857	11,032

The relationship between the service ratio and households capable of being served makes it possible to forecast the number of residential water and sewage households. These amounts should be multiplied by the average consumption of water and sewage[1].

Sabesp presented the forecast for average unit water consumption for the period 2017-2020, starting off at 10.78 m³/household/month and rising to 11.00 m³/household/month in 2020.

In relation to the volume measured, Sabesp reported that from January to October 2017 the volume measured of residential water was 1,099,529,106 m³ for 10,042,126 residential households, resulting in an average unit consumption of 10.95 m³/household/month, which is higher than the figure which was previously forecast by Sabesp.

Although the figures for 2017 are not initially used to construct the model for the calculation of the average tariff, taking into account that the change in average consumption projected by Sabesp is seen to be lower and it is already known that the projected figure for 2017 (of 10.78 m³/household/month) was exceeded, the assessment was that the projections initially presented by Sabesp were not consistent with the recent history of recovery following the water crisis.

In this context, Arsesp is using amounts that are similar to those which were obtained over the course of the year as a projection basis for 2017, so as to capture the movement of recovery in average consumption. The growth trajectory (rate of growth) proposed by Sabesp was used from 2018 onwards, recognizing that the movement of recovery from structural faults in the sanitation market is likely to be slower, similar to what was seen in the electricity markets after the shortage that occurred in 2001.

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[1] According to Technical Note NT.F-0003-2018, which defined the methodology for Sabesp's 2nd RTO, the average sewage contribution is calculated based on the average water consumption in households with a sewage connection.

Table 3.3: Average Monthly Consumption of Water and Sewage Households

Description	Unit	2017	2018	2019	2020
Sabesp PN Projection:					
1. Average monthly consumption of water	m³/household/month	10.78	10.85	10.92	11.00
Annual growth	%	0.66	0.65	0.66	0.66
2. Average monthly consumption of water in households with sewage connection	m³/household/month	10.70	10.77	10.83	10.90
Annual growth	%	0.61	0.63	0.63	0.63
Arsesp Projection:					
1. Average monthly consumption of water	m³/household/month	10.95	11.02	11.09	11.17
Annual growth	%	2.21	0.65	0.66	0.66
2. Average monthly consumption of water in households with sewage connection	m³/household/month	10.87	10.93	11.00	11.07
Annual growth	%	2.18	0.63	0.63	0.63

By multiplying residential households and average consumption, we obtain the estimate of the residential volume measured. The volume projected by Arsesp is about 1.6% higher than that forecast by Sabesp in its Business Plan.

Table 3.4: Projections of Water Volume Measured - Sabesp and Arsesp

Description	Unit	Source	2017	2018	2019	2020
Residential water volume measured	thousand m³	Sabesp	1,303,712	1,337,683	1,371,504	1,404,370
Residential water volume measured	thousand m³	Arsesp	1,323,819	1,358,314	1,392,656	1,426,029

Table 3.5: Projections of Sewage Volume Measure - Sabesp and Arsesp

Description	Unit	Source	2017	2018	2019	2020
Water volume measured in households with residential sewage connection	thousand m³	Sabesp	1,121,665	1,160,776	1,201,120	1,241,138
Water volume measured in households with residential sewage connection	thousand m³	Arsesp	1,139,173	1,178,894	1,219,869	1,260,511

3.2. Non-residential demand

For the non-residential market, the assessment of numbers of households projected by Sabesp indicated a projected growth lower than that proposed for residential households. Assuming that the market recovery will take place in all the classes, and particularly for non-residential classes, the effect of recovery of economic activity is more pronounced and, therefore, it would not be consistent to forecast a slow growth.

Taking into account that the historical variations observed in the number of non-residential households are more volatile than those of the residential class, but exhibit similar trends, it does not seem reasonable to assume that the recovery of the non-residential classes is occurring so slowly, very close to stability, especially bearing in mind that there should be a recovery in economic activity during the period (while the projected average growth in the number of residential households is 1.8% p.a., the projected average growth of non-residential households is 0.2% p.a.),

The historical relationship between residential and non-residential households was used to project the non-residential households. The historical correlation between the series is greater than 95%. The number of non-residential households projected by Arsesp was roughly 2% higher than that projected by Sabesp.

Table 3.6: Projections of Quantity of Water Households - Sabesp

Active Water Households – Sabesp (units)	2017	2018	2019	2020
Commercial	702,135	704,057	705,990	707,943
Firm Commercial Demand	1,986	1,945	1,903	1,864
Industrial	64,192	64,004	63,816	63,632
Firm Industrial Demand	264	266	271	273
Public	37,420	37,523	37,625	37,729
Sabesp Own Building	3,311	3,330	3,349	3,364
Non-Residential Total	**809,308**	**811,125**	**812,954**	**814,805**

Table 3.7: Projections of Quantity of Water Households - Arsesp

Active Water Households – Arsesp (units)	2017	2018	2019	2020
Commercial	713,710	715,390	716,441	717,137
Firm Commercial Demand	2,068	2,073	2,076	2,078
Industrial	65,623	65,778	65,875	65,938
Firm Industrial Demand	264	265	265	265
Public	38,035	38,125	38,181	38,218
Sabesp Own Building	3,355	3,362	3,367	3,371
Non-Residential Total	**823,055**	**824,993**	**826,205**	**827,007**

Table 3.8: Projections of the Quantity of Sewage Households - Sabesp

Active Sewage Households – Sabesp (units)	2017	2018	2019	2020
Commercial	631,006	633,691	636,408	639,153
Firm Commercial Demand	1,784	1,733	1,684	1,637
Industrial	55,009	54,963	54,924	54,887
Firm Industrial Demand	156	152	147	144
Public	30,286	30,448	30,605	30,768
Sabesp Own Building	2,075	2,091	2,099	2,112
Non-Residential Total	**720,316**	**723,078**	**725,867**	**728,701**

Table 3.9: Projections of the Quantity of Sewage Households - Arsesp

Active Sewage Households – Arsesp (units)	2017	2018	2019	2020
Commercial	640,442	641,950	642,893	643,517
Firm Commercial Demand	1,871	1,876	1,879	1,880
Industrial	56,116	56,248	56,331	56,385
Firm Industrial Demand	163	163	164	164
Public	30,709	30,781	30,826	30,856
Sabesp Own Building	8,438	9,780	11,460	12,582
Non-Residential Total	**737,739**	**740,798**	**743,553**	**745,384**

The graph below shows the comparison between Sabesp's projection for the number of non-residential households and that observed up until October 2017 and the adjustments proposed by Arsesp.

Chart 3.1: Non-residential active households
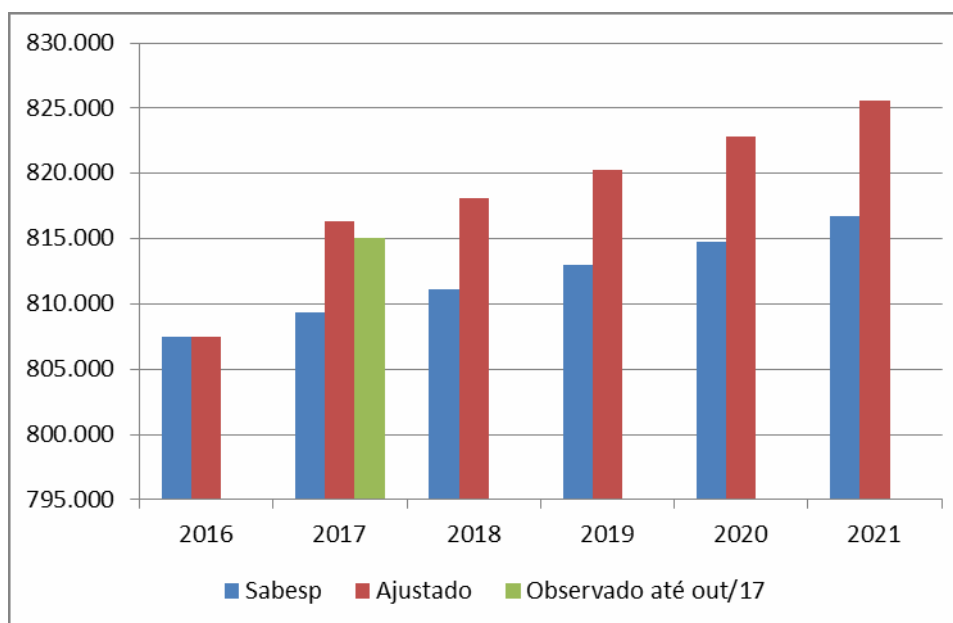
Key:

Adjusted

Observed up to Oct/17

Taking into account the volumes measured and the number of non-residential households (actual figures up to 2016 and projected for the period 2017-2020) presented by Sabesp, one arrives at the following figures in terms of average unit consumption.

Table 3.10: Average monthly consumption measured per non-residential household based on Sabesp's PN (m³/household)

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Residencial	12,9	12,8	11,9	10,4	10,7	10,8	10,9	10,9	11,0
Comercial	16,5	16,2	14,6	12,7	12,9	13,0	13,1	13,2	13,3
Comercial Demanda Firme	637,4	701,9	691,2	585,4	639,8	643,8	647,5	651,9	655,6
Industrial	36,6	37,8	32,7	27,5	26,9	27,1	27,2	27,4	27,6
Industrial Demanda Firme	3.430,2	3.054,7	3.250,1	2.321,1	2.289,9	2.303,4	2.346,7	2.367,2	2.417,8
Pública	123,9	124,2	113,7	88,7	88,1	88,6	89,1	89,6	90,1
Prédio Próprio Sabesp	84,4	71,4	66,9	50,3	50,1	49,8	49,6	49,4	49,3
Não Residencial	201,8	203,3	190,4	176,5	181,7	185,8	190,0	194,2	198,2

Key:

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Residential	12.9	12.8	11.9	10.4	10.7	10.8	10.9	10.9	11.0
Commercial	16.5	16.2	14.6	12.7	12.9	13.0	13.1	13.2	13.3
Firm Commercial Demand	637.4	701.9	691.2	585/4	639.8	643.8	647.5	651.9	655.6
Industrial	36.6	37.8	32.7	27.5	26.9	27.1	27.2	27.4	27.6
Firm Industrial Demand	3,430.2	3,054.7	3.250.1	2,321.1	2,289.9	2,303.4	2,346.7	2,367.2	2,417.8
Public	123.9	124.2	113.7	88.7	88.1	83.6	89.1	89.6	90.1

Sabesp Own Building	84.4	71.4	66.9	50.3	50.1	49.8	49.6	49.4	49.3
Non-Residential	201.8	203.3	190.4	176.5	181.7	185.8	190.0	194.2	198.2

For projection of the volume measured of non-residential water and sewage, it was proposed to adopt the average consumption per economy resulting from the projections presented by Sabesp, but applying it to the number of non-residential households adjusted by Arsesp.

Table 3.11: Projections of Non-Residential Water Volume - Sabesp and Arsesp

Description	Unit	Source	2017	2018	2019	2020
Non-residential water volume measured	thousand m³	Sabesp	194,922	196,320	197,754	199,224
Non-residential water volume measured	thousand m³	Arsesp	198,508	200,311	201,877	203,437

Table 3.12: Projections of Non-Residential Sewage Volume - Sabesp and Arsesp

Description	Unit	Source	2017	2018	2019	2020
Water volume measured for housesholds with non-residential sewage connection	thousandm³	Sabesp	193,672	194,996	196,355	197,750
Water volume measured for housesholds with non-residential sewage connection	thousandm³	Arsesp	201,612	204,153	206,843	208,956

3.3. Demand from permissionaires

For the permissionaire's volume, Sabesp used population growth as a reference… For 2017 and 2018, the projected growth was 0.82% p.a., and the figure for the two-year period 2019-20 was 2.0% p.a.

The variations observed for this category are very substantial and make it impossible to assess a trend, However, it can be noted that this market already showed growth of 10% up to October 2017, (average consumption in 2017 was 20 million m³/month, while in 2016 it was 18 million m³/month), This pace of growth seems to be associated with a significant recovery in water consumption following the decreases that were observed during the water crisis.

Arsesp accepts Sabesp's proposal, but made an adjustment at the starting point (2017), given that the recovery of consumption in this segment has been very pronounced. Therefore, an adjustment was made to the growth projection for 2017, but the growth trajectory for the following years was kept as proposed in Sabesp's Business Plan.

Table 3.13: Projections of the Permissionaires' Volume - Sabesp and Arsesp

Description	Unit	Source	2017	2018	2019	2020
Permissionaires' volume	thousand m³	Sabesp	249,225	251,593	256,624	261,757
Permissionaires' volume	thousand m³	Arsesp	275,541	281,052	286,673	292,407

3.4. Projection of Total Demand

Based on each category's consumption projections, the total demand for water and sewage is obtained for the next tariff cycle. The tables below show the values projected by Sabesp and the values adjusted by Arsesp for all the market variables.

Table 3.14: Comparison between the projection of the water market variables - Arsesp and Sabesp

1. Sabesp Projections		2017	2018	2019	2020
Number of Active Households (Dec)	Units	10,884,802	11,081,887	11,274,665	11,457,359
Number of Active Connections (Dec)	Units	7,954,415	8,095,923	8,234,855	8,366,607
Water volume measured	m³	1,498,634,146	1,534,002,818	1,569,257,703	1,603,593,550
Water volume billed	m³	1,801,644,828	1,844,164,735	1,886,547,848	1,927,826,103
Wholesale Volume	m³	220,995,664	222,798,502	227,254,472	231,799,562
2. Arsesp Projections		2017	2018	2019	2020
Number of Active Households (Dec)	Units	10,898,549	11,095,755	11,287,916	11,469,561
Number of Active Connections (Dec)	Units	7,968,004	8,109,636	8,247,964	8,378,684
Water volume measured	m³	1,522,327,561	1,558,624,281	1,594,533,147	1,629,466,067
Water volume billed	m³	1,830,128,843	1,873,764,441	1,916,933,766	1,958,929,816
Wholesale Volume	m³	244,292,238	249,178,083	254,161,644	259,244,877

Table 3.15: Comparison between the projection of the sewage market variables - Arsesp and Sabesp

1. Sabesp Projections		2017	2018	2019	2020
Number of Active Households (Dec)	Units	9,456,953	9,708,135	9,965,353	10,216,616
Number of Active Connections (Dec)	Units	6,851,652	7,025,891	7,203,932	7,378,588
Water volume measured of households with sewage connection	m³	1,315,336,400	1,355,771,517	1,397,475,624	1,438,888,332
Sewage volume billed	m³	1,571,265,835	1,619,568,549	1,669,387,165	1,718,857,683
Wholesale Volume	m³	28,229,457	28,794,046	29,369,927	29,957,325
2. Arsesp Projections		2017	2018	2019	2020
Number of Active Households (Dec)	Units	9,474,376	9,725,855	9,983,039	10,233,299
Number of Active Connections (Dec)	Units	6,868,923	7,043,477	7,221,512	7,395,197
Water volume measured of households with sewage connection	m³	1,340,784,179	1,383,046,541	1,426,711,885	1,469,467,152
Sewage volume billed	m³	1,601,665,075	1,652,150,567	1,704,312,024	1,755,386,328
Wholesale Volume	m³	31,248,970	31,873,949	32,511,428	33,161,657

For the calculation of the volumes billed, the historical ratio between measured and billed is used to calculate the total market. Sabesp has projected a trend for this ratio. It was proposed to use the value that was observed in 2016, as there is no trend for the evolution of this relationship over the next few years.

Table 3.16: Comparison between the total water and sewage volume billed - Sabesp and Arsesp

Description	Unit	Source	2017	2018	2019	2020
Total volume billed (A+E)	thousand m³	Sabesp	3,627,131	3,725,470	3,828,116	3,929,680
Total volume billed (A+E)	thousand m³	Arsesp	3,707,335	3,806,967	3,907,919	4,006,723

Econometric models were constructed based on state-space[2] - time-series models, the purpose of which is to assess the behavior of structural components, such as trend, cycle and seasonality, in addition to identifying outliers in the series.

The models with outlier control point to a still significant drop in 2017. It is important to note that these models do not include independent variables, so that they reflect only the statistical movement of the series and are not able to capture recovery movements generated by external factors, such as improvements in income and changes in consumption habits, for example, as can be seen from the market data observed for 2017, the market showed positive growth. After 2018, the volume should once again grow in accordance with the model constructed.

When the average growth rate of the period (2018-2020) is verified, it shows 2% p.a., for water, which is similar to the result obtained using the assumptions adjusted by Arsesp[3]. For sewage, the result is slightly more positive, to the order of 4.5% p.a., which is similar to that projected using Arsesp's adjustments. Therefore, it is deemed that the projections constructed are in line with the expected long-term statistical movements

Graph 3.2: Comparison of models of water market projection (total volume billed)
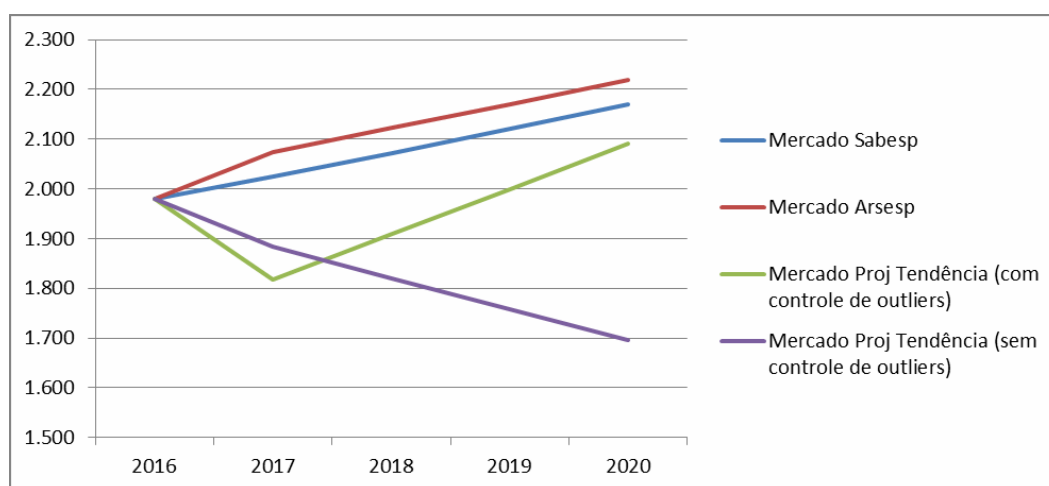
Key:
Sabesp Market

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[2] HARVEY, Andrew C. *Forecasting, structural time series models and the Kalman filter*. Cambridge University Press, 1990.

[3] It should be noted that 2% p.a., includes a significant drop in 2017. Thus the average growth indicated by Arsesp can be regarded as conservative, to the extent that positive growth has already been observed in 2017.

Arsesp Market
Market Projection Trend (with outlier control)
Market Projection Trend (without outlier control)

Graph 3.3: Comparison of models of sewage market projection (total volume billed)
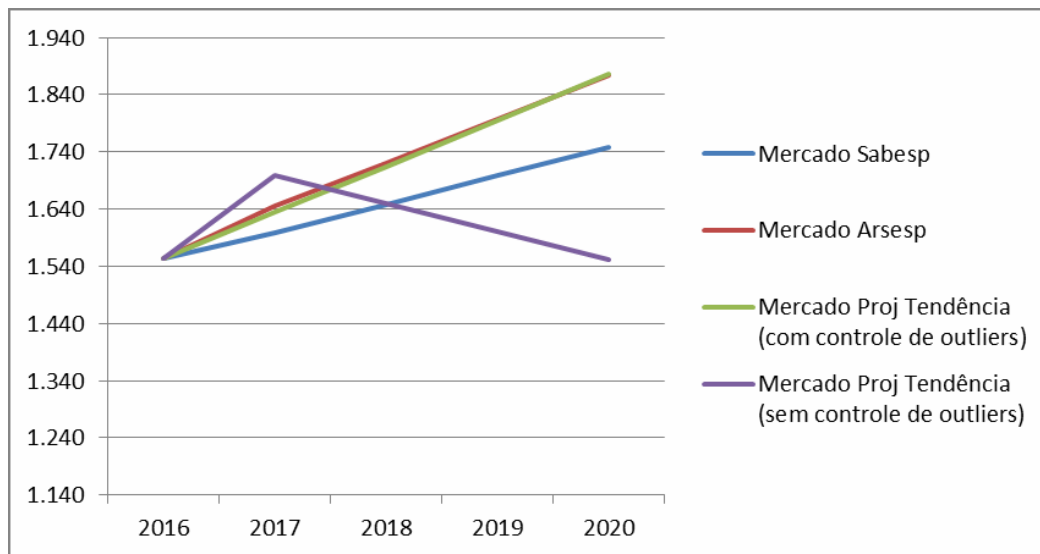
Key:
Sabesp Market
Arsesp Market
Market Projection Trend (with outlier control)
Market Projection Trend (without outlier control)

4. PROJECTION OF WATER SUPPLY AND SEWAGE TREATMENT

In order to calculate the volume of water to be produced, in addition to the volume required to meet the projected water demand, it is necessary to include the volume corresponding to the losses occurring throughout the distribution process. However, this volume is based on water supply systems that meet efficiency standards, in such a way as to achieve and maintain the loss levels within limits that are acceptable from the regulatory point of view. In addition to the water losses, the volume produced should include the volumes reserved for meeting so-called special activities, which correspond to the social, emergency, operating and own uses.

4.1. Water losses

The tariff regime used defines a maximum price mechanism based on the company's efficient costs projected for the tariff cycle. The control of water losses has a direct impact on production costs, given that higher losses require a greater production of water, which influences the consumption of electric energy and chemical products, along with other factors which have a major role in the cost structure. There is also an impact on revenue, resulting from the apparent or commercial losses from under-measurement of

consumption, for example.

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

The Agency understands that the trajectory of losses should be signaled both for the medium term as well as for the long term, making it possible for the provider to seek to exceed the target. It is important to clarify that the "regulatory" loss target is defined for projection of efficient costs for the cycle, not to be confused with or to replace the contractual targets agreed with the municipalities. From the tariff point of view, maintaining higher levels of losses than that established in the RTO implies additional operating costs to produce this volume of water, which will not be recognized in the tariff.

In its Business Plan Sabesp presented the projection of losses, indicating a 6% reduction over the course of the entire tariff cycle, starting off at 301 liters/connection/day in 2016 and dropping to 281 liters/connection/day in 2020.

For this period, Sabesp indicates that it will increase investments in "Loss Reduction and Control" by around 10% a year[4]. Therefore, Arsesp considered that the projected loss reduction forecast was too low in relation to the investments.

As indicated in technical note NT.F-0003-2018, which defined the methodology for Sabesp's 2nd RTO, the weighted average of the program contracts was adopted as the starting point and an additional amount was defined in relation to efficiency based on benchmarking with other companies for the remaining years of the cycle. To provide a broad clarification, the contract targets and each municipality's number of connections used to calculate the weighted average were presented in a summarized form in Exhibit II.

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[4] In the previous cycle, there was a 17% decrease in the loss level (from 363 liters/connection/day in 2013 to 301 liters/connection/day in 2016). During this period, investments to combat losses were also reduced, but due to the water crisis there was a policy of control and a reduction of pressure, which led to a reduction in the losses.

In order to arrive at a more consistent trajectory, initially an attempt was made to do a benchmarking assessment, considering clusters of companies. However, Sabesp exhibits very different characteristics in relation to the country's other sanitation providers, always being in an individual cluster.

As an alternative, the 26 sanitation companies with regional operations were divided into four quartiles, considering the daily losses per extension in 2016, as shown below:

Table 4.1: Selection of companies for benchmarking

Quartile	Service Provider*	Losses in 2016 (liters/connection/day)
1	COPANOR	63.73
1	SANEAGO	168.25
1	SANEATINS	186.54
1	COPASA	219.91
1	CAGEPA	229.27
1	SANEPAR	232.43
2	CAGECE	245.69
2	SANESUL	261.42
2	EMBASA	278.61
2	SABESP	306.74
2	AGESPISA	330.65
2	CORSAN	340.67
2	DESO	355.07
3	CASAN	367.52
3	CAESB	376.70
3	COMPESA	379.81
3	CESAN	409.98
3	CAERN	426.14
3	COSANPA	507.87
4	CEDAE	642.67
4	CASAL	692.08
4	CAERD	712.84
4	DEPASA	954.27
4	CAEMA	958.00
4	CAER	1147.85
4	CAESA	1827.30

Source: National Sanitation Information System, SNIS

(*) The highlighted companies are regarded as outliers based on 1 standard deviation in relation to the average,

Figure 4.1: "Clustering" of Providers
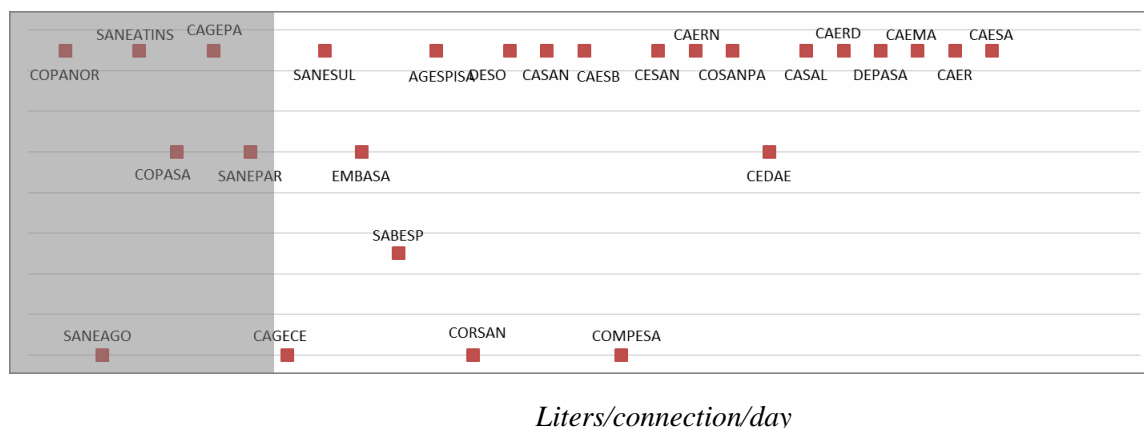
Liters/connection/day

For benchmarking analysis, only those companies that provide water and sewage services with regional coverage were selected. The figures used for the analysis were those obtained from the National Sanitation Information System (SNIS) for the years 2013, 2014 and 2016. Bearing in mind that the figures for 2015 were significantly affected by the water crisis, it was decided to exclude them from the sample.

The clustering of companies was constructed based on the geometric mean of the Euclidean distances of the following variables[5]: number of water households; volume of water produced; number of employees; households per employee; average water consumption; micro-measurement index; level of socioeconomic conditions[6]. It should be noted that Sabesp forms an exclusive cluster - even using different variables, the company continues to be in a separate cluster.

On the other hand, when we observe the distribution of the daily losses per connection, it can be observed that Sabesp is not the reference. In 2016 the company had a loss level of 300.7 liters/connection/day[7], while the lowest value in the sample is 64 liters/connection/day (COPANOR) and the cutoff value for the first quartile is 242 liters/connection/day, after excluding outlier values, which are highlighted in Table 4.1 above, Sabesp can be found in the second quartile.

Therefore, Arsesp adopted a loss reduction trajectory for Sabesp <u>towards the first quartile</u> (**242.38**

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[5] The variables used were those that exhibited the highest correlation with the losses. The Euclidean distance is calculated as the difference between the values observed for each variable between the companies. The differences are squared and the square root of their sum is calculated. Each company now has a distance in relation to all the rest. The companies that are "closest" companies are aggregated into a cluster. We worked with a set of 4 clusters.

[6] Calculated based on the ANEEL methodology for the identification of complexity in combating commercial energy losses, it includes a set of socioeconomic variables: violent deaths; % of people with a per capita income of less than ½ the minimum wage; the Gini index; % of people in subnormal homes; urban waste collection; default in the credit industry. All variables are calculated at the state level. A methodological breakdown can be found in NT no. 106/2015/SGT/SRM/ANEEL.

[7] Value given in Sabesp's Business Plan.

liters/connection/day) over the course of the tariff cycle. This trajectory represents a 19% decrease in the level of losses, similar to the movement achieved in the previous cycle, this loss reduction is equivalent to a change in the percentage of losses, from 31.8% in 2016 to 26.4% in 2020.

The following graph shows the evolution of the regulatory loss index:

Graph 4.2 - Evolution of the loss index (liters/connection/day)

	2016	2017	2018	2019	2020
■ Sabesp	300,68	302,64	296,87	288,77	281,27
■ Arsesp	300,68	284,91	269,96	255,79	242,38
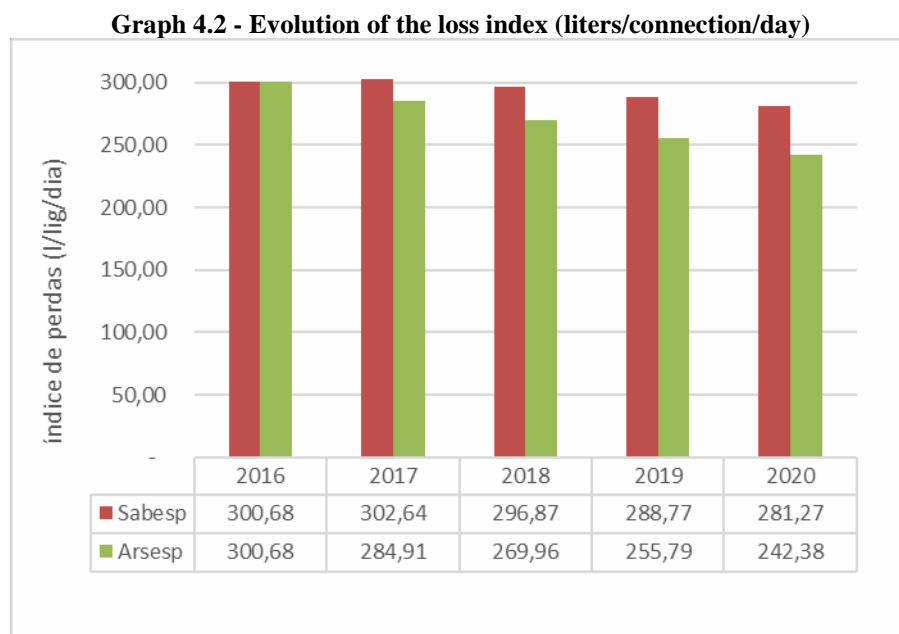
Key:

Loss index (liters/connection/day)

It should be stressed that Sabesp will have a guaranteed tariff level that will support the operating costs for water production, taking into account the level of regulatory losses. Over and above this limit, the costs will be borne by Sabesp rather than by the users.

Although the Agency has revised the starting point for the level of regulatory losses in relation to the level that was expected at the end of the previous cycle, it is understood that the loss trajectory should be signaled for the medium and long term. The scenario presented due to the scarcity of water in the period 2014-2015 was a key factor behind Arsesp's decision to revise the trajectory, on the basis that this event led to distortions in the track record of Sabesp's losses.

4.2. Special uses

The volume for special uses corresponds to the amount of water earmarked for social, operating, emergency and own use. The amount for social use is related to the estimated volume consumed illegally in irregular communities, which have some form of water supply, but where there is no billing by Sabesp. The amount of water used by the Fire Department is also classified as social use, "Operating use" refers to the volume of water used for washing filters or any activity in the production stage, but not included in the loss indicator.

According to the water inventory of the International Water Association (IWA), the volume used for operating activities, such as the washing of filters, as well as illegal consumption, is regarded as "Unbilled authorized consumption".

For special uses, Arsesp adopted the same percentage of growth in the volume distributed, based on the value verified in 2016.

4.3. Projection of the total volume of water produced

The water production recognized in the tariff definition corresponds to the sum of the following volumes:

- Total water demand projected for residential and non-residential users and permissionaires;

- Volume for special uses; and

- Regulatory losses,

Therefore, taking into account the projection of the volume of water approved by Arsesp, the annual loss index and the volume of special uses, the total volume produced recognized by Arsesp for the next tariff cycle is shown in the table below:

Table 4.2 - Results of Arsesp's projections for the volume produced (2017-2020)

Description	Unit	Source	2016	2017	2018	2019	2020
Loss Index	liters/connection/day	Arsesp	300.68	284.91	269.96	255.79	242.38
Loss Index	%		31.8%	30.0%	28,8%	27.6%	26.4%
Active water connection	unit		7,812,366	7,968,004	8,109,636	8,247,964	8,378,684
Volume of losses	m³		857,392,353	828,595,370	799,079,945	770,072,316	741,235,954
Volume distributed	m³		1,683,517,582	1,766,619,799	1,807,802,363	1,848,694,792	1,888,710,944
Volume for special uses	m³		155,292,434	162,958,018	166,756,815	170,528,848	174,220,051
Volume of water produced	**m³**		2,696,202,369	**2,758,173,187**	**2,773,639,123**	**2,789,295,955**	**2,804,166,950**

4.4. Projection of treated sewage volume

Another component related to the market variables is the treated sewage volume. Its projection is based on a ratio between the volume treated and the volume collected converging on Sabesp's targets and is shown in the following table:

Table 4.3 - Evolution of the sewage treatment index (2016-2020)

Description	Source	2016	2017	2018	2019	2020
Sewage Treatment Index	Sabesp	83.1%	82.6%	82.7%	83.0%	88.1%

In 2016, the value observed for the treatment index was 83.1%. The projection starts off at 82.6% in 2017 rising to 88.1%[8] in 2020.

Bearing in mind that one of Sabesp's goals is to achieve a 95% rate of sewage treatment by 2030, it is reasonable for it to achieve 88.1% by 2020. The program contracts exhibit individual targets for each municipality, subject to periodic inspection by Arsesp, with failure to provide the service being grounds for a disciplinary process.

The projections for water production and sewage treatment are used in the tariff model as drivers for the forecast of operating costs. Compliance with loss and treatment indexes involves disciplinary issues, based on the contract criteria. In the future, these indicators may also have a direct tariff effect by means of the application of the General Quality Index (Factor Q).

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[8] The rise in the indicator is consistent with the speeding up of investments aimed at expanding the network and sewage treatment at the end of the cycle.

5. OPERATING COSTS AND EXPENSES (OPEX)

5.1. Adjustments for unrecognized OPEX

In accordance with the methodology (Technical Note NT.F-0003-2018), Arsesp carried out qualitative disallowance of expense accounts which are not recognized in operating costs due to their nature. In addition, the figures for 2016 in relation to research, development and innovation related accounts were excluded from the OPEX projection for 2020, the year in which the specific fund for PDI will be applied, as mentioned further on. PDI expenditure accounts were identified in the General Expenses, Third Party Services and General Materials group, with this last item showing a value equal to zero in 2016. Taking into account the expenses for 2016, which is the base year for projection, the percentage disallowed was 5.3% of total operating costs. The breakdown of this expense group is shown in the table below.

Table 5.1: Percentage of unrecognized expenses in the base year 2016

Expense Group	% Disallowed
Personnel	4.8%
General materials	0.1%
Treatment materials	0.0%
Third-party services	0.8%
Energy	0.5%
Overheads	33.0%
Total Opex	**5.3%**

5.2. Projection of operating costs

The model for the projection of operating costs is based on the calculation of unit costs by purpose and production stage, using the drivers shown in Table 5-2 below.

