

Corporate Presentation 2015

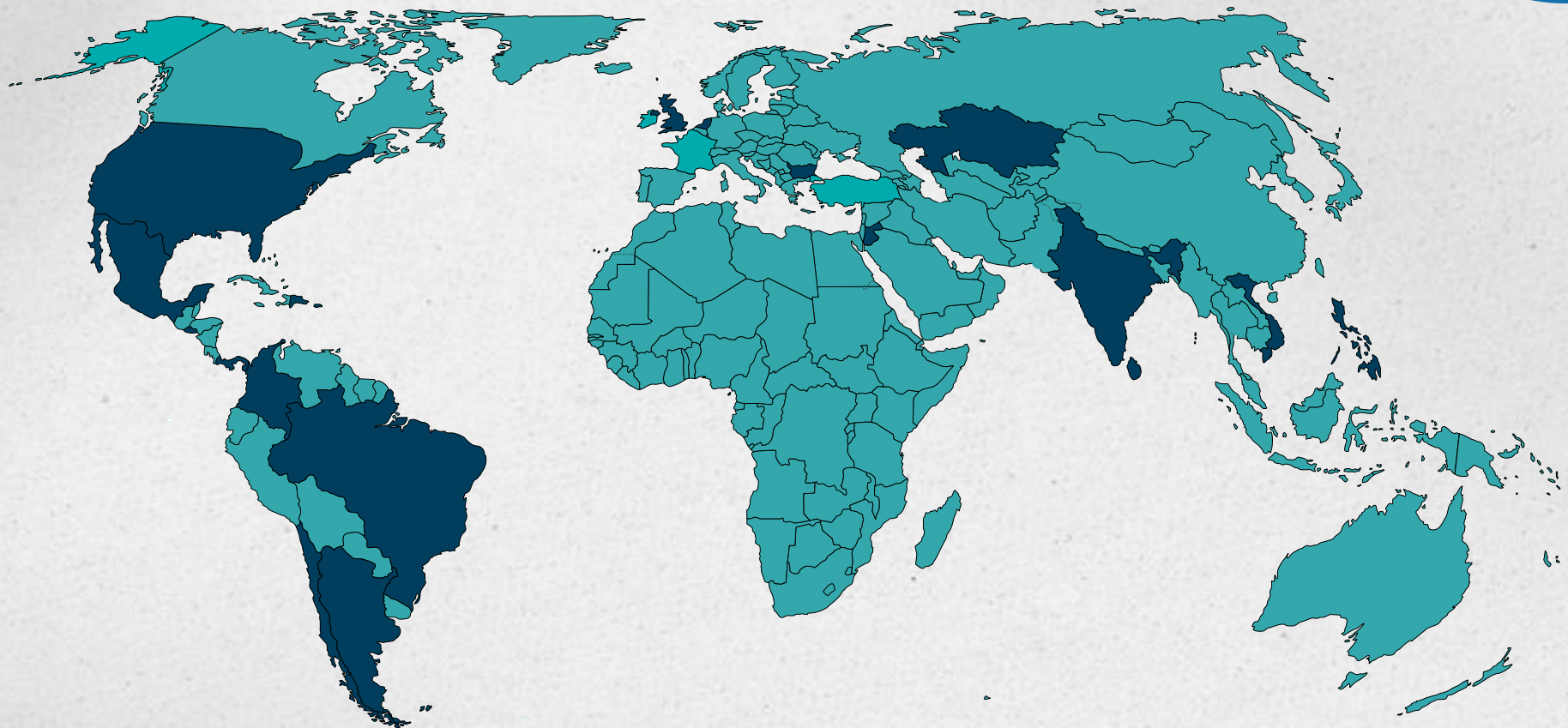


AES Corp is present in **18 countries**
and **4 continents**

Providing
services to over
100 million
people

18.5
thousand
employees

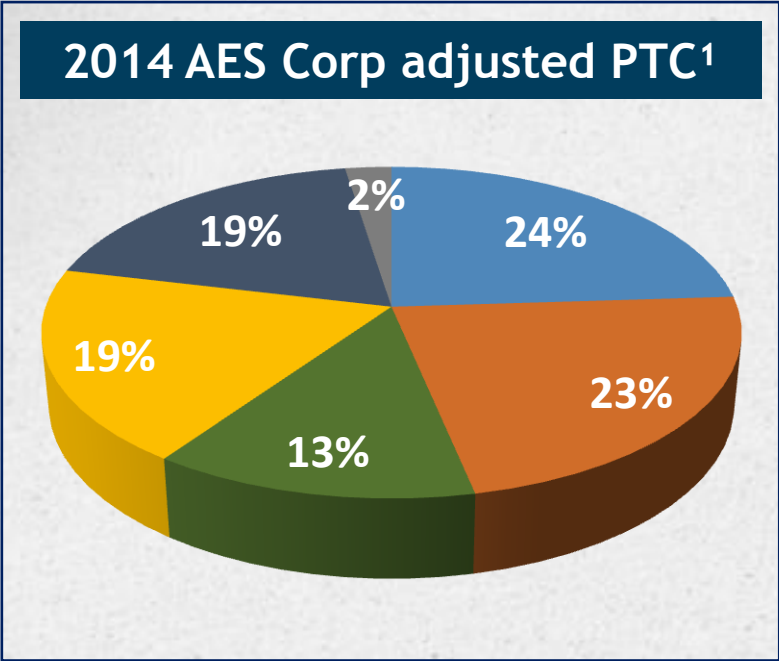
Countries in which **AES** develops its activities



AES Brasil SBU

Represents **13%** of 2014 **AES Corp** adjusted PTC¹

AES Brasil is one of AES Corp priority markets

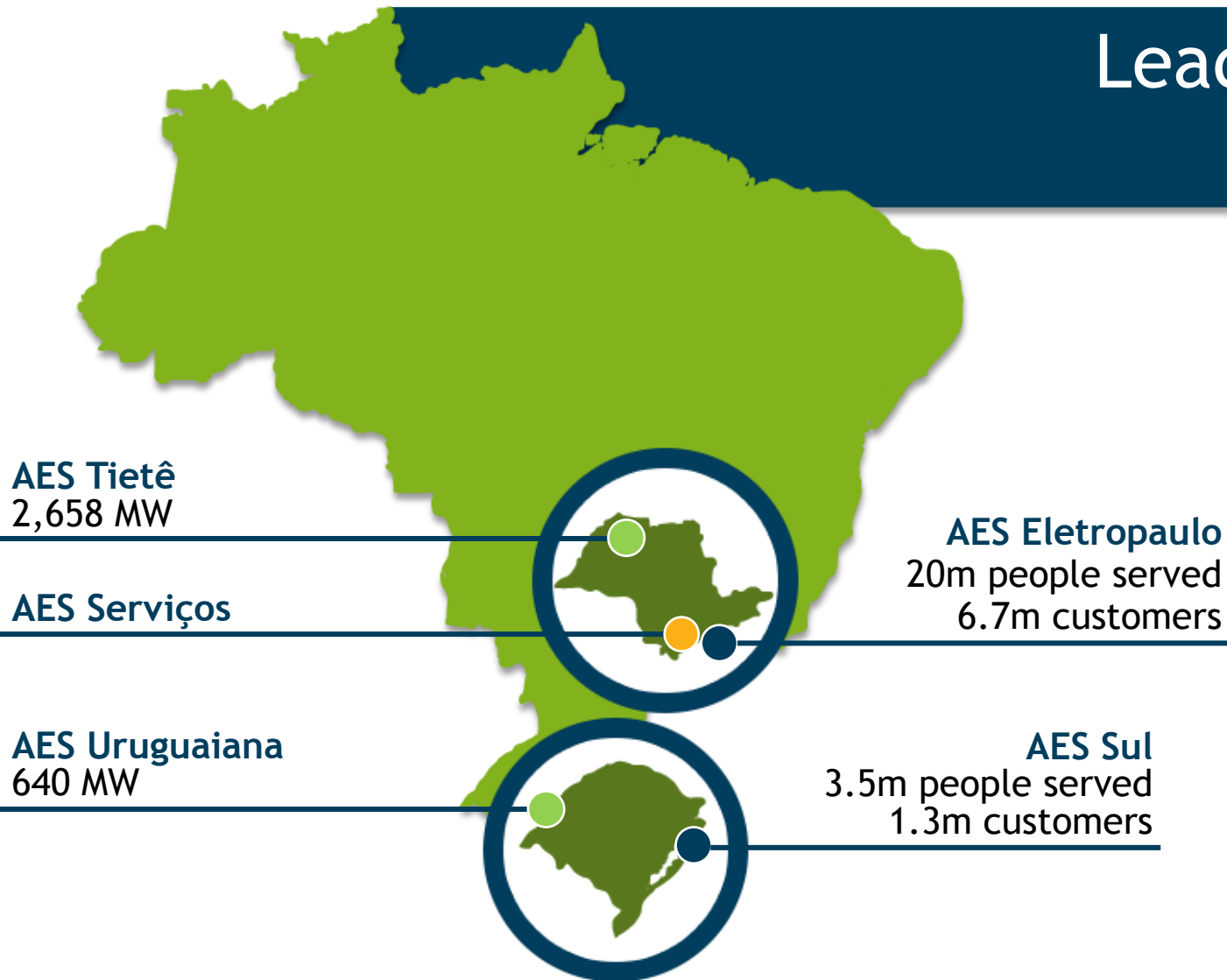


■ US ■ Andes ■ Brazil
■ MCAC² ■ EMEA³ ■ Asia

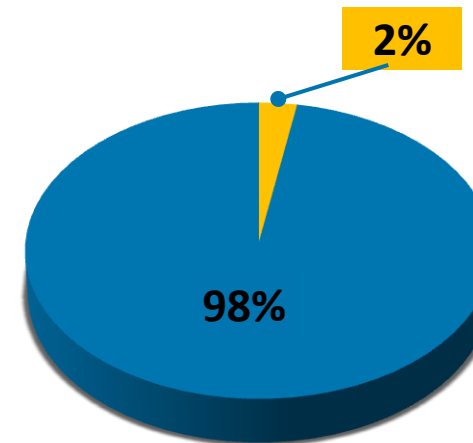
AES Corp is organized in **Six Strategic Business Units (SBU)**, focused on key markets

1 - Pre-tax contribution (a non-GAAP financial measure); 2 - Mexico, Central America and Caribbean; 3 - Europe, Middle-East and Africa

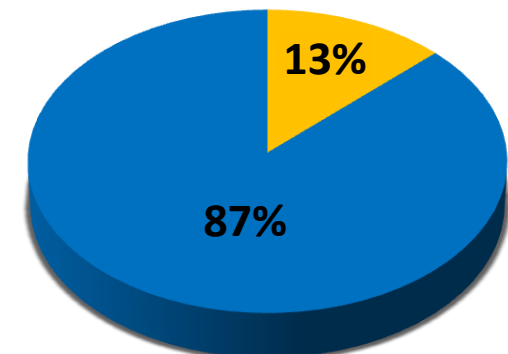
Leading position in the energy sector in Brazil



Generation¹
Market Share



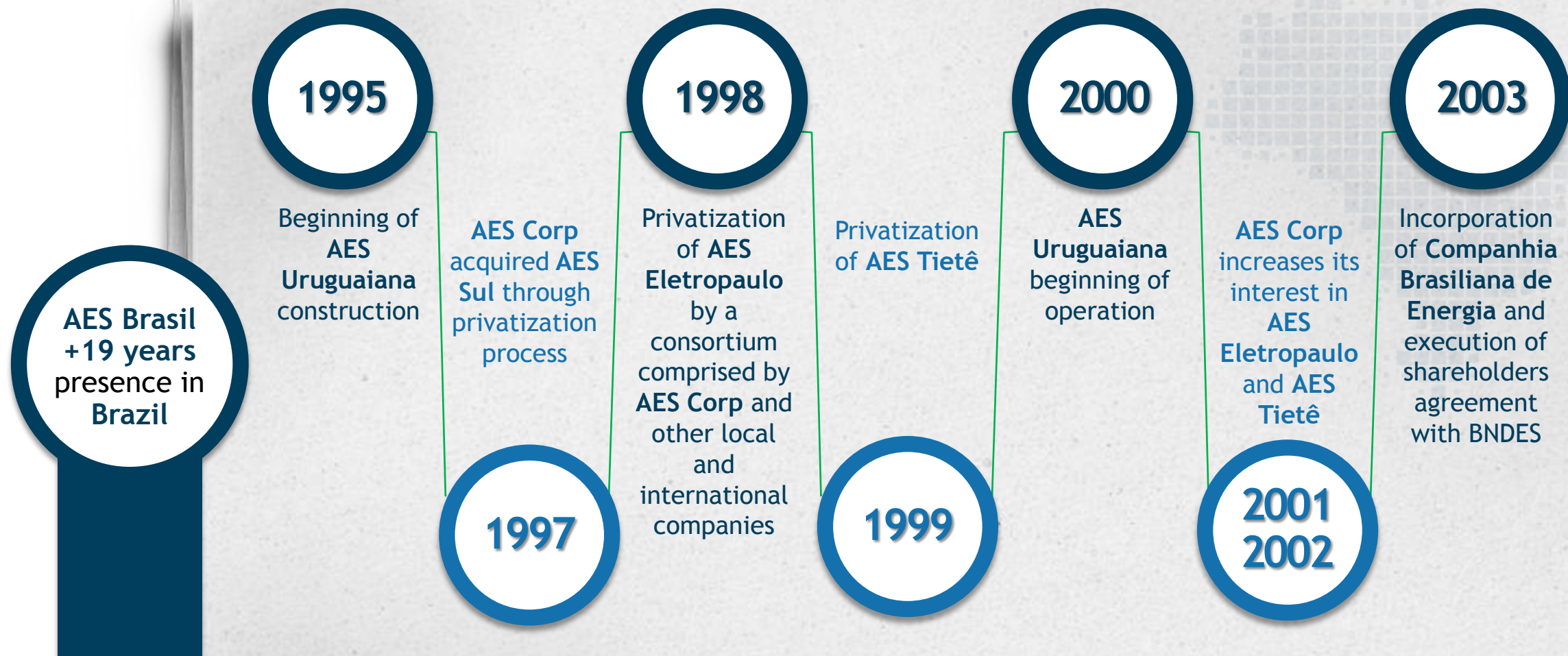
Distribution²
Market Share



AES Brasil Others

History in Brazil

Solid participation in **distribution** and **generation** businesses



AES Brasil Mission, Vision and Values

Mission

To promote well being and development with the safe, sustainable and reliable provision of energy solutions



Vision

To be the leading power company in Brazil that safely provides sustainable, reliable and affordable energy



Values

- Put safety first
- Act with integrity
- Honor commitments
- Strive for excellence
- Have fun through work



AES Brasil environmental responsibility



- Reservoirs **repopulation**
- **Reforestation**, **border** and **archeological** management programs
- Water **quality monitoring**
- **Recycling** and **waste disposal** programs
- Programs aiming to **reduce** CO₂ **emissions**
- **Risk Management** and identification of **opportunities** related to **climate change**

AES Brasil social responsibility



- Access to **reliable energy** through **social development**
- **Education** for **efficient** and **safe** use of **electricity**
- Program which offer **cultural** and **sports** activities simulating **citizenship practices**
- **Sustainable partnership** - **commitment** with **sustainable** development at AES Brasil' **value chain**

INVESTMENT PLAN

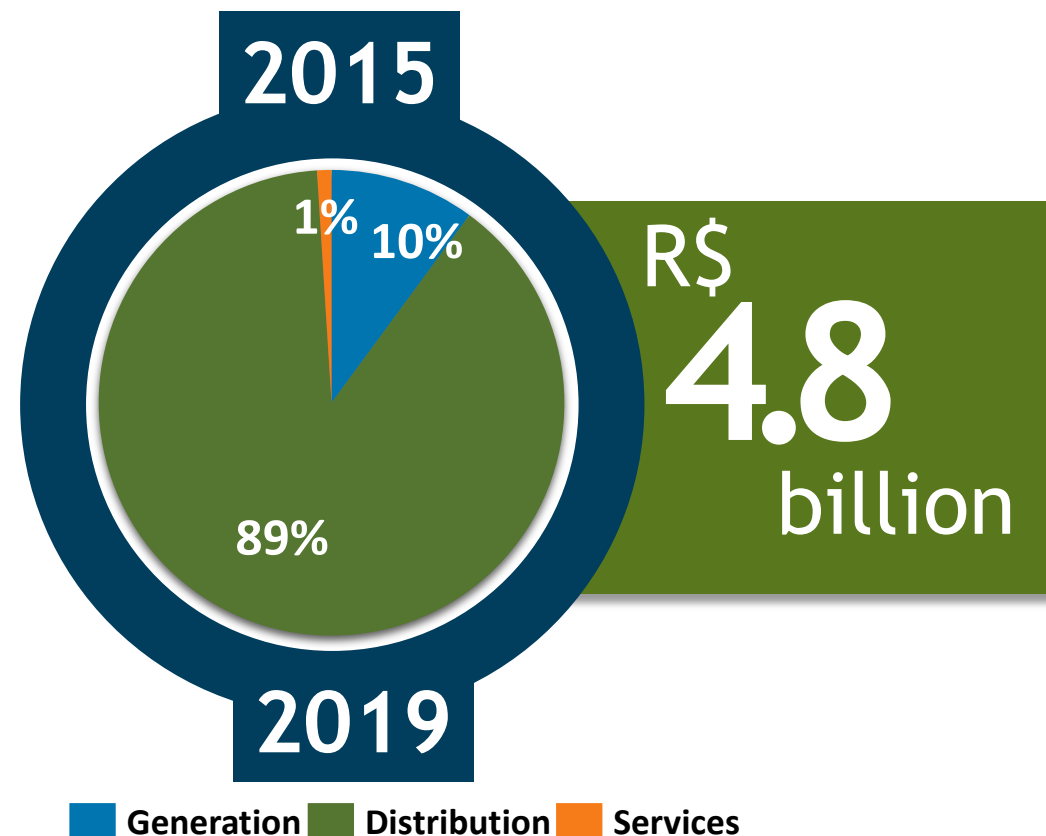
2015 - 2019

 **AES Eletropaulo**
R\$ 3.2 billion

 **AES Tietê**
R\$ 487 million

 **AES Sul**
R\$ 1.1 billion

 **AES Serviços**
R\$ 19 million



AES Brasil widely recognized

AES Eletropaulo



AES Tietê



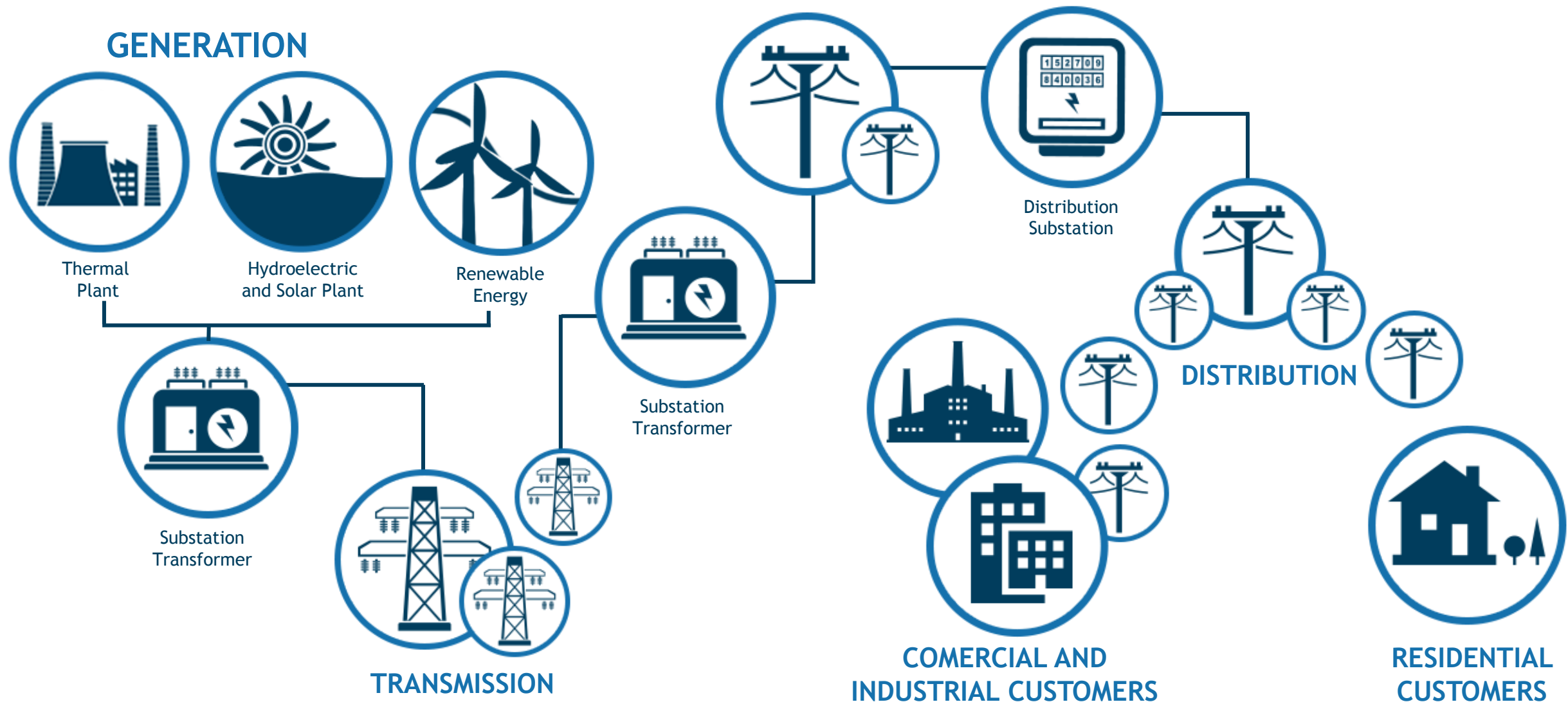
AES Brasil



AES Sul



National Interconnected System



Energy sector in Brazil: businesses segments



Generation¹

- **3,631** power plants
- **139 GW** of installed capacity
- System **based** on **hydro plants** (66%)
- **Contracting environment: free** and **regulated markets**



Transmission²

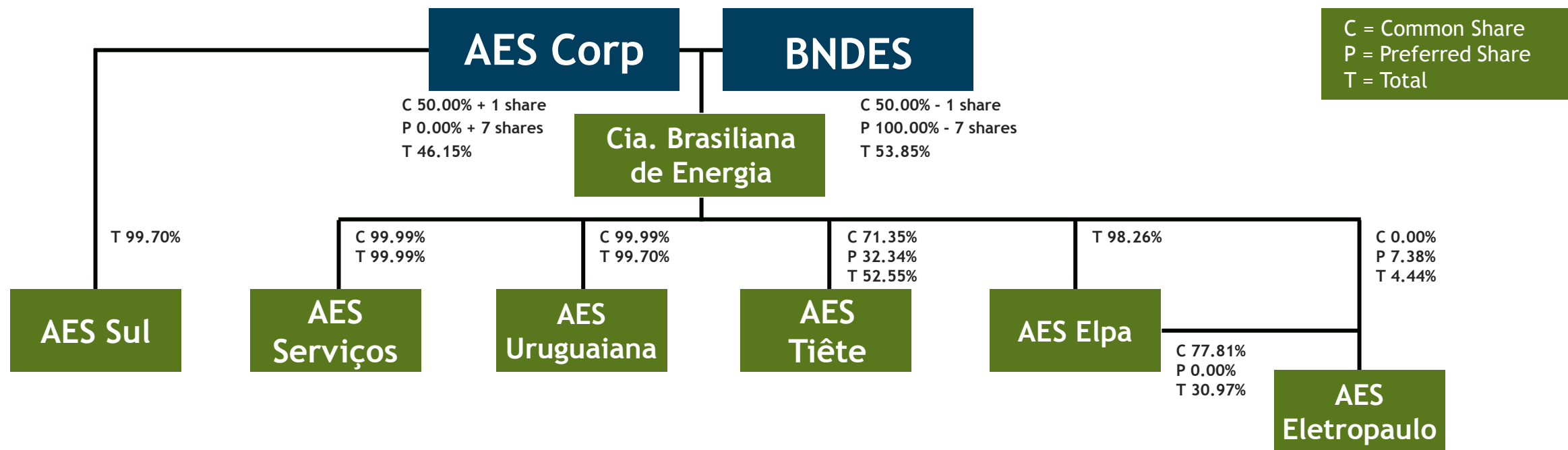
- **77** companies
- **High voltage transmission (>230 kV)**
- **116,767 km** lines (National Integrated System)
- **Regulated tariff** (annually adjusted by inflation)



Distribution²

- **65** distribution companies
- **473 TWh** energy **distributed**
- **190 million** consumers
- **Annual** tariff **adjustment**
- **Tariff reset** every **four** or **five** years
- **Regulated contracting** environment

Ownership Structure



AES Eletropaulo

AES Tietê



16.1%



19.2%

Free Float

56.3%

Others²

8.5%

Market Cap³

US\$ 0.5 bi

24.2%

28.3%

39.5%

8.0%

US\$ 2.0 bi

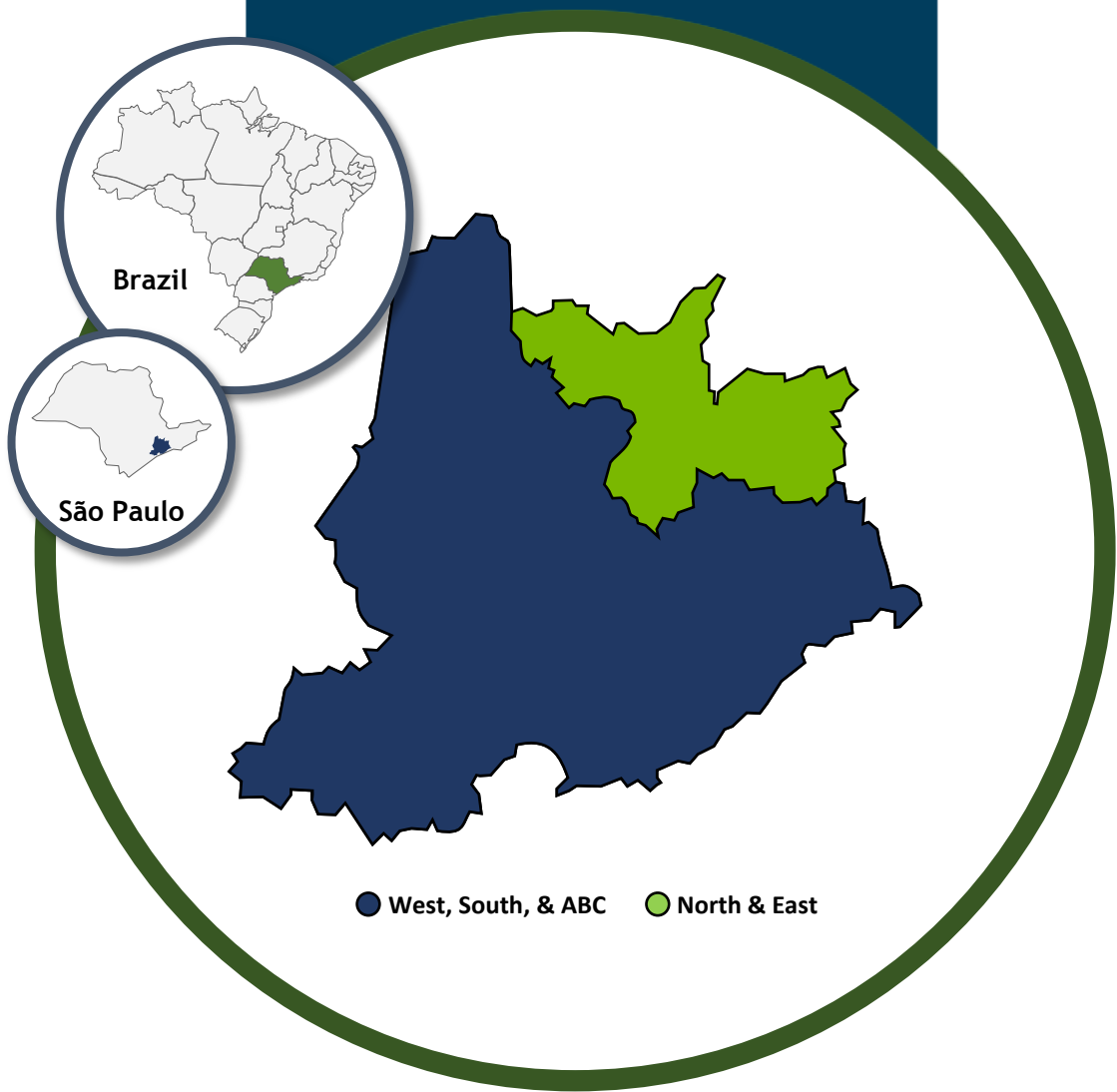


| | |
|---------------------------|----------------------------|
| Água Vermelha (1.396 MW) | Euclides de Cunha (109 MW) |
| Nova Avanhandava (347 MW) | Caconde (80MW) |
| Promissão (264 MW) | Limoeiro (32 MW) |
| Ibitinga(132 MW) | Mogi-Guaçu (7 MW) |
| Bariri (143 MW) | São Joaquim (3 MW) |
| Barra Bonita (141 MW) | São José (4 MW) |

- **3rd largest** among private generation companies
- **Concession** expires in 2029
- **Market Cap:** US\$ 2.0 billion¹

- **9 hydroelectric** plants and **3 SHP³** in São Paulo
- Installed capacity of 2,658 MW, physical guarantee² of 1,278 MWavg
- **Physical guarantee fully contracted** with AES Eletropaulo through Dec, 2015

- **Dividend Yield:**
 - 2014: 9.7% PN and 10.4% ON
 - Last 3 years avg: 11.0% PN and 11.4% ON
- **Investment grade (Moody's):**
 - National: Aa1
 - International: Baa3



- **Largest distribution company** in Latin America
- **24 cities** attended in São Paulo metropolitan area
- Concession contract **expires in 2028**

- **16% of Brazil's GDP¹** in its concession area
- **4,526 km²** concession area
- **46 thousand km** of distribution and transmission lines
- **6.7 million** customers
- **20 million** people served
- **46 TWh** distributed in 2014
- **6,152 employees** as of December 2014

Investment Grade:

| | Fitch | S&P | Moody's |
|---------------|-------|-----|---------|
| National | A+ | AA- | Aa3 |
| International | BB | BB | Ba2 |



- SAIDI and SAIFI **30% better than in 2009**, within regulatory limits
- Operating costs **2% below** the **regulatory levels**
- **118 cities attended** in Rio Grande do Sul state
- Concession contract **expires in 2027**

- **1.3 million** customers
- **9,528 GWh** sold in 2014
- **99,512 km²** concession area
- **3.5 million** people served
- **1,635** direct employees¹
- Regional **GDP growth** of **3.2%**²

- **63%** dividend payout in 2012
- **R\$ 401 million** Ebitda in 2014
- **R\$ 207 million** invested in 2014



- Beginning of commercial operations in **2000**
- Located in the State of **Rio Grande do Sul** - city of Uruguiana

- **Operations** were **suspended** in 2008 due to **lack of gas supply**
- Initiated **arbitration against YPF** in Argentina
 - ICC¹ **awarded the merits** in favor of **AES Uruguiana** in **2013**
 - **Next** and **final phase** refers to the **damages calculation**

- **Emergency operations** in **2013, 2014** and **2015** to **support reservoirs recovery** in Brazil
- Looking for **long-term solution**

Fast Facts

Combined cycle gas turbine (CCGT)

Capacity (MW) 640 MW

Authorization expiration 2027



- **Customer-focused Company**, that provides electrical energy services
- Focus on offering **integrated and high-added-value solutions** to the electrical energy agents, industrial and commercial segments, based on AES Brasil strong capabilities and know-how

- **Main Products**

- Commercial technical services
- Consulting in energy efficiency
- Construction and maintenance of substations and transmission lines
- Commercial service: face-to-face service and debt collection
- Affinities: insurance

- **Over 3 years** of operation
- 5 major clients - AES Eletropaulo, Hebraica, Hospital Santa Marcelina and Universidade Guarulhos
- **2 operational bases** - cities of Barueri and São Paulo
- **110 vehicles**
- **533 employees**

Corporate governance

Key for the investment decision

- Operational and Investment Management Committee: **robust capital allocation process**
- **Corporate policy of Integrated Risk Management¹** monthly assessed by Company's Executive Officers and quarterly by Fiscal committee and Board of Directors

- **Corporate governance manual**; audit committee installed
- High level of **commitment**, with **monthly** Board of Directors **meetings**

- Listed at BM&FBovespa:
 - ELPL3 and ELPL4: **level II**
 - GETI3 and GETI4: **traditional market**
- ISE Corporate Sustainability Index portfolio
- Tag along rights





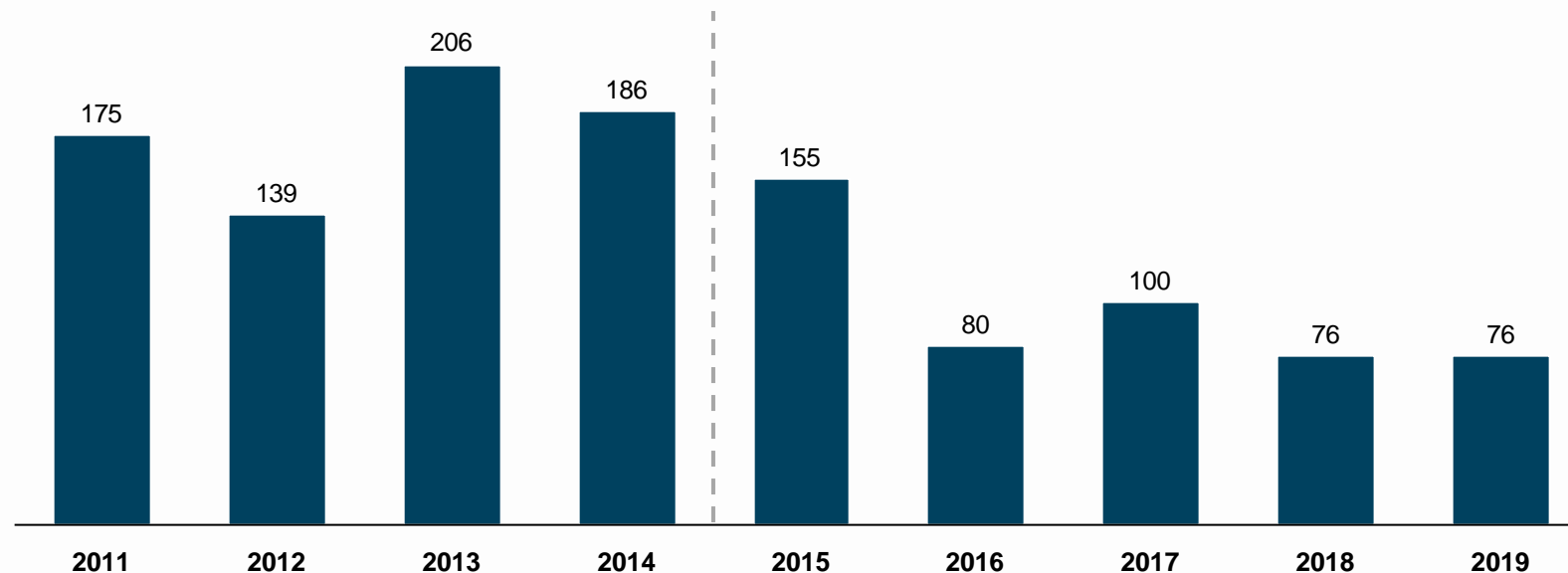
AES Tietê

Uma Empresa AES Brasil

Investment focused on power plants modernization



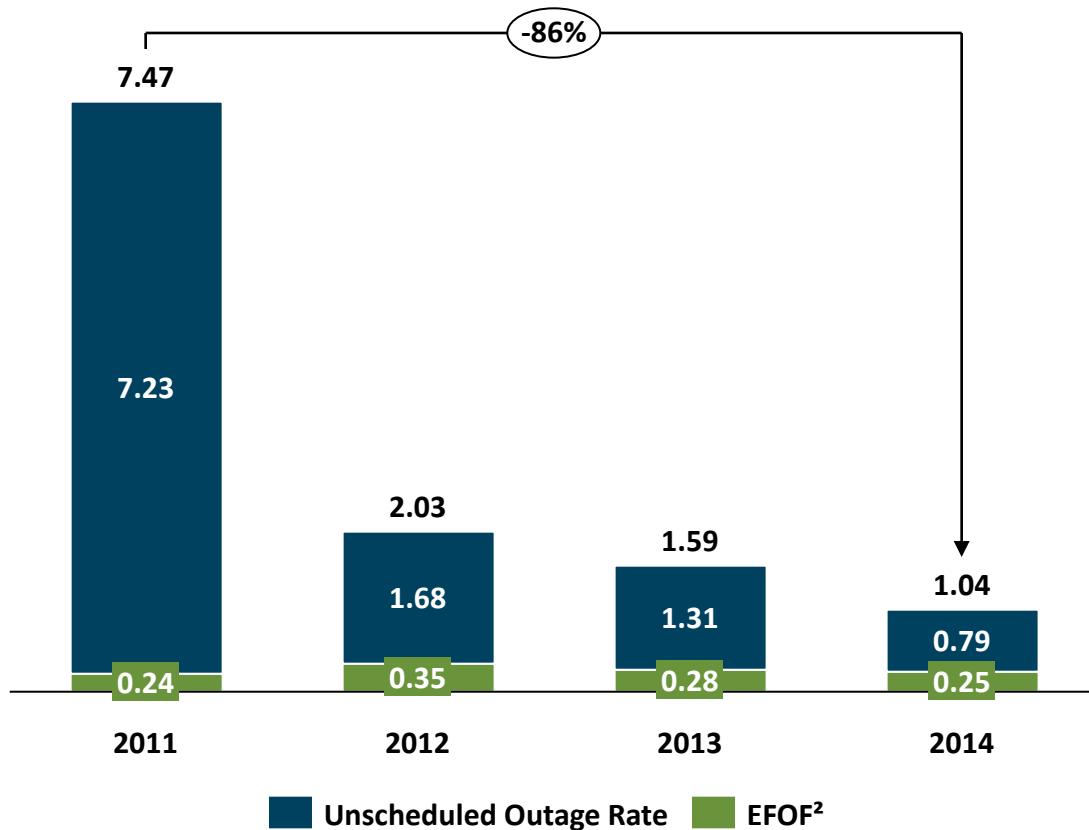
R\$ 487 million projected for 2015-2019



Power plants modernization process, aiming for continuous improvement in operational conditions and ensuring availability in its generation plants