Table 5.2: Drivers used for the projection of operating costs (OPEX)

WATER SUPPLY SYSTEMS		
PURPOSE	**PRODUCTION**	**DISTRIBUTION**
PERSONNEL	Average compensation (R$/employee)	Average compensation (R$/employee)
	Employee per volume of water produced (employee/m³)	Employee per water connection (employee/connection)
GENERAL MATERIALS	Volume of Water Produced	Water Connections
TREATMENT MATERIALS	Average Cost of material (R$/ton)	Average Cost of material (R$/ton)
	Treatment material per volume of water produced (ton/m³)	Treatment material per volume of water measured (ton/m³)
SERVICES	Volume of Water Produced	Water Connections
ENERGY	Average Cost of Energy (R$/MWh)	Average Cost of Energy (R$/MWh)
	Energy per volume of water produced (MWh/m³)	Energy per volume of water measured (MWh/m³)
OVERHEADS	Volume of Water Produced	Water Connections
SANITARY SEWAGE SYSTEMS		
PURPOSE	**COLLECTION**	**TREATMENT**
PERSONNEL	Average compensation (R$/employee)	Average compensation (R$/employee)
	Employee per sewage connection (employee/connection)	Employee per volume of sewage treated (employee /m³)
GENERAL MATERIALS	Sewage Connections	Volume of Sewage Treated
TREATMENT MATERIALS	Average Cost of material (R$/ton)	Average Cost of material (R$/ton)
	Treatment material per volume of sewage collected (ton/m³)	Treatment material per volume of sewage treated (ton/m³)
SERVICES	Sewage Connections	Volume of Sewage Treated
ENERGY	Average Cost of Energy (R$/MWh)	Average Cost of Energy (R$/MWh)
	Energy per volume of sewage collected (MWh/m³)	Energy per volume of sewage treated (MWh/m³)
OVERHEADS	Sewage Connections	Volume of Sewage Treated
COMMERCIAL AND ADMINISTRATIVE SYSTEMS		
PURPOSE	**COMMERCIAL**	**GENERAL ADMINISTRATION**
PERSONNEL	Average compensation (R$/employee)	Fixed
	Employee per water connection (employee/connection)	
GENERAL MATERIALS	Water Connections	Fixed
TREATMENT MATERIALS	Average Cost of material (R$/ton)	Fixed
	Treatment material per water collection (ton/m³)	
SERVICES	Water Connections	Fixed
ENERGY	Average Cost of Energy (R$/MWh)	Fixed
	Energy per water connection (MWh/m³)	
OVERHEADS	Water Connections	Fixed

The drivers used to determine operating costs were projected as indicated in Sections 3 and 4 of this Technical Note. For the general material, third party services and overheads groups, the unit costs (OPEX/driver) were established based on the amounts observed in 2016. In the case of personnel expenses, treatment materials and electricity, the drivers were segregated into physical components and unit prices, Both the projection of the physical components - employees, tons of chemical product and energy consumption - and unit prices (OPEX/physical component) were also based on the amounts observed in 2016.

Based on the establishment of the unit costs, specific consumption and unit prices, and on the projection of the drivers, the projection of the operating costs for the tariff cycle was obtained. Summing up, the calculation sequence is as follows:

a. Calculation of the annual disallowance per expenditure group (Personnel, General Materials, Treatment Material, Energy, Third Party Services and Overheads);

b. Projection of cost drivers, in accordance with the previous sections;

c. Application of the annual disallowance percentages to the annual OPEX figures, excluding the amounts in relation to the Alto Tietê PPP;

d. Calculation of the unit cost (OPEX/driver) for the General Materials, Third Party Services and Overheads categories in 2016;

e. Calculation of the specific consumption (employees, GWh, tons of chemical materials/driver) and unit prices (OPEX/employees, GWh, tons of chemical materials) for the Personnel, Material Treatment and Energy categories in 2016;

f. Projection of the General Materials, Third Party Services and Overheads categories maintaining the 2016 unit costs constant and using the projections generated in the previous sections for the drivers;

g. Projection of the Personal, Treatment and Energy categories, considering the unit price and 2016's specific consumption as constant and using the projections generated in the previous sections for the drivers.

It should be noted that notwithstanding the differentiation in the Personnel, Treatment Material and Energy projections, the values obtained would be the same if the unit costs were directly applied. However, this breakdown makes it possible to construct indices that can be monitored in a more detailed way over the course of the cycle and that can generate elements for a reassessment of the projection strategies for the following cycles.

The adjustments made by Arsesp represented an average reduction of 14.76% in operating costs vis-à-vis the figures reported by Sabesp in the Business Plan for the period 2017-2020, as shown in Table 5.4.**Table 5.3:**

Table 5.3: Projected Operating Costs Sabesp and Arsesp - R$ thousand Dec/16

Description	2017	2018	2019	2020
TOTAL OPEX **Sabesp Business Plan**	**5,983,654**	**6,354,444**	**6,243,673**	**6,217,810**
Personnel	2,387,888	2,381,372	2,337,804	2,308,317
General Materials	234,372	240,551	243,774	247,287
Treatment Materials	338,184	334,672	336,598	336,469
Third Party Services	1,555,467	1,880,849	1,883,555	1,890,394
Electricity	868,711	989,173	992,993	1,059,492
Overheads	599,032	527,827	448,948	375,851
REGULATORY TOTAL OPEX **Arsesp Projections**	**5,115,635**	**5,257,096**	**5,339,129**	**5,422,973**
Personnel	2,105,871	2,161,997	2,196,091	2,230,818
General Materials	182,588	188,495	192,088	195,770
Treatment Materials	284,446	292,871	296,767	300,866
Third Party Services	1,229,626	1,265,205	1,287,678	1,310,512
Electricity	947,787	977,547	992,103	1,007,145
Overheads	365,317	370,982	374,403	377,863
DIFFERENCE TOTAL OPEX **Arsesp versus Sabesp**	**-868,019**	**-1,097,348**	**-904,544**	**-794,837**
Annual Percentage Difference	**-14.51%**	**-17.27%**	**-14.49**	**-12.78**
Average Percentage Difference for the Period	**-14.76%**			

It is important to bear in mind that the amounts projected by Arsesp also exclude amounts related to revenues from Public-Private Partnerships (PPPs) and asset leases. The reduction calculated in the efficiency sharing Factor - Factor X, which is described in a specific section further on, will be applied to operating costs.

5.3. Consideration from Public-Private Partnerships and Asset Lease

Consideration from Public-Private Partnerships and asset lease makes up a specific component of cash flow, which is added to OPEX each year. The amounts taken into account for the period 2017-2020 are described in the Table below.

Table 5.4: Consideration from PPPs and asset lease - R$ Dec/16

Description	2017	2018	2019	2020
Asset Lease	54,482,904	84,233,400	84,233,400	84,233,400
Alto Tietê PPP	118,119,519	118,119,519	118,119,519	118,119,519
São Lourenço PPP	-	374,012,904	374,012,904	374,012,904
Total	172,602,423	576,365,823	576,365,823	576,365,823

Factor X is not applied to this component. Investments made by means of PPPs and asset leases are not included in the amount projected for CAPEX, nor the Basis for Regulatory Remuneration, as explained in detail in Exhibit V of this Technical Note.

6. OTHER OPERATING COSTS

6.1. Costs of Default: Irrecoverable Revenues

As already presented in Technical Note NT.F-0003-2018, the regulatory percentage of irrecoverable revenues will be obtained by means of the debt aging methodology and will not include default in the wholesale market.

In this model, monthly billing not received by the reference date is compared to the provider's monthly billing in a long series (in this case a period of 60 months is used), generating a monthly non-receipt index. For the definition of the percentage of irrecoverable revenue to be applied to direct operating revenue, the stabilization point will be taken into account.

Graph 6.1: Aging of default (logarithmic scale)
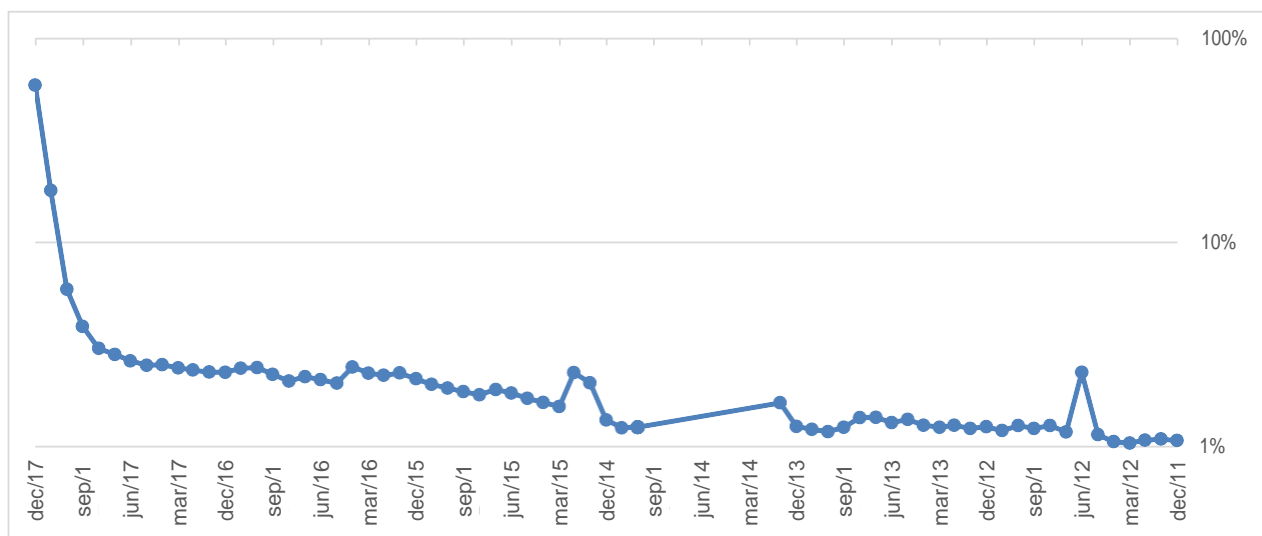
By means of the above graphical analysis, a stabilization in the default index can be observed with effect from month 48 (Dec/13). The figures for months 40 through 47 are not shown. The table below shows the average percentage of default per year. The percentage to be considered for the next tariff cycle is 1.29% of direct revenue. The projected values are shown in table 6.2 below.

Table 6.1: Sabesp's Average Default

Year	%
2017	8.97%
2016	2.28%
2015	1.91%
2014	N/A
2013	**1.29%**
2012	1.28%

Table 6.2: Irrecoverable regulatory revenues - from 2017 to 2020 - R$ thousand Dec/2016

Description	2017	2018	2019	2020
Direct Revenue	13,433,593	13,794,611	14,160,411	14,518,429
% of default	1.29%	1.29%	1.29%	1.29%
Provision for irrecoverable revenues	172,960	177,608	182,318	186,927

6.2. Fund for Expenditure on Municipal Obligations in Sanitation

Article 13 of Federal Law no. 11445/2007 authorized the setting up of funds for the purpose of financing the universalization of basic public sanitation services, in accordance with the municipal sanitation plans. Therefore, it is a true public policy instrument which is designed to contribute to and strengthen the sources of funds required for universalization of basic public sanitation services, namely:

> Article 13, The entities of the Federation, alone or together in public consortia, may establish funds, to which may be allocated, along with other resources, portions of the revenues from services, for the purpose of financing the universalization of basic public sanitation services, in accordance with the provisions of the respective basic sanitation plans.
>
> Sole paragraph, The funds referred to in the main section of this article may be used as sources or guarantees for credit operations aimed at financing the investments required for the universalization of basic public sanitation services.

In this way, the recognition of this item as a cost of the provider is duly provided for in the law that governs the basic sanitation sector.

In the urban area, the search for universalization implies expanding coverage, particularly on the outskirts of the cities, which are predominantly occupied by the low-income population and which, due to the complexity of the construction work, require joint action on the part of the owners of basic public sanitation services and the provider.

In other words, in order to for it to be possible to expand the water supply and sewage systems infrastructure and operating facilities, certain investments and actions are required, which are the responsibility of the municipalities and not directly of the service providers, such as urbanization of informal communities and settlements, land regularization and the channeling of streams, among other initiatives, which are essential

for expanding the water and sewage system.

As indicated in Technical Note NT.F-0003-2018, the Fund for Expenditure on Municipal Obligations for Sanitation should reflect a regulatory limit of the transfers made by the Provider to the regulated municipal funds, the purpose of which is to allocate funds for basic sanitation construction projects, as established by Law 11445/07. Arsesp has set a percentage of 4% of the direct operating revenue obtained in the respective municipality that set up the Fund as a regulatory limit. The lower of the percentage established by the municipality in its contract with the Provider and the regulatory limit of 4% will be recognized in the tariff. Values in excess of the regulatory limit (4%) will be restricted to the municipality.

For the projection of this component in the 2017-2020 tariff cycle, the criterion adopted by the Agency when there is a legal and contractual provision for a fund for basic sanitation works, was to only include in the tariff calculation the percentage limit of 4% of Sabesp's direct revenue in the municipality.

In its Business Plan, Sabesp included a list of the municipalities and of the rules for calculating the expenditures agreed in the program and service contracts. Upon analyzing the respective agreements, Arsesp identified that only the Municipality of São Paulo meets the prerequisites established in Technical Note NT.F- 0003-2018. Other municipalities have transfers linked to sanitation construction works, but the existence of a specific municipal fund was not identified. To the extent that over the course of the current cycle the municipalities set up funds that meet the established prerequisites, the amounts effectively paid by Sabesp will be the subject of compensatory adjustment in the next tariff cycle, limited to 4% of the direct operating revenue from each municipality.

Therefore, a constant percentage of 1.84% of Sabesp's direct revenue, which corresponds to the regulatory limit of 4% of the net revenue from the Municipality of São Paulo, was recognized in the tariff calculation.

6.3. Fund for Research, Development and Innovation (PDI)

The adoption of a Research, Development and Innovation program is already envisaged in the electricity distribution (ANEEL) and piped gas distribution (Arsesp) sectors, since it makes it possible to encourage and, at the same time, to provide resources to be applied in projects that exhibit relevance and economic feasibility in the water supply and sanitary sewage processes. As a result of this, we have the creation of a virtuous circle in a segment where there is little incentive for technological innovation.

As established in Technical Note NT.F-0003-2018, the forecast is that a percentage of the revenue for PDI will only be applied in 2020, given the fact that in the period 2018-2019. Arsesp will publish a specific resolution, indicating the rules for validation of PDI projects, and Sabesp will have sufficient time to adjust its internal processes for the selection and contracting of projects.

Therefore, an initial percentage of 0.05% of the direct required revenue for the year 2020 was included in the calculation of P0, which corresponds to R$7,259,214.

A compensatory adjustment will be made at the end of the tariff cycle, based on what is actually carried out in 2020, and the percentage may be adjusted for the next cycle with a view to reflecting the conditions under which projects are contracted.

7. INVESTMENTS (CAPEX)

7.1. Investment plan

As indicated in NT.F-0003-2018, Sabesp provided information regarding disbursements, fixed assets and physical data, with the breakdown of this being shown in the table below.

Table 7.1: Breakdown of the Investment Plan presented by Sabesp

Região	Produto	Programa	Aplicação	Segmento
1. RMSP 2. INTERIOR 3. LITORAL	1. ÁGUA 2. ESGOTO 3. AÇÕES CORPORATIVAS 4. ENERGIA 5. SERVIÇOS	1. APOIO OPERACIONAL 2. CÓRREGO LIMPO 3. CRESCIMENTO VEGETATIVO 4. EFICIÊNCIA ENERGÉTICA 5. FROTA 6. INSTALAÇÕES E EQUIPAMENTOS ADMINISTRATIVOS 7. NOVOS NEGÓCIOS 8. ONDA LIMPA BAIXADA SANTISTA 9. ONDA LIMPA LITORAL NORTE 10. PRÓ-BILLINGS 11. PROGRAMA DE ÁGUA DO INTERIOR 12. PROGRAMA DE ÁGUA DO LITORAL 13. PROGRAMA DE ESGOTO DA RMSP 14. PROGRAMA DE ESGOTO DO INTERIOR 15. PROGRAMA DE ESGOTO DO LITORAL 16. PROGRAMA DO VALE DO RIBEIRA 17. PROGRAMA METROPOLITANO DE ÁGUA - PMA 18. PROJETO TIETÊ 19. REDUÇÃO E CONTROLE DE PERDAS 20. SERVIÇOS E ESTUDOS TÉCNICOS 21. TECNOLOGIA DA INFORMAÇÃO 22. VIDA NOVA (MANANCIAIS)	1. EXPANSÃO DE SISTEMAS 2. MELHORIA DE SISTEMAS OU RENOVAÇÃO DE ATIVOS 3. DESENVOLVIMENTO OPERACIONAL 4. EFICIÊNCIA ENERGÉTICA 5. DESENVOLVIMENTO INSTITUCIONAL 6. SERVIÇOS ESPECIAIS	1. ACOMPANHAMENTO TÉCNICO DE OBRA 2. ADUÇÃO DE ÁGUA BRUTA 3. ADUÇÃO DE ÁGUA TRATADA 4. APOIO OPERACIONAL 5. ARMAZENAMENTO 6. BOCA COLETORA 7. BP ADMINISTRATIVO 8. CAPTAÇÃO 9. COLETOR TRONCO 10. COMERCIALIZAÇÃO 11. CONSULTORIA, ASSESSORIA, SERVIÇO DE ENGENHARIA 12. CONTROLE TECNOLÓGICO 13. ELEVAÇÃO DE ÁGUA BRUTA 14. ELEVAÇÃO DE ÁGUA TRATADA 15. ELEVAÇÃO DE ESGOTO 16. EMISSÁRIO 17. EQUIPAMENTO AUTOMOTIVO 18. GÁS 19. GERAÇÃO 20. GERENCIAMENTO 21. HIDRÔMETRO 22. INSTALAÇÃO ADMINISTRATIVA 23. INTERCEPTAÇÃO 24. LIGAÇÃO 25. LINHA DE RECALQUE 26. LODO E DISPOSIÇÃO FINAL 27. MACROMEDIÇÃO 28. MANANCIAL 29. PONTO DE COLETA 30. REDE 31. RESERVAÇÃO 32. REUSO DE EFLUENTES 33. SETORIZAÇÃO 34. TECNOLOGIA DA INFORMAÇÃO 35. TRANSBORDO 36. TRANSPORTE 37. TRATAMENTO 38. UNIDADE DE MEDIÇÃO DE ÁGUA - UMA 39. VEÍCULO

Key:

REGION	PRODUCT	PROGRAM	APPLICATION	SEGMENT
1. RMSP (METROPOLITAN REGION OF SÃO PAULO) 2. INTERIOR OF THE STATE 3. COASTAL REGION	1. WATER 2. SEWAGE 3. CORPORATE ACTIONS 4. ENERGY 5. SERVICES	1. OPERATIONAL SUPPORT 2. CLEAN STREAM 1. PLANT GROWTH 4. ENERGY EFFICIENCY 5. FLEET 6. ADMINISTRATIVE FACILITIES AND EQUIPMENT 7. NEW BUSINESS 8. ONDA LIMPA (CLEAN WAVE) BAIXADA SANTISTA 9. ONDA LIMPA (CLEAN WAVE) NORTHERN COASTAL REGION 10. PRO-BILLINGS 11. STATE INTERIOR WATER PROGRAM	1. EXPANSION OF SYSTEMS 2. IMPROVEMENMT OF SYSTEMS OR RENEWAL OF ASSETS 3. OPERATIONAL DEVELOPMENT 4. ENERGY EFFICIENCY 5. INSTITUTIONAL DEVELOPMENT 6. SPECIAL SERVICES	1. TECHNICAL MONITORING OF CONSTRUCTION PROJECT 2. INTAKE OF RAW WATER 3.INTAKE OF TREATED WATER 4. OPERATIONAL SUPPORT 5. STORAGE 6. COLLECTION POINT 7. ADMINISTRATIVE BP 8. CATCHMENT 9. TRUNK COLLECTOR 10. COMMERCIALIZATION 11. CONSULTANCY, ADVISORY, ENGINEERING SERVICES 12. TECHNOLOGICAL CONTROL

| | | 12. COASTAL REGION WATER PROGRAM
13. RMSP SEWAGE PROGRAM
14. STATE INTERIOR SEWAGE PROGRAM
15. COASTAL REGION SEWAGE PROGRAM
16. VALE DO RIBEIRA PROGRAM
17. METROPOLITAN WATER PROGRAM - PMA
18. TIETÊ PROJECT
19. REDUCTION AND CONTROL OF LOSSES
20. TECHNICAL SERVICES AND STUDIES
21. INFORMATION TECHNOLOGY
22. VIDA NOVA (NEW LIFE) (WATER SOURCES) | | 13. PUMPING OF RAW WATER
14. PUMPING OF TREATED WATER
15. PUMPING OF SEWAGE
16. OUTFALL
17. AUTOMOBILE EQUIPMENT
18. GAS
19. GENERATION
20. MANAGEMENT
21. WATER METER
22. ADMINISTRATIVE FACILITY
23. INTERCEPTION
24. CONNECTION
25. PRESSURE VALVE
26. SLUDGE AND FINAL DISPOSAL
27. MACRO-MEASUREMENT
28. WATER SOURCE
29. COLLECTION POINT
30, NETWORK
31 STORAGE
32. REUSE OF EFFLUENTS
33. SECTORING
34. INFORMATION TECHNOLOGY
35. SPILLOVER
36. TRANSPORT
37. TREATMENT
38. WATER MEASUREMENT UNIT (UMA)
39. VEHICLE |

It was also established that the information should be provided per municipality and per type of investment up until December 2019, thus enabling a more in-depth analysis and monitoring by the Agency of investments made over the course of the cycle.

As defined in the methodology of the 2nd RTO (Technical Note NT.F-0003-2018), henceforth Arsesp will consider the projected investments in fixed assets rather than the projected disbursement for the purposes of the discounted cash flow calculation, stimulating greater efficiency in investment in fixed assets and adherence between the amounts covered by the tariff and the benefits directly perceived by the user, by means of assets in service. The projections for the plan for investment in fixed assets sent by Sabesp are presented, by program, in Table 7.2 below, Arsesp's analysis is detailed in Exhibit III of this Technical Note.

Table 7.2: Sabesp Plan for Investment in Fixed Assets by Program - R$ thousand - Dec/2016

Products	2017	2018	2019	2020	2021	Total	%
TIETÊ PROJECT	859,573	705,120	354,551	1,480,309	1,253,016	4,652,568	30.0%
REDUCTION AND CONTROL OF LOSSES	465,862	759,106	610,594	528,472	529,740	2,893,773	18.6%
METROPOLITAN WATER PROGRAM - PMA	220,707	1,169,355	143,217	94,894	135,844	1,764,017	11.4%
VEGETATIVE GROWTH - SEWAGE	169,829	161,316	180,471	172,729	217,781	902,126	5.8%
VEGETATIVE GROWTH - WATER	138,353	136,424	146,456	159,541	175,950	756,724	4.9%
ONDA LIMPA (CLEAN WAVE) BAIXADA SANTISTA	97,247	53,533	12,877	23,679	442,377	629,713	4.1%
RMSP (METROPOLITAN REGION OF SÃO PAULO) SEWAGE PROGRAM	59,967	110,640	126,400	124,724	178,878	600,609	3.9%
COASTAL REGION WATER PROGRAM	49,695	79,805	75,037	132,463	226,030	563,029	3.6%
INFORMATION TECHNOLOGY	120,117	93,920	81,609	97,245	102,447	495,337	3.2%
TECHNICAL SERVICES AND STUDIES	59,528	98,326	90,816	99,851	101,331	449,852	2.9%
COASTAL REGION SEWAGE PROGRAM	53,620	57,856	69,976	90,726	151,887	424,064	2.7%
STATE INTERIOR SEWAGE PROGRAM	131,848	58,504	47,058	29,870	66,945	334,224	2.2%
STATE INTERIOR WATER PROGRAM	44,897	69,543	59,955	48,142	44,390	266,927	1.7%
PRÓ-BILLINGS	6,932	41,797	78,019	58,415	39,503	224,667	1.4%
VIDA NOVA (NEW LIFE) WATER SOURCES	9,126	41,509	32,658	19,235	19,235	121,761	0.8%
ADMINISTRATIVE FACILITIES AND EQUIPMENT	17,536	16,443	28,036	21,149	20,423	103,586	0.7%
VALE DO RIBEIRA PROGRAM	13,766	16,582	20,733	21,126	28,767	100,974	0.7%
CÓRREGO LIMPO (CLEAN STREAM)	8,000	9,000	23,803	26,033	26,033	92,869	0.6%
OPERATIONAL SUPPORT	16,066	15,704	16,211	17,045	17,278	82,304	0.5%
ENERGY EFFICIENCY	2,108	3,510	8,720	8,720	8,700	31,758	0.2%
ONDA LIMPA (CLEAN WAVE) NORTHERN COASTAL REGION	4,901	13,785	-	-	-	18,686	0.1%
FLEET	2,200	330	1,304	1,000	3,407	8,241	0.1%
NEW BUSINESS	1,331	150	1,000	1,000	1,000	4,481	0.0%
Overall Total	**2,553,206**	**3,712,257**	**2,209,499**	**3,256,367**	**3,790,960**	**15,522,290**	**100.0%**

With regard to the values projected by Sabesp in its Business Plan, Arsesp only failed to recognize the investments in special services related to new business (R$3.5 million in the period), given that these are linked to capital injections in companies in which Sabesp is a partner and are not part of the set of municipalities operated by Sabesp and which are taken into account under the scope of this Tariff Review.

Therefore, direct investments in operational and institutional development included in the model correspond to those projected by Sabesp in its Business Plan.

For the projection of capitalizable expenses, the average from the 2013-2016 cycle was used as a reference, which was an amount of R$187.4 million/year. However, adding together special services and capitalizable expenses would represent between 15.7% and 19.6% of direct investments and, as set forth in Technical Note NT.F-0003-2018, capitalizable expenses were adjusted so that the sum of special services and capitalizable expenses is limited to 15%.

Table 7.3: Amounts adopted by Arsesp for the Plan for Investment in Fixed Assets (CAPEX) - R$ thousand Dec/16

ITEMS	2017	2018	2019	2020	2021
1 - Direct Investments	2,181,484	3,261,157	1,896,739	2,847,744	3,250,258
2 - Operational Development	19,996	16,324	16,922	19,227	18,978
3 - Institutional Development	139,853	110,692	110,948	119,394	126,277
4 - Special Services	210,542	323,934	183,891	269,003	394,447
5 - Capitalizable Expenses	187,351	187,351	187,351	187,351	187,351
Percentage Share of Special Services and Capitalizable Expenses (4+5) in Direct Investments (1)	**18.2%**	**15.7%**	**19.6%**	**16.0%**	**17.9%**
5,1 - Adjusted Capitalizable Expenses (15% limit)	116,680	165,239	100,620	158,159	93,091
Total CAPEX (1+2+3+4+5,1)	**2,668,556**	**3,877,346**	**2,309,119**	**3,413,527**	**3,883,052**

7.2. Interest on Construction Work in Progress - JOA

Interest on Construction in Progress (JOA) consists of the remuneration of the construction that is in progress (fixed assets in progress) and is applied to the sum of main equipment (EP), Accessory Equipment (EA) and Additional Costs (CA), in accordance with the type of eligible construction work. For each type of construction work a term is determined for the application of the remuneration, in other words, under the regulations an average duration period is set per type of construction work and a flow of expected investment disbursements is projected.

In this way, the JOA uses a calculation weighted by the defined disbursement period and in accordance with the Weighted Average Cost of Capital (WACC) defined for each Tariff Review. As detailed in section 8, in this second RTO Arsesp defined the WACC as being 8.11%.

Arsesp projected the amounts in relation to the JOA using the same calculation methodology utilized for the validation of the asset base, which is described in Arsesp Resolution no. 672/2016. This determines the types of construction works that are eligible under the JOA and their respective deadlines for the application of the remuneration, being as follows:

   i)   Networks: a term of 12 months;

   ii)   Treatment plants: a term of 24 months; and

   iii) Catchment and Reservoirs: a term of 18 months.

In addition, the flow of disbursements was defined as being 40% in the first half of the average term of each type of construction work and 60% in the second half of the average term.

The formula to be applied in order to determine the JOA values is shown below:

$$\square\square\square = \sum_{\square=1}^{\square} \left[1 + \square_\square^{\frac{\square+1+\square}{12}} - 1 \right] * \square\square$$

Where:

JOA: Interest on Construction Work in Regulatory Progress, in percentage terms (%);

N: number of months, according to the type of construction work;

r_a: Weighted Average Cost of Capital of 8.11% a year; and

di: monthly disbursement as a percentage (%) distributed in accordance with the financial flows defined in the following tables,

Table 7.4 shows the calculation of the JOA for each type of construction work approved by Arsesp Resolution No. 672/2016, applying the WACC of 8.11% approved for the 2nd RTO.

Table 7.4: Percentages of Regulatory JOA by type of construction work

TREATMENT STATIONS											
d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12
3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%
d13	d14	d15	d16	d17	d18	d19	d20	d21	d22	d23	d24
5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
JOA =	7.73%										

DISTRIBUTION NETWORKS AND TRUNK COLLECTORS											
d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12
6.67%	6.67%	6.67%	6.67%	6.67%	6.67%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
JOA =	3.93%										

RESERVOIRS AND CATCHMENT											
d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12
4.44%	4.44%	4.44%	4.44%	4.44%	4.44%	4.44%	4.44%	4.44%	6.67%	6.67%	6.67%
d13	d14	d15	d16	d17	d18						
6.67%	6.67%	6.67%	6.67%	6.67%	6.67%						
JOA =	5.81%										

Therefore, the JOA percentages calculated will be applied to the estimated CAPEX values for the period of the next tariff cycle, in accordance with the previously provided fixed asset amounts, taking into account the types of construction work that qualify for this remuneration.

It should be stressed that Arsesp determined that the JOA percentages will not be applied to Special Services, Operational Development, Institutional Development (vehicles, administrative and IT facilities), connections or water meters, in this way maintaining the same criteria as that used for ascertainment of the asset base.

The investment amounts to which JOA applies and the calculation of the projected amount of interest are shown in the table below.

Table 7.5: Projections of Interest on Construction Work in Progress - R$ thousand - Dec/16

Type	Description	JOA	Component	2017 (R$ thousand)	2018 (R$ thousand)	2019 (R$ thousand)	2020 (R$ thousand)
1	Treatment Stations	7.73%	Investment	652,660	153,239	156,306	410,129
			JOA	50,421	11,838	12,075	31,684
2	Distribution Networks and Trunk Collectors	3.93%	Investment	828,757	1,917,232	919,823	1,581,874
			JOA	32,602	75,420	36,184	62,228
3	Reservoirs and Catchment	5.81%	Investment	165,450	445,097	106,522	205,396
			JOA	9,606	25,843	6,185	11,925
Total			Investment	**1,646,867**	**2,515,568**	**1,182,651**	**2,197,399**
			JOA	**92,629**	**113,101**	**54,444**	**105,838**

8. WEIGHTED AVERAGE COST OF CAPITAL - WACC

As part of the tariff review process, it is necessary to determine the rate of remuneration corresponding to the cost of capital for calculation of its tariffs, in order to comply with one of the model's key assumptions, namely the concessionaire's financial sufficiency.

Arsesp calculated the rate of return on capital by calculating the Weighted Average Cost of Capital (WACC), as was done in the 1st RTO. The variables that are included in the calculation of the WACC were revised and adjusted for application in this tariff cycle (2017-2020), which resulted in a rate of 8.11%.

Table 8.1: Summary of Sabesp's Weighted Average Cost of Capital for the 2nd RTO

Capital Structure	
(A) Percentage of Equity	58.83%
(B) Percentage of Third Party Capital	41.17%
Cost of Equity	
(1) Risk Free Rate	5.09%
(2) Market Return Rate	11.50%
(3) Market Risk Premium = (2)-(1)	6.42%
(4) Unlevered Beta	51.7%
(5) IR + CSLL (income and social contribution taxes)	34.00%
(6) Levered Beta = (4)*[1+(((B)/(A))*(1-(5)))]	75.6%
(7) Business and Financial Risk Premium = (6)*(3)	4.86%
(8) Brazil Risk Premium	2.56%
(9) US Inflation Rate	2.11%
(10) Nominal Ke = (1)+(7)+(8)	12.50%
(11) Real Cost of Equity (CAPM) = {[(1)+(7)+(8)]+1}/[1+(9)]-1	10.18%
Cost of Debt	
(12) Risk Free Rate = (1)	5.09%
(13) Brazil Risk Premium = (8)	2.56%
(14) Credit Risk	3.52%
(15) Nominal Kd = (12)+(13)+(14)	11.16%
(16) Nominal Kd after Tax = (15)*[1-(5)]	7.37%
(17) Real Cost of Debt Net of Taxes = [1+(15)*[1-(5)]/[1+(9)]-	5.15%
WACC	
(18) WACC = (A) x (11)+ (B) x (17)	8.11%

This calculation is shown in detail in Exhibit IV of this Technical Note.

9. DETERMINATION OF THE BASIS FOR REGULATORY REMUNERATION

The Basis for Regulatory Remuneration (BRR) of the 2nd Ordinary Tariff Review (RTO) is obtained by adding together the updated and depreciated values of the Shielded Base with the Incremental Base. The Shielded Base represents the 1st RTO's Asset Remuneration Base. The Incremental Base represents the Remuneration Base for Assets incorporated between 10/01/2011 and 06/30/2016.

Public Consultation no. 03/2016. which took place between 06/30/2016 and 07/15/2016, resulted in the publication, on 10/14/2016. of ARSESP Resolution no. 672/2016, which defined the methodology and general criteria for the update of the BRR of SABESP's 2nd RTO.

9.1. Shielded Base

The shielded base is the base for remuneration of assets evaluated and approved in the previous tariff cycle (1st RTO), which ended in September 2011. For the 2nd RTO, the Shielded Base underwent the following stages:

a) Write-off of assets and/or transfers of amounts;

b) Review of the utilization rates;

c) Updating of the value using the IBGE's IPCA economic index;

d) Depreciation of these assets;

e) Assessment of the disallowances applied to the 1st RTO.

9.2. Incremental Base

The incremental base is the Basis for Remuneration of Assets of the incremental period, in other words, the period between the regular tariff reviews. The period of the Incremental Base is four years. However, for Sabesp's 2nd RTO, the incremental period considered will be from 10/01/2011 to 06/30/2016, which is the base date for the calculation of the BRR.

In accordance with the stipulations of Arsesp Resolution No. 672/2016. Sabesp contracted an appraisal company to draft its Assets Report. Arsesp, in turn, hired a company to assist it with the inspection of Sabesp's Asset Report.

Sabesp sent the preliminary version of its Asset Report to Arsesp on 08/22/2017 and the final version on 12/22/2017. Arsesp completed the work of inspecting and validating Sabesp's Asset Report at the end of February 2018. During the inspection process. Sabesp implemented a number of the adjustments indicated by Arsesp, giving rise to the final revised version of its Assets Report. dated 02/27/2018.

9.3. Summary of the Regulatory Remuneration Base

Table 9.1 shows a summary of the values recognized by Arsesp for the shielded base, incremental base and the total value of the Regulatory Remuneration Base of the 2nd RTO.

Table 9.1: Summary of the Regulatory Remuneration Base (June/2016 values)

FIXED ASSETS IN SERVICE	R$ thousand
1. Shielded Base 1st RTO updated	27,169,186
2. Incremental Base	11,236,701
3. Total Regulatory Remuneration Base (1+2)	38,405,887
4. Public-Private Partnerships (PPP) and Asset Leases	424,867
5. New Municipalities	38,807
6.Total BRR excluding PPP and New Municipalities (3-4-5)	37,942,213
7. Special Obligations	392,727
8. Final BRR (R$ June/16)	**37,549,486**
9. Final BRR (R$ Dec/16)	**38,222,667**

Table 9.1 shows two main differences between the values of the revised final version of the Assets Report filed by Sabesp on 02/27/2018 and the amounts recognized by Arsesp:

a) The differences in the values of the Shielded Base reflect the disallowances made by Arsesp in the first cycle (1st RTO) and that were not taken into account by Sabesp in its Report;

b) The differences presented in the amounts of the Incremental Base refer to the adjustments (corrections and disallowances) made by Arsesp during the inspection process of Sabesp's Assets Report. Arsesp also made three additional adjustments to the values of the Incremental Base in order to define the final value of the BRR for the 2nd RTO:

- The values of the assets of the Public Private Partnerships (PPP) and of the Asset Leases were not taken into account in the BRR. However, it should be pointed out that the amounts of the payments of the consideration in relation to the PPPs and the Asset Leases were regarded as Operational Expenses (OPEX), in accordance with a decision agreed during the Initial Stage of the 2nd RTO (see Final Technical Note NTF/004/2017).

- In its Preliminary Technical Note NT. F/0004/2018, dated 03/26/2018, Arsesp initially opted not to include the Assets of the new Municipalities assumed by SABESP in the BRR. when the assets were recorded on a date prior to the start of the Concession. This was due to the fact that the Concessionaire had not presented the document required under ARSESP Resolution No. 672/2016's Term of Reference with the legal. economic and financial conditions under which these Assets were assumed. In response to this request. on 04/16/2018 Sabesp forwarded to the Agency Technical Note

"Assets of Municipalities assumed by the Company between October 2011 and June 2016." Based on the analysis of this information Arsesp decided to include the Assets of the Municipality of Diadema in the BRR. On the other hand, it was decided not to include the assets of the Municipalities of Glicério. Santa Isabel and Torrinha in the BRR.

- Part of the investments related to the water crisis were treated as special obligations, in the amount received by way of the contingency tariff, which was in force during the period between 02/2015 and 03/2016, as per Arsesp Resolutions No. 545 of 01/07/2015, No. 614 of 12/23/2015 and No. 640 of 06/30/2016.

Summing up. the final values (in R$ of June/2016) recognized by Arsesp for Sabesp's 2nd RTO were as follows: R$27,169,185.823 for the Shielded Base and R$10,380,300.116 for the Incremental Base. resulting in R$37,549,485,939. for the Regulatory Remuneration Base.

Arsesp's detailed analysis of Sabesp's Asset Report for the 2nd RTO is described in Exhibit V of this Technical Note.

9.4. Average Depreciation

For the current P0 calculation. the technical depreciation adopted was calculated by means of ascertaining the average useful life of the remuneration base presented in the appraisal report. which is equal to 36.49 years. or 2.74%.

Table 9.2: Average useful life of the remuneration base

BRR	Depreciation	VNR	Depreciation	Years of depreciation (average weighted by VNR)	Average Annual Depreciation	Useful Life	Average Rate
Incremental	1,225,631,473	12,338,040,008	9.93%	3.06	3.25%	30.78	3.25%
Shielded	26,314,559,334	55,150,608,053	47.71%	18.02	2.65%	37.77	2.65%

In order to calculate the technical depreciation amounts of the asset base. it is necessary to estimate the gross Regulatory Remuneration Base. This amount is obtained by the difference between the updated New Replacement Value (R$69.8 billion), less the un-depreciated utilization index (estimated at R$3.7 billion) and the amounts of PPPs, new municipalities, special obligations (contingency tariff revenue) and the 100% depreciated assets. The value arrived at is R$63.4 billion.

For accounting depreciation, to be used in the financial flow, the technical depreciation of investments was added to the average depreciation shown by Sabesp in its 2016 balance sheet (R$1.2 billion/year).

9.5. Assets incorporated and depreciation after the asset report up to December/2016

In order to obtain the Initial Net Basis for Regulatory Remuneration Base (BRRL$_0$) to be used in the cash flow. the estimated value at June/2016 prices, should be updated to the reference date of the tariff cycle (December 2016), including the assets incorporated during the period from July to December 2016 and adding the JOA and capitalizable expenses and excluding technical depreciation and asset write-offs.

At Arsesp's request, Sabesp presented the amounts related to investments in fixed assets in the period between July/16 and December/16. which came to a total of R$712 million.

Table 9.3: Amounts incorporated into fixed assets during the period from Jul to Dec/2016

	Amounts incorporated into fixed assets (R$ current prices)	Amounts incorporated into fixed assets (R$ Dec/16)
Jul/16	125,444,275	127,032,548
Aug/16	80,438,990	81,100,606
Sep/16	128,163,163	129,114,006
Oct/16	39,881,532	40,073,184
Nov/16	134,566,236	134,969,814
Dec/16	199,975,850	199,975,850
Total		**712,266,008**

In addition, Interest on Construction Work in Progress, average for 2016, which corresponds to 4.6%, obtained on the basis of the information from Sabesp regarding amounts included in fixed assets, adopting the methodology described in item 7.2. is applied to this investment.

For the estimate of capitalizable expenses, half of the value of 2016's capitalizable expenses was taken. For technical depreciation, a percentage of 2.74% was adopted, as indicated previously in item

9.4. For the calculation of asset write-offs, we adopted the average of write-offs presented in the asset base report.

Table 9.4: Initial Basis for Regulatory Remuneration (R$ Dec/16)

Breakdown	Amounts (R$)
BRRL$_0$ Jun/16 (Dec/16 prices)	38,222,666,516
Investments Jul-Dec/16 + JOA	745,162,215
Capitalizable Expenses Jul-Dec/16	84,809,071
Depreciation Jul-Dec/16 BRR	523,713,188
Depreciation Jul-Dec /16 CAPEX	6,052,138
Write-Offs Jul-Dec/16	114,620,930
BRRL$_0$ up to Dec/16	39,032,454,982

9.6. Regulatory Working Capital

The Net Regulatory Remuneration Base should include the amount related to working capital. i.e. the funds necessary to finance the continuity of the short-term activities related to the provision of the services. The formulas for calculating each component of working capital were presented in Technical Note NT.F-0003-2018 and are reproduced below.

Table 9.5: Breakdown of Regulatory Working Capital

Conta	Fórmula de cálculo
Contas a receber	Contas a receber[1]/Receita operacional[2] * Receita direta projetada ano t
Estoques	Estoques[1]/(Despesas de materiais gerais + Desp. materiais de tratamento)[2] * (Desp. materiais gerais + Desp. materiais tratamento) projetadas ano t
Demais contas a receber	Demais contas a receber[1]
Empreiteiros e fornecedores	Empreiteiros e fornec.[1]/(Desp. mat.gerais + Desp. mat.tratam. + Serv.terceiros + Energia + Desp.gerais + Desp.fiscais)[2] * (Opex - Desp.pessoal) projetados ano t
Salários, provisões e contrib. sociais	Salários, provisões e contrib. sociais[1]/Salários, encargos e benefícios[2] * Despesas de pessoal projetada ano t
Impostos e contribuições a recolher	Impostos e contribuições a recolher[1]/(Salários, encargos e benefícios + Desp. mat.gerais + Desp. mat.tratam. + Serv.terceiros + Energia + Desp.gerais + Desp.fiscais)[2] * Opex projetado ano t
Contas a pagar	Contas a pagar[1]/(Desp. mat.gerais + desp. mat.tratam. + Serv.terceiros + Energia + Desp.gerais + Desp.fiscais)[2] * (Opex - Desp.pessoal) projetados ano t
Outras obrigações	Outras obrigações[1]/(Salários, encargos e benefícios + Desp. mat.gerais + Desp. mat.tratam. + Serv.terceiros + Energia + Desp.gerais + Desp.fiscais)[2] * Opex projetado ano t

Fonte: (1) Balanço Patrimonial Sabesp 2016; (2) Notas Explicativas às demonstrações financeiras - Balanço Sabesp 2016.

Key:

Account	Calculation formula
Accounts receivable	Accounts receivable[1]/Operating revenue[2] * Projected direct revenue year t
Inventory	Inventories[1]/ (Expenses for general materials + expenses for treatment materials)[2] * (Expenses for general materials + expenses for treatment materials) projected year t
Other accounts receivable	Other accounts receivable [1]
Contractors and suppliers	Contractors and suppliers[1]/ (Expenses for general materials + expenses for treatment materials + third party services + Energy + Overheads + Tax expenses)[2] * (Opex - Staff expenses) projected year t
Salaries. provisions and social contributions	Salaries. provisions and social contributions [1]/ Salaries. charges and benefits [2] * Staff expenses projected year t
Taxes and contributions payable	Taxes and contributions payable [1]/ (Taxes and contributions payable + Expenses for general materials + expenses for treatment materials + third party services + Energy + Overheads + Tax expenses) [2] * Opex projected year t
Accounts payable	Accounts payable [1]/ (Expenses for general materials + expenses for treatment materials + third party services + Energy + Overheads + Tax expenses) [2] * (Opex - Staff expenses) projected year t
Other liabilities	Other liabilities [1]/ (Salaries. charges and benefits + Expenses for general materials + expenses for treatment materials + third party services + Energy + Overheads + Tax expenses) [2] * Opex projected year t

Source: (1) Sabesp's 2016 Balance Sheet; (2) Notes to the financial statements - Sabesp's 2016 Balance Sheet

Using the information from Sabesp's 2016 balance sheet. the following values were obtained:

Table 9.6: Projection of Regulatory Working Capital - R$ Dec/16

Description	2016	2017	2018	2019	2020
I - Current Assets	**2,108,836,437**	**2,488,134,673**	**2,580,918,061**	**2.640.922.790**	**2.703.901.454**
Cash and cash equivalents	440,686,437	452,474,899	492,957,912	499,944,927	510,243,730
Trade accounts receivable	1,557,472,000	1,922,095,069	1,973,448,141	2,025,481,530	2,076,407,776
Operating Inventories	58,002,000	60,888,705	61,836,008	62,820,333	64,573,948
Other Accounts Receivable	52,676,000	52,676,000	52,676,000	52,676,000	52,676,000
II - Current Liabilities	**1,484,633,000**	**1,344,405,914**	**1,365,383,022**	**1,386,823,764**	**1,418,431,977**
Contractors and suppliers	311,960,000	266,844,357	270,977,417	275,212,066	281,569,346
Salaries, provisions and social contributions	458,299,000	453,630,694	460,784,271	468,070,685	478,529,848
Taxes and contributions payable	168,757,000	152,891,144	155,276,888	157,715,312	161,309,530
Accounts payable	460,054,000	393,521,008	399,616,119	405,861,046	415,236,261
Other obligations	85,563,000	77,518,710	78,728,327	79,964,655	81,786,991
III - Regulatory Working Capital					
Inventories	624,203,437	1,143,728,759	1,215,535,039	1,254,099,027	1,285,469,478
Variation		519,525,322	71,806,280	38,563,988	31,370,451

9.7. Mechanism for annual updating of the BRRL

The initial BRRL should also be updated annually for the tariff cycle period, as per the methodology described in Technical Note NT.F-0003-2018. The values obtained over the course of the cycle are shown, in millions of R$, at December 2016 prices. in the table below.

Table 9.7: Final Regulatory Remuneration Base - R$ thousand Dec/16

Description	2017	2018	2019	2020
BRRLt-1	39,032,455	40,531,556	42,707,537	43,124,536
Dt	(1,780,236)	(1,885,290)	(1,984,153)	(2,075,446)
INCORt	2,759,811	3,989,465	2,362,588	3,516,342
VarWKt	519,525	71,806	38,564	31,370
BRRLt	**40,531,556**	**42,707,537**	**43,124,536**	**44,596,803**

10. TAXES AND CONTRIBUTIONS

10.1. Cofins / Pasep

Although it falls under the non-cumulative incidence regime for Cofins and Pasep, Sabesp has a lower effective rate than the nominal rate of 7.6% and 1.65% (respectively), due to the deductions of allowable credits. Sabesp projected rates of 6.7% for 2017; 6.5% for 2018 and 2019; and, 6.6% for 2020. For the projection of these taxes. Arsesp adopted the average rate for the period, as shown below.

Table 10.1: Projections of Cofins/Pasep expenses - R$ thousand Dec/16

Description	2017	2018	2019	2020
Gross Operating Revenue	13,726,041	14,092,764	14,464,344	14,828,018
Cofins/Pasep Rate	6.563%	6.563%	6.563%	6.563%
Cofins/Pasep	900,806	924,873	949,259	973,126

10.2. Income Tax and Social Contribution on Net Income - IRPJ/CSLL

In line with the proposal in Technical Note NT.F-0003-2018. these taxes will be calculated by adopting a 34% rate. The basis of assessment is obtained by deducting the costs related to COFINS/Pasep, OPEX, consideration for public-private partnerships, irrecoverable revenues, accounting depreciation, fund for municipal expenditures and fund for research, development and innovation from operating revenue. The projected values are shown in the following table.

Table 10.2: Projection of IRPJ/CSLL - R$ thousand Dec/2016

Description	2017	2018	2019	2020
(+) Direct Required Revenue -> Tariff	13,433,593	13,794,611	14,160,411	14,518,429
(+) Indirect Revenue	212,246	217,950	223,730	229,387
(+) Other Revenues	80,203	80,203	80,203	80,203
(-) COFINS/PASEP	900,806	924,873	949,259	973,126
(-) Operating Expenses -> OPEX	5,257,096	5,339,129	5,422,973	5,546,559
(-) PPP and Asset Leases	172,602	576,366	576,366	576,366
(-) Irrecoverable Revenues	172,960	177,608	182,318	186,927
(-)Municipal Funds	247,298	253,944	260,678	267,269
(-) PDI	-	-	-	7,259,214
(-) Accounting Depreciation	1,189,560	1,294,615	1,393,478	1,484,771
IRPJ/CSLL	**1,967,144**	**1,878,918**	**1,930,952**	**1,967,152**

10.3. Regulation. Control and Inspection Fee

The regulation, control and inspection fee only applies to municipalities with services regulated by Arsesp, with a rate of 0.5% of direct revenue, being charged directly to the users' accounts. In this sense, it does not go directly into the calculation of the equilibrium tariff.

11. INDIRECT REVENUES AND OTHER REVENUES

Indirect Revenues and Other Revenues are amounts derived from supplementary and/or additional activities carried on by the provider, which, although not directly linked to the regulated activity, have some relationship, even though only indirectly, to the service provided.

The values of Indirect Revenues projected for the financial flow were defined by means of the analysis of historical data updated to the base date of December 2016, compared to direct tariff revenues. The table below shows the figures obtained from Indirect Revenues in the previous cycle, which is the basis for calculating the average percentage to be applied to the next tariff cycle:

Table 11.1: Historical values of indirect revenues - current prices

Description	Actual			
	2013	2014	2015	2016
	Total Amount (R$)	Total Amount (R$)	Total Amount (R$)	Total Amount (R$)
Connections and reconnections	21,649,344.78	23,764,919.00	23,824,315.03	25,108,583.90
Extensions	3,216,291.61	3,447,926.30	3,222,539.01	5,892,164.83
Water consultancy and representation	1,005,808.13	1,142,228.51	1,036,770.79	1,712,840.48
Repairs to Networks	68,646,368.66	66,145,404.72	69,257,432.55	68,391,201.67
Inspections. Certificates and Others (partner construction works)	739,69.80	749,097.39	875,605.60	1,551,069.86
Increase for Late Payment	49,831,22.78	50,299,399.66	47,454,622.15	68,230,262.19
Total	145,088,905.76	145,548,975.58	145,671,285.13	170,886,122.93
Total (R$ Dec/16)	**186,371,489.58**	**175,833,868.32**	**161,406,756.87**	**174,128,014.63**
Direct Revenues	12,254,471,386.73	10,758,299,712.68	9,913,264,928.12	11,333,232,196.24
%	**1.52%**	**1.63%**	**1.63%**	**1.54%**

The average of the percentages adopted for forecasting the Indirect Revenue amounts in the tariff cycle is 1.58%.

With regard to Other Revenues, the process is similar, but the average of the amounts directly realized is used rather than their percentage in relation to direct tariff revenues.

Table 11.2: Historical values of Other Revenues - current prices

Description	Actual			
	2013	**2014**	**2015**	**2016**
	Total Amount (R$)	**Total Amount (R$)**	**Total Amount (R$)**	**Total Amount (R$)**
Compensation and Refunds of Expenses	6,112,917.49	5,936,805.66	6,299,724.44	8,814,575.68
Fines and Collateral	6,901,454.84	32,743,238.44	23,271,211.86	6,450,240.48
Technical Services	196,576.76	168,822.31	150,491.49	148,076.03
Real Estate Leases	989,646.16	390,383.11	3,070,439.11	1,654,140.13
Real Estate	-	-	48,370,200.50	955,661.91
Reuse Water	635,806.59	345,890.37	440,511.28	494,493.05
PURA Project (Program for the Rational Use of Water)	3,119,499.30	24,026,899.23	4,797,215.32	735,155.64
Amounts lapsed	13,376,396.72	14,789,804.23	9,125,242.46	-523,962.61
Bank of New York	3,538,695.07	698,787.08	4,027,794.22	13,719.724.96
SP Sanitation and Water Dept. (Sanebase)	-	238,408.85	174,837.65	72,333.51
Donations	6,140,226.85	9,004,375.37	49,703,941.12	27,070,896.77
Exclusive Contract of Banco do Brasil	3,901,065.73	5,809,194.98	6,551,169.28	6,569,117.70
Electricity	-	16,911,457.02	43,071,422.06	308,974.64
Provision of Services (Third Parties)	-	7,221,201.05		-
Loss of suit	-	-	-	-
Casal- Cia Saneamento Alagoas	2,907,995.60	495,022.55	-	-
Others. metrological testing, legal fees	8,593,751.18	6,922,721.31	11,323,927.79	8,007,842.93
Total	**64,272,086.87**	**130,939,264.75**	**212,714,157.74**	**76,396,321.29**
Total (R$ Dec/16)	**82,559,617.54**	**158,184,263.03**	**235,691,627.97**	**77,845,640.85**

The average, excluding 2014's and 2015's outlier values. was R$80.203 thousand. This amount will be deducted annually from direct revenue, for purposes of tariff affordability. The difference between the projected values and those actually realized in the cycle will be the subject of compensatory adjustment for the next cycle.

12. GENERAL QUALITY INDEX - FACTOR Q

For the preliminary calculations of Factor Q, as per methodological technical note NT.F-0003-2018, Sabesp was asked for information for the construction of four indices: feasible sewage connections index: deadline for replacement of road surfaces after repairs of visible leaks and the installation of new connections; index of user complaints related to lack of water and low pressure; index of leaks visible by network extension. The indicators will be measured and disclosed by 2019, with the definition of targets and tariff effects from 2020 onwards.

13. COMPENSATORY ADJUSTMENT OF THE LATEST CYCLE

There are two compensatory adjustments that should be applied in the 2017-2020 tariff cycle. First of all, compensatory adjustments related to the previous cycle will be considered. The other refers to the retroactive compensatory adjustment resulting from the differences between the preliminary P0 (Initial Stage) applied in October/2017 and the final P0 (Final Stage), disclosed in this document. This second adjustment will be dealt with in section 14.

The first stage entails determining the equilibrium P0 of the tariff cycle from 2013 to 2016. In this period, in addition to the P0 determined for the cycle in 2014[9], a new P0 was determined in 2015, as part of an RTE (Extraordinary Tariff Review).

In order to obtain the cycle's average tariff, the forecast values of the RTO for the first two years (2013/2014) and of the RTE for the second two-year period (2015/2016) were used. Therefore, the variables that depend on direct revenue show mean values. The resulting Discounted Cash Flow is shown below.

Table 13.1: Discounted Cash Flow from the 2013-2016 Cycle including RTE

Breakdown	Formula compenents	Present Value 2012	Tariff Cycle - R$ 1000			
			2013	2014	2015	2016
	VF		**3,727,507**	**3,834,691**	**3,462,068**	**3,842,647**
- Volume Billed (A + E) - (1000m3)						
- + Required Direct Revenues (tariff)						
- + Indirect Revenues	RRD	32,464,930	9,842,176	10,125,185	9,141,307	10,146,193
- + Other Revenues	RI	633,628	192,695	197,915	178,045	197,316
- COFINS / PASEP	OR	46,296	13,997	13,997	13,997	13,997
- Operating Expenses (OPEX)	COP	2,419,574	733,567	754,608	681,334	756,098
- Irrecoverable revenues (uncollectible)	OPEX	14,341,390	4,142,769	4,246,167	4,300,613	4,721,822
- Income Tax / Social Contribution	INC	658,198	216,528	209,591	179,824	185,188
	IRCS	4,315,471	1,391,372	1,439,532	1,100,704	1,258,200
- Investments	CAPEX	7,596,528	2,403,450	2,275,913	2,126,199	2,370,128
- Interest on Regulatory Construction Works in Progress	TR	459,210	145,289	137,579	128,529	143,274
- Variation in Working Capital	DWK	31,825	130,561	7,503	-133,143	13,764
- Initial Capital Base	BRL0	26,733,934	-	-	-	-
+ Final Capital Base	BRLT	23,411,274	-	-	-	31,921,619
= Free Cash Flow + Bdk		-26,733,934	885,331	1,266,203	949,289	32,830,650
= Free Cash Flow + Bdk (Discounted)		-26,733,934	819,296	1,084,359	752,321	24,077,957

Net Present Value =	0.00000	Average Maximum Tariff - Po (R$/m3) Calculated	
Internal Rate of Return (IRR) =	8.06%	2.6404	

The next step involves the determination of P0 in a cash flow with the compensatory adjustments taken into account. For the 2013-2016 cycle. the following adjustments were made:

- Use of the effective percentages of Pasep / Cofins;

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[9] It should be noted that the P0 determined for the cycle was calculated in 2014. At that time, the Repositioning Index took into account delays and other adjustments necessary

- Use of the effective values of Other Revenues. Indirect Revenues and Working Capital;

- Elimination of the disallowance made in BRR0 (cast iron tubes. as per Technical Note NT/F/004/2017);

- Inclusion of accounting and physical surpluses (fixed assets up to Sep/11) in BRR0 (Dec/2012);

- Utilization of the fixed asset values of the audited report of the base for Sabesp's compensation for the period between September 11 and June 16. For the amount between Jul/16 and Dec/16, the fixed asset information sent by Sabesp. as described in section 9. was used.

The discounted cash flow resulting from the adjustments made is shown below.

Table 13.2: Discounted cash flow from the 2013-2016 cycle with compensatory adjustments

Breakdown	Formula components	Present Value 2012	Tariff Cycle - R$ 1000			
			2013	2014	2015	2016
Volume Billed (A + E) - (1000m3)	VF		3,727,507	3,834,691	3,462,068	3,842,647
	RRD	32,141,105	9,744,004	10,024,190	9,050,126	10,044,988
+ Required Direct Revenues (tariff)	RI	436,512	140,586	132,637	121,754	131,350
+ Indirect Revenues	OR	338,148	62,277	112,742	177,789	58,721
+ Other Revenues	COP	2,175,099	682,092	686,714	579,957	676,533
- COFINS / PASEP	OPEX	14,730,282	4,240,310	4,363,489	4,427,998	4,854,355
- Operating Expenses (OPEX)	INC	654,409	214,368	207,501	179,824	185,188
- Irrecoverable revenues (uncollectibles)	IRCS	4,233,380	1,351,819	1,412,439	1,114,552	1,212,848
- Income Tax/Social Contribution	CAPEX	5,198,882	1,255,376	2,073,146	1,481,543	1,482,941
- Investments	TR	-	-	-	-	-
- Interest on Regulatory Construction Works in Progress	DWK	329,500	312,966	-199,191	298,124	-35,184
- Variation in Working Capital	BRL0	27,378,568	-	-	-	-
	BRLT	21,790,345	-	-	-	29,711,458
- Initial Capital Base		-27,378,568	1,888,145	1,723,622	1,265,953	31,567,939
+ Final Capital Base		-27,378,568	1,747,312	1,476,088	1,003,282	23,151,886
= Free Cash Flow + Bdk						
= Free Cash Flow + Bdk (Discounted						

Average Maximum Tariff - Po (R$/m3)

Net Present Value = 0.00000   Calculated
Internal Rate of Return (IRR) = 8.06%   2.6141

In order to determine the compensatory adjustment, the required revenue authorized in the 2013-2016 cycle is calculated using the projected market for the cycle. The required revenue is then calculated with the compensatory adjustments and the same reference market. The difference between the revenues and the amounts are brought to Dec/16 prices and to present value by the regulatory WACC of the latest cycle. The table below shows the calculation of the compensatory adjustment to be applied in this tariff cycle.

Table 13.3: Calculation of the compensatory adjustment of the closed tariff cycle

Description	2013	2014	2015	2016
Accumulated IPCA since Dec/12	1.94%	8.21%	17.01%	27.99%
Accumulated Factor X		0.94%	1.89%	2.84%
Required Revenue Authorized in the cycle (R$ March current)	10,033,311	10,861,876	10,523,898	12,698,106
Required Revenue with Compensatory Adjustments (R$ March current)	9,933,233	10,753,532	10,418,926	12,571,448
Differential (R$ March current)	-100,079	-108,343	-104,972	-126,659
Differential (R$ Dec/16)	-130,144	-132,726	-118,929	-131,185
Differential Adjusted by WACC	-164,218	-154,983	-128,514	-131,185
Compensatory Adjustment to be applied	**-578,900,443**			

In particular, on account of the difference between projected and realized investments, the estimated compensatory adjustment amount is negative in the amount of R$578.9 million. This amount is considered as a negative component of the cash flow for the 2017-2020 cycle and is also distributed equally over the cycle. but the present value is maintained equal to the compensatory adjustment calculated.

The second adjustment, in relation to the publication of the result of the tariff review in April/2018, is detailed in section 14 below.

14. DETERMINATION OF THE TARIFF REPOSITIONING INDEX

The Maximum Average Tariff (P0) is obtained by iterative calculation. The tariff value that ensures that the Net Present Value of Sabesp's cash flow in the cycle is equal to zero is determined, given an opportunity cost equal to the cycle's regulatory WACC (8.11%). The discounted cash flow calculated for this tariff cycle (2017-2020) is shown below. In addition, as mentioned in the introduction to this Technical Note, the economic-financial model used in the Final Stage was made available in order to allow a better understanding of the calculations.

Table 14.1: Discounted cash flow of the 2017-2020 tariff cycle - R$ Dec/2016

Breakdown	Components of the Formula	Present Value	Tariff Cycle - R$ (Dec/16)			
		2016	2017	2018	2019	2020
Volume Billed (A+E) - (1.000 m³)	VF		3,707,335,125	3,806,967,040	3,907,918,862	4,006,722,677
(+) Required Direct Revenues -> Tariff	RRD	46,063,282,247	13,433,592,644	13,794,610,601	14,160,411,269	14,518,428,592
(+) Indirect Revenues	RI	727,785,334	212,246,528	217,950,498	223,730,033	229,386,594
(+) Other Revenues	OR	264,992,161	80,202,629	80,202,629	80,202,629	80,202,629
(-) COFINS/PASEP	COP	3,088,171,264	900,805,722	924,872,763	949,258,640	973,125,646
(-) Operating Expenses -> OPEX	OPEX	17,782,984,420	5,257,096,362	5,339,129,123	5,422,973,305	5,546,558,936
(-) PPPs and Asset Leases	PPP	1,530,857,286	172,602,423	576,365,823	576,365,823	576,365,823
(-) Municipal Funds	FMS	847,977,151	247,298,479	253,944,444	260,678,454	267,269,181
(-) R&D&I	PDI	5,314,056	-	-	-	7,259,214
(-) Income Tax/Social Contribution	IRCS	6,395,387,035	1,967,144,277	1,878,917,700	1,930,952,454	1,967,151,945
(-) Irrecoverable Revenues	RINC	593,072,738	172,959,832	177,608,001	182,317,748	186,927,283
(-) Investments	CAPEX	10,112,120,549	2,668,555,531	3,877,346,417	2,309,119,124	3,413,526,547
(-) Interest on Regulatory Construction Works in Progress	JOAR	297,919,066	91,255,480	112,118,263	53,469,213	102,815,339
(-) Compensatory Adjustment	AJC	-578,900,443	-156,462,317	-169,151,411	-182,869,591	-197,700,314
(-) Variation in Working Capital	VarWK	595,474,113	519,525,322	71,806,280	38,563,988	31,370,451
(-) Initial Capital Base	BRL0	39,032,454,982	-	-	-	-
(+) Final Capital Base	BRLT	32,646,772,475	-	-	-	44,596,802,511
= Free Cash Flow + Bdk		-39,032,454,982	1,885,260,691	1,049,806,325	2,923,514,772	46,550,150,276
= Free Cash Flow + Bdk (Discounted)		-39,032,454,982	1,743,835,622	898,209,100	2,313,703,431	34,076,706,830

Net Present Value =

- Internal Rate of Return (IRR) =   8.11%

Maximum Average Tariff - P0 (R$ / m3)		
Calculated	Current	Variation
3.6235	3.3762	7.3264%

The P0 resulting from the 2nd RTO, calculated at Dec/2016 prices was R$3.6235/m³, which already incorporates the compensatory adjustments of the previous cycle. For application in April 2017, the P0 should be updated by the inflation index (IPCA) up until March 2017, which results in R$3.6584/m³.

The tariff repositioning index (IRT) is calculated as the variation between the P0 calculated by the discounted cash flow model and the average tariff in force. The average tariff in force, as indicated in Technical Note NT.F-0003-2018. was obtained by the rebilling of the volumes of Sabesp's histogram, taking into account the tariff tables approved by Arsesp. In addition, a regulatory percentage of reforms and cancellations is excluded from the revenue obtained, based on the historical average of the events taken into consideration by the Agency, which are as follows: reforms related to alterations in registration and compensation for consumption increases due to leakage or without apparent cause. The historical values are shown in table 14.2. The average adopted for this cycle was 2.17%.

Table 14.2: Historical values of reforms and cancellations - current prices

Description	2013	2014	2015	2016
Reforms (R$)	237,826,448	214,809,446	258,363,126	252,684,468
Revenues (R$)	12,349,010,694	10,847,418,817	10,055,581,071	11,494,038,837
Percentage (%)	1.93%	1.98%	2.57%	2.20%

The average tariff in force obtained, in relation to the period between May/16 and April/17, when the 2nd RTO should take place, was **R$3.3762/m³** (see table 14.3). If we compare the tariff of the 2nd RTO of R$3.6584/m³, for application in April/17, with the average tariff in force of R$3.36762/m³, this would produce a Tariff Repositioning Index of **8.3600%.** In the Initial Stage of the 2nd RTO, approved in October 2017. Arsesp applied a preliminary index of **7.8888%.**

Table 14.3: Average Effective Tariff

Description	Unit	Revenue with reforms and cancellations excluding discounts	Revenue without reforms and cancellations, and excluding discounts
Volume Billed	m³	3,587,753,096	3,587,753,096
Revenue Billed	R$	12,112,848,835	12,381,335,069
Effective Tariff	R$/m³	**3.3762**	3.4510

The average tariff in force calculated by Arsesp is shown in Exhibit VII.

14.1. Annual Tariff Adjustment - April/2018

In addition, in April 2018, the Annual Tariff Adjustment for monetary correction, which consists of the inflation measured by the IPCA during 12 months (April/17-March/18) discounting Factor X, should be applied. The accumulated inflation during the period was 2.6808%, which discounting Factor X, of 0.8885% (see details in Exhibit VI). results in an Annual Tariff Adjustment of **1.7923%.**

Therefore, applying the annual tariff adjustment index to the Maximum Average Tariff (P0) calculated in this Final Stage (R$3.6584/m³), gives a P0 in April/2018 of R$3.7240/m³.

The change in the P0 is summarized in the following table.

Table 14.4: Tariffs taking into account the application on Sabesp's tariff adjustment dates

Description	Prices	Amount	IRT
Effective Tariff in April/17	-	3.3762	-
P0 calculated for the 2nd RTO (DCF)	Dec/16	3.6235	-
P0 of the 2nd RTO updated to Mar/17	Mar/17	3.6584	8.3600%
P0 with the annual adjustment (Apr/17-Mar/18) – Factor X	Mar/18	3.7240	1.7923%

Lastly, taking into account that the tariff of the 2nd RTO was not applied in April 2017 as expected, but instead in April 2018, the difference in revenue obtained between April/17 and March/18 should be adjusted. as detailed below.

14.2.   Compensatory adjustment for the period from April/2017 to March/2018

In order to ascertain the compensatory adjustment resulting from the differences between the preliminary P0 (Initial Stage) applied in October/2017 and the Final P0 (Final Stage), referring to the base date of the 2nd RTO (April/2017), the Agency adopted the following procedure:

    i. The required revenue is estimated for each period of the 2017-2020 tariff cycle, considering the P0 resulting from the discounted cash flow.

    ii. The effective revenue obtained in the period between May/17 and April/18 is calculated. For this period, the average tariff in force from May/17 to Oct/17 and the average tariff in force from Nov/17 to Apr/18, after the preliminary tariff repositioning of Oct/17, were taken into account.

    iii. The difference between the revenues of items i and ii in monthly terms is calculated and capitalized using the regulatory WACC of the current cycle.

    iv. The adjustment factor to be applied to the P0 calculated for the remaining period of the current cycle is determined. and is to be applied from Jun/2018 to Apr/2021, which ensures that the revenues calculated in the previous stages are the same. Therefore, the revenue generated in the next 3 years of the current cycle, together with the revenue due from the first year, should be equal to the required revenue calculated for the complete cycle.

Exhibit VII shows the adjustment values for the application of the P0 of the Final Stage in April/2018.

After taking into account this last adjustment, we arrive at the maximum average tariff (P0) of R$3.7702/m³, <u>which represents a final IRT of 3.5070%.</u> which will be applied on a straight line basis to the current tariff tables.

EXHIBIT I

SABESP's TARIFF RETROSPECT

1. TARIFF RETROSPECT

1.1. Tariff review and adjustments in the latest cycle (2012-2016)

Based on the powers assigned to Arsesp, in 2011 the Agency started the process of the 1st Ordinary Tariff Review (1st RTO) for the 4-year tariff cycle, which comprised the period from August/2012 to August/2016. The methodology to be applied in the 1st RTO was published by means of Technical Note RTS/01/2012. Also in 2012, Arsesp authorized the annual tariff adjustment of 5.15% (Arsesp Resolution n° 353).

Due to problems encountered by Sabesp and Arsesp during the work, particularly in relation to the determination and validation of the asset base, the tariff review was concluded in 2014. Prior to this, in April/2013, the Agency authorized the Provisional Tariff Repositioning Index of 2.3509%, as an advance of the 1st RTO (Arsesp Resolution n° 406) and, in November/2013, granted the annual tariff adjustment of 3.1451% (Arsesp Resolution n° 435).

Then in April 2014 Arsesp published the result of the 1st RTO, determining the tariff repositioning index of 5.4408% in relation to the tariffs in effect at the time, which ensured the concessionaire's economic-financial balance for the tariff cycle and the definition of the efficiency factor (Factor X) of 0.9386% to be applied to the following annual adjustments to take place in April 2015 and April 2016. It was also established that the cycle would be extended by a period of 8 months, and that the next tariff review would occur on April 11, 2017. The results were published by Arsesp by means of Resolution no. 484/2014 and Final Technical Note RTS/004/2014.

When the results were published by Arsesp, as a result of the unfavorable water situation, Sabesp began to adopt measures to encourage water savings, which will be described below. In light of this situation, Arsesp allowed the concessionaire to apply the repositioning index resulting from the tariff review at a future date (see article 1 of ARSESP Resolution no. 484/2014).

In November 2014, Sabesp asked Arsesp to apply the results of the RTO approved in April 2014. Arsesp authorized Sabesp to apply, with effect from December 27, 2014, the 6.4952% index, which corresponds to the 5.4408% index approved at the end of the Tariff Review in April, plus 1% as compensation for the postponement of its application, as published in Arsesp Resolution nº 520/2014.

It should be noted that this authorized index did not contain any compensation for Sabesp for revenue losses caused by the Incentive Program to Reduce Water Consumption then in force. Tariff discounts in relation to the maximum tariff approved by the regulator may be granted by the Concessionaire, but do not give cause to a request for compensation.

With the extension of the water crisis, in March 2015, Sabesp asked Arsesp to carry out an Extraordinary Tariff Review (RTE), the triggering events for which were: i) an increase in the cost of electricity; and ii) a reduction in demand as a result of the shortage of supply due to the water crisis.

Arsesp decided to accept the request, promoting changes in the unit costs of electricity and in the demand components, in the business plan, maintaining the methodology used in the 1st RTO. The Extraordinary Tariff Review (RTE) encompassed the remainder of the tariff cycle (2015-2016). The scheduled date for the 2nd RTO (April 2017) was maintained. After the consultation and public hearing, the results of the RTE were presented in Final Technical Note RTS/004/2015, with the resulting Tariff Repositioning Index of

6.9154% (Arsesp Resolution no. 561).