Investments and Best Practices in Asset Management, translates into outages reduction

Unscheduled outages (%)

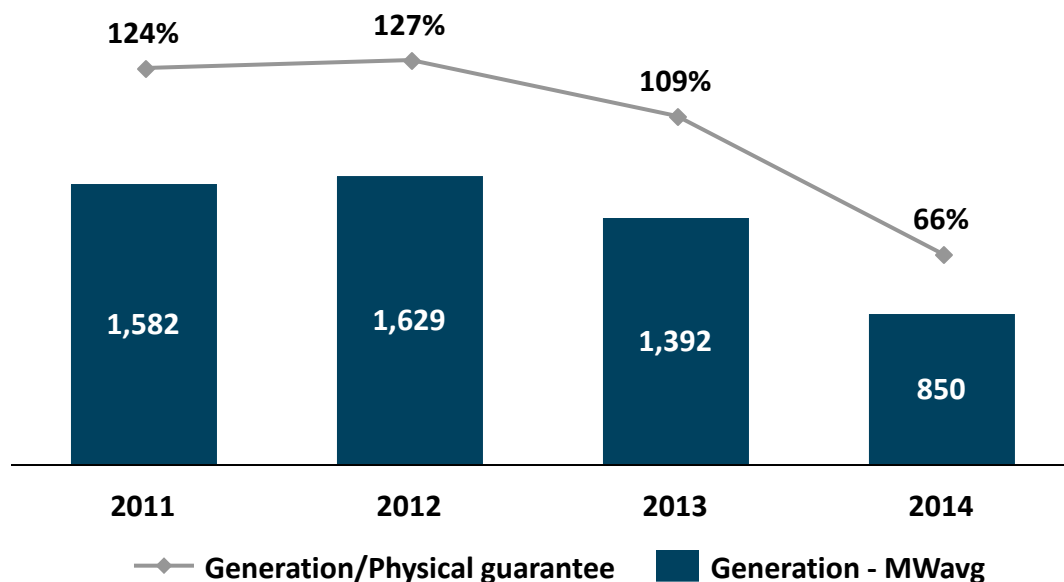


- PASS 55 Certification: Best practices in asset management¹



Energy generation decrease reflects hydrology behavior in the country

Generated energy (MW average¹)



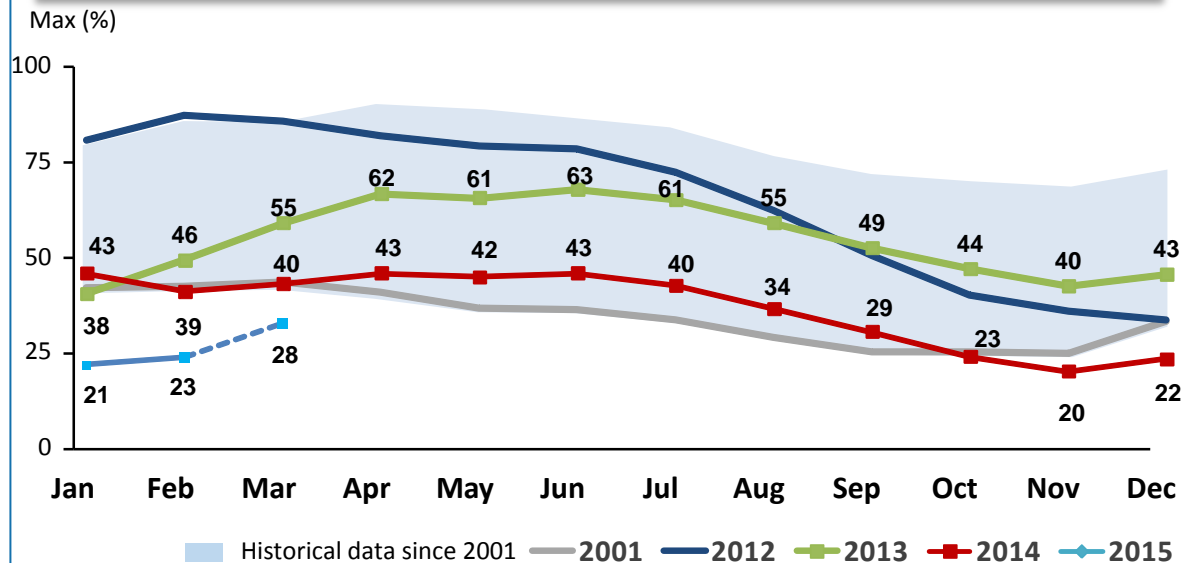
- Hydropower plants are dispatched by ONS²
- Dispatch are also related to hydrological conditions:
 - Low hydrology translates into low generation levels



Challenges ahead

Hydrological scenario and spot price

Historical Level of Brazilian Reservoirs (%)

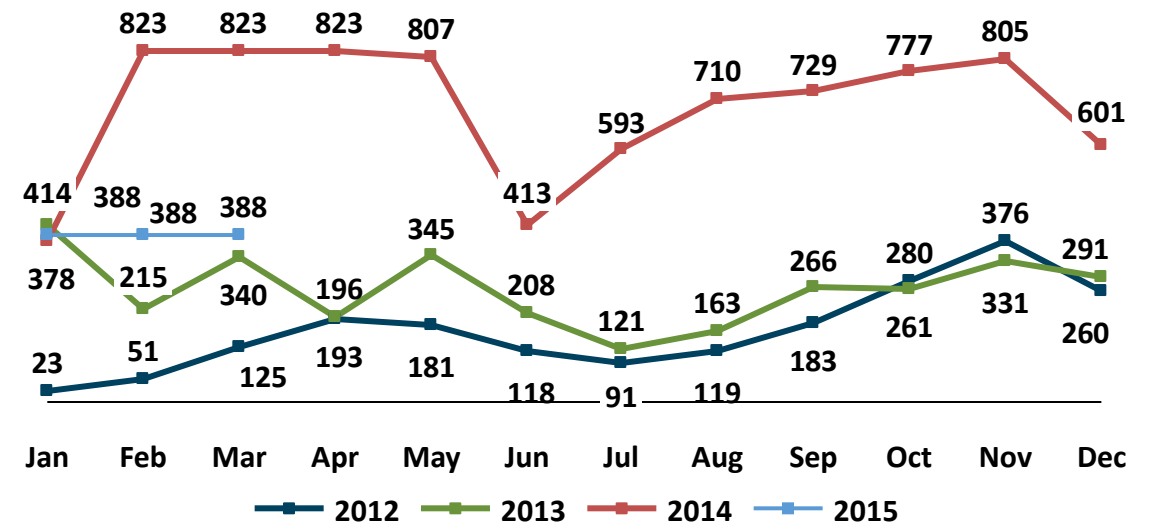


- 2013/2014 rainfall regimes did not recovered Brazilian reservoirs levels

- System is relying on thermal generation (~17 GWavg 2014)

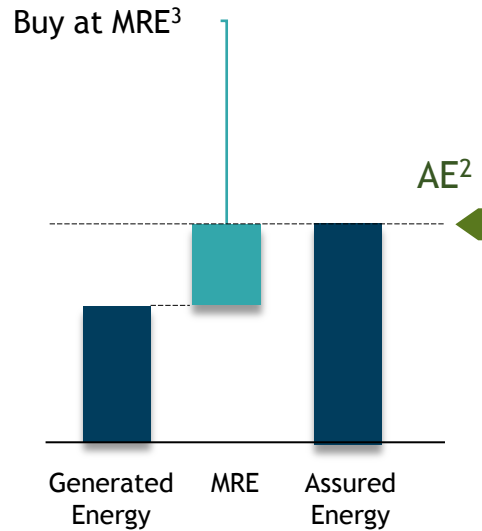
- AES Tietê physical guarantee is 100% contracted until 2015; from 2016 on, Company will have more flexibility to manage the hydrological risk

Monthly Evolution of Spot Price¹ (R\$/MWh) SE/CO



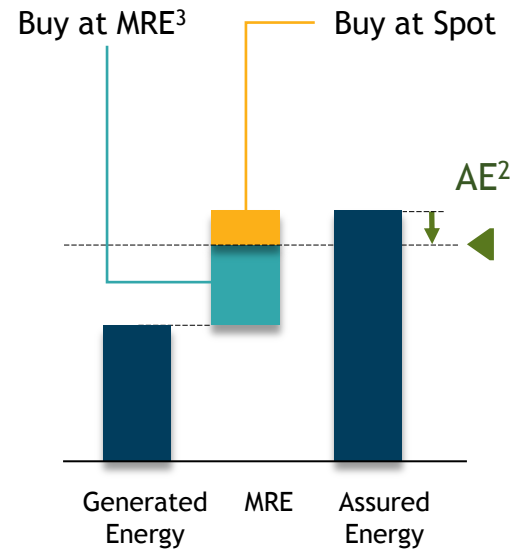
Energy Reallocation Mechanism (MRE) for hydrological risk sharing

1) Equilibrium ($GE^1 = PG^2$)



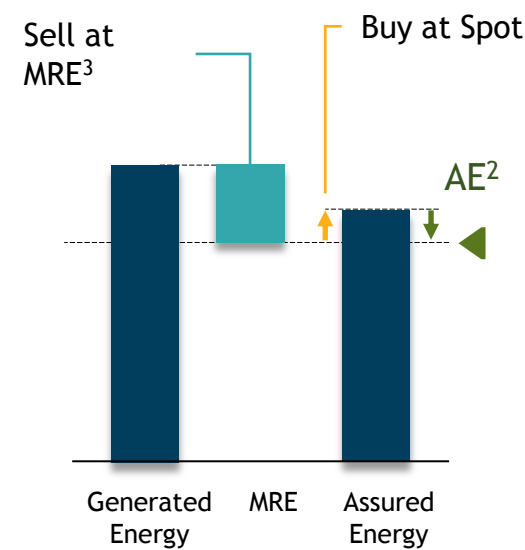
Genco A

2A) Deficit ($GE^1 < PG^2$)



Genco A

2B) Deficit ($GE^1 < PG^2$)



Genco B

- A physical guarantee (assured energy) is assigned to support contracts
- Energy dispatch optimized by centralized system operator (ONS) on a tight pool

Key drivers for hydrological risk

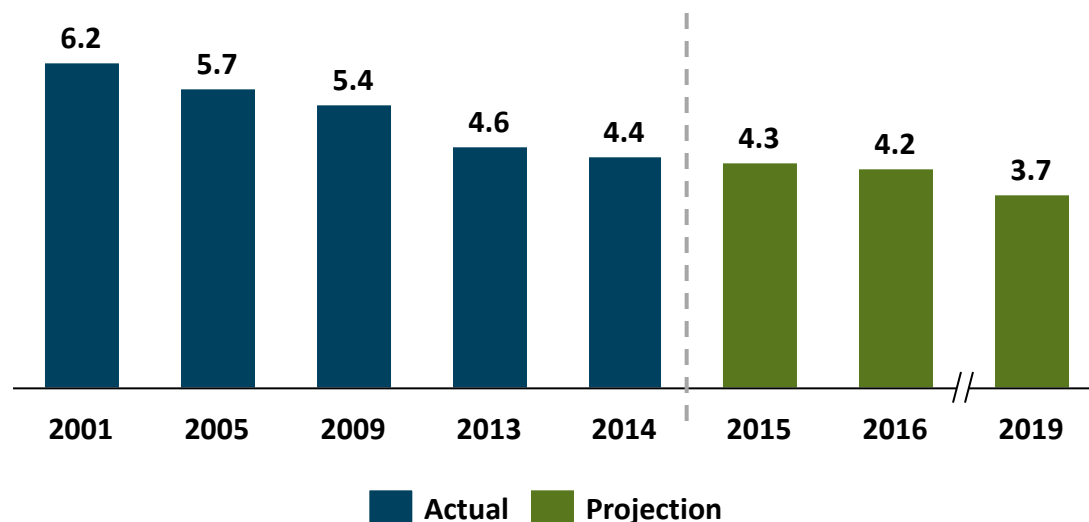
- Generated Energy (hydro) in the entire system (MRE) - influenced by hydrology
- Spot Price - marginal cost influenced by hydrology and thermal dispatch

Tight hydrology and lower system storage capacity requires more flexible generation

Thermo São Paulo (503MW)
and Thermo Araraquara
(579MW)



Storage capacity (months)



Current contracted energy is based on renewable (mainly Wind) and run-of-river hydro projects, which has reduced the energy storage capacity over the recent years.



Growth Initiatives

Diversify Company investments

Thermal São Paulo Project 503 MW



- **Natural gas combined cycle** power plant
- **Previous license** granted in Oct, 2011 - valid for 5 years
- Next steps: obtain **installation license**, **gas supply** and **bid in the auction**

Thermal Araraquara Project 579 MW



- **Natural gas combined cycle** power plant
- **Purchase option acquired** - March, 2012
- Next steps: obtain **installation license**, **gas supply** and **bid in the auction**

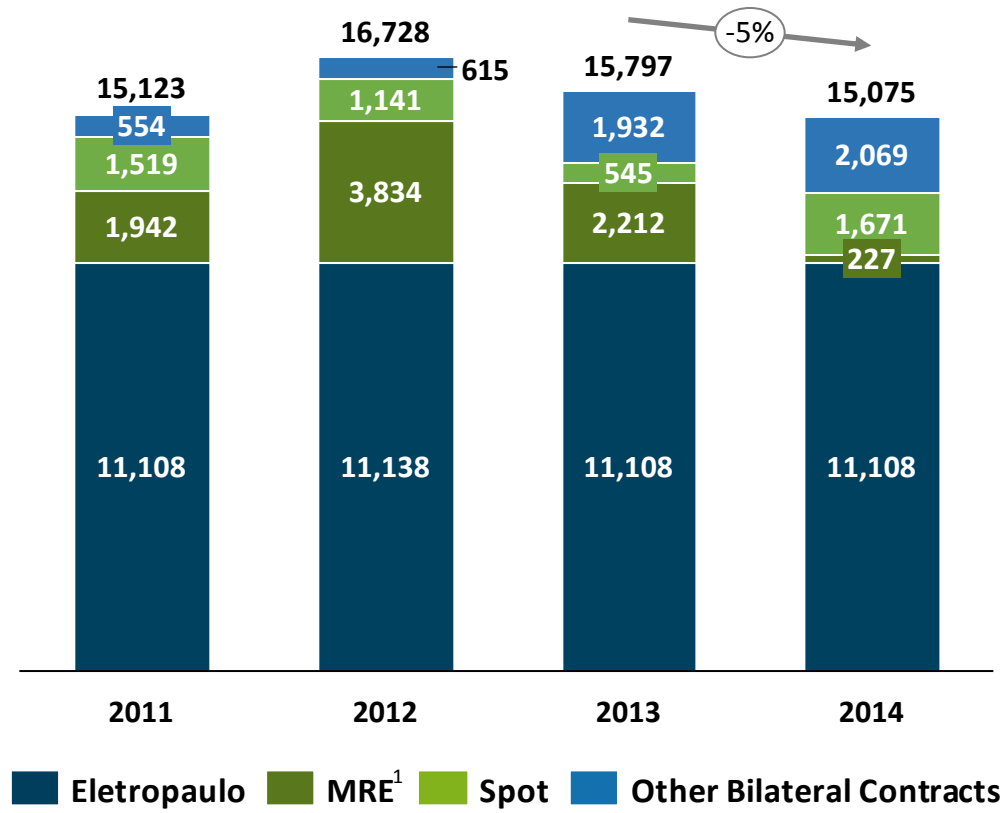
Other initiatives (renewables)



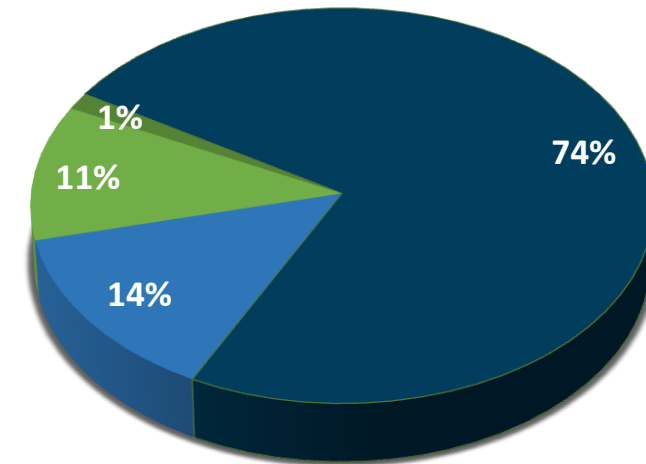
- **Solar project:** Located in Agua Vermelha power plant, capacity of 28.1 MW
- **Company** evaluating other generation sources, aiming to increase shareholders value and diversify its portfolio