Arsesp also authorized the annual tariff adjustment for 2015, which was 7.7875% (Arsesp Resolution no. 560) as well as the tariff adjustment for 2016, which was 8.4478% (Arsesp Resolution no. 643).

1.2. Incentive Program to Reduce Water Consumption and Contingency Tariff

At the start of 2014, Sabesp requested authorization to implement an Incentive Program to Reduce Water Consumption (bonus) for consumers in the Metropolitan Region served by the Cantareira System, as a result of the water crisis that occurred at the time. This program, which was approved by ARSESP Resolution no. 469/2014 of February/2014, was designed to grant a 30% discount in the tariffs for those users who reduced their monthly consumption by at least 20%, in relation to the average consumption verified during the period between February/2013 and January / 2014.

The continuation of the water crisis resulted in the extension of the granting of the bonus to all of the municipalities in the São Paulo Metropolitan Region served by SABESP, which was approved by ARSESP Resolution No. 480/2014. Afterwards, Sabesp was authorized to establish different tariff bonus brackets for the Incentive Program to Reduce Water Consumption, including the granting of bonuses to users who posted a reduction of more than 10% in their consumption from November 1, 2014 onwards (see ARSESP Resolution no. 514/2014).

In January/2015, due to the continuation of the water crisis, Arsesp authorized the Contingency Tariff to be applied to those users who exceeded the established average consumption, under the terms of ARSESP Resolution no. 545/2015.

With the return to normal supply, the Incentive Program to Reduce Water Consumption (bonus) and the Contingency Tariff were both canceled in March 2016. The following table gives a brief summary of the development of Arsesp's Resolutions in relation to the tariff mechanisms adopted.

Table 14.5: Development of the Incentive Program to Reduce Water Consumption and Contingency Tariff

Resolution	Description	Resolution Date
469/2014	Establishment of the Incentive Program to Reduce Water Consumption: granting of a 30% bonus for a reduction of > 20% in consumption - applicable to users supplied by the Cantareira System	Feb/2014
480/2014	Extension of the bonus to all the users of the São Paulo Metropolitan Region	Apr/2014
514/2014	Creation of bonus brackets for reduction in consumption: - between 10% and 15%: a 10% bonus in the bill - between 15% and 20%: a 20% bonus in the bill - > 20%: a 30% bonus in the bill	Dec/2014
545/2015	Application of a contingency tariff for increased consumption: - Up to 20% of the average: a 40% increase in the water bill - More than 20% of the average: a 100% increase in the water bill	Jan/2015
614/2015	Extension of the period of validity of the contingency tariff up to December 31, 2016 or up to such time as there is greater predictability regarding the water situation	Dec/2015
615/2015	Extension of the period of validity of the Incentive Program to Reduce Water Consumption up to December 31, 2016 or up to such time as there is greater predictability regarding the water situation	Dec/2015
640/2016	Cancellation of the contingency tariff	Mar/2016
641/2016	Cancellation of the Incentive Program to Reduce Water Consumption	Mar/2016

1.3. Results of the Initial Stage of the 2nd Ordinary Tariff Review

As described in the introduction to this Technical Note, Arsesp divided the implementation of this 2nd RTO into two stages: the initial stage and the final stage.

In the initial stage, the Preliminary Initial Maximum Price (P0) was determined based on the Discounted Cash Flow (DCF) methodology and the data presented by Sabesp in the Business Plan, at December/2016 prices, adjusted by the Agency as per the methodology approved in the 1st RTO. The resulting P0 was R$3.6039 per m³, expressed at December/2016 prices. Taking into account that Sabesp's base date is April 10, 2017, the variation in the IPCA (Broad Consumer Price Index) for the period from Dec/16 to Mar/17 was applied to this result, resulting in a Maximum Price (P0) of R$3.63861. The resulting Tariff Repositioning Index, applied from November/2017 onwards on a straight-line basis across all user categories and tariff groups, was 7.88888%. The Final Technical Note NT/F/004/2017 contains the results obtained at the time, which were approved by Arsesp Resolution n° 753/2017.

EXHIBIT II

CONTRACTUAL LOSS TARGETS OF THE MUNICIPALITIES REGULATED BY ARSESP

Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)	Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)
ADAMANTINA	160.00	14.466	BASTOS	140.00	7,066
ADOLFO	120.00	1.597	BENTO DE ABREU	150.00	1,001
AGUAS DA PRATA	210.00	3.787	BERNARDINO DE CAMPOS	230.00	3,980
ALFREDO MARCONDES	150.00	1.711	BOCAINA	149.00	4,502
ALTAIR	120.00	1.176	BOITUVA	200.00	17,516
ALTO ALEGRE	150.00	1.440	BORA	170.00	356
ALVARES MACHADO	200.00	8.773	BORACEIA	150.00	1,432
ALVARO DE CARVALHO	150.00	1.152	BOTUCATU	270.00	53,998
ALVINLANDIA	170.00	1.038	BURI	219.00	5,994
ANHEMBI	146.50	2.095	BURITIZAL	205.00	1,477
ANHUMAS	190.00	1.296	CABREUVA	275.00	12,444
APARECIDA DOESTE	100.00	1.656	CACAPAVA	180.00	33,060
APIAI	180.00	7.474	CAIABU	220.00	1,466
ARACARIGUAMA	150.00	5.062	CAJATI	230.00	8,091
ARCO IRIS	70.00	509	CAJURU	190.00	8,157
AREALVA	106.00	2.919	CAMPINA DO MONTE ALEGRE	150.00	2,452
AREIOPOLIS	250.00	3.364	CAMPOS DO JORDAO	350.00	15,501
ASPASIA	150.00	605	CANANEIA	179.00	5,087
AURIFLAMA	150.00	5.483	CAPAO BONITO	165.00	13,887
AVAI	150.00	1.353	CAPELA DO ALTO	162.00	6,153
AVARE	180.00	32.864	CARDOSO	150.00	5,514
BALBINOS	150.00	597	CASSIA DOS COQUEIROS	205.00	798
BANANAL	150.00	3.373	CESARIO LANGE	250.00	5,578
BARAO DE ANTONINA	180.00	1.079	CHARQUEADA	180.00	5,890
BARRA DO CHAPEU	133.00	988	COLOMBIA	180.00	2,103
BARRA DO TURVO	146.00	1.333	COROADOS	150.00	1,904

Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)	Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)
CORONEL MACEDO	180.00	1.485	GUARANI DOESTE	150.00	795
CRUZALIA	250.00	792	GUAREI	325.00	4,064
DIRCE REIS	100.00	651	GUARIBA	190.00	12,424
DIVINOLANDIA	205.00	3.293	GUZOLANDIA	150.00	1,676
DOLCINOPOLIS	150.00	976	IACRI	210.00	2,064
ECHAPORA	180.00	2.227	IARAS	140.00	1,256
ELDORADO	148.00	2.981	IBIRA	160.00	4,461
ELIAS FAUSTO	190.00	4.855	IBIUNA	379.00	12,964
EMILIANOPOLIS	150.00	1.126	ICEM	140.00	2,801
ESPIRITO SANTO DO PINHAL	200.00	14.403	IGARATA	180.00	2,895
ESTRELA DO NORTE	180.00	3.055	IGUAPE	113.00	10,863
ESTRELA DOESTE	120.00	869	ILHA COMPRIDA	98.00	11,740
EUCLIDES DA CUNHA PAULISTA	170.00	2.539	INDIAPORA	150.00	1,589
FARTURA	160.00	5.329	INUBIA PAULISTA	150.00	1,354
FERNANDO PRESTES	150.00	2.288	IPORANGA	95.00	959
FERNANDOPOLIS	160.00	28.877	IRAPUA	150.00	2,469
FERNAO	100.00	383	ITABERA	180.00	4,674
FLORA RICA	120.00	630	ITAI	241.00	7,302
FLOREAL	150.00	1.154	ITAOCA	95.00	890
FLORIDA PAULISTA	160.00	4.127	ITAPETININGA	210.00	50,286
FLORINIA	265.00	1.046	ITAPEVA	150.00	28,424
FRANCA	235.00	126.138	ITAPIRAPUA PAULISTA	152.00	985
GABRIEL MONTEIRO	190.00	1.096	ITAPORANGA	180.00	4,948
GASTAO VIDIGAL	120.00	1.269	ITARIRI	116.00	3,149
GLICERIO	250.00	1.484	ITATIBA	300.00	32,156
GUAPIARA	200.00	3.967	ITATINGA	150.00	5,473

Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)	Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)
ITOBI	180.00	2,541	MOCOCA	220.00	23,860
ITUPEVA	200.00	16,831	MOMBUCA	263.00	1,106
JABORANDI	125.00	2,141	MONTE ALTO	180.00	18,441
JACUPIRANGA	210.00	4,592	MONTE APRAZIVEL	180.00	8,897
JALES	150.00	19,926	MONTEIRO LOBATO	125.00	942
JAMBEIRO	140.00	1,689	MORUNGABA	350.00	4,049
JARINU	325.00	7,817	NARANDIBA	150.00	1,532
JERIQUARA	210.00	1,180	NHANDEARA	150.00	3,855
JUQUIA	161.00	5,015	NIPOA	150.00	1,703
LAGOINHA	150.00	1,481	NOVA CAMPINA	199.00	1,677
LINS	200.00	29,151	NOVA CANAA PAULISTA	150.00	617
LORENA	300.00	30,157	NOVA GRANADA	170.00	7,268
LOURDES	150.00	734	NOVA LUZITANIA	150.00	1,200
LUCELIA	175.00	7,043	NOVO HORIZONTE	170.00	15,233
LUCIANOPOLIS	140.00	777	OLEO	220.00	996
LUIZIANIA	120.00	1,763	ONDA VERDE	150.00	1,384
LUTECIA	190.00	1,006	ORINDIUVA	150.00	2,030
MACEDONIA	150.00	1,193	OSCAR BRESSANE	170.00	911
MAGDA	150.00	1,249	OSVALDO CRUZ	160.00	12,214
MARACAI	300.00	4,708	OUROESTE	150.00	4,040
MARIAPOLIS	150.00	1,389	PALMARES PAULISTA	170.00	3,262
MARINOPOLIS	150.00	694	PALMEIRA DOESTE	150.00	3,348
MESOPOLIS	150.00	741	PARANAPANEMA	165.00	5,570
MIRA ESTRELA	150.00	1,090	PARANAPUA	150.00	1,539
MIRACATU	150.00	4,668	PARAPUA	145.00	3,995
MIRANTE DO PARANAPANEMA	200.00	4,256	PARDINHO	200.00	2,000

Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)	Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)
PARIQUERA-ACU	170.00	5,517	PRESIDENTE PRUDENTE	245.00	83,917
PAULO DE FARIA	150.00	3,206	QUATA	170.00	4,888
PEDERNEIRAS	270.00	16,011	QUEIROZ	150.00	1,210
PEDRANOPOLIS	150.00	817	REDENCAO DA SERRA	94.00	869
PEDREGULHO	205.00	4,972	REGENTE FEIJO	200.00	7,205
PEDRO DE TOLEDO	100.00	3,373	REGISTRO	130.00	19,015
PIACATU	180.00	2,119	RESTINGA	115.00	2,074
PIEDADE	150.00	10,766	RIBEIRA	178.00	944
PILAR DO SUL	180.00	9,347	RIBEIRAO BRANCO	230.00	4,638
PINDAMONHANGABA	260.00	53,259	RIBEIRAO CORRENTE	220.00	1,213
PIQUEROBI	170.00	1,178	RIBEIRAO DO SUL	160.00	1,224
PIRAPOZINHO	160.00	9,685	RIBEIRAO DOS INDIOS	150.00	813
PIRATININGA	150.00	4,288	RIBEIRAO GRANDE	170.00	2,298
PLANALTO	150.00	1,737	RIFAINA	205.00	1,613
PLATINA	170.00	1,032	RIOLANDIA	230.00	3,348
POLONI	150.00	2,112	RIVERSUL	230.00	1,871
PONGAI	150.00	1,346	ROSANA	200.00	6,346
PONTALINDA	150.00	1,330	ROSEIRA	175.00	3,397
PONTES GESTAL	150.00	1,128	RUBIACEA	150.00	1,028
POPULINA	150.00	1,756	RUBINEIA	150.00	1,679
PORANGABA	181.10	3,786	SAGRES	150.00	830
PRACINHA	150.00	602	SALMOURAO	180.00	1,691
PRATANIA	252.00	1,569	SALTO DE PIRAPORA	250.00	15,647
PRESIDENTE ALVES	150.00	1,519	SANTA ALBERTINA	150.00	2,435
PRESIDENTE BERNARDES	190.00	4,447	SANTA CLARA DOESTE	150.00	743
PRESIDENTE EPITACIO	170.00	15,752	SANTA CRUZ DA ESPERANCA	190.00	592

Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)	Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)
SANTA ERNESTINA	150.00	2,139	TAGUAI	200.00	3,807
SANTA MERCEDES	170.00	1,309	TAPIRAI	132.00	1,962
SANTA ROSA DO VITERBO	190.00	9,189	TAQUARITUBA	190.00	7,915
SANTA SALETE	150.00	483	TAQUARIVAI	170.00	1,592
SANTANA DA PONTE PENSA	170.00	612	TARABAI	150.00	2,273
SANTO ANASTACIO	190.00	7,348	TATUI	350.00	42,411
SANTO ANTONIO DO JARDIM	205.00	1,405	TEODORO SAMPAIO	210.00	7,623
SANTO ANTONIO DO PINHAL	145.00	1,940	TIMBURI	170.00	849
SANTO EXPEDITO	160.00	1,281	TORRE DE PEDRA	249.30	1,098
SANTOPOLIS DO AGUAPEI	130.00	1,607	TORRINHA	230.00	3,467
SAO BENTO DO SAPUCAI	110.00	3,316	TREMEMBE	150.00	14,816
SAO FRANCISCO	150.00	1,040	TRES FRONTEIRAS	150.00	2,493
SAO JOAO DA BOA VISTA	210.00	35,748	TUPA	180.00	25,279
SAO JOAO DAS DUAS PONTES	150.00	952	TURIUBA	150.00	751
SAO JOSE DOS CAMPOS	220.00	183,486	TURMALINA	150.00	738
SAO LUIS DO PARAITINGA	180.00	3,010	UBIRAJARA	150.00	1,274
SAO MANOEL	230.00	14,373	UNIAO PAULISTA	150.00	582
SAO MIGUEL ARCANJO	194.00	8,495	URANIA	150.00	6,228
SAO ROQUE	270.00	21,558	URU	150.00	500
SARAPUI	150.00	3,804	VALENTIM GENTIL	150.00	5,005
SARUTAIA	200.00	1,291	VITORIA BRASIL	150.00	626
SEBASTIANOPOLIS DO SUL	150.00	1,198	ZACARIAS	120.00	941
SERRA AZUL	210.00	2,825			
SETE BARRAS	89.00	3,313			
SILVEIRAS	110.00	1,539			
SUD MENNUCCI	120.00	2,766			

Municipalities of the Sao Paulo Metropolitan Region

Municipalities	Target 2019-2020 (liters/connection/day)	Active water extensions (2016)
ARUJÁ	240.00	26,381
BARUERI	481.00	74,562
CAIEIRAS	300.00	28,849
CAJAMAR	350.00	22,695
COTIA	180.00	67,146
DIADEMA	446.00	108,402
EMBU	260.00	74,703
EMBU GUAÇU	340.00	16,582
FERRAZ DE VASCONCELOS	150.00	45,584
FRANCISCO MORATO	450.00	45,110
FRANCO DA ROCHA	300.00	40,681
ITAPECERICA DA SERRA	384.00	43,636
ITAPEVI	316.00	57,083
MAIRIPORÃ	349.99	17,455
RIBEIRÃO PIRES	310.00	30,445
RIO GRANDE DA SERRA	100.00	11,923
SANTOS	348.00	66,511
SÃO PAULO	300.00	2,980,224
SUZANO	200.00	77,727
TABOÃO DA SERRA	203.00	72,548

Weighted average of the contractual targets of the municipalities regulated by Arsesp: **272.69 liters/connection/day**

EXHIBIT III

ANALYSIS OF THE PROGRAMS THAT MAKE UP SABESP'S INVESTMENT PLAN

1. ANALYSIS OF SABESP'S INVESTMENT PLAN

The investments in fixed assets proposed by Sabesp in its Business Plan adds up to R$11.7 billion during the period from 2017 to 2020, with an average investment of R$3.8 million/year, which corresponds to an average growth of 17.7 p.a. in the period. The disbursement amount is similar.

On average, the investments in fixed assets for Operational Development represents 0.6% of total fixed assets. Investments in Institutional Development account for 4.1% of investments - in 2017, they rose to 5.5%, with the greater part (more than 80%) being investments in Information Technology, followed by administrative facilities and fleet.

The investments in the Córrego Limpo (Clean Stream) Project (sewage) add up to R$8 million in 2017, R$9 million in 2018, R$24 million in 2019 and R$26 million in 2020. These investments include the decontamination of 9 new streams by 2020 and the maintenance of the decontamination of 151 streams.

On average, construction projects aimed at energy efficiency add up to R$5.8 million/year, being almost totally focused on sewage and involve the replacement of blowers and lighting fixtures at an ETE (Sewage treatment Station) in the São Paulo metropolitan area, as well as the replacement of a number of motor-pumps.

Table 1: Fixed Assets - Vegetative Growth - R$ thousand (Dec/2016)

	2017	2018	2019	2020
VEGETATIVE GROWTH OF WATER	**138,353**	**136,424**	**146,456**	**159,541**
WATER	**138,353**	**136,424**	**146,456**	**159,541**
01 - EXPANSION OF SYSTEMS	138,353	136,424	146,456	159,541
04 - NETWORK	67,720	75,033	79,976	71,710
12 - CONNECTION	59,156	51,178	55,637	73,480
13 - WATER METER	11,477	10,213	10,843	14,352
VEGETATIVE GROWTH OF SEWAGE	**169,829**	**161,316**	**180,471**	**172,729**
SEWAGE	**169,829**	**161,316**	**180,471**	**172,729**
01 - EXPANSION OF SYSTEMS	169,829	161,316	180,471	172,729
04 - NETWORK	96,043	74,138	65,118	73,546
12 - CONNECTION	73,786	87,178	115,353	99,183

With regard to investments in the expansion of water and sewage systems due to vegetative growth, the annual amounts are of R$145 million/year for water and R$171 million/year for sewage (see table 1). The unit cost of investment is R$235 thousand/km in a water network and one of R$296 thousand/km in a sewage network; R$390 per water connection and R$565 per sewage connection; R$76 per water meter.

Table 2: Fixed Assets - Onda Limpa (Clean Wave) Baixa Santista - R$ thousand (Dec/2016)

	2017	2018	2019	2020
ONDA LIMPA (CLEAN WAVE) BAIXADA SANTISTA	**97,247**	**53,533**	**12,877**	**23,679**
SEWAGE	**78,218**	**27,150**	**-**	**10,825**
01 - EXPANSION OF SYSTEMS	78,218	27,150	-	10,825
01 - BRANCH COLLECTOR	8,033	-	-	-
03 - TREATMENT	-	-	-	10,825
04 - NETWORK	60,619	23,688	-	-
12 - CONNECTION	4,988	2,039	-	-
17 - SEWAGE PUMP	4,578	1,423	-	-

The costs associated with network investments in the Onda Limpa (Clean Wave) Baixada Santista project are R$1,280 thousand/km of network and R$730 per sewage connection (Table 2). In the case of the Pró-Billings project (Table 3), the costs are of R$4,430 thousand/km of branch collector; R$957 thousand/km of network and R$900 per connection. In addition, 39 pumping stations are being constructed with a capacity of between 10 and 250 liters/second.

Table 3: Fixed assets Pró-Billings - R$ thousand (Dec/2016)

	2017	2018	2019	2020
PRÓ-BILLINGS	**6,932**	**41,797**	**78,019**	**58,415**
SEWAGE	**6,932**	**41,797**	**78,019**	**58,415**
01 - EXPANSION OF SYSTEMS	6,932	41,797	78,019	58,415
01 - BRANCH COLLECTOR	6,932	24,840	54,119	27,633
04 - NETWORK	-	12,925	12,650	10,725
12 - CONNECTION	-	-	2,250	4,529
17 - SEWAGE PUMP	-	4,033	9,000	15,528

On average, investments in expansion and improvement of water and sewage systems in the interior of the state add up to R$121 million/year (Table 4). A quarter of the investments in 2017 are concentrated in sewage systems. From 2018 onwards, the investments will be divided between water and sewage in equal proportions. The cost for the transmission of raw water is R$737 thousand/km and R$311 thousand/km of network; for treated water the cost of transmission is R$950 thousand/km, R$2,022 thousand/m³ of reservoir and R$384/connection. For improvements in the water network, the network cost is R$190 thousand/km and R$1,140 thousand / m³ of reservoir. The cost of the sewage branch collector is R$1,651 thousand/km and R$336 thousand/km of network; R$485/connection. For improvement of the sewage system, the cost is R$635/connection.

On average, investments in expansion and improvement of water and sewage systems in the coastal region add up to R$148 million/year, with a slight emphasis on investments in water. In 2020, there will be a significant increase in investments in water improvement. The cost for the transmission of raw water is R$6,428 thousand/km and R$354 thousand/km of network; for treated water the cost of transmission is R$7,485 thousand/km, R$2,567 thousand/m³ of reservoir and R$339/connection. The cost of the sewage branch collector is R$7,354 thousand/km and R$930 thousand/km of network; R$729/connection.

Table 4: Fixed Assets in the Interior of the State - R$ thousand (Dec/2016)

	2017	2018	2019	2020
WATER PROGRAM OF THE INTERIOR OF THE STATE	**44,897**	**69,543**	**59,955**	**48,142**
WATER	**44,882**	**68,949**	**57,608**	**44,980**
01 - EXPANSION OF SYSTEMS	41,206	67,686	55,532	38,576
01 - CATCHMENT AND PUMPING OF RAW WATER	1,441	3,309	4,005	1,169
02 - TRANSMISSION OF RAW WATER	1,249	2,854	1,499	2,052
03 - TREATMENT	17,151	31,719	21,964	15,050
04 - NETWORK	2,979	5,735	4,932	3,595
06 - WATER SOURCE	4,309	2,049	1,175	3,442
07 - SLUDGE AND FINAL DISPOSAL	58	278	-	-
08 - PUMPING OF TREATED WATER	3,875	500	292	298
09 - TRANSMISSION OF TREATED WATER	6,220	7,136	1,886	
10 - STORAGE	3,052	12,909	18,829	12,049
12 - CONNECTION	393	718	231	201
14 - WATER MEASUREMENT UNIT (UMA)	480	480	720	720
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	3,676	1,263	2,076	6,404
01 - CATCHMENT AND PUMPING OF RAW WATER	596	-	-	-
02 - TRANSMISSION OF RAW WATER	235	-	1,265	552
03 - TREATMENT	820	200	-	5,220
04 - NETWORK	1,618	1,063	180	57
10 - STORAGE	60	-	425	150
11 - SECTORIZATION	348	-	206	425
SEWAGE PROGRAM OF THE INTERIOR OF THE STATE	**131,848**	**58,504**	**47,058**	**29,870**
SEWAGE	**131,394**	**58,256**	**46,767**	**29,272**
01 - EXPANSION OF SYSTEMS	121,235	54,474	41,842	25,562
01 - BRANCH COLLECTOR	21,340	22,145	13,093	11,100
03 - TREATMENT	64,522	9,908	19,895	5,032
04 - NETWORK	12,565	7,932	4,128	7,073
07 - SLUDGE AND FINAL DISPOSAL	2,989	40	140	-
12 - CONNECTION	2,500	1,000	1,295	1,250
17 - SEWAGE PUMP	14,903	12,231	2,477	1,107
18 - OUTFALL	2,418	1,218	814	-
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	10,159	3,782	4,925	3,710
01 - BRANCH COLLECTOR	1,526	308	100	58
03 - TREATMENT	341	2,020	3,828	3,174
04 - NETWORK	3,746	291	159	-
07 - SLUDGE AND FINAL DISPOSAL	35	-	-	-
12 - CONNECTION	1,459	61	110	-
17 - SEWAGE PUMP	1,991	689	200	300
18 - OUTFALL	1,060	413	527	179

Table 5: Fixed Assets in the Coastal Region - R$ thousand (Dec/2016)

	2017	2018	2019	2020
WATER PROGRAM OF THE COASTAL REGION	**49,695**	**79,805**	**75,037**	**132,463**
WATER	**49,617**	**65,727**	**72,521**	**132,463**
01 - EXPANSION OF SYSTEMS	45,500	58,097	55,054	59,963
02 - TRANSMISSION OF RAW WATER	209	2,374	3,272	6,167
03 - TREATMENT	2,607	10,749	3,494	4,601
04 - NETWORK	3,392	3,057	4,657	5,590
09 - TRANSMISSION OF TREATED WATER	4,749	16,955	20,202	28,606
10 - STORAGE	20,532	20,533		
12 - CONNECTION	511	430	430	-
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	4,117	7,630	17,467	72,500
03 - TREATMENT	3,560	7,630	13,467	72,500
09 - TRANSMISSION OF TREATED WATER	557	-	-	-
10 - STORAGE	-	-	4,000	-
SEWAGE PROGRAM OF THE COASTAL REGION	**53,620**	**57,856**	**69,976**	**90,726**
SEWAGE	**53,176**	**57,856**	**69,976**	**90,726**
01 - EXPANSION OF SYSTEMS	52,019	57,856	69,976	90,726
01 - BRANCH COLLECTOR	-	2,954	6,318	-
03 - TREATMENT	11,754	21,070	20,484	28,194
04 - NETWORK	27,523	19,720	31,443	41,526
12 - CONNECTION	6,168	3,582	2,000	3,000
17 - SEWAGE PUMP	6,575	4,337	3,952	12,676
18 - OUTFALL	-	6,194	5,779	5,330
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	1,157	-	-	-
03 - TREATMENT	1,023	-	-	-
17 - SEWAGE PUMP	134	-	-	-

On average, investments in sewage in the São Paulo Metropolitan Region add up to R$105 million/year, mainly at the end of the period (network expansion). The cost of the sewage branch collector is R$4,517 thousand/km and R$819 thousand/km of network; R$575/connection. For improvements, the cost of the sewage branch collector is R$4,706 thousand/km and R$2,764 thousand/km of network; R$575/connection.

Table 6: Fixed Assets in Sewage in the SP Metropolitan Region - R$ thousand (Dec/2016)

	2017	2018	2019	2020
SEWAGE PROGRAM OF THE SÃO PAULO METROPOLITAN REGION	**59,967**	**110,640**	**126,400**	**124,724**
SEWAGE	**59,967**	**110,640**	**126,400**	**124,724**
01 - EXPANSION OF SYSTEMS	40,583	99,288	116,178	107,087
01 - BRANCH COLLECTOR	2,422	2,068	4,481	2,109
03 - TREATMENT	7,500	4,500	9,758	4,102
04 - NETWORK	21,218	75,561	83,593	71,680
12 - CONNECTION	6,026	12,135	14,996	12,197
17 - SEWAGE PUMP	3,417	5,024	3,350	16,999
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	19,384	11,352	10,222	17,637
01 - BRANCH COLLECTOR	14,232	7,653	6,582	11,803
04 - NETWORK	1,043	2,619	3,080	2,630
17 - SEWAGE PUMP	4,109	1,080	560	3,204

In the Vale do Ribeira region, investments in sewage account for 84% of the total investments, adding up to R$18 million/year. The cost of expansion is R$330 thousand/km of sewage network; R$700/connection. For improvements, the cost of the sewage branch collector is R$4,706 thousand/km and R$2,764 thousand/km of network; R$575/connection.

Table 7: Fixed Assets in the Vale do Ribeira region - R$ thousand (Dec/2016)

	2017	2019	2019	2020
PROGRAM OF THE VALE DO RIBEIRA REGION	**13,766**	**16,582**	**20,733**	**21,126**
WATER	**3,485**	**1,078**	**4,382**	**2,655**
01 - EXPANSION OF SYSTEMS	266	595	1,109	1,150
01 - CATCHMENT AND PUMPING OF RAW WATER	256	594	1,109	900
10 - STORAGE	11	0	0	250
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	3,219	483	3,273	1,505
01 - CATCHMENT AND PUMPING OF RAW WATER	430	150	169	-
02 - TRANSMISSION OF RAW WATER	-	-	1,787	-
03 - TREATMENT	-	-	-	500
04 - NETWORK	8	-	252	-
07 - SLUDGE AND FINAL DISPOSAL	161	133	827	1,005
09 - TRANSMISSION OF TREATED WATER	280	-	238	-
10 – STORAGE	2,340	200	-	-
SEWAGE	**10,281**	**15,504**	**16,351**	**18,472**
01 - EXPANSION OF SYSTEMS	10,281	14,512	16,351	18,114
04 - NETWORK	7,676	11,712	13,151	14,514
12 - CONNECTION	2,000	2,800	3,200	3,600
17 - SEWAGE PUMP	605	-	-	
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	-	993	-	357
03 - TREATMENT	-	993	-	357

The Metropolitan Water Program comes out to a total of R$406 million/year, but in 2018 rises to R$1.2 billion. The investments for catchment and pumping of raw water have a capacity of 6,330 liters/second. The transmission of raw water has a cost of R$12,360 thousand/km. The pumping of treated water will have a capacity of 80 liters/second, with a cost of R$10,669 thousand/km. Reservoir costs come out to R$653 thousand/m³.

Table 8: Fixed Assets in the Metropolitan Water Program - R$ thousand (Dec/2016)

	2017	2018	2019	2020
METROPOLITAN WATER PROGRAM - PMA	**220.707**	**1.169.355**	**143.217**	**94.894**
02 - IMPROVEMENTS OF SYSTEMS OR RENEWAL OF ASSETS	75.063	47.787	45.527	30.131
01 - CATCHMENT AND PUMPING OF RAW WATER	8.340	8.550	7.493	4.706
02 - TRANSMISSION OF RAW WATER	1.847	2.483	11.669	7.330
03 - TREATMENT	5.055	10.398	14.199	14.871
04 - NETWORK	2.167	9.408	3.828	500
06 - WATER SOURCE	301	427	402	-
07 - SLUDGE AND FINAL DISPOSAL	1.330	-	-	-
08 - PUMPING OF TREATED WATER	31.335	12.818	3.668	1.728
09 - TRANSMISSION OF TREATED WATER	23.878	2.345	3.357	997
10 - STORAGE	810	1.358	911	-

Table 9: Fixed Assets in the Tietê Project - R$ thousand (Dec/2016)

	2017	2018	2019	2020
TIETÊ PROJECT	**859,573**	**705,120**	**354,551**	**1,480,309**
SEWAGE	**836,080**	**692,449**	**340,848**	**1,372,577**
01 - EXPANSION OF SYSTEMS	836,080	692,449	315,010	1,372,577
01 - BRANCH COLLECTOR	173,269	359,203	37,176	654,032
03 - TREATMENT	531,657	29,730	-	214,658
04 - NETWORK	15,600	16,835	10,663	10,663
05 - INTERCEPTION	103,625	246,936	213,649	352,581
07 - SLUDGE AND FINAL DISPOSAL	-	8,750	14,002	22,541
12 - CONNECTION	1,400	1,500	1,500	1,400
17 - SEWAGE PUMP	1,019	9,350	27,357	108,366
18 - OUTFALL	9,510	20,145	10,662	8,336
02 - IMPROVEMENTS OF SYSTEMS OR RENEWAL OF ASSETS	-		25,838	-
07 - SLUDGE AND FINAL DISPOSAL	-		25,838	-

On average fixed assets for the Tietê Project add up to R$850 million/year, rising to R$1.5 billion in 2020. The cost of the branch collector is R$4,752 thousand/km; R$827 thousand/km of network; of R$28.971 thousand/km of interception; of R$7,188 thousand/km of sludge and final disposal; R$569/connection.

R$103 million will be invested in the Vida Nova (New Life) project during the period. The cost is R$223 thousand/km for the water network and R$495 thousand/km for the sewage network and R$243/sewage connection.

Table 10: Fixed Assets in the Vida Nova (New Life) project - Water Sources - R$ thousand (Dec/2016)

	2017	2018	2019	2020
VIDA NOVA (NEW LIFE) - WATER SOURCES	**9,126**	**41,509**	**32,658**	**19,235**
WATER	**482**	**16,503**	**9,215**	**3,000**
01 - EXPANSION OF SYSTEMS	482	4,882	9,215	3,000
04 - NETWORK	482	4,882	9,215	3,000
02 - IMPROVEMENTS OF SYSTEMS OR RENEWAL OF ASSETS	-	11,621	-	-
07 - SLUDGE AND FINAL DISPOSAL	-	11,621	-	-
SEWAGE	**6,042**	**22,279**	**22,658**	**16,235**
01 - EXPANSION OF SYSTEMS	6,042	10,760	16,235	16,235
04 - NETWORK	4,379	8,967	10,772	10,772
12 - CONNECTION	876	1,793	5,463	5,463
17 - SEWAGE PUMP	788		-	-
02 - IMPROVEMENTS OF SYSTEMS OR RENEWAL OF ASSETS	-	11,519	6,423	-
01 - BRANCH COLLECTOR	-	11,519	6,423	-

Investments in expansion of systems increased by 23% during the period between 2012 and 2016, while the water service index (IAA) rose from 93% to one of 95% in the same period and the sewer service index (IAE) increased from 81% to 82%. Sabesp's projections point to a growth of 13% between 2016 and 2020 with the projected value for the IAA rising to 96% and that for the IAE climbing to 86%. In fact, when we look at the breakdown between investments in water and sewage, it can be noted that the focus during the period is on investments in sewage (73% on average), which explains the trajectory of the indices.

Graph 1: Investments in Expansion of Systems (R$ Dec/16) and the Water and Sewage Service Indices (%)
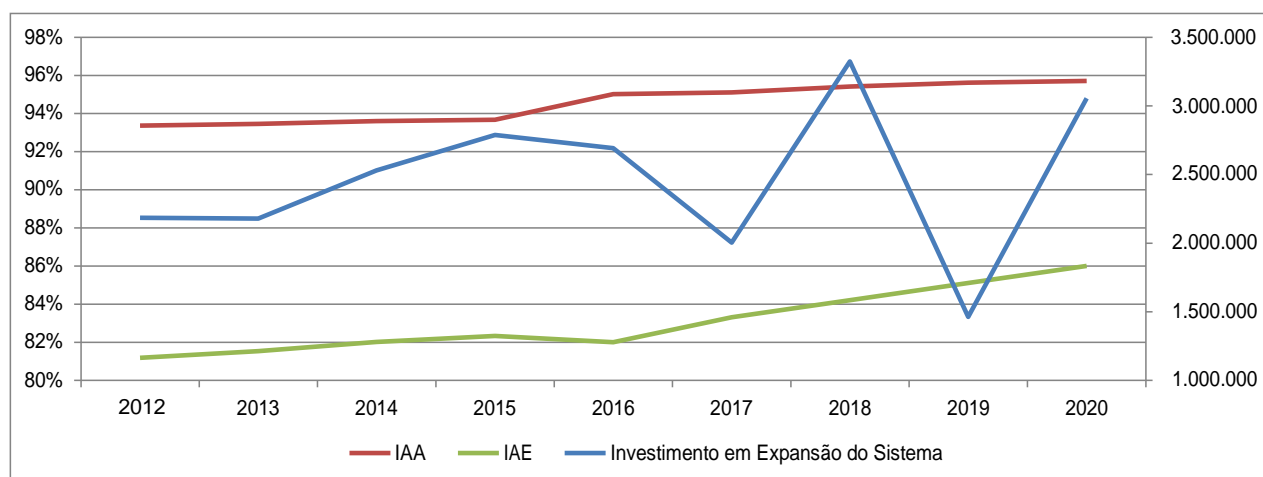
For their part, investments in the treatment of sewage showed a 53% drop in the latest cycle and a 70% growth is projected for the period between 2016 and 2020. During the same period, the expectation is that the treatment index will post a 5-percentage point gain, with a jump in 2020, also in line with the investments in fixed assets.

Graph 21.1: Investments in Sewage Treatment (R$ Dec/16) and the Sewage Treatment Indices (%)
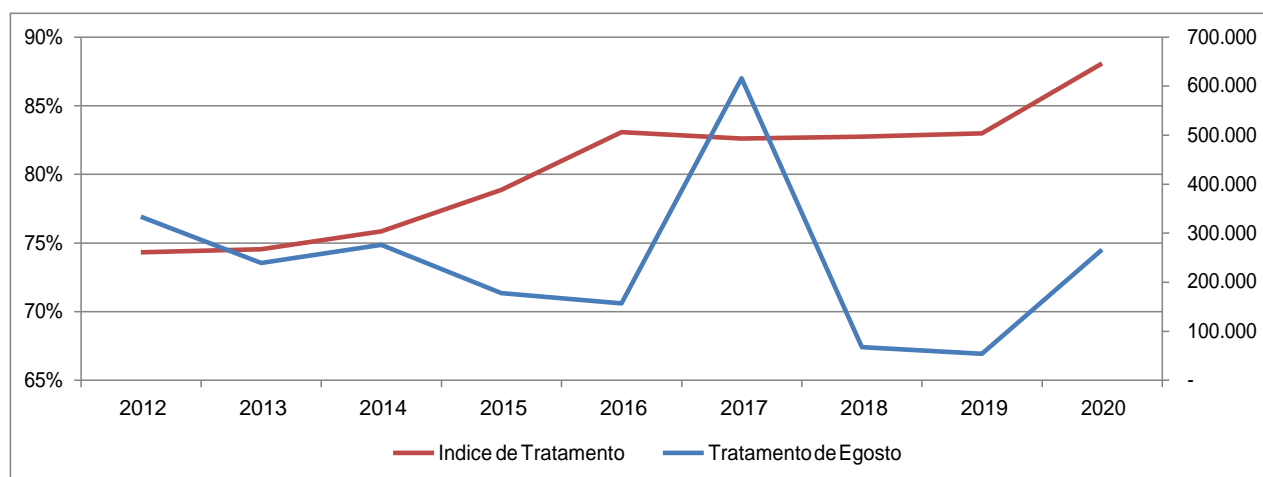
Capition:
Treatment Indices
Sewage Treatment

Investments aimed at combating losses will total R$2.3 billion in the period, an average of R$591 million a year - which represents an average growth of 7% p.a., by comparison with an average drop of 5% p.a. during the latest cycle.

On average 45% of the investments will be in connections. The costs will be R$357 thousand/km of network; of R$5,447 thousand/km of transmission of treated water; R$500/connection; R$93/water meter.

Table 11: Fixed assets related to the reduction and control of losses - R$ thousand (Dec/2016)

	2017	2018	2019	2020
REDUCTION AND CONTROL OF LOSSES	**465,862**	**759,106**	**610,594**	**528,472**
WATER	**442,042**	**738,486**	**587,105**	**504,198**
02 - IMPROVEMENT OF SYSTEMS OR RENEWAL OF ASSETS	442,042	738,486	587,105	504,198
04 - NETWORK	100,493	173,003	131,055	108,685
09 - TRANSMISSION OF TREATED WATER	-	8,000	3,000	6,000
11 - SECTORIZATION	129,225	245,333	75,135	101,677
12 - CONNECTION	182,864	269,604	347,547	251,133
13 - WATER METER	29,460	42,546	30,368	36,703

Graph 3: Investments in Reduction and Control of Losses (R$ Dec/16) and Loss Indices (liters/connection/day)
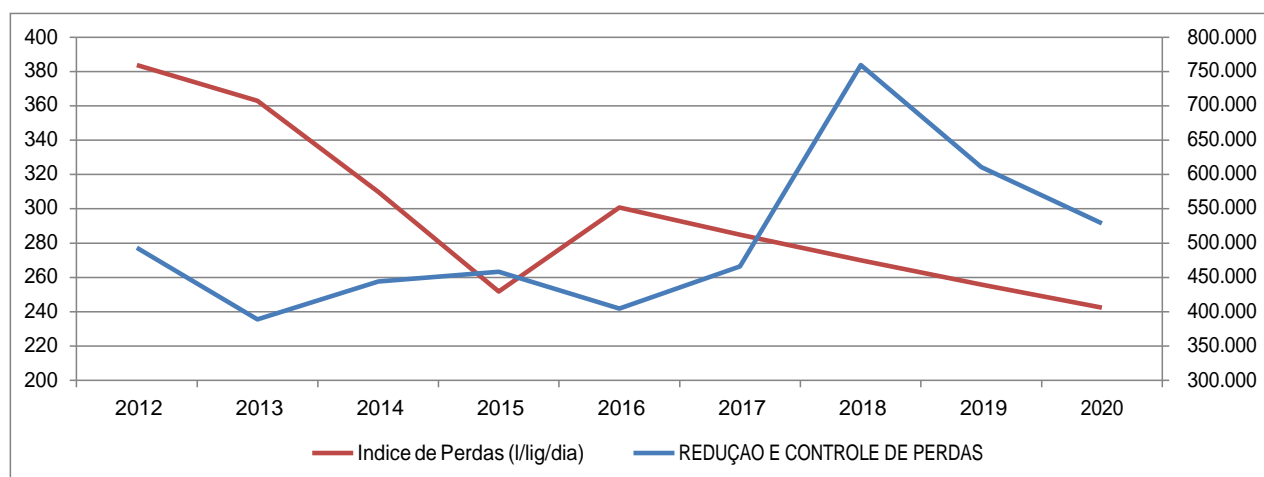
Capition:
Loss Indices
Reduction and Control of Losses

In this way, direct investments add up to R$10.2 billion in the period, which translates into an average of R$2.5 billion/year. Special services related to direct investments come out to R$987 million in the period, or 8.4% of the total investment. Specifically, in this group of investments, Arsesp decided to disallow investments in special services related to new businesses (R$3.5 million in the period), given that these are associated with capital contributions to companies in which Sabesp is a partner and are not part of the set of municipalities regulated by Arsesp.

Last but not least, for the capitalizable expenses, Sabesp uses the average observed between 2012 and 2016 as a reference for the next cycle. In the final composition of the CAPEX, as set forth in the Technical Methodological Note, investments in special services and capitalizable expenses will be limited to 15 of the direct investments. The average projected by Sabesp, including the projected capitalizable expenses as shown above, represent 17.4% of the direct investments.

EXHIBIT IV

SABESP'S METHODOLOGY for CALCULATION OF PRELIMINARY WEIGHTED AVERAGE COST OF CAPITAL (WACC)

1. METHODOLOGICAL APPROACH

1.1. The Chosen Model WACC/CAPM

Arsesp, in line with the procedure adopted by a great many regulatory agencies, opted to apply the WACC model. This model is based on the assumption that an investment's rate of return is equal to the weighted average of the costs of the various types of capital (equity or of third parties), with weights that corresponding to each type of capital's percentage share in the total value of the invested asset. In other words, it seeks to reflect the average cost of the different financing alternatives that are available for the investment.

The formula below shows the calculation of the WACC after tax, that is, it takes into account the effective cost of the debt excluding the tax benefit. Therefore, in order to calculate the WACC after tax it is necessary to know the cost of both equity capital as well as third party capital (cost of debt), in addition to estimating the capital structure for the weighting of these costs and the applicable tax rates.

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

Where:

- **WACC**: weighted average cost of capital;

- **Ke**: cost of equity;

- **Kd**: cost of debt before tax;

- **We = E / (D + E):** percentage share of equity, where E and D are the amounts of equity (E) and debt (D), respectively

- **Wd = D / (D + E):** percentage share of third-party capital, where E and D are the amounts of equity (E) and debt (D), respectively

- **T:** tax rate (IR + CSLL).

In order to obtain the cost of equity, in other words, of the return required by the shareholders, the CAPM - Capital Asset Pricing Model method, which is widely accepted by most regulatory agencies, will be used. One of its advantages is the fact that it enables the comparison of the case under analysis with that of companies belonging to the same industry and which undertake activities in conditions of similar risk.

This model is built on the assumption that the variance of returns is an appropriate measure of the business' risk. However, only that part of the variance that cannot be diversified, in other words that portion of the risk which cannot be eliminated by means of a proper diversification of the investor's portfolio, is recognized for the purpose of remuneration.

Therefore, the CAPM covers two basic types of investments: a risk-free investment the yield of which is known with certainty and a portfolio of shares represented by all the available shares that are in the hands of the public, weighted in accordance with their market values. The main idea is that, given a risk-averse investor, there is an equilibrium relationship between risk and expected return. In market equilibrium, a

given investment is expected to yield a return that is in proportion to its systematic risk (i.e. that risk which cannot be avoided by diversifying stocks). The higher the systematic risk, the higher the return that is expected by the investors, in other words the size of the risk premium is proportional to the systematic risk assumed by the investor. The cost of equity calculated by the original CAPM is represented by the formula below:

$$Ke = R_f + \beta \; x \; (R_m - R_f) => (2)$$

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's rate of return (diversified portfolio)

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

$$Ke = R_f + \beta \; x \; (R_m - R_f) + R_p => (3)$$

Where:

R_p: additional country risk premium.

The cost of debt (third-party capital) is the return required by the holders of the debt of the company that owns the asset, based on an assessment of the business and of the company's performance. In line with the estimated cost of equity, in order to calculate the cost of the third-party capital ARSESP will use the methodology known as CAPM of debt[10], also incorporating country risk. Therefore, SABESP's cost of debt will be estimated based on the following algebraic expression:

$$K_d = R_f + R_c + R_{p} => (4)$$

Where:

K_d : Cost of Debt or Debt CAPM

R_f: rate of return of a risk-free asset

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

R_p: country risk premium

With regard to the definition of the capital structure, in other words, the breakdown between equity and debt in the financing of the investments made by the concessionaire, the following factors should be taken into account.

This definition is extremely important given that the weights between the sources of funding have an effect on the WACC outcome in two ways: a) in the weighting of the costs of equity and debt; and b) in the calculation of the leveraged Beta, which indicates the business risk.

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

There are two ways to address the capital structure: check the concessionaire's current financing structure or, alternatively, adopt an optimal capital structure, in other words, a composition that is deemed to be adequate and in keeping with the company and the sector of which it is a part[11]. This latter approach is normally

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[10] The Debt CAPM is the most widely used method for determining the cost of debt with a regulatory objective. It consists of an adaptation of the general CAPM model, representing the rate at which the company can raise funds for the level of leverage considered. In its basic formulation, it expresses the marginal cost of the debt. In adapting it for emerging economies, the country risk premium (r_p) is added to the original expression.

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

achieved by means of a financial benchmarking, which consists of comparing the company's accounting information with that of other companies in the same industry. During this preliminary stage of Sabesp's tariff review process, Arsesp opted for the first approach.

Summing up, in line with the trend taken by a number of regulatory agencies in various parts of the world[12], Arsesp will use the Weighted Average Cost of Capital (WACC) method combined with the CAPM model in order to calculate the rate of return on Sabesp's investments.

1.2. Time Series, Measures of Central Tendency and Reference Market

Before giving a detailed explanation of the calculation of each variable of formulas (1), (3) and (4), it is important to explain the determination of the time windows and of the choice of the central tendency measure to be used to demonstrate the consistency of the analysis. Along with, the choice of the reference market for the choice of the variables to be used in the WACC calculation.

Initially, an attempt was made to use merely the arithmetic mean as a central tendency measure of the data series used in the calculation of the WACC/CAPM. However, observing the behavior of the data series chosen, over the course of time, it is observed that although the arithmetic mean is the most widely used central tendency measure for measuring the expected return, where there is a considerable asymmetry, it may be surpassed by the median or mode as the best tendency measure, in other words, a better measure of the expected value[13].

Reinforcing this argument, in its Technical Note nº 180/1204 ANEEL explained that: "*With regard to the central tendency measures, it should be borne in mind that the WACC/CAPM model estimates variables associated with expectations. There is no certainty regarding how best to reflect an expectation, and there are a number of possible and justifiable measures to be implemented. It is possible to use the most recent available data of the series, border data or some quartile, or even some statistical inference. The practice has been to use central tendency measures of the historical series of the variables of interest in order to estimate the expectations associated with the definition of the cost of capital. Once the central tendency measures have been chosen as appropriate to reflect expectations, the choice of the measure no longer has any degree of subjectivity ... This choice should comply with the profile of the series, in order to avoid the exaggerated distortion caused by extreme data. "*

Taking this into account, after carrying out asymmetry and standard deviation analysis on the main series of data, in order to verify whether the dispersion of the data over the course of the years allows us, with a reasonable degree of certainty, to determine a reliable central tendency of the aforementioned data series Arsesp opted for the following choices both in terms of the time-windows as well as regarding the central tendency measures to be used in the calculation of the WACC.

In the case of the determination of the Risk-Free Return (Rf) and the Market Return (Rm), Arsesp opted for the use of the arithmetic mean as a measure of central tendency and time windows of 30 years. It should be noted that these windows explain the behavior and macroeconomic conditions within the terms of the Sabesp's concessions and therefore take into account the behavior of the variables over the useful life of the assets that will be remunerated by the WACC calculation.

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[12] (Great Britain) (OFGEM), Australia (AER), Brazil (ANEEL and ARSESP - Piped Gas), Colombia (CREG), Guatemala and New Zealand, among others (Cepa, 2010).
[13] See Copeland et. Al, Financial Theory and Corporate Policy, p.104

In the case of the Country Risk Premium, **EMBI+Br**[14], Arsesp opted to use the median as the central tendency measure and a time window of 15 years, given the high degree of asymmetry exhibited in the measurements of its historical series, as will be seen further on.

With regard to the choice of the reference market, a decision was made to use international statistics, using the USA as a reference market, due to its size, its degree of competition and the availability of information, for choosing the variables to be used in the calculation of WACC. Below we include the definition and the estimates made for the calculation of the variables that make up the WACC/CAPM model.

2.   CALCULATION OF THE VARIABLES OF THE WACC/CAPM MODEL

2.1.   Capital structure

In order to determine the capital structure, first of all an analysis was made of companies in the Brazilian sanitation sector which exhibit the greatest similarity to Sabesp, such as Sanepar (in the State of Paraná) and Copasa (in the State of Minas Gerais) (Table 3.1). The indicator chosen was the ratio of Interest-Bearing Liabilities (Short and Long-term Loans and Financing) to the Intangible Non-Current Assets of the companies[15]. The average leverage exhibited by the three companies was **38.72%.** However, this analysis is hampered by the lack of regulatory accounting in the sanitation sector that standardizes the accounting criteria, making the parameters being compared more homogeneous.

Arsesp opted to use Sabesp's own capital structure, in other words, it took the Interest-Bearing Liabilities/Intangible Assets ratio as an indicator of the company's financial leverage, under which the intangible assets are used as a proxy for the Regulatory Asset Base[16] (Fixed Assets in Use). This choice produced a capital structure in which debt had a **41.17%** share and equity had a **58.83%** share, which will be used to calculate the WACC.

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[14] EMBI+, is the code for the Emerging Markets Bond Index, which was created by JPMorgan and which measures the daily performance of debt securities of emerging economies in relation to the average daily return of the prices of similar United States Treasury securities (which act as the reference for the extremely low risk securities market). The greater the difference, the more pronounced the investors' perception of risk vis-à-vis a particular type of security. The formula created by JPMorgan is restricted to calculating the difference and its variation from one day to the next.

[15] The figures were taken from the respective companies' Corporate Balance Sheets for the last five years.

[16] Intangible Assets are being used to make up for the absence of any definitive figure in terms of the Regulatory Asset Base, since the additions and decreases in regulatory assets that came into operation over the course of the last tariff cycle (Incremental Asset Base) are still being evaluated by ARSESP, the result of which will be reflected in the final result of Sabesp's tariff review, which is scheduled to be concluded in April 2018.

Table 1.1: Capital structure

SABESP

Anos	Ativo Intangível	Divida = Passivo Oneroso	PO/AI = D/AI
		Valores em R$ mil correntes	
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%
Média	26.311.159	10.839.378	41,17%

Fonte: Balanços Patrimoniais da SABESP: 2012, 2013, 2014, 2015 e 2016.

Nota: Divida = Passivo Oneroso = Emprestimos e Financiamento de Curto e Longo Prazo

SANEPAR

Anos	Ativo Intangível	Divida = Passivo Oneroso	PO/AI = D/AI
		Valores em R$ mil correntes	
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%
Média	6.135.922	1.863.264	29,5%

Fonte: Balanços Patrimoniais da SANEPAR: 2012, 2013, 2014, 2015 e 2016.
Nota: Divida = Passivo Oneroso = Emprestimos e Financiamento de Curto e Longo Prazo

COPASA

Anos	Ativo Intangível	Divida = Passivo Oneroso	PO/AI = D/AI
		Valores em R$ mil correntes	
2012	6.463.360	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%
Média	7.347.884	3.335.367	45,5%

Fonte: Balanços Patrimoniais da COPASA: 2012, 2013, 2014, 2015 e 2016.

Nota: Divida = Passivo Oneroso = Emprestimos e Financiamento de Curto e Longo Prazo

Caption:

SABESP

Year	Intangible Assets (AI)	Debt (D)= Interest Bearing Liabilities (PO)	PO/AI = D/AI
		Amounts in current R$ thousands	
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	26,311,159	10,839,378	41.17%

Source: SABESP's Balance Sheets for 2012, 2013, 2014, 2015 and 2016
Note: Debt = Interest Bearing Liabilities = Short and Long-Term Loans and Financing

SANEPAR

Amounts in current R$ thousands

Year	Intangible Assets (AI)	Debt (D) = Interest Bearing Liabilities (PO)_	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 for 2012, 2013, 2014, 2015 and 2016.
Note: Debt = Interest Bearing Liabilities = Short and Long-Term Loans and Financing

COPASA

Amounts in current R$ thousands

Year	Intangible Assets (AI)	Debt (D)= Interest Bearing Liabilities (PO)	PO/AI = D/AI
2012	6,463,360	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 for 2012, 2013, 2014, 2015 and 2016
Note: Debt = Interest Bearing Liabilities = Short and Long-Term Loans and Financing

It should be stressed here that in order to improve the calculation methodology of the WACC after the definitive implementation of the company's regulatory accounting, an attempt should be made to find an indicator that takes into account the portion of third-party capital in proportion to the amount of the Net Regulatory Remuneration Base of the company's assets. In addition, an effort should be made to improve the studies so that the Agency can define an optimal capital structure that enables Sabesp's cost of capital to be minimized, taking into account the business risk and the tax benefits of using third-party capital[17].

2.2. Risk-Free Rate of Return (Rf)

The risk-free rate of return represents the remuneration required by a given investor to continue to hold a financial asset that presents no risk, in other words, it represents, from an intertemporal perspective, the opportunity cost through waiver of liquidity in the future. In general, the yield of sovereign debts instruments issued by countries with a low probability of default is used to determine the risk-free rate. In order to determine the risk-free rate of return, the historical series of US government bonds with a 10-year maturity[18] were used,

---

[17] The determination of this optimal capital structure should take into account that companies are constantly looking to reduce their financial costs by means of adopting a proper mixture of equity and third-party capital. In other words, they seek an optimal level of indebtedness and to improve their final profitability

[18] 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.

with three time series (10, 20 and 30 years) of these securities being analyzed, with a cut-off date of December 2016. The analysis of each series included verifying its asymmetry and standard deviation for utilization of the central tendency (mean), with a view to representing the value of this asset's return in the calculation of the WACC, as shown in Graphs 3.1, 3.2 and 3.3.

Graph 1.1: USGG10YR Index - 30 years
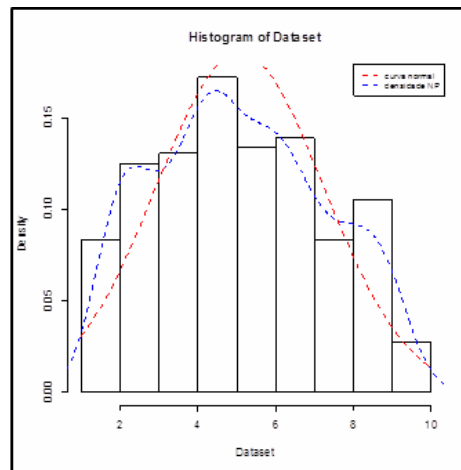
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
1,4531	5,085445	4,89195	9,587	2,15485	0,16396	-0,971801

Caption:
Normal Curve
Density
Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

Graph 1.2: USGG10YR Index - 20 years
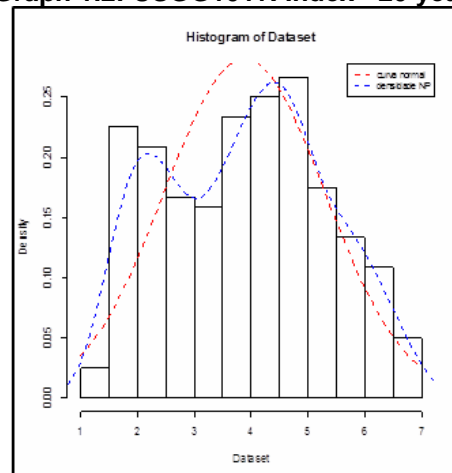
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
1,4531	3,883405	3,97005	6,903	1,415952	0,034218	-1,011726

Caption:
Normal Curve
Density
Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

Graph 1.3: USGG10YR Index - 10 years
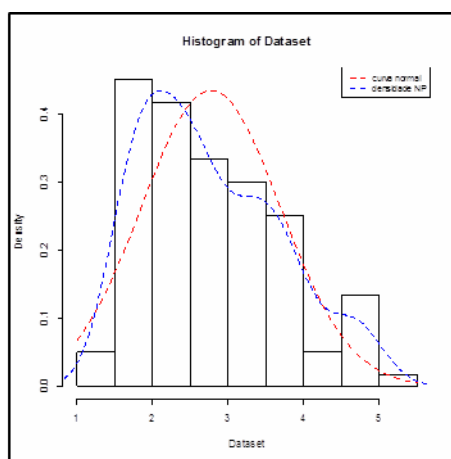
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
1,4531	2,775147	2,58775	5,0244	0,918414	0,582137	-0,603608

Caption:
Normal Curve
Density
Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

Looking at the graphs above, it can be noted that the 20- and 30-year series exhibit low asymmetry and standard deviations, particularly the 20-year series. However, due to the prioritization of the use of longer series to represent the concession's historical context, which was explained previously, we chose to use the 30-year series, which even so maintains a high level of symmetry and low standard deviation for the use of the central tendency (arithmetic mean) as a parameter of the Risk-Free Return in the calculation of the WACC. Therefore, the resulting Risk-Free Rate of Return (Rf) was **5.09%,** to be applied in the calculation of Sabesp's cost of capital.

2.3. Market Risk Premium (Rm - Rf)

In order to determine the return on account of exposure to market risk, the historical returns series of the New York Stock Exchange's S&P 500 Index[19] were used. Three series of this data (10-, 20- and 30- years) were also analyzed in this case, maintaining the cutoff date at December 2016.

Graph 1.4: S&P 500 - 30 years
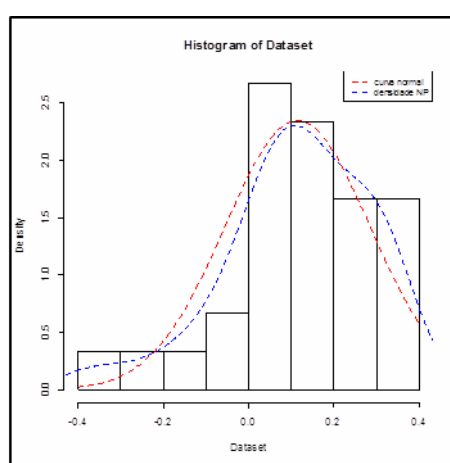
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
-0,365523	0,115044	0,126324	0,371952	0,170229	-0,751406	0,369667

Caption:
Normal Curve
Density
Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

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[19] The S&P 500, which is short for Standard & Poor's 500, is an index made up of 500 assets (shares) which are listed on the New York Stock Exchange (NYSE) and on the NASDAQ, qualified according to their market size, liquidity and the industrial group it represents. It is a weighted market value index (the value of the asset value multiplied by the number of outstanding shares) with the weight of each asset in the index being in proportion to its market price. Source: http://pages.stern.nyu.edu/~adamodar

Graph 1.5: S&P 500 - 20 years
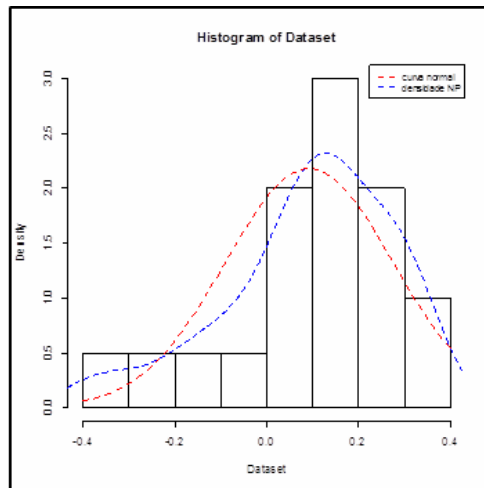
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
-0,365523	0,092736	0,126324	0,331037	0,183209	-0,787981	-0,052332

Caption:
Normal Curve
Density
Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

Graph 1.6: S&P 500 - 10 years
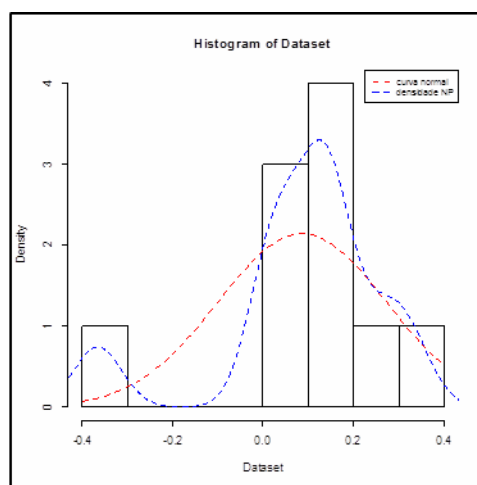
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
-0,365523	0,086447	0,126324	0,321451	0,186308	-1,1461	0,798831

Caption:
Normal Curve
Density

Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

The result of this analysis shows that the 20-and 30-year series, once again, present low asymmetry and low standard deviation, even taking into account that these are market returns which by their very nature exhibit greater variability than other series. In this case as well, the longest series (30 years) was given priority, using the arithmetic mean as a parameter of Market Risk in the calculation of the cost of equity. Thus, the market rate of return (Rm) obtained is **11.50%** and, as a result the Market Risk Premium (Rm - Rf) is **6.42%.**

2.4. Beta Coefficient (β)

The CAPM methodology uses the Beta coefficient to measure the sensitivity of a given investment's returns vis-à-vis the market's returns, expressing the systematic risk of an asset, which implies paying a premium over and above the return on risk-free assets. Therefore, the Beta coefficient constitutes a measure of a share's systematic in relation to the reference market. In order to estimate the Beta coefficient of an asset (or a company) it is necessary to measure variations in the share's price in relation to the movements of the overall stock market.

For the estimation of Sabesp's Beta coefficient (β), we initially analyzed 22 companies from the water utilities sectors listed on the New York Stock Exchange, as shown in the list below:

Table 1.2: US Sanitation Companies

Empresas Analisadas	
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
AquaVenture Holdings Limited	Global Water Resources Inc
Cadiz Inc.	Consolidated Water Co. Ltd.
Pure Cycle	

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

Caption:

Companies Analyzed

Afterwards, in order to only seek companies with activities similar to those of Sabesp, a detailed analysis was made of each company listed in Table 3.2 and those that included other activities apart from those related to water supply and sewage services were excluded. The final list was reduced to 12 companies, as shown in Table 3.

The next step was to find the Betas of these 12 companies[20] and after this to unlever the aforesaid Betas by their respective capital structures[21]. Once the unlevered Betas of the 12 companies had been obtained, the arithmetic mean of these Betas (**mean β = 0.52**) was used (Table 3.3).

Table 1.3: Sanitation companies selected for calculation of Beta

Código	Nome	BETA Desalavancado
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 Resource 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 Company Ltd.	0,78
PCYO	Pure Cycle	0,64
	MÉDIA	*0,52*

Caption:

Code	Name	Unlevered BETA
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 Resource Corporation	0.40
MSEX	Middlesex Water Company	0.59
CTWS	Connecticut Water Service, Inc.	0.40
YORW	The York Water Company	0.68

[20] Historical betas were obtained using the following source: Bloomberg Professional Terminal.

[21] The choice of the unlevered Beta is due to the fact that, when the aim is to calculate the Beta of a sector in which each company operates with a diverse capital structure, their risks and, therefore, their Betas, are not comparable. For this reason, it is necessary to unlever each Beta, in other words, to remove the effects of financial indebtedness (Hamada, RS (1972) "The Effect of the Firm's Capital Structure on the Systematic Risk of Common Stocks", The Journal of Finance, 27(2):435-452.).

SJW	SJW Group	**0.57**
GWRS	Global Water Resources Inc	**0.48**
CWCO	Consolidated Water Company Ltd.	**0.78**
PCYO	Pure Cycle	**0.64**
	AVERAGE	*0.52*

To find the **Beta** to be used in the calculation of Sabesp's WACC, it is necessary to leverage the average unlevered Beta of the North American companies using the capital structure defined for Sabesp (41.17% debt to 58.83% equity)[22] and a 34% tax rate[23]. In this way, one arrives at a Beta of **0.76**, to be taken into account in Sabesp's 2nd Ordinary Tariff Review, as shown in Table 4.

Table 1.4: Estimates of Sabesp's Beta coefficient

$Beta_{historico}$ Média de 12 water utilities EUA		*0,68*
$Beta_{desalavancado}$ Media de 12 water utilities EUA		*0,52*
D/(D+E)		0,41
D/E		0,70
Impostos (T)		0,34
$Beta_{realavancado}$ SABESP = $Beta_{desalavancado}$ EUA * (1 + D/E * (1 - T))		*0,76*

Source: Produced by the Company itself

Caption:

Beta $_{historical}$ Average of 12 US water utilities	0.68
Beta $_{unlevered}$ Average of 12 US water utilities	0.52
D/(D+E)	0.41
D/E	0.70
Taxes (T)	0.34
*Beta $_{unlevered}$ SABESP = Beta $_{unlevered}$ EUA *(1 + D/E*(1 - T))*	0.76

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[22] See item 3.1

[23] This tax rate is made up of the sum of the Corporate Income Tax (IRPJ) rate plus the rate of Social Contribution on Net Income (CSLL) applied in Brazil.

2.5. Country Risk Premium (Rp)

As was shown earlier on, for the analysis of the Country Risk Premium a decision was made to use the EMBI+ Br[24] index, which is obtained from the Institute of Applied Economic Research - IPEA's[25] IPEADATA system. Like the other parameters which were used for the calculation of the CAPM, three time series of this index were analyzed, the longest of which covered a mere 23 years, on account of the fact that the EMBI+Br series only got underway in 1994. The results are shown in Graphs 3.7, 3.8 and 3.9.

Graph 1.7: EMBI+ - 23 years
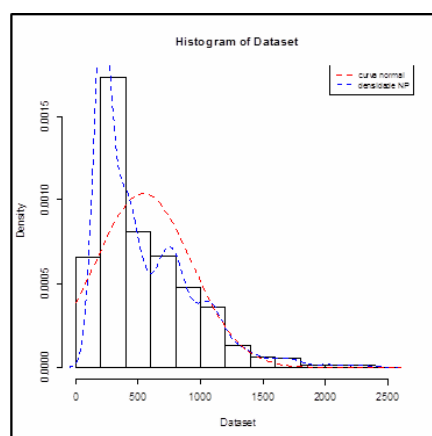
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
136	541,611426	415	2436	383,99006	1,365929	2,046868

Caption:
Normal Curve
Density
Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

---

[24] See footnote no.6.
[25] Available at: http://www.ipeadata.gov.br/ExibeSerie.aspx?serid=40940&module=M.

Graph 1.8: EMBI+ - 20 years

Histogram of Dataset
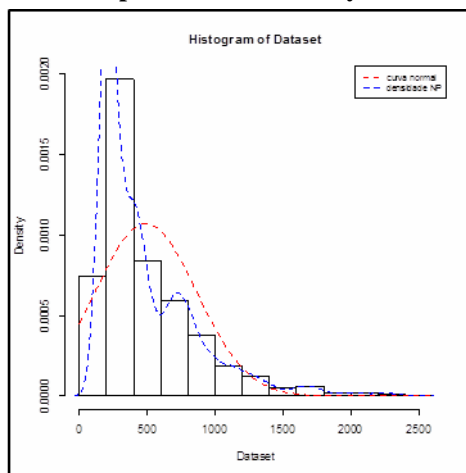
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
136	491,428571	370	2436	372,608207	1,80426	3,790162

Caption:
Normal Curve
Density
Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

Graph 1.9: EMBI+ - 10 years

Histogram of Dataset
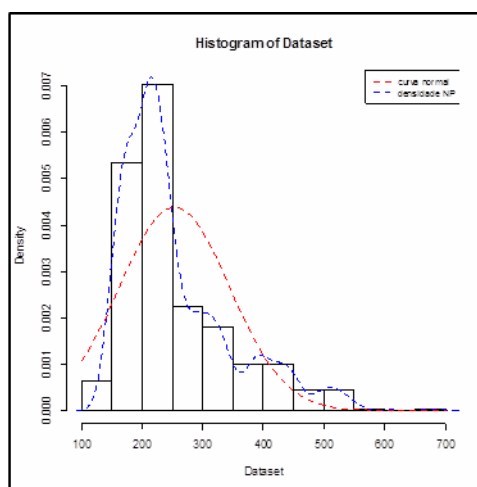
Mínimo	Média	Mediana	Máximo	Desvio Padrão	Assimetria	Kurtosis
136	253,192029	225	688	90,897648	1,346502	1,429245

Caption:
Normal Curve
Density

Minimum
Mean
Median
Maximum
Standard deviation
Asymmetry
Kurtosis

Unlike the other indexes there were analyzed previously, it can be noted that the three series exhibit high levels of asymmetry and of standard deviation. In addition to this, a simple observation of Graph 3.10 reveals that there were very large variations at the beginning of the series (1994/1995), at the end of the 1990s (1999) and later on, in the early 2000s (in mid-2002 and at the start of 2003), when the largest of all the variations occurs.

Graph 1.10: History of Variations in the EMBI +
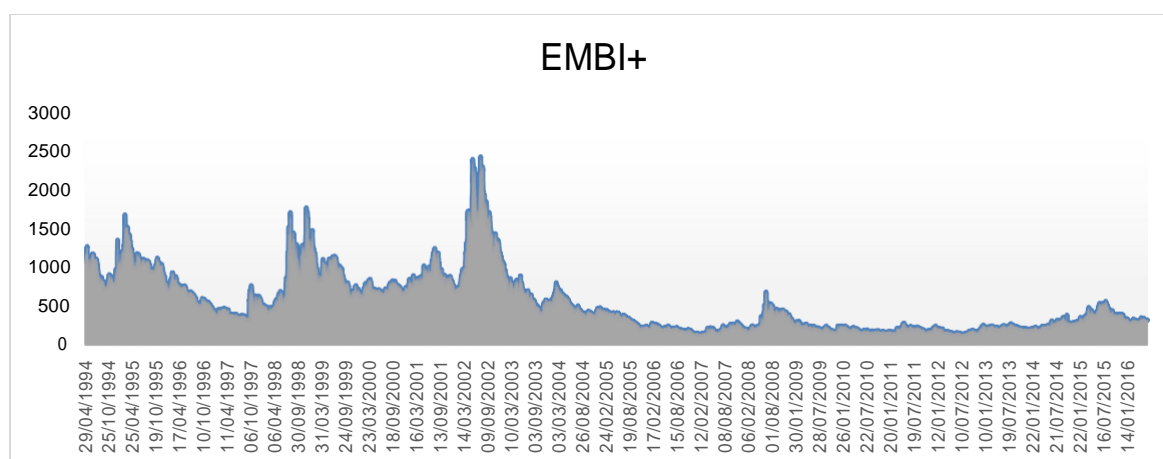
Source: IPEADATA

Therefore, in the specific case of this index, the adoption of the arithmetic mean as a central tendency measure implies that the result may be heavily influenced by these points which are well outside of the norm. This behavior of the EMBI+Br is due to the fact that in the case of Brazil, which is also the case with the other Latin American countries, the country risk is a highly volatile variable, which fluctuates between extreme values over short periods of time. In a stable macroeconomic context, the spread tends to be reduced, while during a period in which the economic or political cycle is unfavorable, the spread increases.