Currently, AES Eletropaulo is our main client

Billed energy (GWh)



2014 (%) - Clients per net revenue



Contracting environment and opportunities

2016
and
beyond

Regulated Market

Existing Energy
Auctions



Via auctions organized
by federal government

Distribution
companies

Free Market

Bilateral
contracts



Via bilateral
agreements

Free Consumers¹

Spot Market

Non contracted
energy



Exposed to Spot
Market price

CCEE Settlement

Commercialization strategy post-2015 leveraging cash flow

Our goal is to sell the major part of Company' physical guarantee in the free market

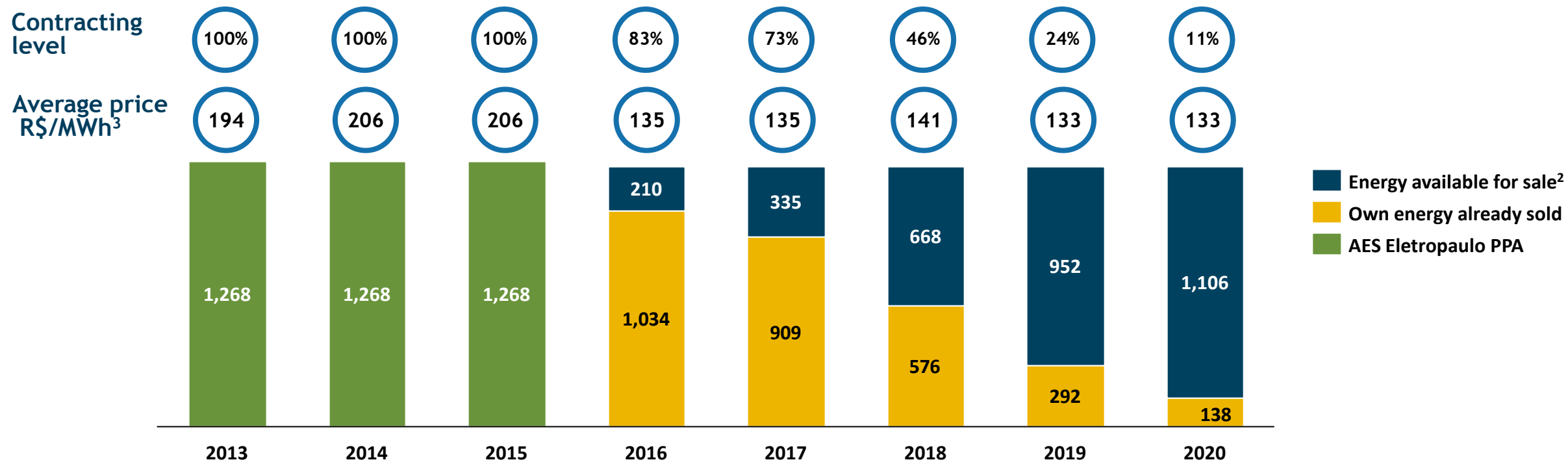
- Customized energy with global experience
- Focus on long term contracts and off takers with a strong financial background aiming to ensure Company' cash flow
- Practices and policies to ensure an adequate risk-profile assessment
- Client Relationship actions to promote AES Tietê and identify clients needs (i.e.: workshops, site visits, satisfaction surveys)
- 458 visits promoted by the team to clients within 2013 and 2014
- We've already sold 83% of the available energy for 2016, 73% for 2017 and 46% for 2018



Commercialization strategy-

Consistent evolution of client portfolio

Client portfolio¹ (MWavg)



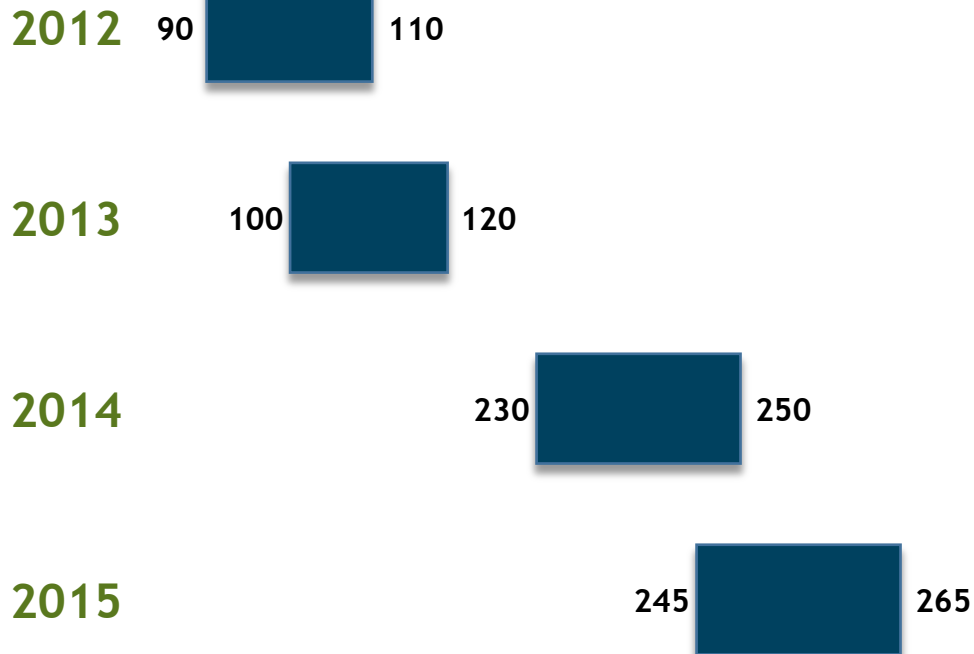
Free Market

Dynamic and competitive market

Avg energy price for 2016 (R\$/MWh)

Price Expectation

Year



Price formation methodology

Short term

- Spot price (hidrology and reservoirs)

Medium Term

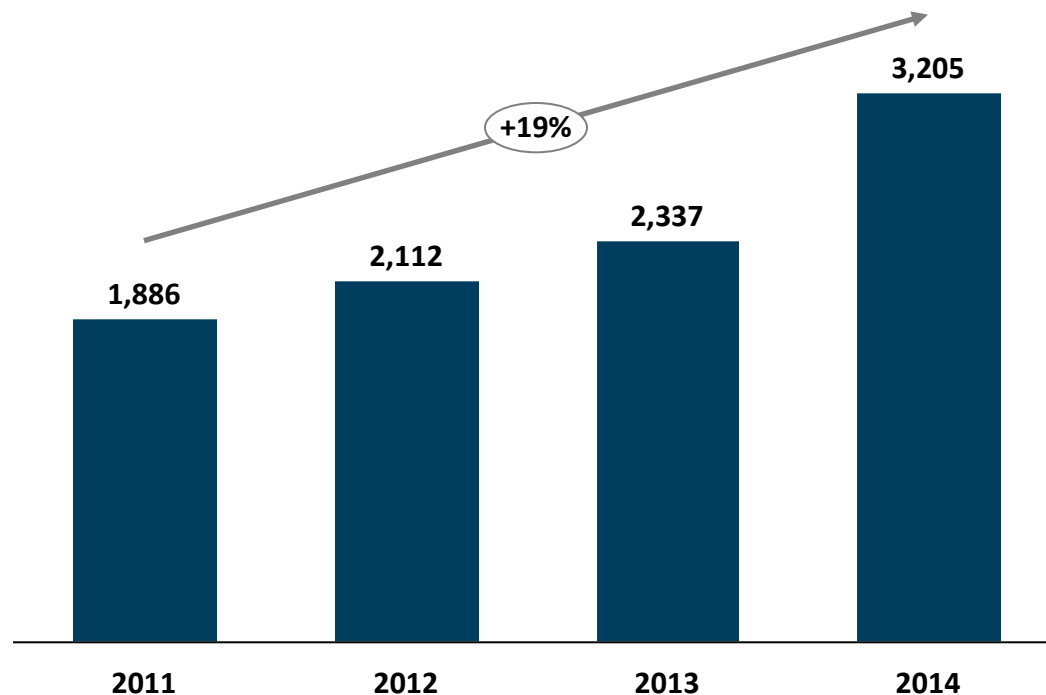
- Supply and demand

Long Term

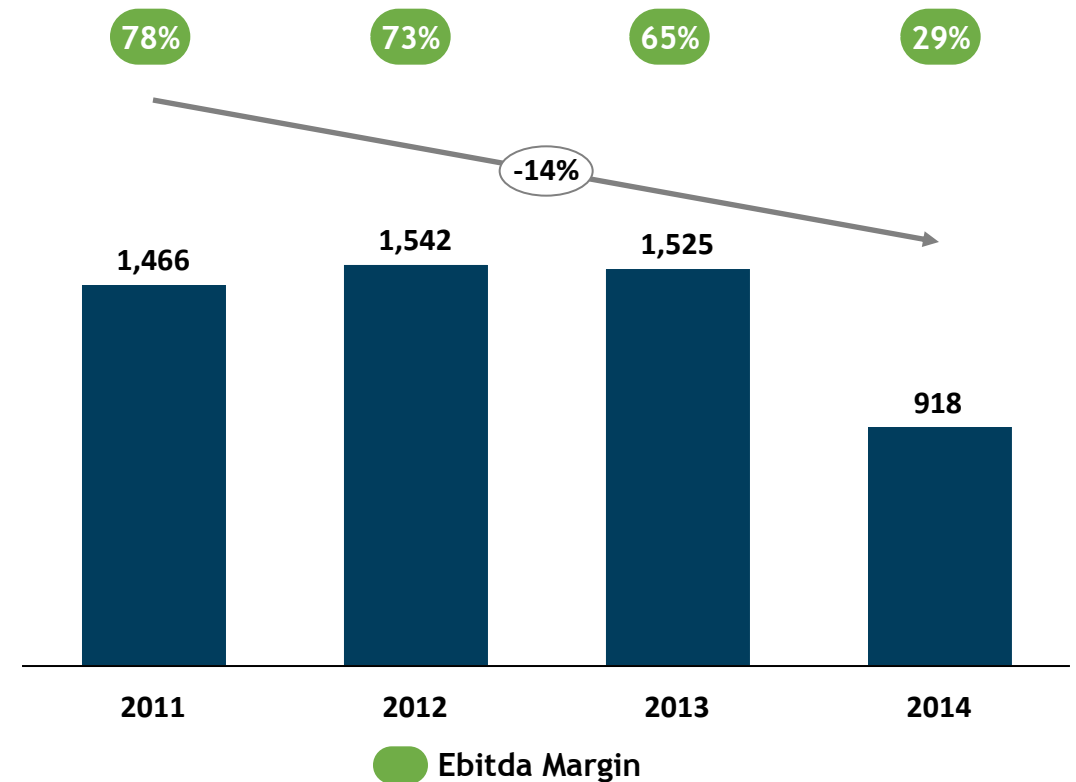
- Marginal Expansion Cost
- Regulated Market price

Strong and consistent results...

Net revenue (R\$ million)

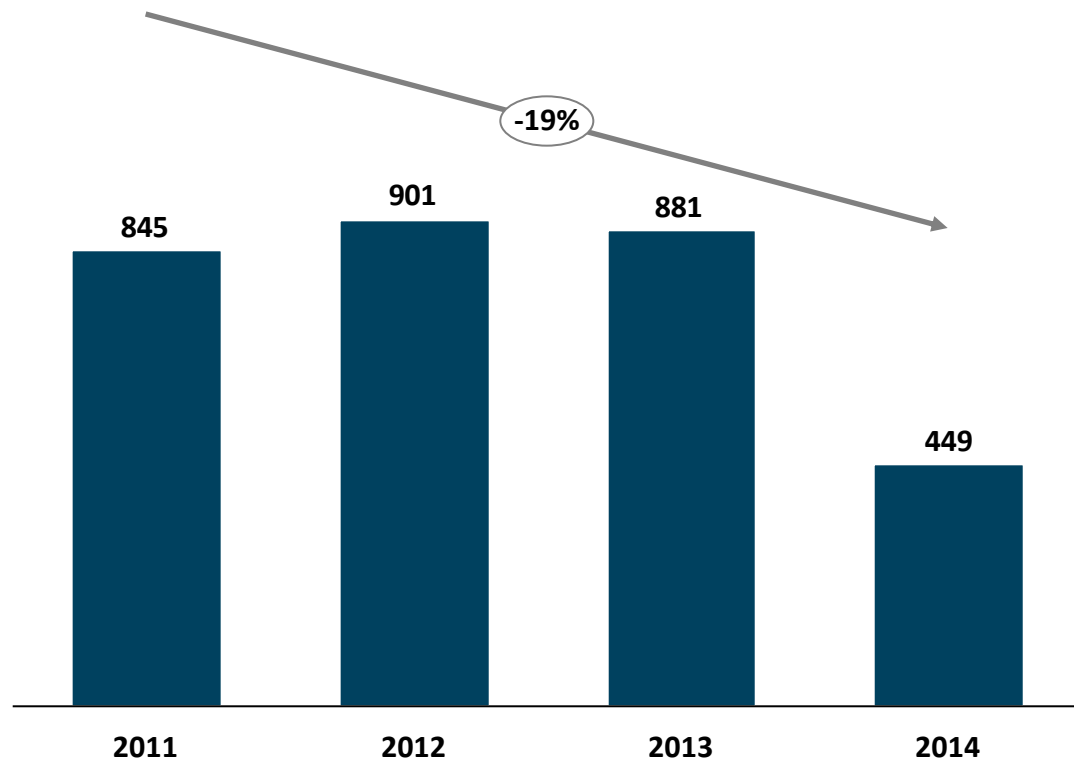


Ebitda (R\$ million)



... and attractive returns

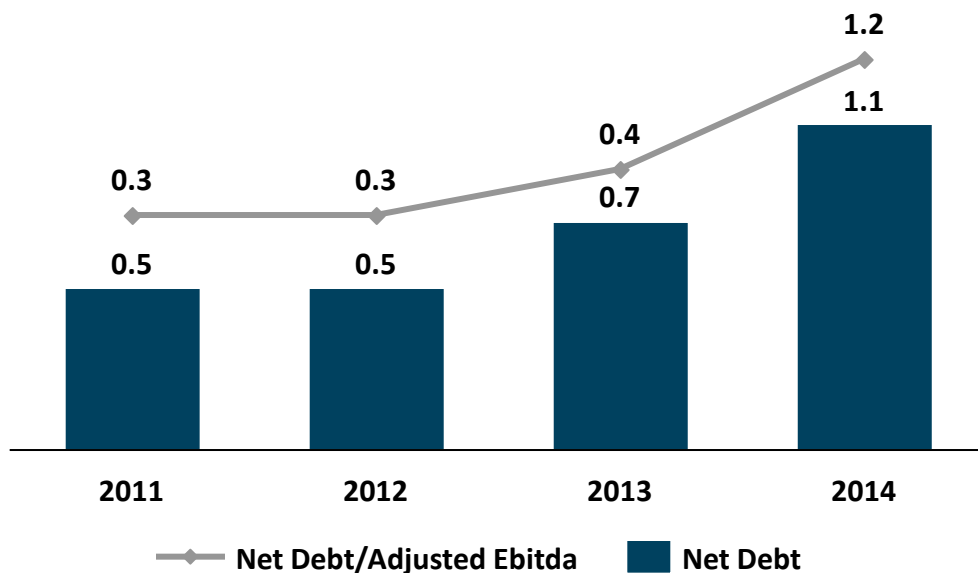
Net Income (R\$ Millions)



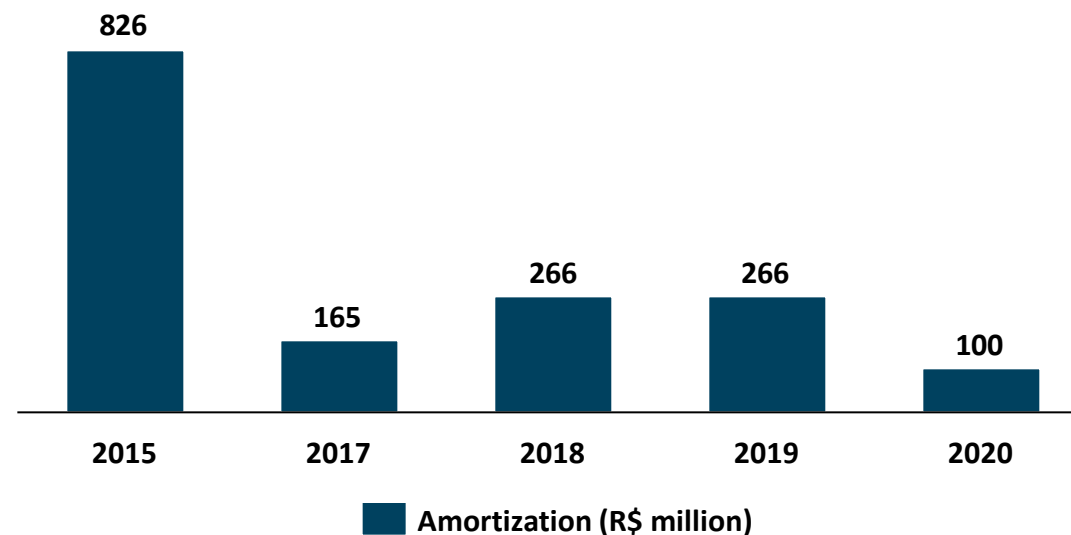
- **25% of minimum pay-out** according to bylaws
- Distribution practice: **quarterly basis**
- **Average payout** from 2008 to 2014: **112%**
- **Average dividends** since 2008: **R\$ 836 million** per year¹
- Dividends **approved in 2014:**
R\$ 644 million

Low leverage level...

Net debt (R\$ billion)



Debt amortization schedule



Covenants

Net debt/Adjusted Ebitda² ≤ 3.5x
Adjusted Ebitda²/Financial Expenses ≥ 1.75x

Debt Cost

| | 2013 | 2014 |
|-----------------------------------|-------|-------|
| Average cost (% CDI) ¹ | 107% | 106% |
| Average term (years) | 2.40 | 2.18 |
| Effective rate | 12.0% | 13.6% |

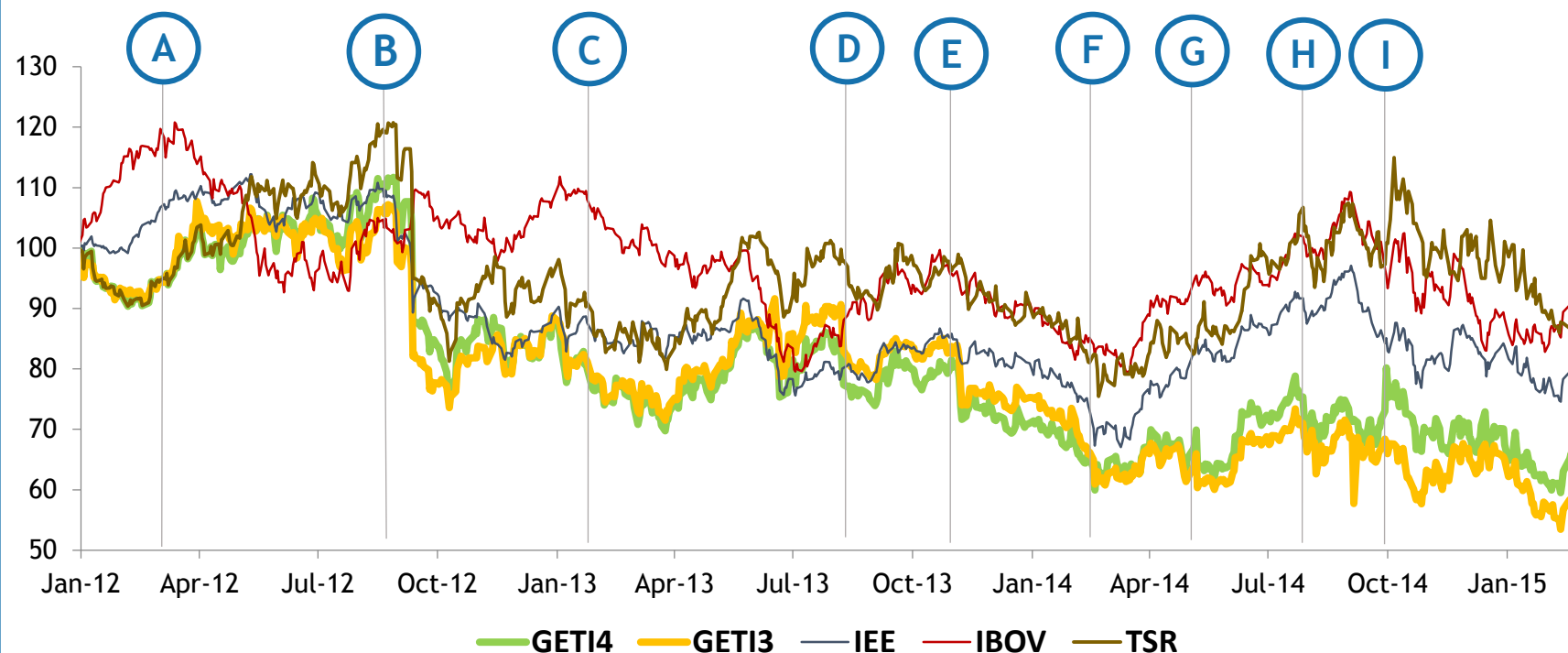


...and consistent cash flow

| R\$ Million | 4Q13 | 4Q14 | 2013 | 2014 |
|-------------------------|-------|-------|-------|-------|
| Initial Cash | 437 | 223 | 397 | 457 |
| Operating Cash Flow | 400 | (109) | 1,486 | 1,187 |
| Investments | (87) | (41) | (188) | (173) |
| Net Financial Expenses | (32) | (38) | (62) | (94) |
| Net Amortization | - | 500 | 192 | 499 |
| Income Tax | (20) | (33) | (457) | (483) |
| Free Cash Flow | 262 | 279 | 971 | 936 |
| Dividends and IoE | (242) | (0) | (912) | (892) |
| FINAL CASH CONSOLIDATED | 457 | 501 | 457 | 501 |

Capital markets

AES Tietê x IEE x Ibovespa¹ - 24 months



- **Market cap³:** US\$ 2.0 billion / R\$ 5.9 billion
- **BM&FBOVESPA:** GETI3 (common shares) and GETI4 (preferred shares)
- **ADRs negotiated in US OTC Market:** AESAY (common shares) and AESYY (preferred shares)





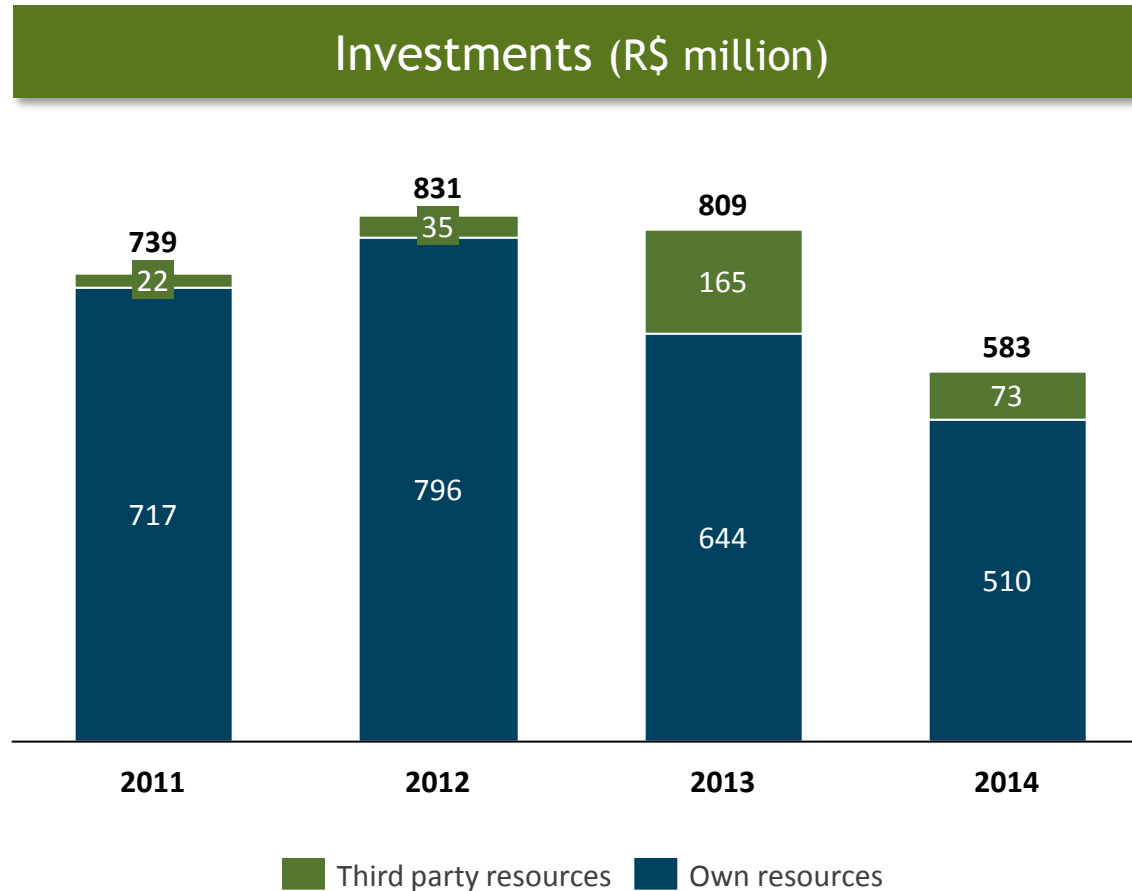
We have strong capabilities and business governance

- **PASS 55** certification, **1st** Generation company in Latin America
- **AES Tietê** has been included in the ISE since **2007**
- **Attractive** returns to investors. **Strong cash generation**; Maximization of payout
- **Cost efficiency** and **optimized capital** allocation
- Established **risk management capability**



Uma Empresa AES Brasil

2014 investments focused on system expansion and quality of service

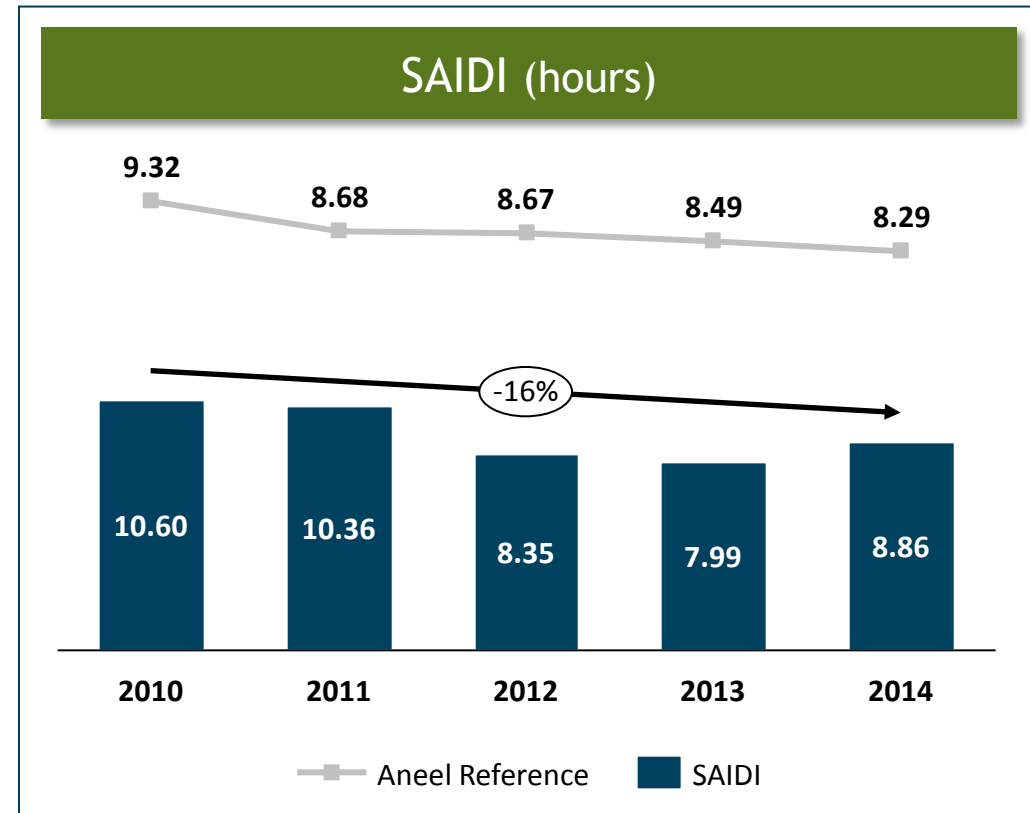
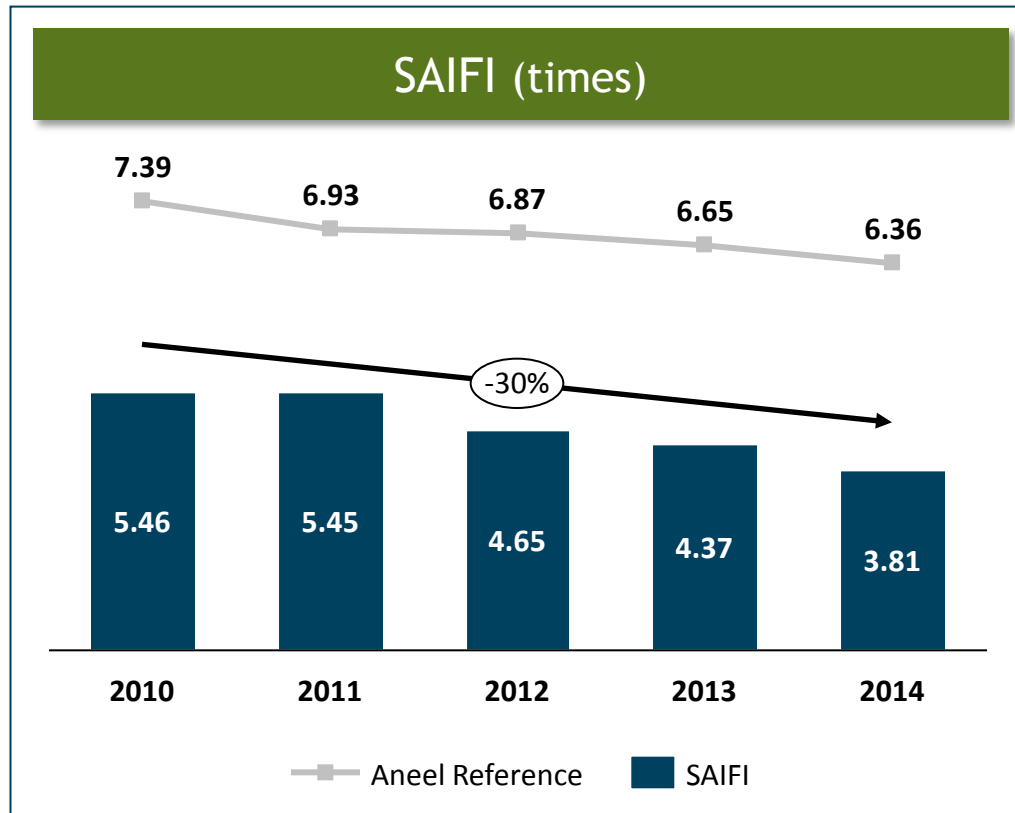


2014 Investment focused on

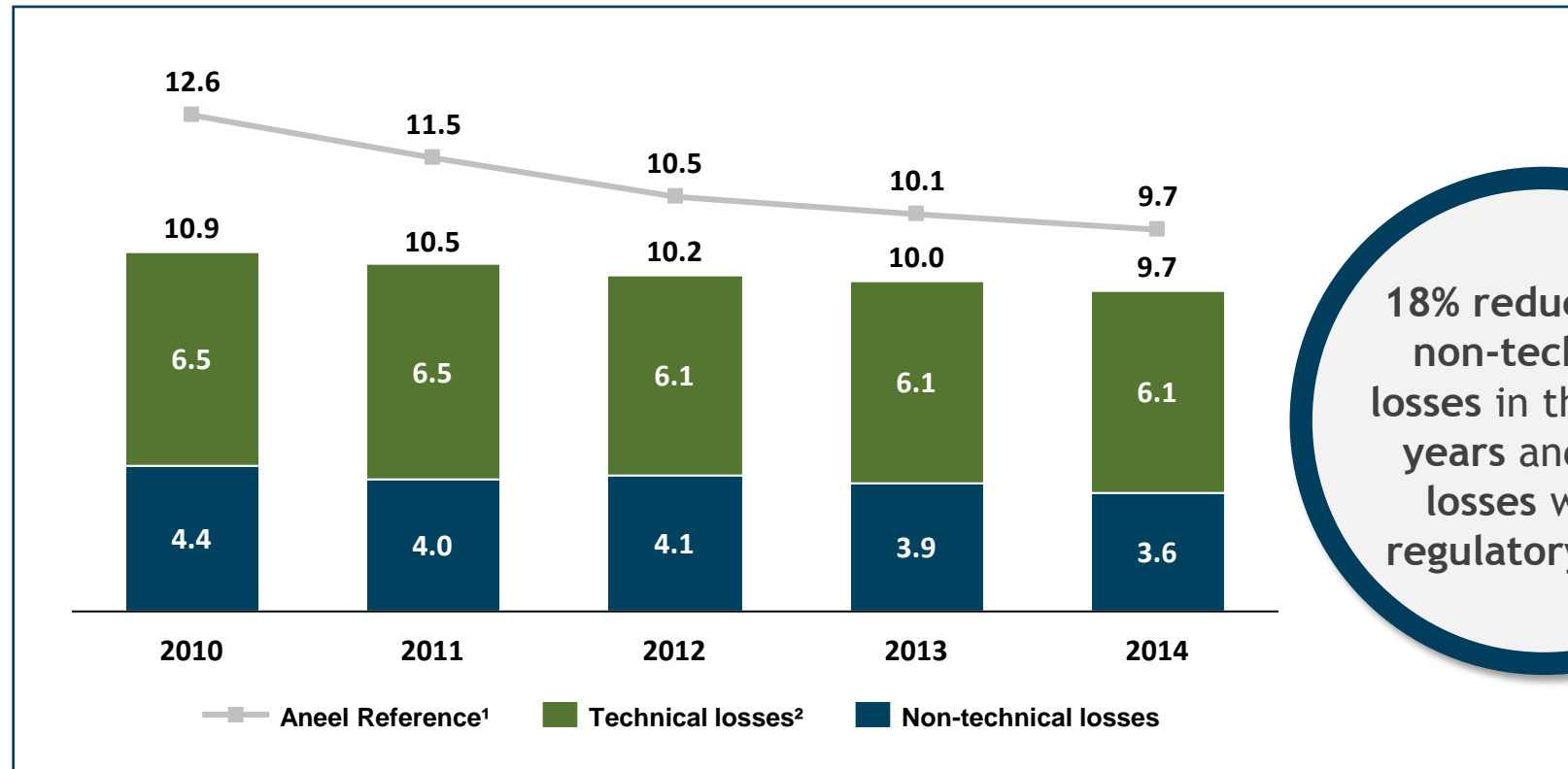
- Substation repowering and energization adding **309MVA** to the system's capacity
- **30 km** of new distribution lines
- Maintenance in **over 4.0 thousand km** of the distribution grid
- **Regularization** of 42 thousand connections

Consistent improvement in the quality of service since 2010

- SAIFI¹: 30% reduction in **frequency of interruptions in the last 5 years**
- SAIDI²: 16% reduction in **hours of interruptions in the last 5 years**