Therefore, Arsesp chose to use the following criteria:

- The median as a central tendency measure in order to mitigate the effects of the extreme values verified on the index, particularly during the economic and political crisis from mid-2002 up until the first few months of 2003. It can be seen that there has been no repetition of this fact, not even upon the impeachment of the then President in 2016 or when the economic downturn intensified after 2015 up until the present time; and,

- 15-year time window, coinciding with the start of trading in Sabesp's shares on the New York Stock Exchange (NYSE).

It should be stressed that these criteria established by Arsesp are the same ones as those used by Aneel for the calculation of the WACC of the electricity distributors and by Arsesp itself for calculating the WACC of the piped gas distribution companies. As a result, the estimated Country Riskfor SABESP is **2.56%.**

2.6. Credit Risk Premium (Rc)

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

Table 1.5: SABESP's Rating

Agências de Classificação de Risco de Crédito	Escala Nacional	Escala Global
Standard & Poors	brAA-	BB
Fitch Rating	AA (bra)	BB
Moody's America Latina	Aa2.br	Ba2

Source: SABESP
Caption:
Credit Rating Agencies
National Scale
Global Scale

In the analysis of Sabesp's Credit Risk, as a component of the Cost of Debt (Kd), the Rating classification assigned to the company in December 2016 on the Global Scale (BB[26]) was verified, and based on this classification, the average spread of the risk ratio in relation to its classification of the last 5 years was used, benchmarking the Company against securities with a similar rating. In this way, Sabesp obtained a Credit Risk Premium of **3.52%**.

3. CALCULATION OF THE WACC

Last but not least, after determining the parameters of each variable of formulas (3) and (4) for both the Cost of Equity *(Ke)* and 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: real WACC of 8.01%[27], with the base date for the calculation of all the formula's indicators and parameters being December 2016.

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[26] Sabesp Site -> RI -> Rating

[27] To deflate the WACC, the US inflation rate for December 2016 (INFCPI1YR) was used.

Source: https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/historical-data/inflation-forecasts

Table 1.6: Statement of WACC Calculation

WACC SABESP	
Estrutura de Capital	**2º CICLO**
(A) Participação de Capital Próprio	58,83%
(B) Participação de Capital Terceiro	41,17%
Custo do Capital Próprio	
(1) Taxa de Livre Risco	5,09%
(2) Taxa de Retorno de Mercado	11,50%
(3) Prêmio Risco de Mercado = (2)-(1)	6,42%
(4) Beta Desalavancado	0,52
(5) IR + CSLL	34,00%
(6) Beta Alavancado = (4)*[1+(((B)/(A))*(1-(5)))]	0,76
(7) Prêmio de Risco de Negócio e Financeiro = (6)*(3)	4,86%
(8) Prêmio Risco Brasil	2,56%
(9) Taxa Inflação Americana	2,20%
(10) Ke Nominal = (1)+(7)+(8)	12,50%
(11) Custo Real Capital Próprio (Ke real) = {[(1)+(7)+(8)]-1}/[1-(9)]-1	**10,08%**
Custo do Capital de Terceiros	
(12) Taxa de Livre Risco = (1)	5,09%
(13) Prêmio de Risco Brasil = (8)	2,56%
(14) Risco de Crédito	3,52%
(15) Kd Nominal = (12)+(13)+(14)	11,16%
(16) Custo Real da Dívida Líquido de Impostos (Kd real sem impostos)= [1+(15)*[1-(5)]/[1+(9)]-1	**5,05%**
WACC	
(17) WACC = (A) x (11)+ (B) x (16)	**8,01%**

Caption:

WACC SABESP	
Capital Structure	2ND CYCLE
(A) Share of Equity	58.83%
(B) Share of Debt	41.17%
Cost of Equity	
(1) Risk-Free Rate	5.09%
(2) Market Return Rate	11.50%
(3) Market Risk Premium = (2)-(1)	6.42%
(4) Unlevered Beta	0.52
(5) IR H- CSLL	34.00%
(6) Levered Beta = (4)*[1+(((B)/(A))*(1-(5)))]	0.76
[7] Business and Financial Risk Premium = (6)*{3}	4.86%
(8) Brazil Risk Premium	2.56%
[9} US Inflation Rate	2.20%
(10) Nominal Ke = (1)+(7)+(8)	12.50%
(11) Real Cost of Equity (real Ke} = {[(1)+(7)+(8)]-1J/[1-(9)]-1	10.08%
Cost of Debt	
(12) Risk-Free Rate = [1}	5.09%
(13) Brazil Risk Premium = (8)	2.56%
(14) Credit Risk	3.52%
(15) Nominal Kd = (121^(131^(14}	11.16%
(16) Real Cost of Debt (Net of Tax)= [1+(15)*[1-(5)]/[1+(9)]-1	5.05%
WACC	
(17)Y/ACC = (A)x(11)+(B)x(16)	8.01%

Source: Produced by the Company

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

Table 1.7: Periods by component

Componente	Fonte	Período
Participação de Capital Próprio	Demonstrações Financeiras SABESP	Média5 anos
Participação de Capital Terceiro	Demonstrações Financeiras SABESP	Média 5 anos
Taxa de Livre Risco	USGG10YR Index	Média 30 anos
Prêmio Risco de Mercado	Damodaran	Média 30 anos
Beta	Bloomberg	Média 4 anos
Risco País	EMBI+BR	Mediana 15 anos
Inflação Americana	INFCPI1YR	dez/16
Risco de Crédito	IGUUC510 Index	Média 5 anos

Caption:

Component	Source	Period
Share of Equity	SABESP's Financial Statements	5-year average
Share of Debt	SABESP's Financial Statements	5-year average
Risk-Free Rate	USGG10YR Index	30-year average
Market Risk Premium	Damodaran	30-year average
Beta	Bloomberg	4-year average
Country Risk	EMBI+BR	15-year median
US Inflation	INFCPI1YR	Dec/16
Credit Risk	IGUUC510 Index	5-year average

EXHIBIT V

REGULATORY REMUNERATION BASE

1. BACKGROUND

ARSESP Resolution no. 672/2016 defined the methodology and general criteria for updating the Regulatory Remuneration Base (BRR) for SABESP's 2nd Ordinary Tariff Review (2nd RTO). As determined by the aforementioned Resolution, the BRR will be obtained by adding together the updated values of the previous cycle's Shielded Base with the values of the inclusions that occurred between October 2011 and June 2016 (incremental base).

On 03/31/2017, by means of Official Letter PR-357/2017, SABESP presented the first Asset Valuation Report, explaining that due to the short deadline, difficulties encountered in obtaining part of the technical information, problems located in the technical records and in the process of physical accounting reconciliation, this Report would not be the final result in terms of the asset valuation. Therefore, in addition to the initial information, new versions of the Asset Report were presented on 04/07/2017, 04/11/2017, 06/12/2017, 08/22/2017 and 12/22/2017.

ARSESP used the Asset Report that was filed on 08/22/2017 for the field inspection work of the Asset Base. The 12/22/2017 Report was used to carry out the work of reconciling and checking the procedures, methodologies and criteria used to determine the Regulatory Asset Base.

The supplements, corrections, updates, and disallowances made by ARSESP in SABESP's Report are reflected in the values verified and presented for the BRR in this Technical Note.

2. THE PROCESS OF INSPECTING THE REGULATORY ASSET BASE

The work carried out by ARSESP during the course of inspecting SABESP's Asset Report dated 12/22/2017 basically consisted of the following activities:

- General Analysis of the Asset Report - Executive Summary (presentation of the information);

- Verification of the procedures and criteria used by the appraisal company to undertake the survey and perform a valuation of the assets in use by the Concessionaire;

- Analysis and verification of the procedures, methodologies and criteria used to determine the BRR;

- Verification of the procedures used to carry out the field surveys;

- Verification of the situation, procedures and criteria used to validate the Concessionaire's controls (engineering controls and asset control);

- Verification of the application of the depreciation rates as per the applicable regulations (Final Technical Note nº CRS/0001/2013);

- Verification of the procedures used to carry out the physical accounting reconciliation and the reconciliation of accounting surpluses;

- Verification of write-offs in the period;

- Criteria used to include the assets in the BRR (eligibility);

- Criteria used to determine the utilization rates;

- Procedures used to undertake the valuations - survey and appraisal of the assets (determination of the New Replacement Value - VNR); and

- Criteria used to validate the Special Obligations.

3. SHIELDED BASE

In the 1st Ordinary Tariff Review (1st RTO) ARSESP did not recognize the amounts presented by SABESP in its Asset Valuation Report (see Final Technical Note RTS/004/2014). The figures presented by SABESP underwent significant reductions, with highlight going to the disallowances made in relation to the item Piping, due to the review of the values used for the appraisal of the Network and Connection kits (the set of values used to determine the cost per kilometer of the different types of piping). The estimates for the values of the iron pipes were also revised, under the assumption that this piping could be replaced by new lower cost materials. Adjustments were also made to wells, water meters, home connections and others.

For the 2nd RTO, as determined by ARSESP Resolution no. 672/2016, the value of the Shielded Base should be monetarily restated to June 2016 values by means of the IPCA-IBGE index. In addition, the depreciation and write-off of assets between October 2011 and June 2016 should be applied to the Shielded Base.

However, as SABESP's Asset Report disregarded the disallowances carried out in the 1st RTO BRR, ARSESP decided to recalculate the value of the Shielded Base to be taken into account in this 2nd RTO by means of a proportional calculation, as detailed in Table 1 below.

Table 1: Variation in the Shielded Base

June/2016 Values

	Report Presented by Sabesp (R$ *1000)	Arseps Recalculated	
		Value (R$*1,000)	Variation (R$*1,000)
Plots of Land			
VNR 1st Cycle	3,692,461	3,692,461	0
Write-Offs	11,263	11,263	0
Updated VNR	5,147,972	5,147,972	0
Updated Depreciation (1st cycle)	0	0	0
Depreciation Incremental Period	0	0	0
Accumulated Depreciation	0	0	0
Updated VMU	5,147,971	5,147,971	0
Portion of Depreciated IA	1,364,883	1,364,883	0
Updated VBR	3,783,088	3,783,089	0
Structures			
VNR 1st Cycle	6,225,679	6,225,679	0
Write-Offs	49,506	49,506	0
Updated VNR	8,637,069	8,637,069	0
Updated Depreciation (1st cycle)	4,304,219	4,304,219	0

	Report Presented by Sabesp (R$ *1000)	Arseps Recalculated	
		Value (R$*1,000)	Variation (R$*1,000)
Depreciation Incremental Period	795,046	795,046	0
Accumulated Depreciation	5,099,265	5,099,264	0
Updated VMU	3,537,804	3,537,804	0
Portion of Depreciated IA	223,545	223,545	0
Updated VBR	3,314,259	3,314,259	0
Wells			
VNR 1st Cycle	344,699	329,838	-14,861
Write-Offs	7,946	7,604	-343
Updated VNR	470,931	450,628	-20,303
Updated Depreciation (1st cycle)	249,857	239,085	-10,772
Depreciation Incremental Period	95,138	91,037	-4,102
Accumulated Depreciation	344,995	330,122	-14,874
Updated VMU	125,936	120,507	-5,429
Portion of Depreciated IA	159	152	-7
Updated VBR	125,777	120,355	-5,423
Networks			
VNR 1st Cycle	34,967,807	24,552,968	-10,414,839
Write-Offs	170,082	119,425	-50,657
Updated VNR	48,662,878	34,169,089	-14,493,789
Updated Depreciation (1st cycle)	20,668,823	14,512,805	-6,156,018
Depreciation Incremental Period	4,509,632	3,166,480	-1,343,152
Accumulated Depreciation	25,178,455	17,679,285	-7,499,171
Updated VMU	23,484,423	16,489,805	-6,994,619
Portion of Depreciated IA	629	442	-187
Updated VBR	23,483,794	16,489,363	-6,994,431
Water Meters			
VNR 1st Cycle	600,971	510,372	-90,599
Write-Offs	318,491	270,478	-48,014
Updated VNR	395,033	335,480	-59,553
Updated Depreciation (1st cycle)	129,970	110,376	-19,593
Depreciation Incremental Period	168,317	142,942	-25,374
Accumulated Depreciation	298,286	253,319	-44,968

	Report Presented by Sabesp (R$ *1000)	Arseps Recalculated	
		Value (R$*1,000)	Variation (R$*1,000)
Updated VMU	96,747	82,162	-14,585
Portion of Depreciated IA	0	0	0
Updated VBR	96,747	82,162	-14,585
Residential Connections			
VNR 1st Cycle	4,730,765	4,477,705	-253,060
Write-Offs	535,137	506,511	-28,626
Updated VNR	5,867,376	5,553,516	-313,860
Updated Depreciation (1st cycle)	2,635,404	2,494,430	-140,974
Depreciation Incremental Period	538,772	509,952	-28,820
Accumulated Depreciation	3,174,176	3,004,382	-169,794
Updated VMU	2,693,200	2,549,134	-144,066
Portion of Depreciated IA	72	69	-4
Updated VBR	2,693,127	2,549,065	-144,062
Others			
VNR 1st Cycle	2,791,540	2,774,715	-16,825
Write-Offs	264,949	263,352	-1,597
Updated VNR	3,533,311	3,512,015	-21,296
Updated Depreciation (1st cycle)	1,970,224	1,958,349	-11,875
Depreciation Incremental Period	648,911	645,000	-3,911
Accumulated Depreciation	2,619,135	2,603,349	-15,786
Updated VMU	914,176	908,666	-5,510
Portion of Depreciated IA	78,244	77,773	-472
Updated VBR	835,932	830,893	-5,038
TOTAL			
VNR 1st Cycle	53,353,922	42,563,738	-10,790,184
Write-Offs	1,357,375	1,228,139	-129,236
Updated VNR	72,714,571	57,805,769	-14,908,802
Updated Depreciation (1st cycle)	29,958,498	23,619,265	-6,339,233
Depreciation Incremental Period	6,755,816	5,350,456	-1,405,360
Accumulated Depreciation	36,714,313	28,969,721	-7,744,593
Updated VMU	36,000,258	28,836,049	-7,164,209
Portion of Depreciated IA	1,667,532	1,666,863	-670

	Report Presented by Sabesp (R$ *1000)	Arseps Recalculated	
		Value (R$*1,000)	Variation (R$*1,000)
Updated VBR	**34,332,725**	**27,169,186**	**-7,163,539**

In the Final Technical Note RTS/004/2014, ARSESP envisaged the possibility of reconsidering the disallowed values in the factory price of the iron piping, conditional upon the presentation by the Concessionaire of a well-founded study. In May 2017 SABESP presented the "Technical Report regarding the disallowances applied by ARSESP to pipelines in the 1st Tariff Review", enclosing the set of invoices for the purchase of cast iron in recent years and examples of as-built projects executed in the incremental period of networks laid using cast iron. It also presented, in July 2017, the Technical Note "Analysis of the utilization of Cast Iron and PVC Piping", corroborating the information regarding the continued usage of iron piping.

ARSESP concluded that the information submitted by SABESP demonstrated that cast iron pipes cannot be replaced in all situations by other materials (HDPE - high density polyethylene - or PVC - Polyvinyl chloride). As a result, ARSESP decided to revise the R$980 million (in September 2011 values) factory price of the cast iron piping in the 1st RTO. This review is taken into account in the value of the networks set out in Table 1 above.

4. INCREMENTAL BASE

Table 2 presents the values of the Incremental Base included in SABESP's Asset Report of 12/22/2017.

Table 2 - Summary of the Incremental Base Amounts - SABESP

June/2016 Amounts

CONSOLIDATED SUMMARY OF THE REGULATORY ASSET BASE - SABESP – JUNE /2016				Amounts in Reais
SUMMARY OF THE BRR	SÃO PAULO METROPOLITAN REGION			TOTAL
NUMBER OF ASSETS	63,099	60,127	12,926	136,152
VOC	5,768,795,770	2,855,285,637	2,926,943,837	11,551,025,243
DAC	460,896,897	218,234,062	217,766,324	896,897,283
VOCL	5,307,898,872	2,637,051,575	2,709,177,513	10,654,127,960
VF	2,863,417,385	1,749,629,456	1,241,345,126	5,854,391,966
EA	151,453,845	66,634,011	54,299,730	272,387,587
CA	2,673,236,955	1,801,921,007	1,318,822,540	5,793,980,503
JOA	25,788,963	15,629,074	6,327,068	47,745,105
VNR	6,386,123,716	3,929,617,561	2,890,297,877	13,206,039,154
DACA	772,544,135	347,129,137	231,306,853	1,350,980,125
VMU	5,613,579,581	3,582,488,424	2,658,991,024	11,855,059,029

Note: SABESP's Asset Report base date 12/22/2017.

Table 3 presents the Incremental Base amounts recognized by ARSESP, as a result of an analysis of the information contained in SABESP's Asset Report dated 12/22/2017.

Table 3 - Summary of the Incremental Base Amounts - ARSESP

June/2016 Amounts

CONSOLIDATED SUMMARY OF THE REGULATORY ASSET BASE - SABESP - JUNE/2016				Amounts in Reais
SUMMARY OF THE BRR	SÃO PAULO METROPOLITAN REGION	INTERIOR OF THE STATE	COASTAL REGION	TOTAL
NUMBER OF ASSETS	62,511	58,172	12,919	133,602
VOC	5,350,384,470	2,465,350,699	2,924,929,743	10,740,664,913
DAC	415,792,525	199,227,461	217,645,234	832,665,219
VOCL	5,830,062,802	2,719,746,442	3,354,679,929	11,904,489,172
VF	2,539,799,951	1,499,703,366	1,240,118,759	5,279,622,076
EA	165,239,441	74,853,273	69,788,800	309,881,514
CA	2,561,514,273	1,608,922,683	1,374,721,914	5,545,158,870
JOA	62,206,268	21,185,636	37,859,122	121,251,026
VNR	5,974,792,909	3,490,871,032	2,872,987,069	12,338,651,009
DACA	708,466,254	288,304,202	229,472,018	1,226,242,474
VMU	5,266,326,654	3,202,566,830	2,643,515,051	11,112,408,535
IA	4,052,529	162,767,792	172,561,425	339,381,746
VBR	**5,262,274,125**	**3,039,799,037**	**2,470,953,626**	**10,773,026,789**

Note: Excludes the values related to PPPs, Asset Lease and new Municipalities.

4.1. Interest on Construction Work in Progress (JOA)

The Interest on Construction Work in Progress (JOA), is defined by regulations and calculated taking into account the Weighted Average Cost of Capital (WACC) after charging taxes. The value of the WACC to be used in the calculation of the JOA is that defined in ARSESP Resolution no. 227/2011.

Average terms for construction:

- 12 months for Distribution Networks;
- 18 months for Catchments;
- 24 months for Stations.

During the inspection process, ARSESP asked SABESP to correct and update the application of the JOA of the Incremental Base of the Asset Report. SABESP made these corrections in the last Asset Report that was delivered on 02/27/2018. ARSESP analyzed the calculations made and the application of the percentages of JOA in this new Incremental Base, and reached the conclusion that they were in compliance with what had been established in ARSESP Resolution nº 672/2016.

4.2. Non-Interest Bearing Assets or Special Obligations

Non-Interest Bearing Assets were not taken into account in the Regulatory Remuneration Base because they are the result of a donation and/or without consideration for the Concessionaire. It was confirmed that the classification made by the appraiser gave a total of 1,666 items of Non-Interest Bearing Assets, which were not included in the final calculation base of the BRR.

In addition, part of the investments related to the water crisis were treated as "special obligations", in the total sum of R$392,726,673 related to the net amounts received under the contingency tariff that was in force during the period from 02/2015 to 03/2016, as per ARSESP Resolutions no. 545 of January 7, 2015, no. 614 of 12/23/2015 and no. 640 of 06/30/2016.

4.3. Public Private Partnerships (PPP) and Asset Lease

The Incremental Base of SABESP's Asset Report includes the Public Private Partnership (PPP) and Asset Lease investments. The information in relation to these assets is detailed in Table 4 below:

Table 4: PPP and Asset Leases

June/2016 Values

Type of investment	Quantity of BP	Original Book Value-VOC (R$)	Total factory price of the material (R$)	Market Value in Use - VMU (R$)	Value of the Remuneration Base-VBR (R$)
ASSET LEASES - CAMPOS DO JORDÃO ETE (SEWAGE TREATMENT STATION)	393	151,762,249.78	67,648,815.96	89,928,274.24	89,928,274.24
ALTO TIETÊ PPP	1296	488,830,031.18	194,365,341.76	274,542,511.17	274,542,511.17
CAMPO LIMPO VÁRZEA PAULISTA PPP ETE	252	153,026,245.84	96,125,147.56	132,579,193.62	60,396,483.30
Overall Total	**1941**	**793,618,526.80**	**358,139,305.28**	**497,049,979.03**	**424,867,268.71**

These values regarding PPPs and Asset Leases were excluded from the BRR. On the other hand, the amounts of the payments with the consideration for the PPPs and Asset Leases were included as a component of the Third-Party Services category of Operational Expenses (OPEX) and will be assessed under the same tariff inclusion criteria as that used for the other service provision contracts. This treatment of the PPPs and Asset Leases is in line with the decision agreed during the Initial Stage of the 2nd RTO (see Final Technical Note NTF/004/2017).

4.4. Accounting Surpluses

Under the terms of ARSESP Resolution no. 672/2016, in its Asset Report SABESP presented the accounting surpluses related to the 1st RTO, for analysis and incorporation into the Regulatory Remuneration Base. 4,457 items were presented (Assets - BPs).

ARSESP selected and analyzed a sample of 128 BPs, which represent 94.9% of the total value of the Accounting Surpluses. In order to highlight the incorporation of the assets presented as Accounting Surpluses, SABESP presented screen shots from the Asset Management system (FAP), photos, commercial registers and plans of the selected sample items.

In its analysis ARSESP concluded that 90 BPs were accepted, which represent 91.3% of the value of the selected sample. Based on these results, ARSESP regarded as being accepted all of the BPs of the Accounting Surpluses, except for the 38 BPs that were not regarded as being accepted.

The results of the Accounting Surpluses are detailed in Table 5, which is shown below:

Table 5: Result of the Accounting Surpluses

June/2016 Values

Status of the Accounting Surplus	Number of BPs	Original Book Value -(R$)	Value of the Remuneration Base- (R$)
ACCEPTED	4419	30,846,951	428,094,092
NOT ACCEPTED	38	3,474,078	38,704,748
Overall Total	**4457**	**34,321,029**	**466,798,840**

4.5. New Municipalities

During this tariff cycle, SABESP took over the provision of services for 4 new Municipalities: Diadema (03/18/2014), Glicério (04/14/2013), Santa Isabel (08/05/2015) and Torrinha (09/11/2013).

The Term of Reference of ARSESP Resolution nº 672/2016 establishes that the assets of the water and sewage systems of the Municipalities taken on Sabesp, during the period from October 2011 to June 2016, should be determined in accordance with the eligibility and prudence criteria and valued using the New Replacement Value (VNR) methodology, and that afterwards the changes resulting from depreciation, write-offs and the updating of the Utilization Rates (IA) should be implemented. SABESP complied with this determination in the Asset Report sent to ARSESP.

The Term of Reference of ARSESP Resolution No. 672/2016 also establishes that the legal, economic and financial conditions for assuming these assets of the new Municipalities should be explained for the purpose of whether or not to include them in the Regulatory Remuneration Base.

Following the publication of Technical Note F-004/2018, in ARSESP Public Consultation no. 03/2018, SABESP forwarded Official Letter PR-407/2018 dated 04/16/2018, containing the report with the legal, economic and financial conditions for taking on the municipalities that begun to be operated during the incremental period, which was accepted by ARSESP.

Due to the fact the data presented by Sabesp in this report met the provisions of ARSESP's Term of Reference nº 672/2016, ARSESP decided to include the assets of the Municipality of Diadema in the Regulatory Remuneration Base. In the case of the municipalities of Glicério, Santa Isabel and Torrinha, the decision to exclude the assets was upheld.

ARSESP goes on to explain that the assets recorded on a date following the date on which these municipalities were taken on were taken into account in the BRR.

Table 6 below sets out the information regarding the assets of the new Municipalities which were not taken into account in the BRR calculation:

Table 6: Assets of the New Municipalities Not Taken into Account in the BRR.

June/2016 Values

Municipality Value of the Remuneration Base - VBR (R$)	Number of BPs	Original Book Value - VOC (R$)	Total factory price of the material (R$)	Market Value in Use - VMU (R$)	Value of the Remuneration Base - VBR (R$)
Glicério	39	6,660	3,684,252	7,818,675	7,557,799
Santa Isabel	342	34,365	26,794,116	15,211,470	15,211,470
Torrinha	79	19,885	20,779,646	22,461,856	16,037,557
Overall Total	**460**	**60,910**	**51,258,014**	**45,492,000**	**38,806,826**

4.6. Utilization Rate

The Term of Reference of ARSESP Resolution nº 672/2016 establishes that for assets in account groups such as land, buildings and water and sewage treatment stations, an index should be applied that indicates the utilization percentage of these assets in the provision of the service in order to adjust their Market Value in Use. These adjusted values are part of the composition of the BRR.

ARSESP found that in SABESP's Asset Report the calculations of percentages of the Utilization Rate were carried out by the Municipality rather than by installation of Water Treatment Station (ETA) and Sewage Treatment Station (ETE), as determined in ARSESP Resolution nº 672/2016.

By forwarding a Technical Note through correspondence PR-168/2018, SABESP justified its option to calculate the Utilization Rate for two main reasons: a) SABESP's corporate systems do not have a systematic monitoring system based on information that relates the Municipality's service areas with the ETA and ETE; b) the estimation of the annual growth in the demand for volumes produced or treated is only possible for the Municipality as a whole, as this is the only level of aggregation available in the information on the demographic growth rate in the SEADE Foundation and IBGE.

ARSESP deemed the explanations provided by SABESP regarding the calculation of the Utilization Rates which it used in the Asset Report to be adequate. SABESP also presented examples of the methodology used for this calculation, where, despite not fully complying with ARSESP Resolution no. 672/2016, the results obtained were consistent with those obtained directly from the ETAs and TSEs of those Municipalities with exclusive stations.

4.7. Individual Assets

According to ARSESP Resolution no. 672/2016, all of the equipment and facilities related to the collection, distribution and treatment of water, as well as the collection and treatment of sewage, regarding investments made during the incremental period were subject to survey by SABESP's appraiser.

By means of field inspection at the location of the Equity Asset (BP), the information contained in SABESP's Asset Report was validated by comparing the information collected with that contained in the records. Each BP's eligibility status was also observed.

For the definition and selection of the samples of the Individual Assets to be inspected, ARSESP took into account at least 30% of the incremental assets (BPs) inspected by SABESP's appraiser, which included all the Business Units (see Table 7 below) and with the greatest values. The sample information selected by ARSESP is presented by type of installation, in Table 8, and by Municipality, in Table 9.

Table 7: List of SABESP's Business Units

BUSINESS UNIT	CODE
Central business unit	MC
East business unit	MC
North business unit	MN
West business unit	MO
South business unit	MS
Alto Paranapanema business unit	RA
Baixo Paranapanema business unit	RB
Pardo e Grande business unit	RG
Capivari/Jundiaí business unit	RJ
Médio Tietê business unit	RM
North Coastal Region business unit	RN
Vale do Ribeira business unit	RR

BUSINESS UNIT	CODE
Baixada Santista business unit	RS
Baixo Tietê e Grande business unit	RT
Vale do Paraíba business unit	RV

Table 8: Sample Values of Individual Assets by Type of Facility

Amounts in R$

TYPE OF INSTALLATION	ORIGINAL VALUE - VOC
ADMINISTRATIVE/COMMERCIAL	39,044,495.42
BCEA	84,092,497.52
BUG	6,574,979.84
DAT (Without UP - 8-10-11)	296,694,707.10
DET	9,407,930.09
ETA	1,154,518,416.60
ETE	721,702,849.72
FAT	1,599.00
RCE (Without UP - 8-11)	214,219,041.98
Overall Total	**2,526,256,517.27**

Table 9: Sample Values of Individual Assets by Municipality

Amounts in R$

Description of the municipalities - Sample	Original Value – VOC
Adamantina	12,138,275
Apiaí	17,225,192
Arujá	5,283,673
Assis	6,871,280
Barueri	17,930,082
Bertioga	51,079,410
Boituva	10,295,009
Braganca paulista	48,354,772
Campo limpo paulista	31,194,726

Description of the municipalities - Sample	Original Value – VOC
Campos do Jordão	95,710,273
Caraguatatuba	13,590,481

Carapicuíba	39,752,531
Catiguá	3,360,089
Conchas	16,134,703
Cotia	8,334,719
Cubatão	74,256,290
Diadema	51,089
Embu	175,140
Embu-Guaçu	15,395,768
Fernando prestes	1,261,149
Franca	8,191,894
Glicério	5,717
Guardei	12,728,233
Guarujá	207,139,292
Guarulhos	1,599
Itanhaém	178,505,125
Itaoca	9,005,896
Itapecerica da serra	9,121,874
Itaquaquecetuba	5,266,950
Itararé	19,362,993
Itobi	4,927,911
Itupeva	25,613,641
Joanópolis	43,255,534

Description of the municipalities - Sample	Original Value – VOC
Laranjal paulista	10,603,911
Mongaguá	53,738,091
Monte alto	12,720,955

Monte mor	24,818,755
Osasco	171,000
Palmares paulista	2,632,119
Pederneiras	56,300
Peruíbe	23,035,272
Pirapora do bom jesus	4,645,883
Platina	2,257,891
Praia grande	80,845,341
Presidente prudente	4,024,575
Registro	9,270,363
Restinga	6,073,103
Ribeirão grande	8,031,977
Rio grande da serra	21,135,079
Santa cruz do rio pardo	15,020,457
Santos	7,762,194
São Bernardo do campo	22,434,204
São José dos campos	27,984,198
São Paulo	915,965,936
São Sebastião	28,130,474
Serra negra	10,908,509
Suzano	55,295,609

Description of the municipalities - Sample	Original Value – VOC
Tatuí	7,763,144
Torrinha	54,438
Tremembé	54,889,053
Valentim gentil	4,685,376

Vargem	15,002,635
Várzea paulista	104,778,364
Grand Total	**2,526,256,517**

4.7.1. Plots of Land

No new plots of land were acquired by SABESP during the incremental period.

4.7.2. Wells

Table 10 presents the values of the Wells in SABESP's Asset Report of 12/27/2017:

Table 10: Summary of the values of the Wells in SABESP's Asset Report

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
WELLS						
			BRR			
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NUMBER OF ASSETS (1)	UN	-	9	145	9	163
QUANTITY (2)	UN	-	9	145	9	163
VNR UPDATED BY IPCA (3)	R$	-	1,891,301	30,472,804	1.530.556	33.894.661
UPDATED ACCUMULATED DEPRECIATION (4)	R$	-	292,907	3,422,242	117.101	3.832.250
VALUE JUNE/2016 (5) = (3 - 4)	R$	-	1,598,393	27,050,563	1.413.455	30.062.411
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	-	1,598,393	27,050,563	1.413.455	30.062.411

Note: SABESP's Asset Report base date 12/22/2017.

During the field inspection, ARSESP noted that two Wells reported in SABESP's Assets Report were not in operation. These Wells were excluded from SABESP's Asset Base (see Table 11).

Table 11: Wells Excluded from the Asset Base

Municipality	BP Code	Description
Gurei	474716500	Deep Well - between 301 and 400 meters deep
Santa Isabel	RV009166	Artesian well

Table 12 shows the values of the Wells recognized by ARSESP:

Table 12: Summary of the values of the Wells Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
WELLS						
			BRR			
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NUMBER OF ASSETS (1)	UN	5	9	143	9	161
QUANTITY (2)	UN	3	9	143	9	161

VNR UPDATED BY IPCA (3)	R$	958,267	1,891,301	29,948,188	1,530,556	33,370,044
UPDATED ACCUMULATED DEPRECIATION (4)	R$	160,173	292,907	3,340,897	117,101	3,750,905
VALUE JUNE/2016 (5) = (3 - 4)	R$	798,094	1,598,393	26,607,291	1,413,455	29,619,139
UTILIZATION RATE (6)	R$	-	-	53,181	43,998	97,180
VBR JUNE/2016 (7) = (5-6)	R$	798,094	1,598,393	26,554,110	1,369,457	29,521,960

4.7.3. Structures

Table 13 presents the values of the Structures in SABEP's Asset Report of 12/27/2017:

Table 13: Summary of the Values of Structures in SABESP's Asset Report

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
STRUCTURES						
		BRR				
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NUMBER OF ASSETS (1)	UN	103	1,025	1,844	662	3,531
QUANTITY (2)	UN	26	21,317	12,760	3,636	37,713
VNR UPDATED BY IPCA (3)	R$	10,383,321	695,240,246	667,080,239	574,746,116	1,937,066,601
UPDATED ACCUMULATED DEPRECIATION (4)	R$	492,016	39,368,687	47,474,336	37,566,449	124,409,472
VALUE JUNE/2016 (5) = (3 - 4)	R$	9,891,305	655,871,559	619,605,903	537,179,667	1,812,657,129
UTILIZATION RATE (6)	R$	-	72,090,100	144,085,625	134,618,404	350,794,129
VBR JUNE/2016 (7) = (5-6)	R$	9,891,305	583,781,458	475,520,278	402,561,263	1,461,863,000

Note: SABESP's Asset Report base date 2/27/2018.

During the inspection ARSESP identified that 8 Structures were out of operation and for this reason were excluded from the Asset Base (see Table 14).

Table 14: Structures Excluded from the Asset Base

Municipality	BP Code	Description
Barueri	475355400	EEE-Sewage Pumping Station
Barueri	475355600	Generator House
Itapecerica da Serra	475980100	Sentry House/Gate House
Santa Isabel	RV009074	Containment Dike
Santa Isabel	RV009076	Containment Dike
São Sebastião	475223100	Filter
Tremembé	474292800	Contact Tank
Tremembé	474293300	Sludge Tank

Table 15 shows the values of Structures recognized by ARSESP:

Table 15: Summary of the Values of Structures Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
STRUCTURES						
		BRR				
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NUMBER OF ASSETS (1)	UN	111	1,022	1,840	661	3,523
QUANTITY (2)	UN	34	21,285	12,756	3,635	37,676

VNR UPDATED BY IPCA (3)	R$	11,908,101	694,643,348	666,240,594	574,657,879	1,935,541,821
UPDATED ACCUMULATED DEPRECIATION (4)	R$	622,038	39,348,036	47,367,465	37,563,949	124,279,450
VALUE JUNE/2016 (5) = (3 - 4)	R$	11,286,063	655,295,313	618,873,129	537,093,930	1,811,262,371
UTILIZATION RATE (6)	R$	339,967	72,090,100	143,805,427	134,558,635	350,454,162
VBR JUNE/2016 (7) = (5-6)	R$	10,946,096	583,205,212	475,067,702	402,535,295	1,460,808,209

4.8. Mass Assets

As established in ARSESP Resolution no. 672/2016, the Mass Assets (distribution networks, collection networks, water meters, connections) were validated by sampling.

The Resolution in question determined that the Concessionaire submit proposals for the determination of the samples of the Mass Assets. The appraiser chose to define strata created from clusters of Municipalities that exhibited characteristics in relation to the extension of networks, number of connections and water meters. In order to define the strata, the "Ward Clustering" method was used based on the Euclidean distance of the defined variables. The analysis of the calculation of the Concessionaire's samples is presented in Table 17.