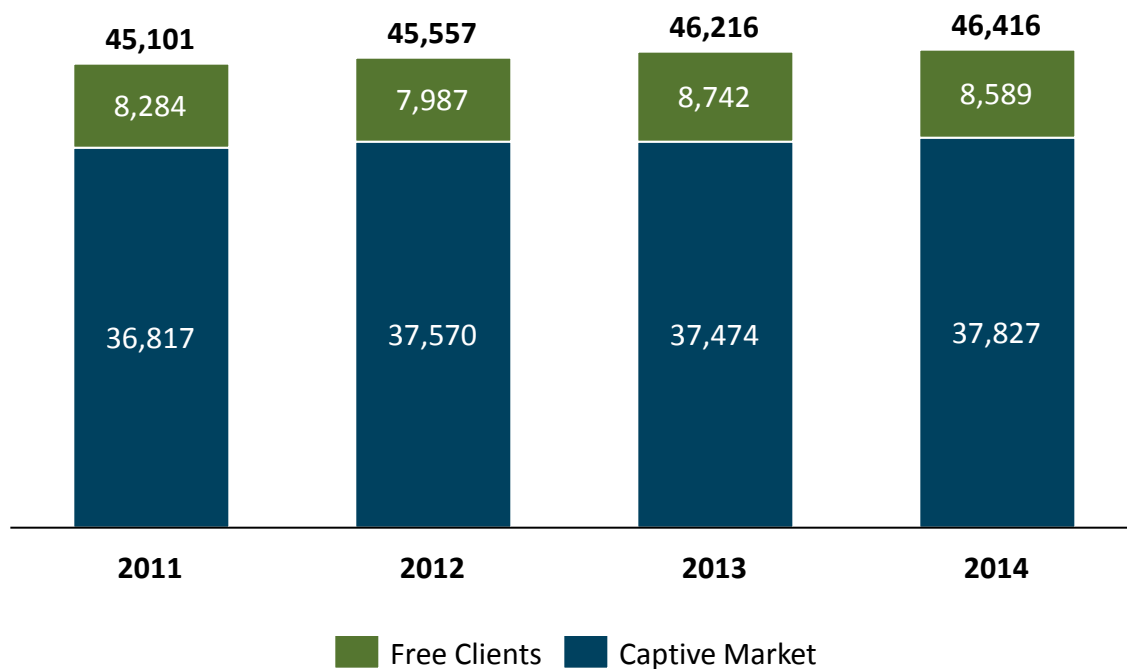


Efficiency in losses reduction over the last five years



Large and resilient concession area

Total Market¹ (GWh)



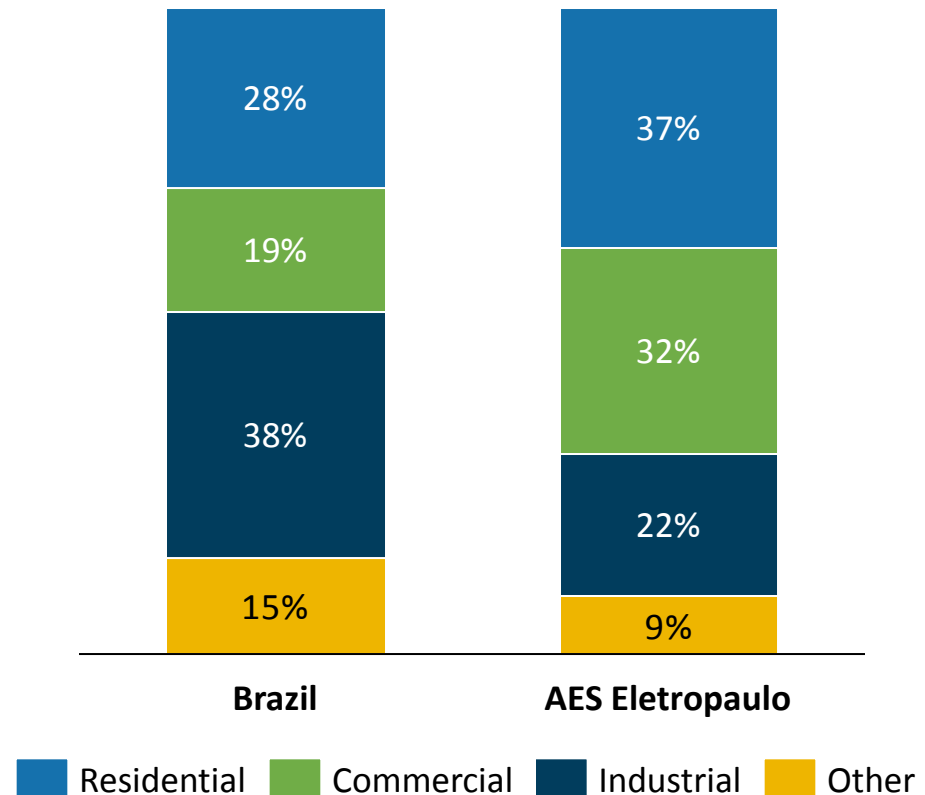
- AES Eletropaulo concession area consists of a mature market, representing approx. 16% of national GDP²
- State of São Paulo's GDP average growth of 2.0% p.a. for the last 5 years³



Consumption expansion is mostly in residential and commercial classes

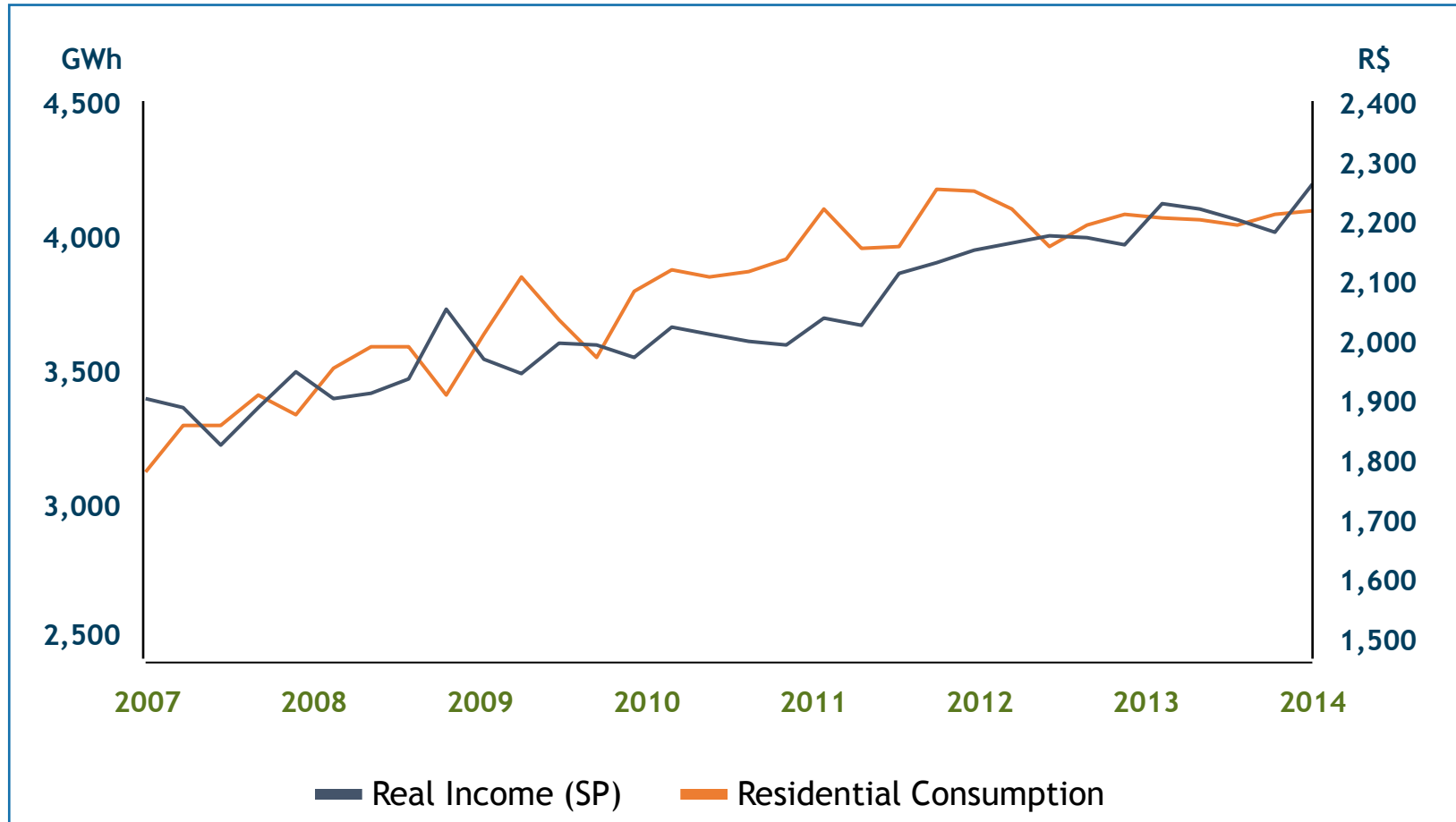


Consumption by class¹ – 2014



Residential Class

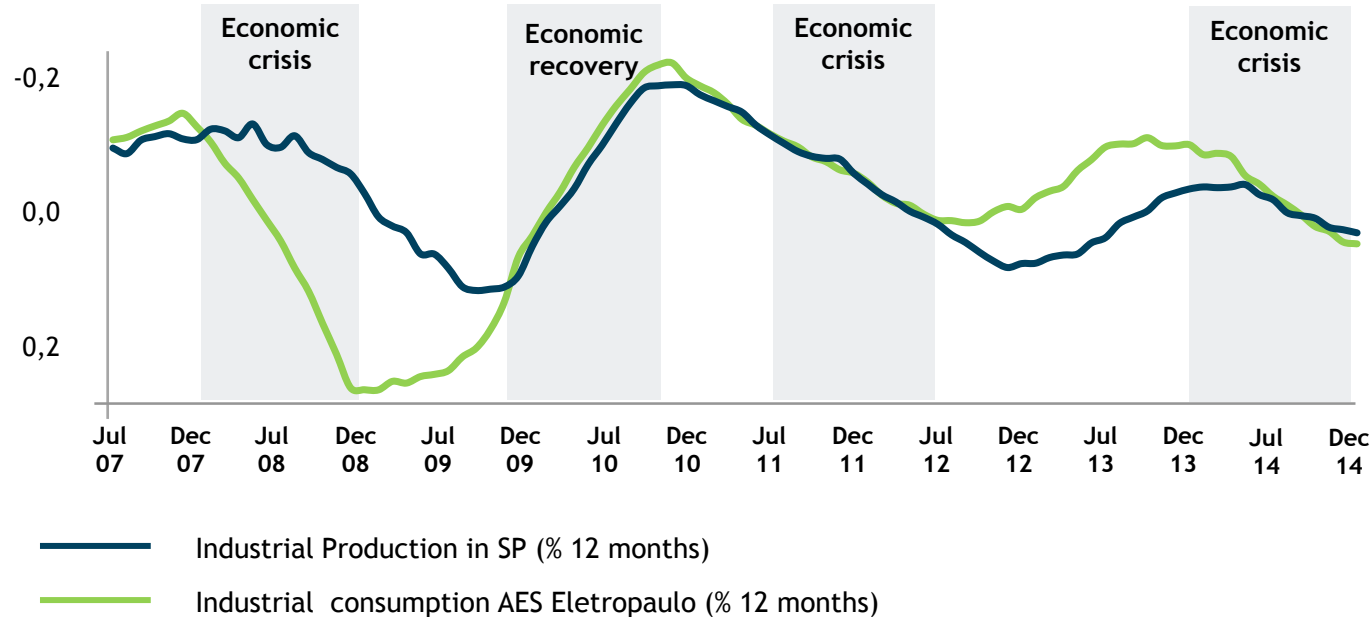
consumption in line with
São Paulo state real income



Residential
consumption
per client grew
an average
of 0.9% in the
last 8 years¹

Industrial class consumption tied to the industrial production growth in the state of São Paulo

Industrial class X Industrial production in SP¹

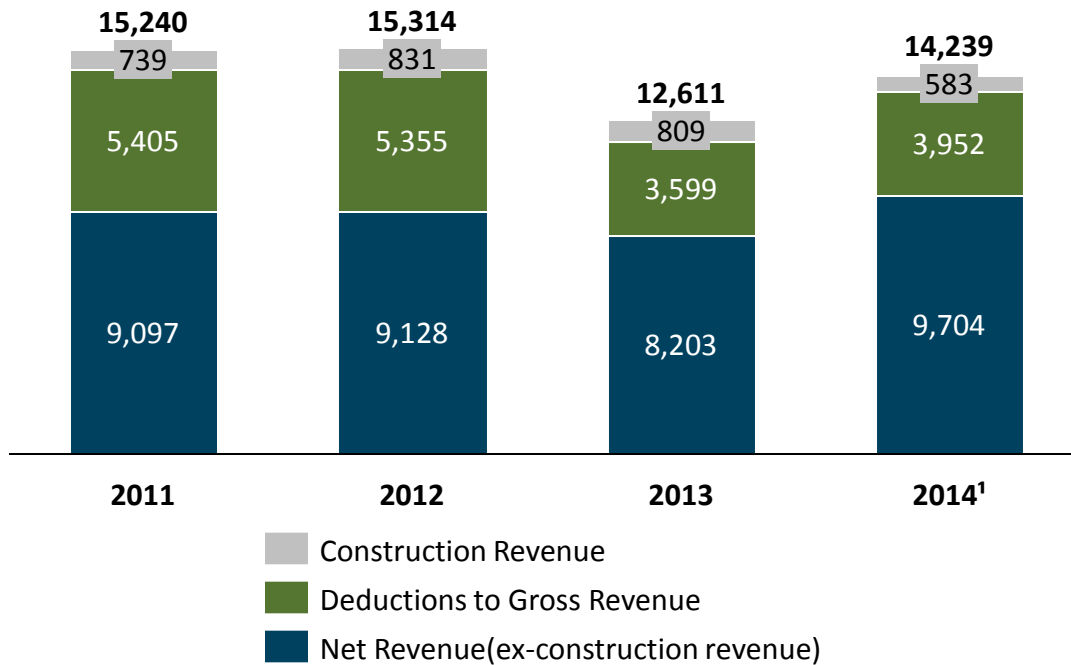


- Industrial consumption impacted by lower industrial production in Brazil
- Consumption focused on more resilient segment (residential and commercial classes)

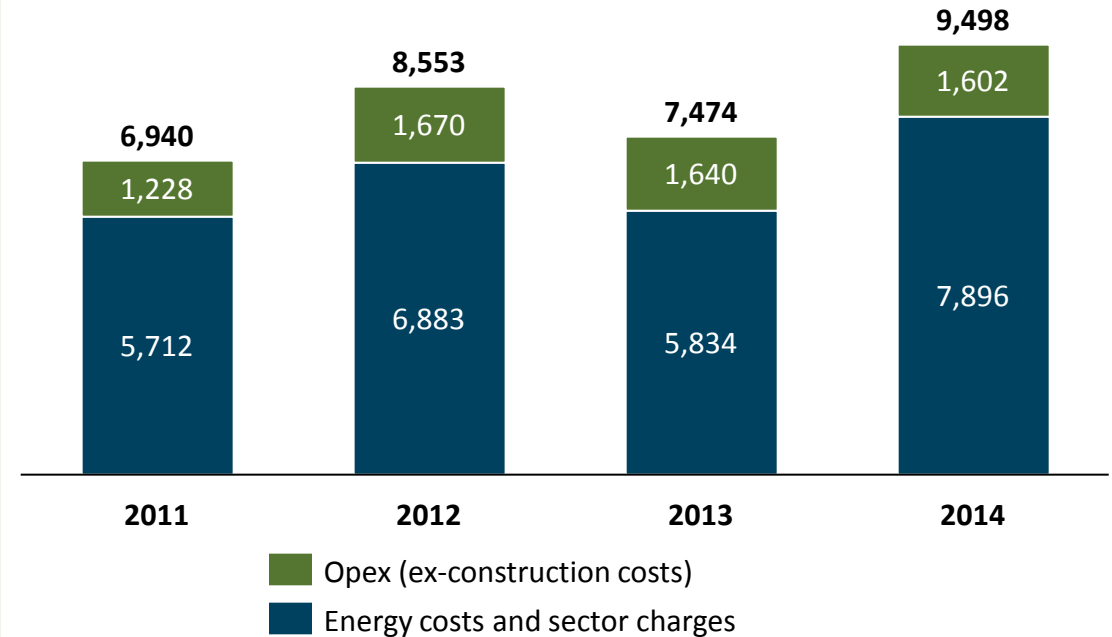


2014 net revenue positively influenced by the tariff readjustment and overcontracted energy

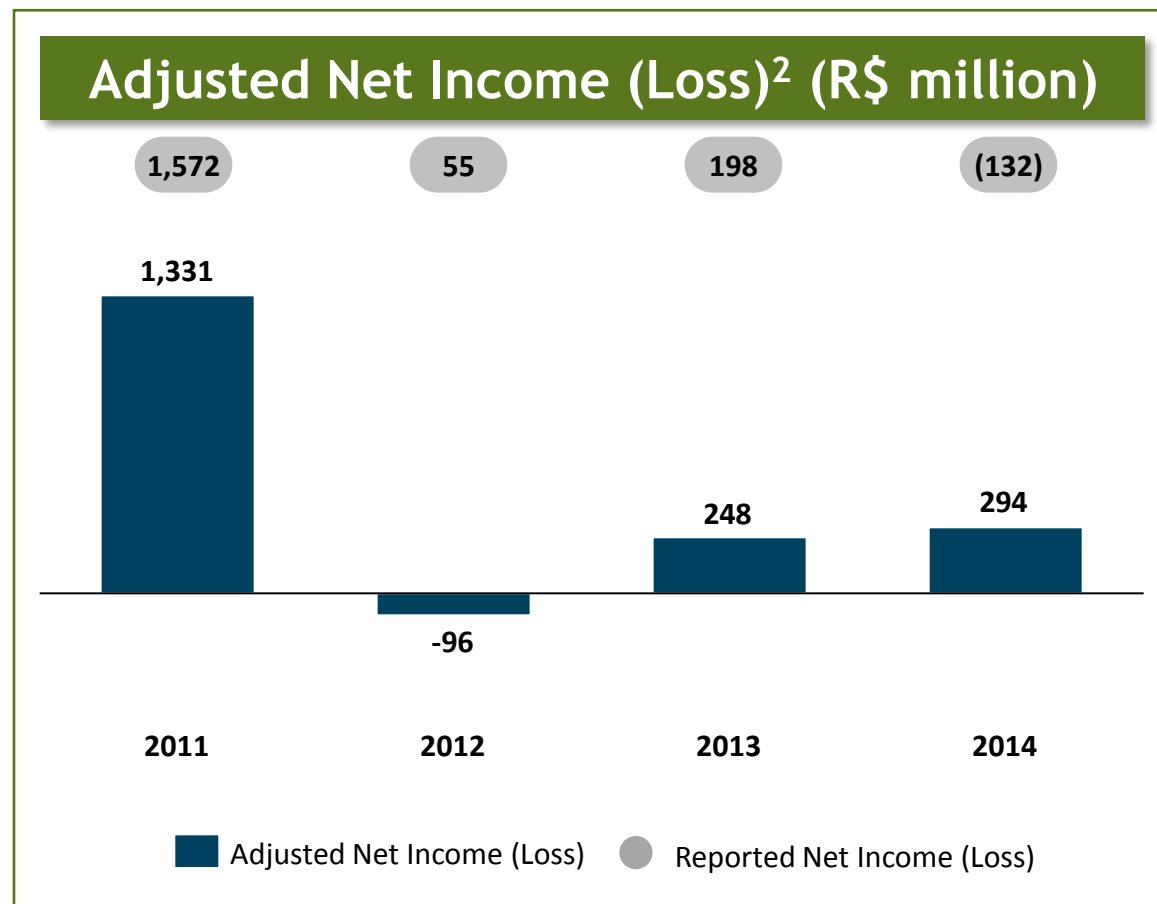
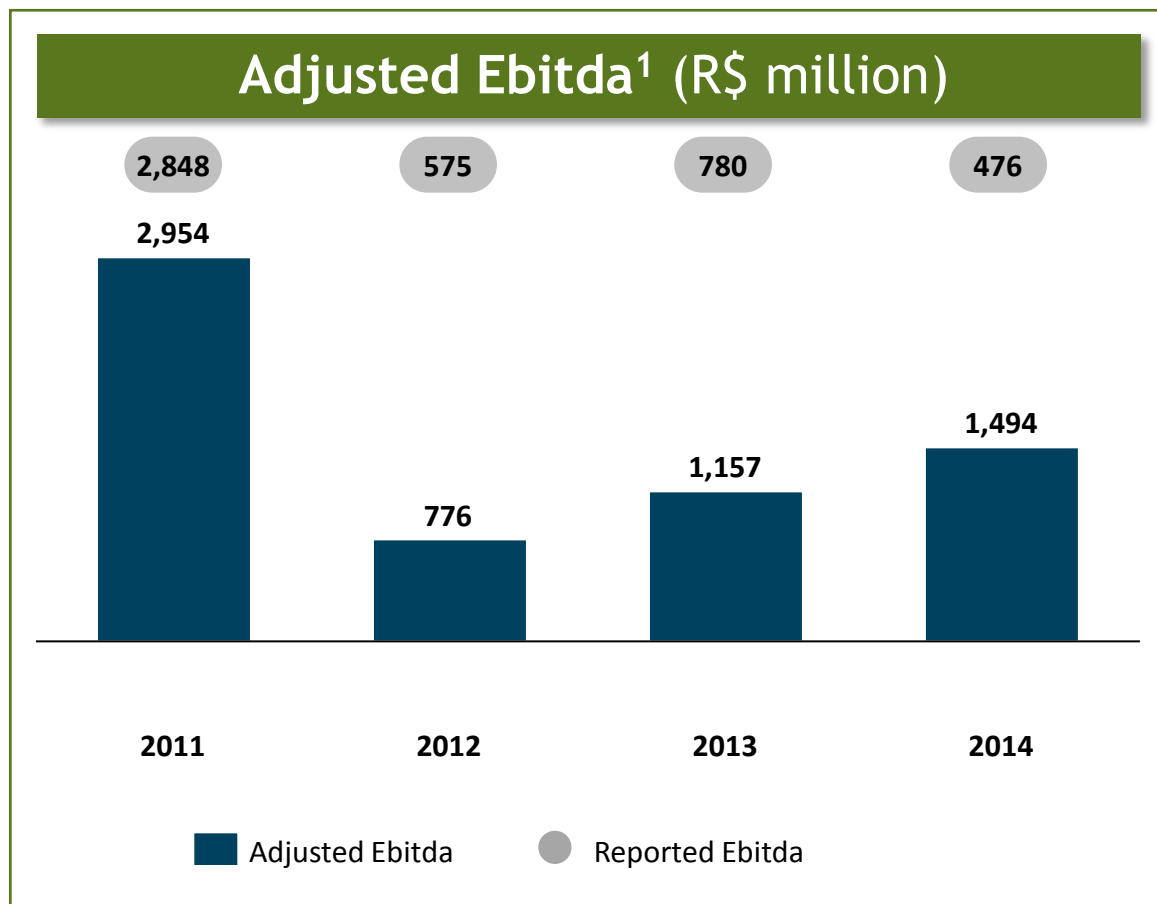
Gross revenue (R\$ million)



Costs (R\$ million)



Adjusted Ebitda driven by market and tariff readjustment in 2014



Cost management projects generated R\$ 1,019 MM¹ in savings until 2014

1st wave - 2007-2010

- Headcount reduction
- Support functions centralization - shared services
- Overhead reduction - management and contracts renegotiation
- Leadership headcount reduced by 44% from 2008 to 2013
- Currently operating at the same PMSO level as in 2007 while every quality indicators have improved

2nd wave - 2010-2012

- Benchmark approach
- Process review and IT tools to increase performance
- Development of strategic sourcing capability
- Continuous overhead reduction
- Administrative and operational activities centralized in a new site
- Real Estate Plan: sale of assets and maximization of occupancy rate

3rd wave - 2013-2015

- Efficiency gains through process transformation and IT tools integration
- Cost management and innovation as part of the Company's culture
- Consider the total cost of ownership for CAPEX/OPEX allocation decisions
- Sustainability driving value (e.g., ABS initiative with suppliers)

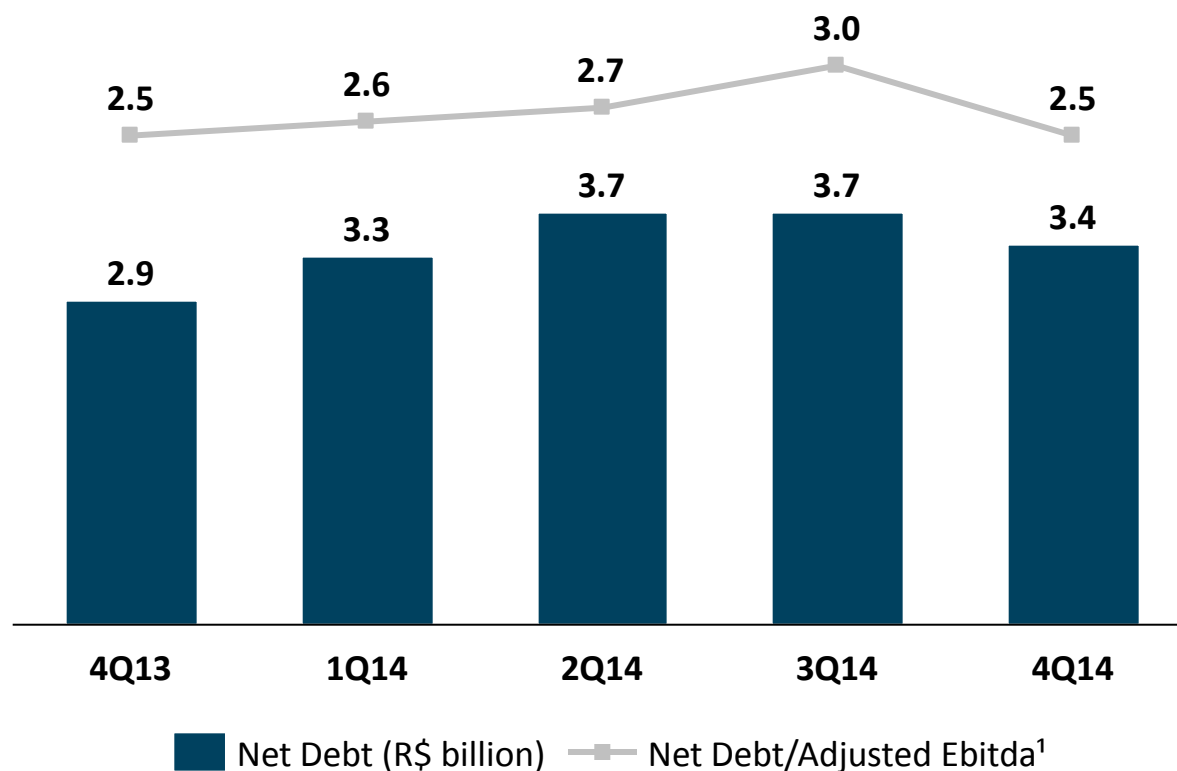


Operational cash flow generation

| R\$ Million | 4Q13 | 4Q14 | 2013 | 2014 |
|---|------------|------------|------------|------------|
| Initial Cash | 1,288 | 942 | 814 | 974 |
| Operating cash generation | 61 | 433 | 1,480 | 724 |
| Investments | (175) | (67) | (741) | (501) |
| Net Financial Expenses/Net Amortization | (107) | (149) | (312) | 211 |
| Pension fund expenses | (56) | (44) | (221) | (166) |
| Income Tax | (3) | (2) | (25) | (47) |
| Disposal of assets | 9 | 3 | 49 | 24 |
| Cash restricted and/or locked | 54 | 126 | 26 | (61) |
| Free cash | (266) | 36 | 208 | (33) |
| FINAL CASH CONSOLIDATED | 974 | 909 | 974 | 909 |

Leverage level within financial covenants

Net debt (R\$ billion)



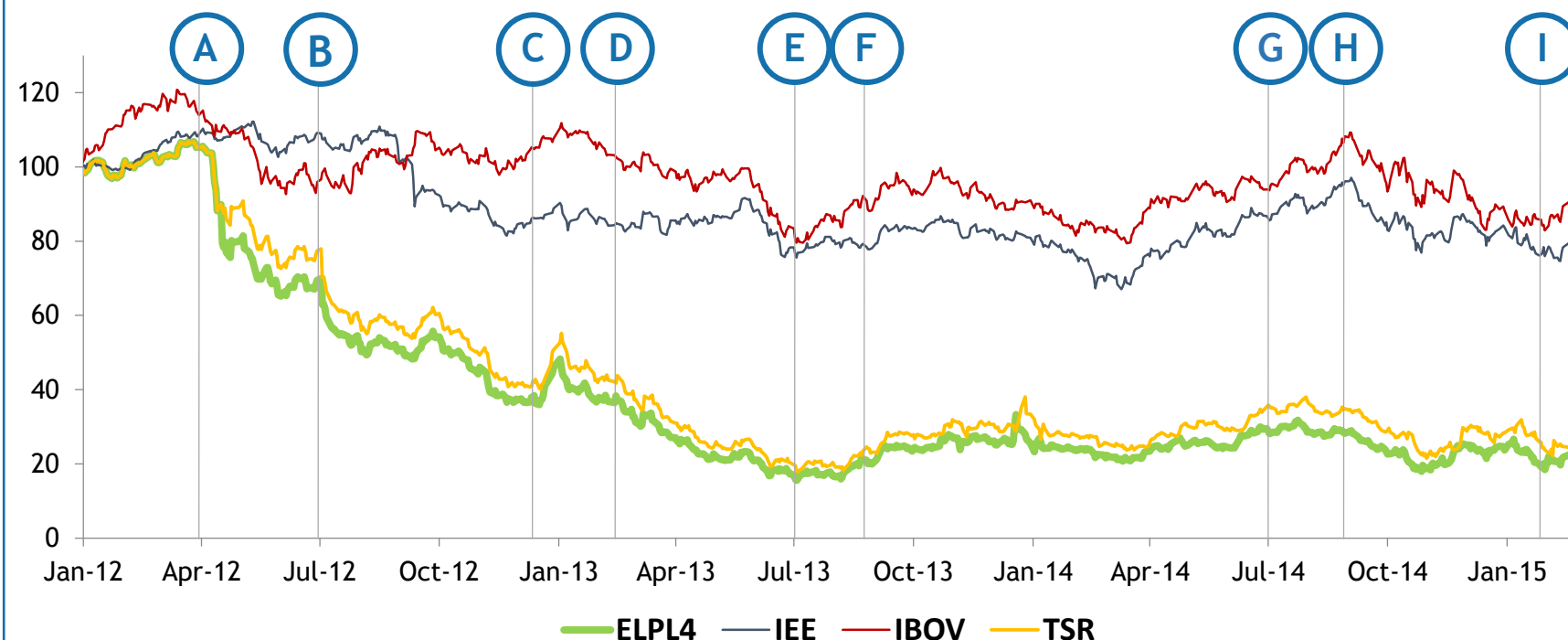
- **Average maturity of debt** reaching **5.7 years**
- **Covenants within the limits** established by debt contracts

Debt Cost

| | 2013 | 2014 |
|------------------------|-------|-------|
| ■ Average term (years) | 6.1 | 5.7 |
| ■ Effective rate² | 12.5% | 13.2% |

Capital markets

AES Eletropaulo x IEE x Ibovespa¹ - 30 months



- **Market cap³:** US\$ 0.5 billion/R\$ 1.5 billion
- **BM&FBOVESPA:** ELPL3 (common shares) and ELPL4 (preferred shares)
- **ADRs at US OTC Market:** EPUMY (preferred shares)

- A** Apr/2012: Aneel announced 3PTRC proposal (tariff cut of 8.81%)
- B** Jul/2012: Aneel announced official 3PTRC (tariff cut of 9.33%) lowering dividend payout expectations
- C** Dec/2012: Court deems Eletropaulo liable for Eletrobras lawsuit. Eletropaulo appealed the decision.
- D** Feb/2013: 4Q12 EPS affected by energy costs and regulatory charges
- E** Jul/2013: Low tariff adjustment due to payment of 2/3 of 3PTRC "Bubble"
- F** Aug/2013: 2Q13 results above expectations. Efficiency in cost reduction.
- G** Jul/2014: Tariff readjustment approved by ANEEL including 50% of "cable" restitution
- H** Aug-Oct/2014: high volatility due to Brazilian elections expectations
- I** Jan/2015: Tariff republished without the "cable" restitution



We have strong capabilities and corporate governance

- **AES Corporation and BNDES as major shareholders:** long-standing reputation in the market
 - Consumption focused on **more resilient segment** (residential / commercial market)
-
- **2015-2019 investment plan of R\$ 3.2 billion** mainly focused on **customer services** and **better quality indicators**
 - **Efficiency** on recognizing investments on the RAB
 - **Deleveraging and improving** capital structure





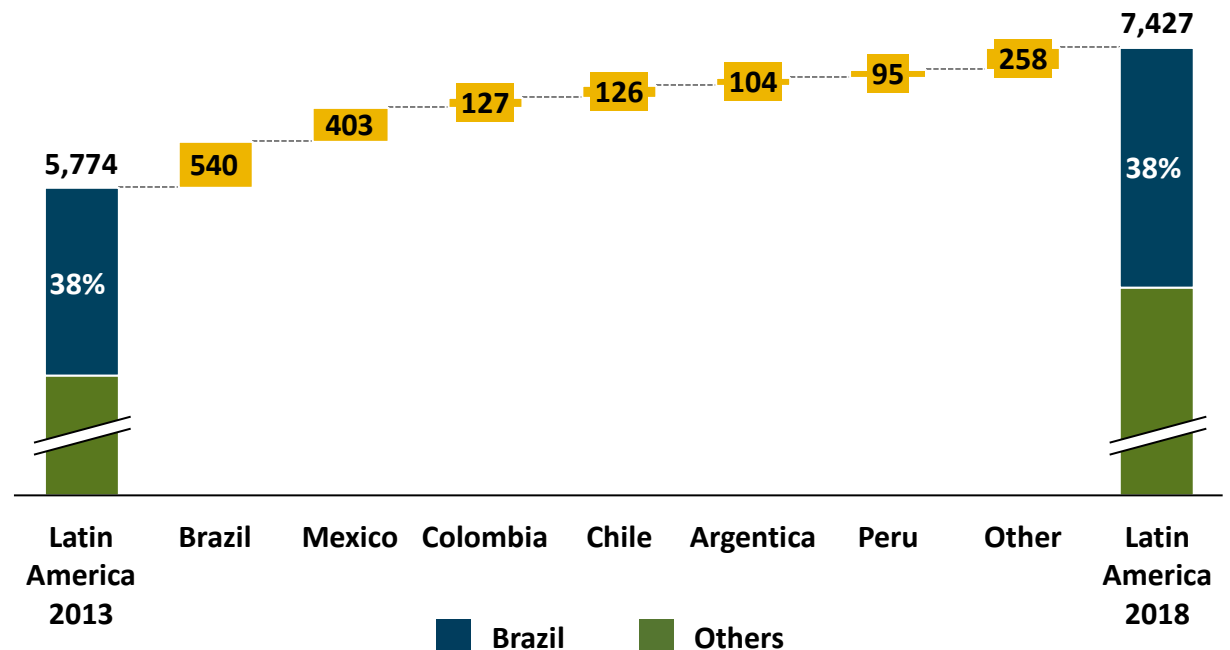
Brazilian Opportunities

Brazil remains as one of the most relevant economy in Latin America with plenty growth opportunities

- Brazil represented 38% of Latin America's 2013 GDP
- Brazil is expected to contribute with ~33% of Latin America's growth from 2013-2018¹
- Brazil has ~200 million inhabitants²