Table 16: Breakdown of Cluster Samples

BREAKDOWN OF THE CLUSTER SAMPLES							
CLUSTER	Number of Municipalities	Water Network Incr. (km)	Sewage Network Incr. (km)	Water Meters Incr. (un)	Water Connections Incr.(un)	Sewage Connections Incr.(un)	% of the Total Incremental Investment
Cluster 1	14	322	298	123,154	64,331	28,525	3.87%
Cluster 2	38	236	126	85,378	35,678	10,468	1.57%
Cluster 3	15	730	450	470,168	192,191	54,635	12.85%
Cluster 4	6	380	569	229,421	113,470	50,882	7.94%
Cluster 5	3	170	696	109,147	21,348	65,790	8.35%
Cluster 6	1	953	728	1,181,878	849,758	463,004	36.85%
TOTAL SAMPLE	77	2,790	2,866	2,199,146	1,276,776	673,304	71.4%
TOTAL POPULATION	362	5,818	4,911	3,740,104	1,859,113	982,024	100.0%
PERCENTAGE SHARE OF THE SAMPLE	21%	48%	58%	59%	69%	69%	71.4%

Taking into account the total number of Mass Assets per Municipality presented in the Asset Report, ARSESP confirmed that the sample used by the Concessionaire is in accordance with the Resolution.

With the aim of validating the number of water meters, water connections and sewage connections, a comparative analysis between the quantities shown in the Assets Base was carried out, comparing them with the quantities contained in SABESP's commercial area's database.

4.8.1. Water Meters

Table 17 presents the Values of the Water Meters in SABESP's Asset Report of 12/22/2017.

Table 17: Summary of the Values of the Water Meters in SABESP's Asset Report

UPDATE OF THE BASE OF INCREMENTAL ASSETS - SABESP						
WATER METERS						
		BRR				
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NUMBER OF ASSETS (1)	UN	11	12,035	18,668	2,081	32,784
QUANTITY (2)	UN	643	1,901,516	1,401,895	461,252	3,764,663
VNR UPDATED BY IPCA (3)	R$	53,108	139,933,527	98,054,215	32,909,587	270,897,329
UPDATED ACCUMULATED	R$	15,438	35,338,772	25,754,538	10,387,592	71,480,902

DEPRECIATION (4)						
VALUE JUNE/2016 (5) = (3 - 4)	R$	37,670	104,594,755	72,299,678	22,521,994	199,416,427
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	37,670	104,594,755	72,299,678	22,521,994	199,416,427

Note: SABESP's Asset Report base date 12/22/2017.

It should be pointed out that in the Water Meter analysis it was not possible to link the physical records inspected with the BP number. However, it was possible to verify the model, address and other characteristics from SABESP's commercial register.

The quantity of Water Meters of SABESP's Incremental Base and of the samples verified in the field survey by the appraiser (Real Value) and the inspection company (Control Consulting), without being linked to the Asset Base, are summarized in Table 18, which is shown below.

Table 18: Water Meters of Incremental Base versus Verified Samples

INCREMENTAL BASE				
Type		SABESP	REAL VALUE	CONTROL CONSULTING
Water Meters	UN	3,765,306	3,927	680

The results of the field inspection of the sample selected by the inspection company produced the following results (status): Compliant (eligible), 665 Water Meters; Non-compliant (ineligible), 0 Water Meters; Inconsistency in description, 6 Water Meters; and Others, 4 Water Meters. These results enable us to accept the sample valued by Real Value.

In addition, in the inspection process, the quantities presented in the Shielded Base and the Incremental Base were compared to the totals in the commercial register, where differences were found in the commercial register that showed 85,058 units more than actually existed. Taking into account that the difference found corresponds to roughly 1% of the total value, it was deemed that there was no need for supplementary adjustments.

Water meters located in Municipalities not operated by SABESP were excluded from the Asset Base (see Table 19).

Table 19: Water meters excluded: Municipalities Not Operated by SABESP

Municipality	BP Code	Description
Embaúba	601985900	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	602088800	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	602233800	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	602302100	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	602432700	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	602555600	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	602830000	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	602830400	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	603015300	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	603015800	WATER METER QN 0.75 - MAX 1.5M /H
Embaúba	603512700	WATER METER QN 0.75 - MAX 1.5M /H

Also excluded from the Asset Base were the Water meters listed in the Accounting Surpluses the materiality

of which was not properly substantiated (see Table 20).

Table 20: Water meters excluded: Accounting Surpluses

Municipality	BP Code	Description
Regente Feijó	602521000	WATER METER QN 0.75 - MAX 1.5M /H

Table 21 shows the values of the Water meters recognized by ARSESP:

Table 21: Summary of the Values of the Water meters Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS – ARSESP						
WATER METERS						
		BRR				
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMERO OF ASSETS (1)	UN	12	12,035	18,667	2,081	32,783
QUANTITY (2)	UN	7,143	1,901,516	1,395,395	461,252	3,758,163
VNR UPDATED BY IPCA (3)	R$	470,795	139,933,527	97,636,528	32,909,587	270,479,642
UPDATED ACCUMULATED DEPRECIATION (4)	R$	213,840	35,338,772	25,556,136	10,387,592	71,282,500
VALUE JUNE/2016 (5) = (3 - 4)	R$	256,955	104,594,755	72,080,392	22,521,994	199,197,142
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	256,955	104,594,755	72,080,392	22,521,994	199,197,142

4.8.2. Water and Sewage Connections

4.8.2.1. Water Connections

Table 22 shows the values of the Water Connections in SABESP's Asset Report of 12/22/2017.

Table 22: Summary of the values of the Water Connections in SABESP's Asset Report

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
WATER CONNECTIONS						
		BRR				
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMERO OF ASSETS (1)	UN	-	656	3,128	159	3,943
QUANTITY (2)	UN	-	1,370,217	503,016	119,080	1,992,313
VNR UPDATED BY IPCA (3)	R$	-	667,840,913	245,648,858	58,039,344	971,529,115
UPDATED ACCUMULATED DEPRECIATION (4)	R$	-	32,416,219	11,764,738	2,799,235	46,980,192
VALUE JUNE/2016 (5) = (3 - 4)	R$	-	635,424,694	233,884,120	55,240,109	924,548,923
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	-	635,424,694	233,884,120	55,240,109	924,548,923

Note: SABESP's Asset Report base date 12/22/2017.

SABESP's Asset Report included Water Connections of the Municipalities of Alvares Florence, Cajobi,

Embaúba and Macatuba, which are not operated by SABESP (see Table 23 below). These amounts were corrected in the revised Final Asset Report delivered by SABESP and recognized by ARSESP.

Table 23: Water Connections Excluded: Municipalities Not Operated by SABESP.

Municipality	BP Code	Description
Alvares Florence	474407900	Water Connections
Alvares Florence	474408100	Water Connections
Alvares Florence	474408200	Water Connections
Alvares Florence	474409100	Water Connections
Cajobi	474276300	Water Connections
Embaúba	474272100	Water Connections
Embaúba	474356400	Water Connections
Embaúba	474356500	Water Connections
Embaúba	475504300	Water Connections
Macatuba	432636600	Water Connections
Macatuba	432704200	Water Connections
Macatuba	432745900	Water Connections
Macatuba	432914700	Water Connections
Macatuba	432915000	Water Connections

During the inspection, the breakdown of the values of the Water Connection kits were also reviewed and updated.

Table 24 shows the values of Water Connections recognized by ARSESP:

Table 24: Summary of the Values of Water Connections Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
WATER CONNECTIONS						
		BRR				
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMBER OF ASSETS (1)	UN	33	673	3,097	159	3,929
QUANTITY (2)	UN	4,236	1,384,214	489,635	119,080	1,992,929
VNR UPDATED BY IPCA (3)	R$	974,115	636,184,754	225,036,246	54,729,168	915,950,168
UPDATED ACCUMULATED DEPRECIATION (4)	R$	68,691	30,874,970	10,772,121	2,639,585	44,286,676
VALUE JUNE/2016 (5) = (3 - 4)	R$	905,424	605,309,785	214,264,125	52,089,583	871,663,492

UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	905,424	605,309,785	214,264,125	52,089,583	871,663,492

Note: SABESP's Asset Report base date 12/22/2017.

4.8.2.2. Sewage Connections

Table 25 presents the values of the Sewage Connections in the Asset Report of 12/22/2017:

Table 25: Summary of the Values of Sewage Connections in SABESP's Assets Report

UPDATING OF THE BASE OF INCREMENTAL ASSETS						
SEWAGE CONNECTIONS						
			BRR			
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMBER OF ASSETS (1)	UN	-	450	1,936	167	2,553
QUANTITY (2)	UN	-	619,485	216,934	151,777	988,196
VNR UPDATED BY IPCA (3)	R$	-	647,237,326	225,326,912	158,576,462	1,031,140,700
UPDATED ACCUMULATED DEPRECIATION (4)	R$	-	60,716,803	10,379,929	9,552,805	80,649,537
VALUE JUNE/2016 (5) = (3 - 4)	R$	-	586,520,523	214,946,983	149,023,657	950,491,163
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	-	586,520,523	214,946,983	149,023,657	950,491,163

Note: SABESP's Asset Report base date 12/22/2017.

8 Sewage Connections were located in relation to Municipalities that are not operated by SABESP and for this reason were excluded from the Asset Base (see Table 26).

Table 26: Sewage Connections Excluded: Municipalities Not Operated by SABESP

Municipality	BP Code	Description
Alvares Florence	474408000	Sewage Connections
Alvares Florence	474409800	Sewage Connections
Cajobi	474276500	Sewage Connections
Embaúba	474272500	Sewage Connections
Embaúba	474370800	Sewage Connections
Embaúba	475504500	Sewage Connections
Macatuba	432636700	Sewage Connections
Macatuba	432914900	Sewage Connections

During the inspection, the breakdown of the values of the Sewage Connection kits was also reviewed and updated.

Table 27 shows the values of the Sewage Connections recognized by ARSESP:

Table 27: Summary of the Values of Sewage Connections Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
SEWAGE CONNECTIONS						
		BRR				
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMERO OF ASSETS (1)	UN	64	460	1,918	167	2,545
QUANTITY (2)	UN	11,212	623,991	211,776	151,777	987,544
VNR UPDATED BY IPCA (3)	R$	2,860,950	619,435,866	210,132,303	150,669,028	980,237,196
UPDATED ACCUMULATED DEPRECIATION (4)	R$	167,593	57,872,428	9,691,095	9,076,453	76,639,976
VALUE JUNE/2016 (5) = (3 - 4)	R$	2,693,357	561,563,438	200,441,208	141,592,575	903,597,220
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	2,693,357	561,563,438	200,441,208	141,592,575	903,597,220

4.8.3. Water and sewage networks

The assets classified as Water and Sewage Networks consist of pipes of various types of material and diameters. They are the largest item in the Asset Base in terms of value.

All network infrastructure necessary to install a water and/or sewage connection for an end consumer is made up of pipes and various inputs, as well as labor and other services. In accordance with this understanding, the methodology of the creating "standard kits" was adopted for calculating the networks' costs.

In addition, SABESP clarifies that in the preparation of the Water and Sewage Network kits it was necessary to price each of their components. The unit costs of SABESP's Inputs and Services Price Bank were used for the items that accounted for the greatest percentage of the total value of the kit and, in the case of other items, the magazine Revista PINI's Price Bank was used.

A total of 497 water and sewage network piping kits were presented, broken down as follows:

- 370 Open-Trench kits, divided into 164 Sewage kits and 206 Water Kits;
- 42 NATM Rock kits, divided into 21 Sewage kits and 21 Water Kits;
- 43 NATO Ground kits, divided into 22 Sewage kits and 21 Water Kits;
- 42 MND kits, divided into 21 Water Kits and 21 Water Kits.

Some definitions about the types of water and sewage network kits are shown below:

- VCA - Open-trench (Cut-and-cover): This is a destructive method of trench excavation. This excavation procedure requires the area to be sealed off, a construction site to be set up, excavation (of the dimensions indicated in the design), trench timbering, installation of the piping on a support and/or protective layer, and a protective wrapping of the aforesaid piping. Once this has been done, it is necessary to do the backfilling (usually with the excavated soil), to carry out the compaction of this soil and to put back the pavement.
- NATM - New Austrian Tunneling Method: This is a safe and very efficient way to build tunnels. For example, soon after the partial excavation of the massif, the support structure is installed, which is made of sprayed concrete which is supplemented, when necessary, by struts and crankshafts.
- MND - Non Destructive Method: A process for the installation, repair and overhaul of underground pipes, ducts and cables, which is designed to reduce or eliminate the need for excavation.

The inspection company carried out the analysis of these kits in all their stages and components. Some

differences in the VCA kits were pointed out in the Earth-Moving and Paving phases.

4.8.3.1. Water Networks

Table 28 presents the values of Water Networks in the Asset Report of 12/22/2017:

Table 28: Summary of the Water Network Values in SABESP's Asset Report

UPDATING OF THE BASE OF INCREMENTAL ASSETS						
WATER NETWORK						
			BRR			
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMBER OF ASSETS (1)	UN	-	2,170,00	4,281,00	460,00	6,911,00
QUANTITY (2)	UN	-	2,739,396	2,750,434	632,549	6,122,378
VNR UPDATED BY IPCA (3)	R$	-	1,939,117,858	1,176,238,431	636,367,876	3,751,724,164
UPDATED ACCUMULATED DEPRECIATION (4)	R$	-	221,157,513	69,472,069	33,560,044	324,189,626
VALUE JUNE/2016 (5) = (3 - 4)	R$	-	1,717,960,344	1,106,766,362	602,807,832	3,427,534,538
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	-	1,717,960,344	1,106,766,362	602,807,832	3,427,534,538

Note: SABESP's Asset Report base date 12/22/2017.

The Asset Report presented by the appraiser included the Municipalities of Alvares Florence, Cajobi, Embaúba and Macatuba, which are not operated by SABESP (see Table 29 below). These items were excluded from the Asset Base and adjusted in the revised Final Asset Report delivered by SABESP.

Table 29: Water Networks Excluded: Municipalities Not Operated by SABESP

Municipality	BP Code	Description
Alvares Florence	474411100	RDA - PVC - 50 mm
Cajobi	474276000	RDA - PVC - 50 mm
Cajobi	274276100	RDA - PVC - 50 mm
Cajobi	474276200	RDA - PVC - 50 mm
Emabúba	474272000	RDA - PVC - 50 mm
Macatuba	432914600	RDA - PVC - 50 mm

Also excluded were 15 Accounting Surpluses items that were not properly substantiated (see Table 30).

Table 30: Water Networks Excluded: Accounting Surpluses

Municipality	BP Code	Description
Bastos	474625400	Pipeline FF - 150 mm
Boituva	474632600	RDA - PVC - 100 mm
Franco da Rocha	474623500	RDA - F.F. - 400 mm
Nhandeara	474627700	RDA - PVC - 75 mm
Nhandeara	474627800	AAB - PVC - ANY
São Paulo	474623600	RDA - F.F. - 400 mm
São Paulo	474623700	RDA - F.F. - 400 mm

São Paulo	474623800	RDA - F.F. - 500 mm
São Paulo	474624000	RDA - F.F. - 350 400 MM
São Paulo	474624100	AAT - STEEL - 700 mm
São Paulo	474624200	AAT - STEEL - 700 mm
São Paulo	474624300	AAT - F.F. - 700 mm
Serra Negra	474626200	RDA - PVC - 75 mm
Serra Negra	474626300	RDA - PVC - 100 mm
Ubatuba	474632800	AAT - F.F. - 150 mm

Table 31 shows the values of the Water Networks recognized by ARSESP:

Table 31: Summary of the Values of Water Networks Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
WATER NETWORK						
				BRR		
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMERO OF ASSETS (1)	UN	718	2,235	4,197	459	6,891
QUANTITY (2)	UN	720,737	2,812,777	2,652,862	631,069	6,096,707
VNR UPDATED BY IPCA (3)	R$	59,673,435	1,937,740,413	1,088,547,773	647,886,043	3,674,174,229
UPDATED ACCUMULATED DEPRECIATION (4)	R$	5,383,025	216,140,336	63,685,159	34,102,903	313,928,398
VALUE JUNE/2016 (5) = (3 - 4)	R$	54,290,410	1,721,600,077	1,024,862,615	613,783,140	3,360,245,831
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	54,290,410	1,721,600,077	1,024,862,615	613,783,140	3,360,245,831

4.8.3.2. Sewage Networks

Table 32 presents the values of the Sewage Networks in the Asset Report of 12/22/2017:

Table 32: Summary of the Values of Sewage Networks in SABESP's Asset Report

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
SEWAGE NETWORK						
				BRR		
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMERO OF ASSETS (1)	UN	-	3,027	3,884	582	7,493
QUANTITY (2)	UN	-	2,010,260	2,055,499	1,193,851	5,259,611
VNR UPDATED BY IPCA (3)	R$	-	1,271,254,905	979,177,395	1,127,433,896	3,377,866,196
UPDATED ACCUMULATED DEPRECIATION (4)	R$	-	140,248,390	57,403,402	71,682,428	269,334,220
VALUE JUNE/2016 (5) = (3 - 4)	R$	-	1,131,006,516	921,773,993	1,055,751,468	3,108,531,977
UTILIZATION RATE (6)	R$	-	-	41,690	-	41,690
VBR JUNE/2016 (7) = (5-6)	R$	-	1,131,006,516	921,732,303	1,055,751,468	3,108,490,287

Note: SABESP's Asset Report base date 12/22/2017.

SABESP's Asset Report included the Municipalities of Alvares Florence, Cajobi, Embaúba and Macatuba, which are not operated by SABESP. These items were excluded from the Asset Base and corrected in the revised Final Asset Report delivered by SABESP (see Table 33).

Table 33: Sewage Networks Excluded: Municipalities Not Operated by SABESP.

Municipality	BP Code	Description
Alvares Florence	474410000	RCE - PVC - 150 mm
Cajobi	474276400	RCE - PVC - 150 mm
Embaúba	474272300	RCE - PVC - 150 mm
Embaúba	475504400	RCE - PVC - 150 mm
Macatuba	426571200	BRANCH COLLECTOR - CERAMIC - Ø 200 Mm
Macatuba	427052100	BRANCH COLLECTOR - CERAMIC - Ø 200 Mm
Macatuba	427054000	BRANCH COLLECTOR - CERAMIC - Ø 200 Mm
Macatuba	432914800	RCE - PVC - 150 mm

Also excluded from the Asset Base were 23 Accounting Surpluses items which were not properly substantiated (see Table 34).

Table 34: Sewage Networks Excluded: Accounting Surpluses

Municipality	BP Code	Description
Caieiras	474604900	RCE - CERAMIC - 100 mm
Campos do Jirdão	474632500	OUTFALL - CERAMIC - 300 mm
Pindamonhangaba	474629900	SEWAGE SETTLEMENT LINE
Sagres	474629500	RCE - PVC - 150 mm
Sandovalina	474629700	RCE - PVC - 150 mm
Santo Expedito	474629800	RCE - PVC - 150 mm
São Paulo	474596200	BRANCH COLLECTOR - PVC - 200 mm
São Paulo	474607500	DEFOFO SEWAGE SETTLEMENT LINE - 200MM
São Paulo	474621100	RCE - PVC - 200 mm
São Paulo	474621200	RCE - PVC - 200 mm
São Paulo	474621300	RCE - PVC - 200 mm
São Paulo	474622300	BRANCH COLLECTOR - MBV - 700 800 MM
São Paulo	474622400	BRANCH COLLECTOR - MBV - 900 1000 MM
São Paulo	474622500	BRANCH COLLECTOR - MBV - 900 1000 MM
São Paulo	474623000	BRANCH COLLECTOR - MBV - 300 400 MM
São Paulo	474633000	BRANCH COLLECTOR - MBV - 600 700 MM
São Paulo	474713900	INTERCEPTOR - CERAMIC - 250 mm
São Paulo	474714300	INTERCEPTOR - CERAMIC - 250 mm

Taciba	474630100	RCE - PVC - 150 mm
Tatui	474628300	RCE - PVC - 150 mm
Tatui	474628400	RCE - PVC - 200 mm
Tatui	474628600	SEWAGE BRANCH COLLECTOR

Table 35 shows the values of the Sewage Networks recognized by ARSESP:

Table 35: Summary of the Values of the Sewage Networks Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
SEWAGE NETWORK						
				BRR		
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMBER OF ASSETS (1)	UN	350	3,081	3,799	582	7,462
QUANTITY (2)	UN	457,617	2,066,083	1,972,409	1,192,935	5,231,428
VNR UPDATED BY IPCA (3)	R$	51,071,824	1,331,644,458	936,518,834	1,121,191,424	3,389,354,716
UPDATED ACCUMULATED DEPRECIATION (4)	R$	3,663,407	143,770,164	54,229,408	72,062,438	270,062,010
VALUE JUNE/2016 (5) = (3 - 4)	R$	47,408,418	1,187,874,294	882,289,425	1,049,128,986	3,119,292,706
UTILIZATION RATE (6)	R$	-	-	-	-	-
VBR JUNE/2016 (7) = (5-6)	R$	47,408,418	1,187,874,294	882,289,425	1,049,128,986	3,119,292,706

4.9. Other Assets

Table 36 shows the values of the Other Assets in the Report of 12/22/2017.

Table 36: Summary of the Values of Other Assets in SABESP's Asset Report

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
OTHERS						
				BRR		
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMBER OF ASSETS (1)	UN	-	44,066	25,892	8,806	78,764
QUANTITY (2)	UN	-	44,069	28,432	8,806	81,307
VNR UPDATED BY IPCA (3)	R$	-	1,109,655,818	439,521,987	307,276,018	1,856,453,822
UPDATED ACCUMULATED DEPRECIATION (4)	R$	-	249,576,296	116,825,641	66,040,665	432,442,602
VALUE JUNE/2016 (5) = (3 - 4)	R$	-	860,079,522	322,696,346	241,235,353	1,424,011,220
UTILIZATION RATE (6)	R$	-	117,877	12,758,855	23,802,783	36,679,514
VBR JUNE/2016 (7) = (5-6)	R$	-	859,961,645	309,937,491	217,432,570	1,387,331,706

Note: SABESP's Asset Report base date 12/22/2017.

Table 37 shows the assets excluded on account of the fact that they belong to Municipalities not operated by SABESP (Embaúba, Pirajuí and Cajobi):

Table 37: Other Assets Excluded: Municipalities Not Operated by SABESP

Municipality	BP Code	Description
Cajobi	206213600	SUBMERSIBLE MOTOR-PUMP UNIT UP TO 80CV
Cajobi	206213700	SUBMERSIBLE MOTOR-PUMP UNIT UP TO 80CV
Embaúba	201069700	CPU
Embaúba	201083900	VIDEO MONITOR
Embaúba	201096200	SUBMERSIBLE PUMP UP TO 80CV
Pirajuí	205015200	PALM TOP
Pirajuí	205034600	COLLECTOR PRINTER

Also excluded from the Asset Base were 54 items that were either not found or were not deemed to be eligible due to the fact that they were out of operation (see Table 38).

Table 38: Other Assets Excluded: Assets Not Located or Out of Operation

Municipality	BP Code	Description
Barueri	205189300	Stationary diesel generator
Barueri	205189600	Motor-pump unit

Municipality	BP Code	Description
Barueri	205189900	Crusher
Boituva	177500800	Aeration system
Boituva	177500900	Aeration system
Boituva	177501700	Aeration system
Boituva	177501800	Aeration system
Boituva	177501900	Aeration system
Boituva	177502100	Motor-pump unit
Cotia	207700700	Metal container
Guareí	176415100	Mechanical rake
Itóbi	201538400	Sand remover
Santa Isabel	RV009329	Conveyor belt for treatment
Santa Isabel	RV009342	Chemical tank
Santa Isabel	RV009343	Chemical tank

Santa Isabel	RV009344	Chemical tank
Santa Isabel	RV009345	Chemical tank
Santa Isabel	RV009348	Conveyor belt for treatment
Santa Isabel	RV009353	Ultraviolet system/disinfection/effluent
Santa Isabel	RV009354	Ultraviolet system/disinfection/effluent
Santa Isabel	RV009355	Ultraviolet system/disinfection/effluent
Santos	205602100	Horizontal centrifugal pump
Santos	205602200	Horizontal centrifugal pump
Santos	206092500	Automated standardized electrical panel
São José dos Campos	27830200	Mechanical rake
São José dos Campos	27830300	Mechanical rake

Municipality	BP Code	Description
São José dos Campos	27836400	Horizontal centrifugal pump
São José dos Campos	27837200	Mechanical aerator, air injection type
São José dos Campos	27837400	Mechanical aerator, air injection type
São José dos Campos	27838300	Electronic panel
São José dos Campos	27838400	Motorized shutter
São José dos Campos	176345800	Mechanical rake
São José dos Campos	176345900	Mechanical rake
São Paulo	203478800	Command panel PCE station
São Paulo	203479000	Command panel with CLP
São Paulo	203479100	Command panel with CLP
São Paulo	203479200	Command panel PCE station
São Paulo	208531100	General command panel
São Paulo	210040200	Chemical tank
São Paulo	210040300	Chemical tank

São Paulo	210040400	Chemical tank
São Paulo	210040500	Chemical tank
São Sebastião	205191300	Surface mechanical aerator
São Sebastião	205198000	Chlorine gas dosing system, Manual/Automatic.
Tremembé	176873400	Mechanical rake
Tremembé	176873500	Mechanical rake
Vargem	205080300	Vertical cylindrical tank

Table 39 shows the values of Other Assets recognized by ARSESP:

Table 39: Summary of the Values of Other Assets Recognized by ARSESP

UPDATE OF THE BASE OF INCREMENTAL ASSETS						
OTHERS						
				BRR		
	UNIT MEASURED	NOT BRR	RMSP	INTERIOR	COAST	TOTAL BRR
NÚMBER OF ASSETS (1)	UN	916	44,544	25,363	8,801	78,708
QUANTITY (2)	UN	1,436	44,548	26,452	8,801	79,801
VNR UPDATED BY IPCA (3)	R$	35,729,385	1,079,472,455	407,329,218	289,413,385	1,776,215,058
UPDATED ACCUMULATED DEPRECIATION (4)	R$	6,637,833	243,860,150	108,760,298	63,521,997	416,142,446
VALUE JUNE/2016 (5) = (3 - 4)	R$	29,091,552	835,612,304	298,568,920	225,891,388	1,360,072,612
UTILIZATION RATE (6)	R$	220,825	4,145,139	25,594,358	37,958,792	67,698,289
VBR JUNE/2016 (7) = (5-6)	R$	28,870,727	831,467,165	272,974,562	187,932,596	1,292,374,323

5. DEPRECIATION

According to the determination of the Regulatory Accounting Manual and Regulatory Accounts Plan (Final Technical Note no. CRS/0001/2013), Depreciation of the assets of the Asset Base was calculated using the straight-line method. Table 40 shows the rates used:

Table 40: Depreciation Rates

CODE UP	DESC UP	Useful Life Month	Useful Life Year	% Year	% Month
1	PLOTS OF LAND	0	0	0%	0.000%
2	SANITATION STRUCTURES	600	50	2%	0.167%
3	REMOTED CONTROLLED EQUIPMENT	96	8	13%	1.042%
4	GALLERY AND TUNNELS	720	60	2%	0.139%
5	PUMPING EQUIPMENT	240	20	5%	0.417%
6	ELECTRICAL EQUIPMENT FACILITIES	180	15	7%	0.556%

7	WELLS	240	20	5%	0.417%
8	PIPING AND HYDRAULIC PARTS	600	50	2%	0.167%
9	FILTERS AND OTHER TREATMENT EQUIPMENT	120	10	10%	0.833%
10	WATER-METERS	120	10	10%	0.833%
11	HOUSEHOLD CONNECTIONS	600	50	2%	0.167%
12	MEASURING, METERING AND TESTING EQUIPMENT	96	8	13%	1.042%
13	TELECOMMUNICATIONS, TELEPR. SOUND, IMAGING & PHOTOGRAPHIC EQUIPMENT	60	5	20%	1.667%
14	SERVICE AND WORKSHOP EQUIPMENT	180	15	7%	0.556%
18	OFFICE FURNITURE AND EQUIPMENT	180	15	7%	0.556%
19	STORAGE MODULES FOR LIQUIDS, SOLIDS & GAS	240	20	5%	0.417%
20	GENERAL SAFETY EQUIPMENT	120	10	10%	0.833%
21	DENTAL AND MEDICAL EQUIPMENT	120	10	10%	0.833%
22	VEHICLES AND VESSELS	120	10	10%	0.833%
23	IT EQUIPMENT	60	5	20%	1.667%
24	PANTRY, KITCHEN AND REFECTORY EQUIPMENT	120	10	10%	0.833%
25	PRINTING, REPRODUCTION AND DESIGN EQUIPMENT	120	10	10%	0.833%
26	ELECTRICAL NETWORKS	240	20	5%	0.417%
27	MOTORIZED VALVES	120	10	10%	0.833%
28	BUILDINGS AND STRUCTURES	600	50	2%	0.167%
29	MONOBLOCK SUBMERSIBLE WATER-PUMP UNIT	180	15	7%	0.556%
30	LOSS EQUIPMENT	120	10	10%	0.833%
31	PV - MANHOLE - SEWAGE	600	50	2%	0.167%
34	BAG - FILTRATION EQUIPMENT O/DESID.	84	7	14%	1.190%
44	NOT INFORMED	0	0	0%	0.000%
91	RIGHTS, TRADEMARKS AND PATENTS	0	0	0%	0.000%

ARSESP analyzed the calculation of the Depreciation included in SABESP's Asset Report during the period from October 1, 2011 to June 1, 2016, adding up to a total of 57 months of Depreciation (quotas). Some differences were found in the classification of the assets, which were regularized by SABESP. The rates applied comply with those determined in the Final Technical Note no. CRS/0001/2013, as well as the Depreciation method. It was noted that for some BPs there are differences between the asset's date of incorporation and the date on which it began to be depreciated, which should be resolved with the implementation of Regulatory Accounting at SABESP.

6. SUMMARY OF THE INCREMENTAL BASE

ARSESP Resolution no. 672/2016 establishes that the amounts resulting from the valuation process are subject to adjustments as set forth in the appendices of its "Term of Reference", as well as due to inspection or audit carried out by ARSESP. During the inspection process ARSESP made the adjustments (disallowances) indicated in SABESP's Assets Report.

On 02/27/2018 SABESP presented a new revised version of its Asset Report, reflecting part of the adjustments defined by ARSESP during the inspection process.

The comparative table between the results of the Incremental Bases of SABESP's Revised Final Asset Report of 02/27/2018 and the values recognized by ARSESP are shown in Table 41, broken down by regional location (São Paulo Metropolitan Region, the Interior of the State and the Coastal Region), and in Table 42, detailed by UPs.

Table 41: Summary of the Incremental Base by São Paulo Metropolitan Region, the Interior of the State and the Coastal Region - ARSESP x SABESP

June/2016 Values

SUMMARY OF THE BRR	CONSOLIDATED SUMMARY OF THE REGULATORY ASSET BASE - ARSESP								Difference (SABESP - ARSESP)	
	BRR ARSESP - February/2018				BRR SABESP - February/2018					
	RMSP	INTERIOR OF STATE	COASTAL REGION	TOTAL	RMSP	INTERIOR OF STATE	COASTAL REGION	TOTAL	R$	%
Nº OF ASSETS	64,059	59,024	12,919	136,002	64,096	59,075	12,926	136,097	-95	-0.07%
VOC	5,992,240,747	2,617,173,859	2,924,929,743	11,534,344,349	6,001,616,365	2,621,989,386	2,926,943,837	11,550,549,588	- 16,205,239	-0.14%
DAC	474,855,209	201,498,902	217,645,234	893,999,345	475,819,706	203,259,936	217,766,324	896,845,966	- 2,846,620	-0.32%
VOCL	5,517,385,538	2,415,674,957	2,707,284,509	10,640,345,004	5,525,796,659	2,418,729,450	2,709,177,513	10,653,703,623	- 13,358,618	-0.13%
VF	2,830,290,440	1,618,610,196	1,240,118,759	5,689,019,396	2,895,639,727	1,640,731,442	1,250,962,553	5,787,333,723	- 98,314,327	-1.70%
EA	181,771,746	79,343,229	69,788,800	330,903,774	184,365,002	80,891,672	69,923,583	335,180,256	- 4,276,482	-1.28%
CA	2,622,463,653	1,649,581,735	1,374,721,914	5,646,767,302	2,637,457,676	1,663,268,889	1,375,422,006	5,676,148,571	- 29,381,269	-0.52%
JOA	63,153,852	22,288,453	37,859,122	123,301,426	63,645,038	22,524,699	37,874,304	124,044,041	- 742,615	-0.60%
VNR	6,440,946,122	3,661,389,684	2,872,987,069	12,975,322,875	6,525,154,825	3,699,540,816	2,885,072,012	13,109,767,654	- 134,444,779	-1.03%
DACA	767,497,763	323,402,580	229,472,018	1,320,372,360	775,857,929	329,137,062	230,353,161	1,335,348,152	- 14,975,792	-1.12%
VMU	5,673,448,359	3,337,987,104	2,643,515,051	11,654,950,515	5,749,296,896	3,370,403,754	2,654,718,851	11,774,419,502	- 119,468,987	-1.01%
IA	76,235,239	169,452,966	172,561,425	418,249,631	76,235,239	169,733,164	172,842,019	418,810,423	- 560,792	-0.13%
VBR	5,597,213,120	3,168,534,138	2,470,953,626	11,236,700,884	5,673,061,657	3,200,670,591	2,481,876,832	11,355,609,079	- 118,908,195	-1.05%

Note: SABESP's Asset Report base date 02/27/2018

Table 42: Summary of the Incremental Base by UP - ARSESP versus SABESP (June/2016 values)

UPDATE OF THE INCREMENTAL ASSET BASE					Difference ARSESP-SABESP 12/2017		Difference ARSESP-SABESP 02/2018	
	UNIT MEASURED	SABESP Report 12/2017	SABESP Report 02/2018	ARSESP 02/2018				
WATER METERS					Value	In %	Value	In %
NUMBER OF ASSETS (1)	UN	32,795	32,784	32,783	-12	-0.04%	-1	0.00%
QUANTITY (2)	UN	3,765,150	3,764,663	3,758,163	-6,987	-0.19%	-6,500	-0.17%
VNR UPDATED BY IPCA (3)	R$	271,017,128	270,897,329	270,479,642	-537,486	-0.20%	-417,687	-0.15%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	71,516,111	71,480,902	71,282,500	-233,611	-0.33%	-198,401	-0.28%
VALUE JUNE/2016 (5) = (3 - 4)	R$	199,501,017	199,416,427	199,197,142	-303,876	-0.15%	-219,286	-0.11%
UTILIZATION RATE (6)	R$	-	-	-	0	-	0	
VBR JUNE/2016 (7) = (5-6)	R$	199,501,017	199,416,427	199,197,142	-303,876	-0.15%	-219,286	-0.11%
WELLS								
NUMBER OF ASSETS (1)	UN	163	163	161	-2	-1.23%	-2	-1.23%
QUANTITY (2)	UN	163	163	161	-2	-1.23%	-2	-1.23%
VNR UPDATED BY IPCA (3)	R$	33,894,661	33,894,661	33,370,044	-524,616	-1.55%	-524,616	-1.55%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	3,832,250	3,832,250	3,750,905	-81,345	-2.12%	-81.345	-2.12%
VALUE JUNE/2016 (5) = (3 - 4)	R$	30,062,411	30,062,411	29,619,139	-443,272	-1.47%	-443.272	-1.47%
UTILIZATION RATE (6)	R$	-	97,180	97,180	97,180	-	0	0.00%
VBR JUNE/2016 (7) = (5-6)	R$	30,062,411	29,965,231	29,521,960	-540,451	-1.80%	-443.272	-1.48%
STRUCTURES								
NUMBER OF ASSETS (1)	UN	3,530	3,531	3,523	-7	-0.20%	-8	-0.23%
QUANTITY (2)	UN	53,240	37,713	37,676	-15,564	-29.23%	-37	-0.10%
VNR UPDATED BY IPCA (3)	R$	1,912,413,367	1,937,066,601	1,935,541,821	23,128,454	1.21%	-1.524.780	-0.08%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	122,035,587	124,409,472	124,279,450	2,243,863	1.84%	-130.023	-0.10%
VALUE JUNE/2016 (5) = (3 - 4)	R$	1,790,377,780	1,812,657,129	1,811,262,371	20,884,591	1.17%	-1.394.758	-0.08%
UTILIZATION RATE (6)	R$	337,684,212	350,794,129	350,454,162	12,769,950	3.78%	-339.967	-0.10%

VBR JUNE/2016 (7) = (5-6)	R$	1,452,693,568	1,461,863,000	1,460,808,209	8,114,641	0.56%	-1.054.791	-0.07%
WATER NETWORK								
NUMBER OF ASSETS (1)	UN	6,911	6,906	6,891	-20	-0.29%	-15	-0.22%
QUANTITY (2)	UN	6,122,378	6,134,618	6,096,707	-25,671	-0.42%	-37,911	-0.62%
VNR UPDATED BY IPCA (3)	R$	3,751,724,164	3,705,413,147	3,674,174,229	-77,549,935	-2.07%	-31,238,918	-0.84%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	324,189,626	317,993,000	313,928,398	-10,261,229	-3.17%	-4,064,603	-1.28%
VALUE JUNE/2016 (5) = (3 - 4)	R$	3,427,534,538	3,387,420,147	3,360,245,831	-67,288,707	-1.96%	-27,174,316	-0.80%
UTILIZATION RATE (6)	R$	-	-	-	0	-	0	-
VBR JUNE/2016 (7) = (5-6)	R$	3,427,534,538	3,387,420,147	3,360,245,831	-67,288,707	-1.96%	-27,174,316	-0.80%
SEWAGE NETWORK								
NUMBER OF ASSETS (1)	UN	7,493	7,484	7,462	-31	-0.41%	-22	-0.29%
QUANTITY (2)	UN	5,259,611	5,261,857	5,231,428	-28,184	-0.54%	-30,429	-0.58%
VNR UPDATED BY IPCA (3)	R$	3,377,866,196	3,402,524,252	3,389,354,716	11,488,519	0.34%	-13,169,536	-0.39%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	269,334,220	271,920,399	270,062,010	727,790	0.27%	-1,858,389	-0.68%
VALUE JUNE/2016 (5) = (3 - 4)	R$	3,108,531,977	3,130,603,853	3,119,292,706	10,760,729	0.35%	-11,311,147	-0.36%
UTILIZATION RATE (6)	R$	41,690	-	-	-41,690	-	0	-
VBR JUNE/2016 (7) = (5-6)	R$	3,108,490,287	3,130,603,853	3,119,292,706	10,802,419	0.35%	-11,311,147	-0.36%
WATER CONNECTIONS								
NUMBER OF ASSETS (1)	UN	3,943	3,929	3,929	-14	-0.36%	0	0.00%
QUANTITY (2)	UN	1,992,313	1,992,929	1,992,929	616	0.03%	0	0.00%
VNR UPDATED BY IPCA (3)	R$	971,529,115	925,776,589	915,950,168	-55,578,947	-5.72%	-9,826,421	-1.06%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	46,980,192	44,761,789	44,286,676	-2,693,516	-5.73%	-475,113	-1.06%
VALUE JUNE/2016 (5) = (3 - 4)	R$	924,548,923	881,014,800	871,663,492	-52,885,430	-5.72%	-9,351,308	-1.06%
UTILIZATION RATE (6)	R$	-	-	-	0	-	0	-
VBR JUNE/2016 (7) = (5-6)	R$	924,548,923	881,014,800	871,663,492	-52,885,430	-5.72%	-9,351,308	-1.06%
SEWAGE CONNECTIONS								
NUMBER OF ASSETS (1)	UN	2,553	2,545	2,545	-8	-0.31%	0	0.00%
QUANTITY (2)	UN	988,196	987,544	987,544	-652	-0.07%	0	0.00%
VNR UPDATED BY IPCA (3)	R$	1,031,140,700	1,042,845,123	980,237,196	-50,903,504	-4.94%	-62,607,927	-6.00%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	80,649,537	81,536,920	76,639,976	-4,009,561	-4.97%	-4,896,944	-6.01%
VALUE JUNE/2016 (5) = (3 - 4)	R$	950,491,163	961,308,204	903,597,220	-46,893,943	-4.93%	-57,710,983	-6.00%
UTILIZATION RATE (6)	R$	-	-	-	0	-	0	-
VBR JUNE/2016 (7) = (5-6)	R$	950,491,163	961,308,204	903,597,220	-46,893,943	-4.93%	-57,710,983	-6.00%
OTHERS								
NUMBER OF ASSETS (1)	UN	78,764	78,755	78,708	-56	-0.07%	-47	-0.06%
QUANTITY (2)	UN	81,307	79,848	79,801	-1,506	-1.85%	-47	-0.06%
VNR UPDATED BY IPCA (3)	R$	1,856,453,822	1,791,349,951	1,776,215,058	-80,238,765	-4.32%	-15,134,893	-0.84%
UPDATED ACCUMULATED DEPRECIATION (4)	R$	432,442,602	419,413,420	416,142,446	-16,300,156	-3.77%	-3,270,975	-0.78%
VALUE JUNE/2016 (5) = (3 - 4)	R$	1,424,011,220	1,371,936,531	1,360,072,612	-63,938,608	-4.49%	-11,863,919	-0.86%
UTILIZATION RATE (6)	R$	36,679,514	67,919,114	67,698,289	31,018,775	84.57%	-220,825	-0.33%
VBR JUNE/2016 (7) = (5-6)	R$	1,387,331,706	1,304,017,417	1,292,374,323	-94,957,383	-6.84%	-11,643,093	-0.89%
TOTAL		11,480,653,613	11,355,609,079	11,236,700,884	-243,952,729	-2.12%	-118,908,195	-1.05%

Note: SABESP's Asset Report base date 02/27/2018

ARSESP found that in SABESP's revised Final Asset Report of 02/27/2018, a number of changes that were specified during the inspection process had not been implemented, with the highlight being on assets related to Water and Sewage Networks and Accounting Surpluses, in addition to the need to implement further additional adjustments. ARSESP will forward the final result of its analysis so that SABESP can make the proper necessary reconciliations.

We emphasize that SABESP's Asset Report includes assets related to the PPPs and Lease Assets, as well as the Assets of the new Municipalities with an entry date prior to the date on which Sabesp took on the municipality, which are not being taken into account in the value of the BRR recognized by ARSESP for this 2nd RTO.

7. SUMMARY OF THE REGULATORY REMUNERATION BASE

Table 43 shows a comparison between the results of the Incremental Bases of SABESP's revised Final Asset Report of 02/27/2018 and the values recognized by ARSESP:

Table 43: Summary of the Values for the BRR: ARSESP versus SABESP (June/2016 Values)

SUMMARY OF THE REGULATORY REMUNERATION BASE				
FIXED ASSETS IN SERVICE			BASE JUNE/2016 - Values R$	
			ARSESP	SABESP
SHIELDED BASE 1st RTO	VNR 1st Cycle		42,563,738,355	53,353,921,932
	Write-Offs		1,228,138,928	1,357,375,413
	Updated VNR		57,805,769,235	72,714,570,752
	Updated Depreciation (1st cycle)		23,619,264,628	29,958,497,672
	Depreciation Incremental Period		5,350,455,888	6,755,815,510
	Accumulated Depreciation		28,969,720,515	36,714,313,181
	Updated VMU		28,836,048,719	36,000,257,571
	Portion of IA Depreciated		1,666,862,896	1,667,532,496
	Updated VBR		**27,169,185,823**	**34,332,725,074**
INCREMENTAL BASE	VNR		12,975,322,875	13,109,767,654
	Accumulated Depreciation		1,320,372,360	1,335,348,152
	VMU		11,654,950,515	11,774,419,502
	IA		418,249,631	418,810,423
	VBR		**11,236,700,884**	**11,355,609,079**
	(-) PPP and Lease		424,867,269	
	(-) New Municipalities		38,806,826	
	(-) Special Obligations *		392,726,673	
	VBR FINAL		**10,380,300,116**	

*Investments related to the Water Crisis-Contingency Tariff

SUMMARY BRR	Shielded Base Updated 1st RTO		27,169,185,823
	Incremental Base		10,380,300,116
	BRR		**37,549,485,939**

Note: SABESB's Asset Report base date 2/27/2018

In summary, the final values (in June/2016 R$) recognized by ARSESP for SABESP's 2nd RTO were as follows: R$27,169,185,823 for the Shielded Base and R$10,380,300,116 for the Incremental Base, resulting in the amount of R$37,549,485,939 for the Regulatory Remuneration Base.

GLOSSARY

Write-off of assets: Remove from the Remuneration Base those assets that are in operation. All write-offs should be supported by a proper write-off document such as a B.O. (police report), sales tax invoice, donation tax invoice, Scrap, transfer in lieu of Payment, etc. In the case of obsolescence, scrapping (when there is no exit document) it should be supported by an internal report with approvals from the appropriate individuals and if possible with photos to provide proof if necessary at a later date with the Tax Authorities.

Remuneration Base: This consists of the amount of investments made by the concessionaires in the provision of the services that will be covered by the tariffs charged to consumers. Multiplying this by the Weighted Average Cost of Capital, gives us the value of Capital Remuneration. In the same way, multiplying it by the depreciation rate, gives us the Depreciation Share.

The Remuneration Base is established by means of a valuation of the concessionaire's assets. This valuation is carried out using the New Replacement Value Method, which consists of the valuation of each asset, at current prices, for all the expenses necessary for its replacement by an identical, similar or

equivalent asset that performs the same services and has the same capacity as the existing asset.

Shielded Remuneration Base 1st Regular Tariff Review: The Shielded Base is the Remuneration Base evaluated and approved in the cycle prior to the current one, which came to an end in September 2011.

Regulatory Remuneration Base: This is the sum of the Shielded Remuneration Base of the first RTO together with the Incremental Base.

Initial Net Regulatory Remuneration Base: Used in the calculation of the Final P0, it includes the changed Regulatory Remuneration Base (write-offs and depreciation) and the investments made and fixed assets and in use service from July 1, 2016 to December 31, 2016.

Incremental Base: The Incremental Base is the evaluated and approved Remuneration Base of the incremental period, in other words, the period between the periodic tariff reviews.

The incremental base period is one of four years. However, for SABESP's 2nd Regular Tariff Review, the incremental period considered will be from October 1, 2011 to June 30, 2016, the base date for calculating the BRR.

Disallowances: values and assets disregarded in the Remuneration Base by ARSESP.

Incremental Period: Date which consists of the end of the first cycle, and the start of the Third Tariff Cycle, which in this case will be from 10/01/2011 to 06/30/2016.

ABBREVIATIONS

BP	Equity Asset
BR	Remuneration Base
BRR	Regulatory Remuneration Base
CA	Additional costs
DAC	Accumulated Depreciation
DACA	Updated Accumulated Depreciation
EA	Additional Equipment
ETA	Water Treatment Station
ETE	Sewage Treatment Station
FAP	Asset Management System (SABESP)
IA	Utilization Rate
JOA	Interest on Construction Work in Progress
OPEX	Operational Expenses from Exploration
PN	Business Plan
PPP	Public Private Partnership
RTO	Ordinary Tariff Review
SPE	Special Purpose Company
UP	Code for the Designation of Groups of Assets (SABESP)
VBR	Value of the Remuneration Base (VMU – IA)
VF	Factory Price UP
VMU	Market Value in Use (VNR – Depreciation)

VNR	New Replacement Value
VOC	Original Book Value
VOCL	Original Net Book Value (VOC – DAC)
WACC	Weighted Average Cost of Capital

EXHIBIT VI

EFFICIENCY SHARING FACTOR – FACTOR X

1. CALCULATION OF FACTOR X

In Technical Note no. RTS/001/2014, Arsesp presented the methodology chosen for calculating Sabesp's productivity gains, to be used to reduce the operating costs over the course of the tariff cycle.

The first step in determining the efficiency gains involves determining an efficient frontier for the sanitation market. A decision was made to maintain the methodology used in the previous cycle, as it is a model that is widely used in regulated sectors.

Then the distance from Sabesp to the efficient frontier determined by means of a Data Envelopment Analysis (DEA) model was calculated. The construction of the DEA was based on the model presented by Peter Bogetoft and Lars Otto. The model was specified as input-oriented and the sample included domestic water and sewage service providers with regional coverage (state enterprises). The data was obtained from the SNIS and the mean of the data from 2013 to 2016 was taken into consideration, with the aim of eliminating eventual outlier behavior. As a result, 26 observations were included. The final model took into account:

- Input: Operating Costs and Losses (liters/connection/day);

- Products: Water Connections; Sewage connections; Water Households; Sewage Households; Water Volume Measured; Volume of Sewage Collected; Volume of Sewage Treated;

- Non-Descending Returns of Scale.

In line with what has been proposed by other Agencies, such as Arsae-MG, Arsesp adopted a bias adjustment of the efficiency scores obtained by the model. The main reason is the evidence that the results obtained by the model are positively biased. Afterwards the unbiased frontier, as proposed by Simar and Wilson, is calculated. Last but not least, the results are normalized by the maximum level of efficiency obtained in the bootstrap simulations. The programming used to calculate the X Factor and the databases used are shown in the attachment.

CAGECE	100%	CESAN	71%
COPASA	97%	CAERN	70%
SANEPAR	99%	CAESB	67%
EMBASA	97%	SANESUL	67%
CEDAE	93%	DEPASA	65%
COPANOR	93%	CAEMA	65%
SABESP	**93%**	CASAN	63%
CAER	92%	CASAL	62%
SANEAGO	91%	AGESPISA	59%
SANEATINS	92%	COSANPA	57%
COMPESA	77%	CAESA	56%
CORSAN	76%	DESO	50%
CAGEPA	73%	CAERD	38%

The results obtained are very similar to those found by Arsesp in the 1st RTO. Models for the correction of environmental variables were tested by means of a Tobit model, but no significant results were detected.

Sabesp's inefficient stock is 7%. The proposed methodology indicates a reduction of the distance in relation to the frontier by 75% over the course of the cycle, which would result in a 1.34% p.a. reduction in average operating costs. It should be noted that, as was pointed in earlier sections, 5.6% of Sabesp's operating costs were disallowed, in addition to the exclusion of the amounts in terms of consideration from the Alto Tietê PPP. Therefore, Arsesp regards the non-application of this Factor X component as being reasonable, given that the proposed disallowances would already be enough to bring Sabesp closer to the required efficiency level.

Finally, it is necessary to calculate the expected variation in the frontier over the next cycle. The X Factor would be the result of the sum of the inefficiencies reduction component and the frontier variation. As it has been determined that the inefficiency reduction component will not be taken into account, Factor X Factor equals the expected variation in the frontier.

To calculate the variation in the frontier, the decomposition method of the Malmquist Index is applied, according to the algorithm proposed by Simar and Wilson. Therefore, it is possible to obtain the share of technological efficiency gains (variations in the frontier). In order to determine the annual variation in the frontier, the average variation between 2013 and 2016 is taken into account for the data sample used in the calculation of the DEA. The value obtained for each company is weighted by the number of connections in 2016, and the frontier variation is found to be 1.26% p.a., which is slightly lower than the figure obtained in the previous cycle.

Thus, the expected reduction in operating costs should be 1.26% a year. The methodology for the Factor X which is to be taken into account for the purpose of sharing productivity with consumers is presented in Technical Note NT.F-0003-2018. Putting it in a simple way, it is a matter of recalculating the P0 taking into account the efficient operating costs and determining the reduction value to be applied to the Tariff Readjustment Index, in accordance with the following formula.

$$\frac{\sum_{t=1}^{4} P_0 ef \cdot V_t}{(1 + r_{wacc})^t} = \frac{\sum_{t=1}^{4} P_0 \cdot (1 - X)^{t-1} \cdot V_t}{(1 + r_{wacc})^t}$$

Onde:

P0 ef = Tarifa Média Máxima (Preço Máximo) eficiente que assegura o equilíbrio da Sabesp considerando os ganhos de eficiência no OPEX estabelecidos para o ciclo tarifário.

P0 = Tarifa Média Máxima para assegurar o equilíbrio da Sabesp, supondo que o nível de eficiência inicial se mantém constante durante todo o ciclo tarifário.

Vt = Volume faturável total para o ano t (corresponde à soma do volume de água e volume de esgoto)

rwacc = WACC da Sabesp determinado para o ciclo tarifário.

X = Fator X a ser determinado para o ciclo tarifário.

Caption:

Where:

P0 ef = Efficient Maximum Average Tariff (Maximum Price) that ensures Sabesp's equilibrium considering the efficiency gains in OPEX established for the tariff cycle.

P0 = Maximum Average Tariff to ensure Sabesp's equilibrium, assuming the initial efficiency level remains unchanged throughout the entire tariff cycle.

Vt - Total billable volume for year l (corresponds to the sum of the volume of water and the volume of sewage) rwacc = Sabesp's WACC determined for the tariff cycle.

X = Factor X to be determined for the tariff cycle.

The assumed cash flow is shown below.

Breakdown	Components of the Formula	Present Value	Tariff Cycle			
		2016	2017	2018	2019	2020
Volume Billed (A+E) - (1000m3)	VF		3,707,335,125	3,806,967,040	3,907,918,862	4,006,722,677
(+) Direct Revenue Required -> Tariff	RRD	45.479.348.975	13,263,298,186	13,619,739,604	13,980,903,103	14,334,381,926
(+) Indirect Revenue	RI	718.559.373	209,555,929	215,187,591	220,893,860	226,478,714
(+) Other Revenues	OR	264.992.161	80,202,629	80,202,629	80,202,629	80,202,629
(-) COFINS/PASEP	COP	3.049.243.710	889,453,146	913,215,095	937,291,838	960,856,287
(-) Operating Expenses -> OPEX	OPEX	17.247.087.952	5,190,952,544	5,205,622,440	5,220,845,355	5,272,639,947
(-) PPPs and Asset Leases	PPP	1.530.857.286	172,602,423	576,365,823	576,365,823	576,365,823
(-) Municipal Funds	FMS	837.227.547	244,163,535	250,725,251	257,373,895	263,881,073
(-) P&D&I	PDI	5.246.691	-	-	-	7,167,191
(-) Income Tax/Social Contribution	IRCS	6.395.387.035	1,967,144,277	1,878,917,700	1,930,952,454	1,967,151,945
(-) Irrecoverable Revenues	RINC	585.554.496	170,767,261	175,356,506	180,006,549	184,557,650
(-) Investments	CAPEX	10.112.120.549	2,668,555,531	3,877,346,417	2,309,119,124	3,413,526,547
(-) Regulatory Interest on Construction Works in Progress	JOAR	297.919.066	91,255,480	112,118,263	53,469,213	102,815,339
(-) Compensatory Adjustment	AJC	-578.900.443	-156,462,317	-169,151,411	-182,869,591	-197,700,314
(-) Variation in Working Capital	VarWK	595.474.113	519,525,322	71,806,280	38,563,988	31,370,451
(-) Initial Capital Base	BRL0	39.032.454.982	-	-	-	
(+) Final Capital Base	BRLT	32.646.772.475	-	-	-	44,596,802,511
= Free Cash Flow + Bdk		-39,032,454,982	1,795,099,542	1,022,807,460	2,960,880,944	46,655,233,842
= Free Cash Flow + Bdk (Discounted)		-39,032,454,982	1,660,438,018	875,109,004	2,343,275,452	34,153,632,509

Net Present Value =   -

Internal Rate of Return (IRR) = 8.11%

Calculate P0 without X

Calculate X

Maximum Average Tariff- Po (R$ / m3)	
Calculated	
	0,8885
X	

	2017	2018	2019	2020
Efficient Revenue	12,268,336,126	11,652,981,840	11,064,648,547	10,493,382,462
Inefficient Revenue	12,425,855,743	11,697,729,830	11,008,446,005	10,347,317,397
Difference	0.00			

Therefore, the Factor X to be considered for the 2017-2020 tariff cycle is one of **0.88885%.** This amount will be used as a reduction factor of inflation in the calculation of the Annual Tariff Readjustment Index.

2. SCRIPT FOR CALCULATING PRODUCTIVITY GAINS IN R

ROUTINE FOR CALCULATING EFFICIEN FRONTIERS - EFFICIENT OPERATING COSTS

BASIC ROUTINE FOR MAKING ESTIMATES BY DATA ENVELOPMENT ANALYSIS

```
rm(list=ls(all=TRUE)) # Clears R data

# Opening of necessary packages

library(Benchmarking)

library(readxl)

library(mvtnorm)

setwd("C:/…/DEA_OPEX")

base_dados <- read_excel("C:/…/DEA_OPEX/BASE_FATORX.xlsx")

# defines variables inputs and outputs

x <- as.matrix(base_dados[,c("DEX","PERDAS_RAMAL")])

y <- as.matrix(base_dados[,c("LIGACOES_AG","LIGACOES_ESG","ECON_AG","ECON_ESG",
"VOL_MED_AG","VOL_ESG_COL","VOL_ESG_TRAT")])

# Calculates DEA

base_dados$DEA <- dea(X=x, Y=y, RTS="irs", ORIENTATION="in")$eff

## Bias correction using Silmar & Wilsons's algorithm

dea_model_ub <- dea.boot(X=x, Y=y, NREP = 2000, EFF = NULL, RTS="irs")

base_dados$DEA_Unbiased <- dea_model_ub$eff.bc

base_dados$DEA_Final <- base_dados$DEA_Unbiased/max(base_dados$DEA_Unbiased)

write.csv(base_dados, "resultado_dea.csv")

# ## Malmquist bootstraping calculation

base_dados_malm <- read_excel("C:/…/DEA_OPEX/SNIS.xlsx")
```

```
x.t1 <- subset(base_dados_malm, ANO == 2016, select=c("DEX","PERDAS_RAMAL"))

y.t1 <- subset(base_dados_malm, ANO == 2016,
select=c("LIGACOES_AG","LIGACOES_ESG","ECON_AG","ECON_ESG","VOL_MED_AG","VOL_ES
G_COL","VOL_ESG_TRAT"))

x.t0 <- subset(base_dados_malm, ANO == 2013, select=c("DEX","PERDAS_RAMAL"))

y.t0 <- subset(base_dados_malm, ANO == 2013,
select=c("LIGACOES_AG","LIGACOES_ESG","ECON_AG","ECON_ESG","VOL_MED_AG","VOL_ES
G_COL","VOL_ESG_TRAT"))

x.t1 <- as.matrix(x.t1)

y.t1 <- as.matrix(y.t1)

x.t0 <- as.matrix(x.t0)

y.t0 <- as.matrix(y.t0)

Dt0_t0 <- 1/dea(X=x.t0, Y=y.t0, RTS="crs", ORIENTATION="in")$eff

Dt1_t1 <- 1/dea(X=x.t1, Y=y.t1, RTS="crs", ORIENTATION="in")$eff

Dt1_t0 <- 1/dea(X=x.t1 ,Y=y.t1, RTS="crs", ORIENTATION="in", XREF=x.t0, YREF=y.t0)$eff

Dt0_t1 <- 1/dea(X=x.t0 ,Y=y.t0, RTS="crs", ORIENTATION="in", XREF=x.t1, YREF=y.t1)$eff

Eff.change <- Dt1_t1/Dt0_t0

Tech.change <- sqrt( ((Dt1_t0/Dt1_t1)*(Dt0_t0/Dt0_t1)) )

Malmquist <- Eff.change * Tech.change

## Algorithm elements

A <- Dt0_t0

B <- Dt1_t1

N <- length(A) ## number of DMUs

C <- cbind(rep(1,N), rep(1,N))

h <- ((4/5)*N)^(1/6)

NREP <- 10000 ## Delta bootstrap

replicas <- rbind(cbind( A, B),

        cbind(2-A, B),

        cbind(2-A, 2-B),
```

```
                cbind(A, 2-B))

Delta.type <- rep(c("A:B", "2-A:B", "2-A:2-B", "A:2-B"), each=N)

COV <- cov( cbind( A, B) )

COV.R <- cov( cbind(2-A, B) )

Malmquist.boot <- matrix(NA, nrow=N, ncol=NREP)

diff.Malmquist.boot <- matrix(NA, nrow=N, ncol=NREP)

Eff.change.boot <- matrix(NA, nrow=N, ncol=NREP)

diff.Eff.change.boot <- matrix(NA, nrow=N, ncol=NREP)

Tech.change.boot <- matrix(NA, nrow=N, ncol=NREP)

diff.Tech.change.boot <- matrix(NA, nrow=N, ncol=NREP)

for(b in 1:NREP){
  ## First, we randomly draw with replacement N rows from
  ## Delta to form (N x 2) matrix Delta.star
  linhas <- sample.int(4*N, size=N, replace=TRUE)
  Delta.star <- Delta[linhas,]
  D.type <- Delta.type[linhas]
  delta.bar <- colMeans(Delta.star)
  ## Generate eps.star
  eps.star <- matrix(NA, nrow=N, ncol=2)
  for(i in 1:N){if(D.type[i] %in% c("A:B", "2-A:2-B")){ eps.star[i,] <- rmvnorm(n=1, sigma=COV) } else
{ ## in ("2-A:B", "A:2-B")eps.star[i,] <- rmvnorm(n=1, sigma=COV.R)}}
  ## Calculates Gamma
  Gama <- (Delta.star + h*eps.star - C%*%diag(delta.bar))/sqrt(1+h^2) + C%*%diag(delta.bar)
  auxiliar <- Gama >= 1
  Gama.star <- Gama * auxiliar + (2 - Gama) * (!auxiliar)
  ## Calculates the new inputs
  x.t0.star <- cbind(Gama.star[,1], Gama.star[,1])*(x.t0/Dt0_t0)
```

```
x.t1.star <- cbind(Gama.star[,2], Gama.star[,2])*(x.t1/Dt1_t1)

  ## Calculates the Malmquist bootstrap index

Dt0_t0.star <- 1/dea(X=x.t0.star, Y=y.t0, RTS="crs", ORIENTATION="in")$eff

Dt1_t1.star <- 1/dea(X=x.t1.star, Y=y.t1, RTS="crs", ORIENTATION="in")$eff

Dt1_t0.star <- 1/dea(X=x.t1.star ,Y=y.t1, RTS="crs", ORIENTATION="in", XREF=x.t0.star,
YREF=y.t0)$eff

Dt0_t1.star <- 1/dea(X=x.t0.star ,Y=y.t0, RTS="crs", ORIENTATION="in", XREF=x.t1.star,
YREF=y.t1)$eff

Eff.change.star <- (Dt1_t1.star/Dt0_t0.star)

Tech.change.star <- sqrt(((Dt1_t0.star/Dt1_t1.star)*(Dt0_t0.star/Dt0_t1.star)) )

Malmquist.star <- Eff.change.star*Tech.change.star

  Malmquist.boot[,b] <- Malmquist.star

diff.Malmquist.boot[,b] <- Malmquist.star - Malmquist

Eff.change.boot[,b] <- Eff.change.star

diff.Eff.change.boot[,b] <- Eff.change.star - Eff.change

Tech.change.boot[,b] <- Tech.change.star

diff.Tech.change.boot[,b] <- Tech.change.star - Tech.change}
## Malmquist base_dados$Malmquist
<- Malmquist ## Eff.change
base_dados$Eff.change <- Eff.change
## Tech.change
base_dados$Tech.change <- Tech.change
write.csv(base_dados, "resultado_malm.csv")
```

EXHIBIT VII

CONSUMPTION HISTOGRAM AND ADJUSTMENT OF THE FINAL P0

1. Summary of the consumption histogram used by Arsesp to determine the effective average tariff

Tariff Group	Volume billed (m³)	Amount billed (R$)	Amount billed taking into account Arsesp Resolutions* (R$)	Average tariff histogram	Average tariff rebilling
GT-M	2,336,195,499	8,590,369,539	8,711,577,603	3.6771	3.7290
GT-MN	27,916,475	77,860,239	77,308,624	2.7890	2.7693
GT- Interior of the State	610,719,888	1,681,683,035	1,673,858,384	2.7536	2.7408
GT-RS e RN (Coastal Region)	318,675,398	1,065,653,980	1,057,814,330	3.3440	3.3194
GT-Registro	29,356,598	90,725,362	90,089,486	3.0905	3.0688
GT-Vale Paraiba (RV)	193,841,910	570,575,860	566,446,926	2.9435	2.9222
Diadema	48,360,867	146,794,111	145,792,277	3.0354	3.0147
Glicério	533,988	1,330,982	1,388,095	2.4925	2.5995
Guararema	2,315,115	8,351,596	8,352,269	3.6074	3.6077
Iperó	1,827,666	4,250,678	4,250,760	2.3257	2.3258
Lins	12,167,445	30,348,026	31,399,432	2.4942	2.5806
Magda	402,882	977,322	1,001,364	2.4258	2.4855
Torrinha	1,256,280	2,977,152	3,066,207	2.3698	2.4407
Santa Branca	258,374	518,084	518,076	2.0052	2.0051
Santa Isabel	3,924,711	6,233,261	8,471,234	1.5882	2.1584
Total	**3,587,753,096**	**12,278,649,227**	**12,381,335,069**	**3.4224**	**3.4510**

* Arsesp Resolutions nº 643, 686 (Santa Isabel), 635 (Diadema), 662 (Torrinha) and 646 (Glicério)

2. Values of the adjustment from the application of P0 of the Final Stage in April/2018.

	Monthly market	FCD Tariff	Required Revenue	Effective Tariff	Required Revenue	Difference	Capitalized difference
May/17	291,794,053	3.6235	1,057,320,775	3.3762	985,145,065	72,175,710	78,547,652
Jun/17	295,894,395	3.6235	1,072,178,434	3.3762	998,988,498	73,189,935	79,125,639
Jul/17	297,971,877	3.6235	1,079,706,225	3.3762	1,006,002,421	73,703,804	79,172,120
Aug/17	301,625,367	3.6235	1,092,944,708	3.3762	1,018,337,208	74,607,500	79,613,842
Sep/17	306,883,232	3.6235	1,111,996,675	3.3762	1,036,088,634	75,908,041	80,466,961
Oct/17	313,714,053	3.6235	1,136,748,270	3.3762	1,059,150,615	77,597,655	81,732,525
Nov/17	312,434,307	3.6235	1,132,111,090	3.6078	1,127,188,542	4,922,549	5,150,627
Dec/17	318,343,382	3.6235	1,153,522,723	3.6078	1,148,507,074	5,015,649	5,214,512
Jan/18	311,203,352	3.6235	1,127,650,704	3.6078	1,122,747,549	4,903,155	5,063,908
Feb/18	320,295,937	3.6235	1,160,597,840	3.6078	1,155,551,428	5,046,412	5,177,460
Mar/18	324,169,987	3.6235	1,174,635,527	3.6078	1,169,528,077	5,107,450	5,208,830
Apr/18	313,005,184	3.6235	1,134,179,674	3.6078	1,129,248,131	4,931,543	4,996,232
May/18	299,635,805	3.6235	1,085,735,496	3.6078	1,081,014,593	4,720,902	4,752,272
June/18	303,846,340	3.6235	1,100,992,443	3.6235	1,114,671,748	- 13,679,305	- 13,679,305
Jul/18	305,979,653	3.6235	1,108,722,538	3.6235	1,122,497,886	- 13,775,348	- 13,775,348
Aug/18	309,731,327	3.6235	1,122,316,796	3.6235	1,136,261,046	- 13,944,250	- 13,944,250
Sep/18	315,130,494	3.6235	1,141,880,771	3.6235	1,156,068,093	- 14,187,323	- 14,187,323
Oct/18	322,144,888	3.6235	1,167,297,547	3.6235	1,181,800,661	- 14,503,114	- 14,503,114
Nov/18	320,830,750	3.6235	1,162,535,746	3.6235	1,176,979,697	- 14,443,951	- 14,443,951
Dec/18	326,898,627	3.6235	1,184,522,801	3.6235	1,199,239,931	- 14,717,130	- 14,717,130
Jan/19	319,566,714	3.6235	1,157,955,490	3.6235	1,172,342,534	- 14,387,044	- 14,387,044
Feb/19	328,903,655	3.6235	1,191,788,056	3.6235	1,206,595,453	- 14,807,397	- 14,807,397
Mar/19	332,881,818	3.6235	1,206,202,996	3.6235	1,221,189,492	- 14,986,496	- 14,986,496
Apr/19	321,416,969	3.6235	1,164,659,921	3.6235	1,179,130,264	- 14,470,343	- 14,470,343
May/19	307,581,442	3.6235	1,114,526,651	3.6235	1,128,374,112	- 13,847,461	- 13,847,461
Jun/19	311,903,631	3.6235	1,130,188,176	3.6235	1,144,230,224	- 14,042,048	- 14,042,048
Jul/19	314,093,514	3.6235	1,138,123,255	3.6235	1,152,263,893	- 14,140,638	- 14,140,638
Aug/19	317,944,674	3.6235	1,152,078,001	3.6235	1,166,392,019	- 14,314,019	- 14,314,019
Sep/19	323,487,015	3.6235	1,172,160,766	3.6235	1,186,724,304	- 14,563,537	- 14,563,537
Oct/19	330,687,414	3.6235	1,198,251,535	3.6235	1,213,139,238	- 14,887,703	- 14,887,703
Nov/19	329,338,428	3.6235	1,193,363,463	3.6235	1,208,190,434	- 14,826,971	- 14,826,971
Dec/19	335,567,210	3.6235	1,215,933,563	3.6235	1,231,040,956	- 15,107,393	- 15,107,393
Jan/20	328,040,873	3.6235	1,188,661,749	3.6235	1,203,430,304	- 14,768,554	- 14,768,554
Feb/20	337,625,407	3.6235	1,223,391,476	3.6235	1,238,591,530	- 15,200,054	- 15,200,054
Mar/20	341,709,061	3.6235	1,238,188,666	3.6235	1,253,572,569	- 15,383,902	- 15,383,902
Apr/20	329,940,192	3.6235	1,195,543,966	3.6235	1,210,398,029	- 14,854,062	- 14,854,062
May/20	315,358,016	3.6235	1,142,705,200	3.6235	1,156,902,766	- 14,197,566	- 14,197,566
Jun/20	319,789,483	3.6235	1,158,762,696	3.6235	1,173,159,769	- 14,397,073	- 14,397,073
Jul/20	322,034,733	3.6235	1,166,898,397	3.6235	1,181,396,552	- 14,498,155	- 14,498,155
Aug/20	325,983,262	3.6235	1,181,205,960	3.6235	1,195,881,879	- 14,675,920	- 14,675,920
Sep/20	331,665,729	3.6235	1,201,796,477	3.6235	1,216,728,224	- 14,931,747	- 14,931,747
Oct/20	339,048,175	3.6235	1,228,546,899	3.6235	1,243,811,007	- 15,264,108	- 15,264,108
Nov/20	337,665,083	3.6235	1,223,535,242	3.6235	1,238,737,082	- 15,201,841	- 15,201,841
Dec/20	344,051,348	3.6235	1,246,675,981	3.6235	1,262,165,334	- 15,489,353	- 15,489,353
Jan/21	336,334,722	3.6235	1,218,714,655	3.6235	1,233,856,602	- 15,141,947	- 15,141,947
Feb/21	346,161,582	3.6235	1,254,322,452	3.6235	1,269,906,809	- 15,584,357	- 15,584,357
Mar/21	350,348,483	3.6235	1,269,493,759	3.6235	1,285,266,612	- 15,772,853	- 15,772,853
Apr/21	338,282,062	3.6235	1,225,770,875	3.6235	1,241,000,492	- 15,229,617	- 15,229,617

São Paulo, May 09, 2018

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