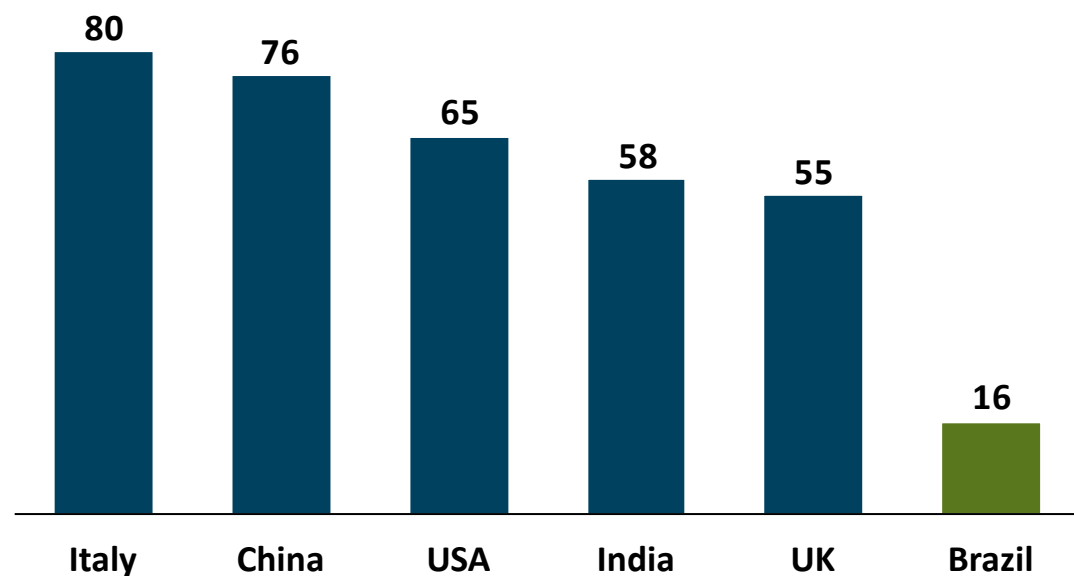


Latin America GDP | USDm, in nominal terms



Infrastructure investments are required for Brazil development

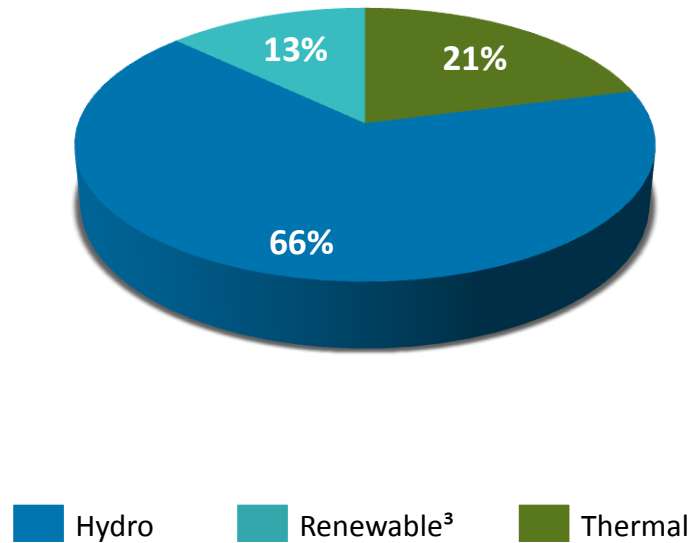
Value of infrastructure assets¹
(% of GDP, 2013)



GDP growth is associated to investments in infrastructure, mainly energy and logistics (highways, roads, ports and airports)

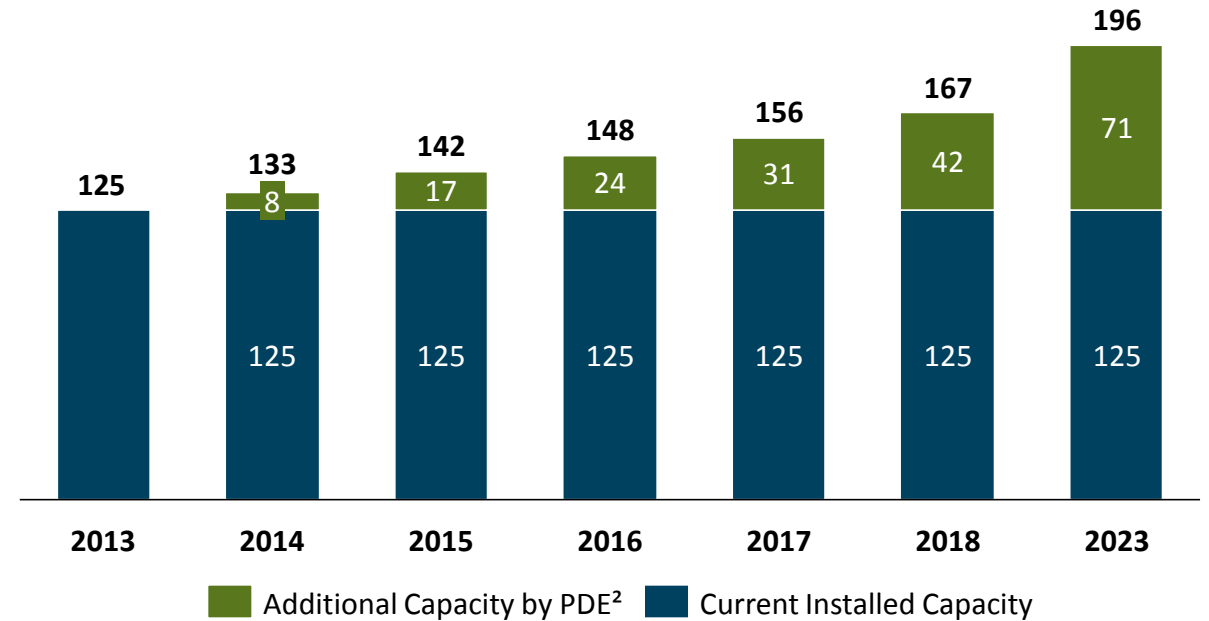
... and generation - Brazilian Energy Matrix and perspectives

Brazilian Energy Matrix¹



- Energy matrix based on hydropower plants
- Thermal source is responsible for system reliability

Governmental Expansion Plan



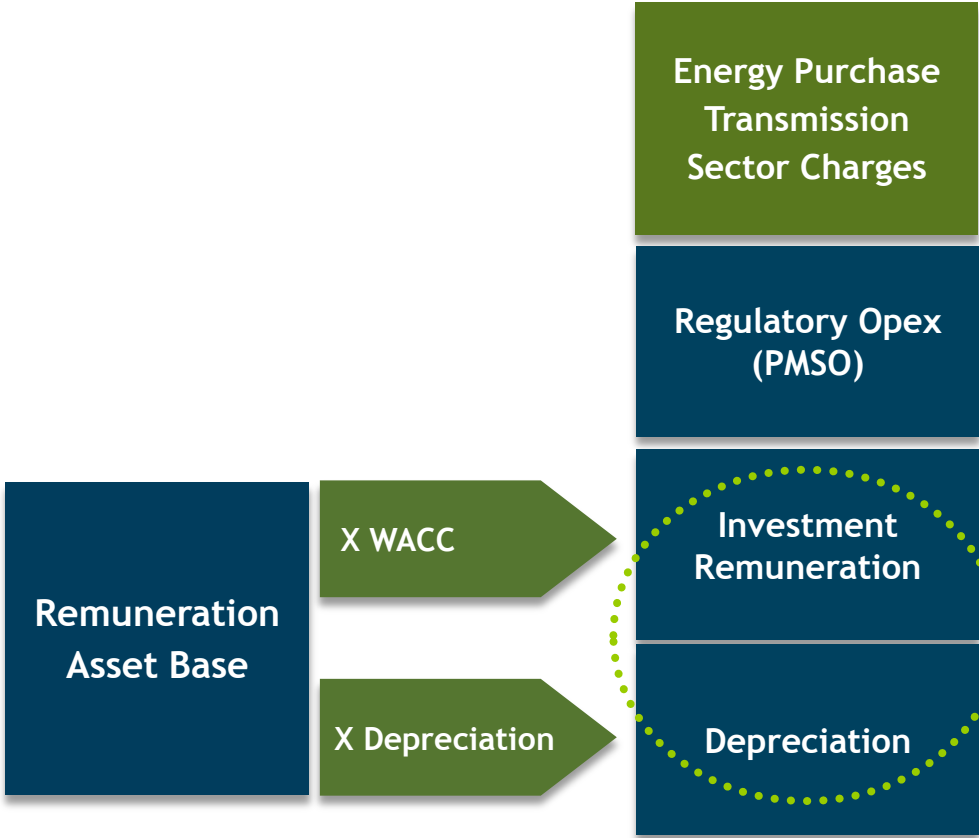
- Expansion based mainly on renewable and run-of-river hydropower plants

Appendix




Tariff methodology for distributors


- **Tariff Reset is applied each 4-5 years**
 - AES Eletropaulo next tariff reset: Jul/2015;
 - AES Sul next tariff reset: Apr/2018
 - Parcel A: costs are passed through to the tariff
 - Parcel B: costs are set by ANEEL
-
- **Annual tariff adjustment**
 - Parcel A : costs are passed through to the tariff
 - Parcel B: costs are adjusted by IGPM +/- X Factor¹



- **Parcel A Costs**
 - Non-manageable costs that are passed through to the tariff
 - Incentives to reduce costs
- **Regulatory Opex**
 - Efficient operating cost determined by ANEEL
- **Remuneration Asset Base**
 - Prudent investments used to calculate the investment remuneration (applying WACC) and depreciation

Regulatory Ebitda

 **Parcel A** - Non-Manageable costs

 **Parcel B** - Manageable costs

- Parcel A - Non-Manageable costs
- Parcel B - Manageable costs

X Factor methodology

| | | | | | | | |
|--------------------|-----------------|---|---|---|---|---|---|
| | X Factor | = | Pd | + | Q | + | T |
| Definition | | | Distribution productivity | | Quality of service | | Operational expenses trajectory |
| Objective | | | Capture productivity gains | | Stimulate improvement of service quality | | Implement operational expenses trajectory |
| Application | | | Defined at tariff reset, considers the average productivity of the sector adjusted by market growth and consumption variation | | Defined at each tariff readjustment, considers variation of SAIDI and SAIFI and comparative performance of discos | | Defined at tariff reset, considers reference company and benchmarking methodologies |

Tariff Reset Cycles

Third Tariff Reset Cycle

Fourth Tariff Reset Cycle Discussion

Regulatory Asset Base

Approximately 20% of investments not recognized in the RAB

Proposal to define average regulatory COM and CA

Invested Capital Compensation WACC

WACC net nominal: 10.13%
WACC net real: 7.50%
FX Risk and Regulatory Risk no longer part of the formula

WACC net real: 8.09%
Only topic already defined by the regulator

OPEX

Transition methodology: Updated Reference Company value of the 2nd cycle (w/o detailed calculation) and use of non parametrical benchmarking methodology

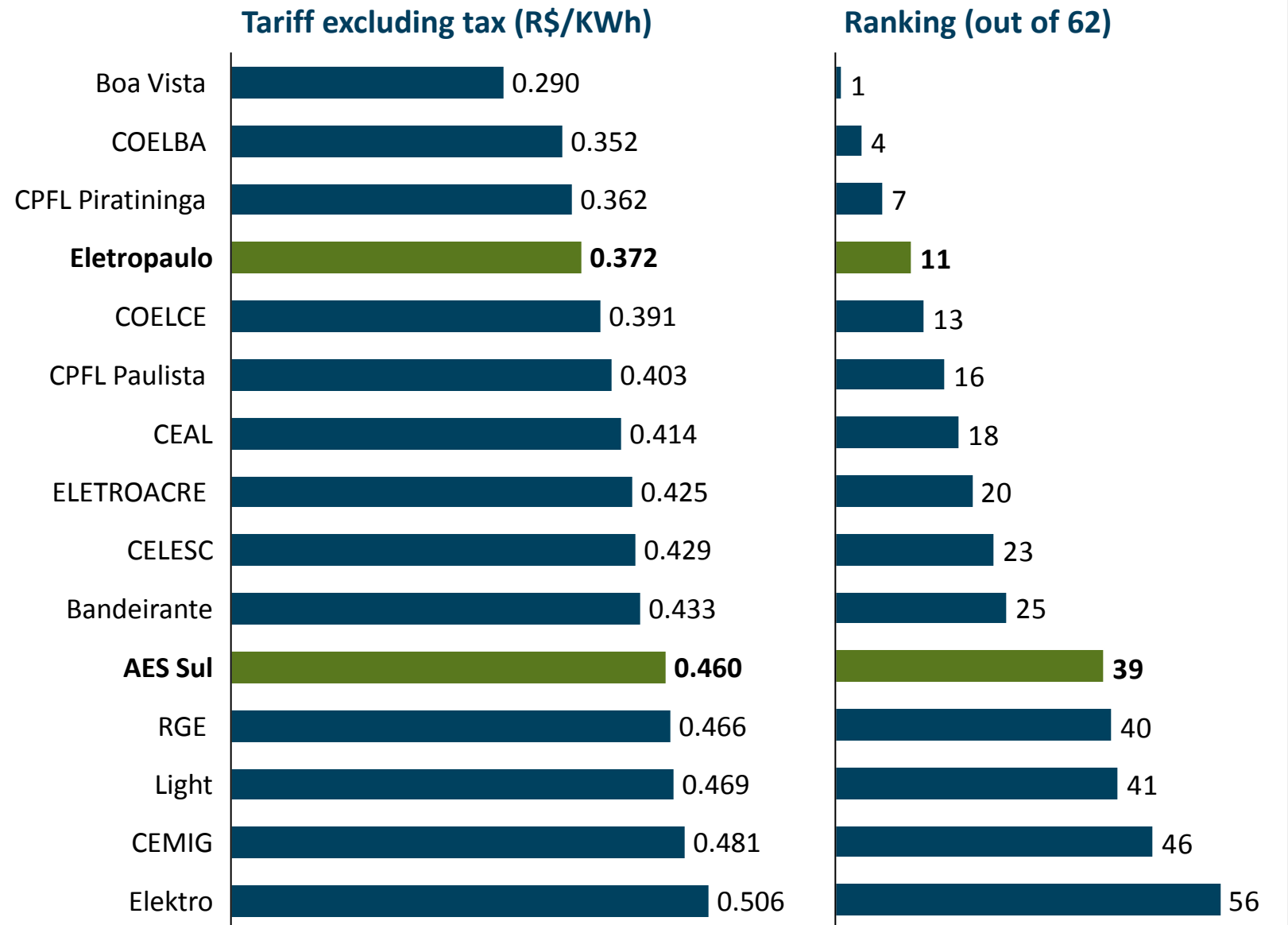
Maintenance of efficiency calculation through benchmarking and the proposal of new parameters to evaluate efficiency, including non-technical losses and service quality

X Factor

Total Productivity Factor (TPF) methodology: based on potential productivity gains and the quality of the service provided

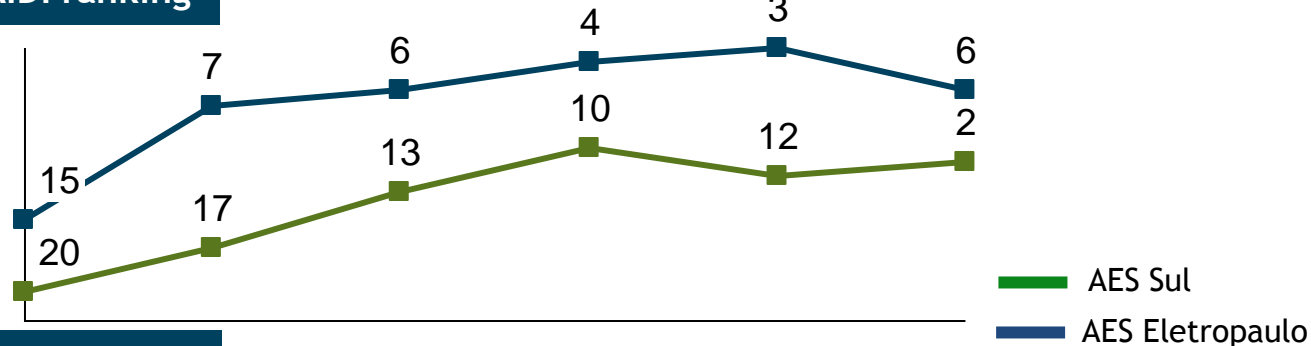
Sector's average productivity = 1.64% (3TRC of 1.03%)

AES Brasil discos among the lowest distribution tariffs in the country

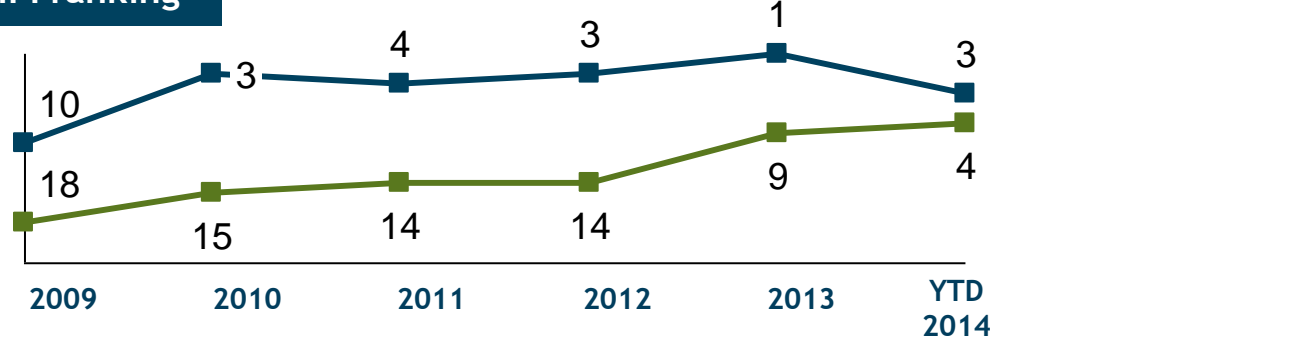


AES distribution companies have been improving their service level performance over the years

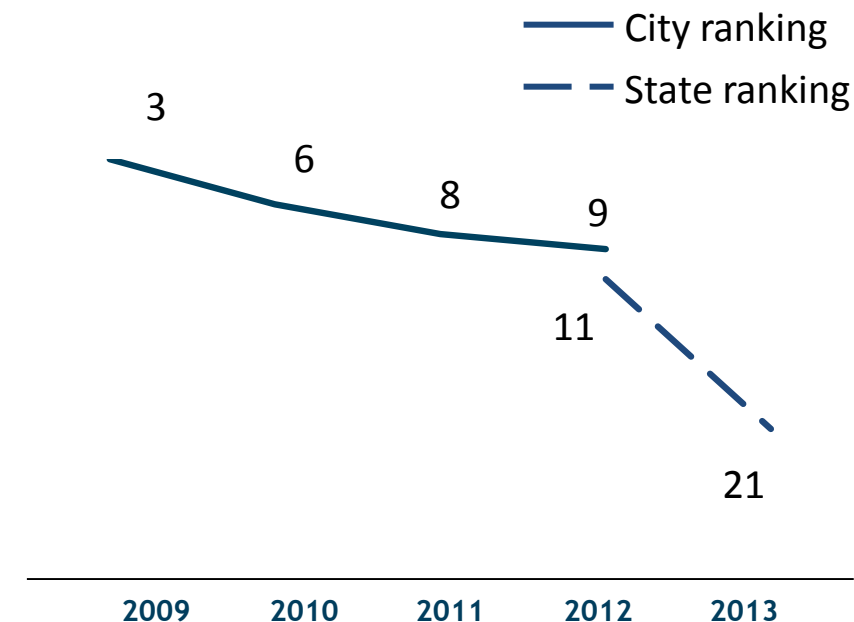
SAIDI ranking¹



SAIFI ranking¹



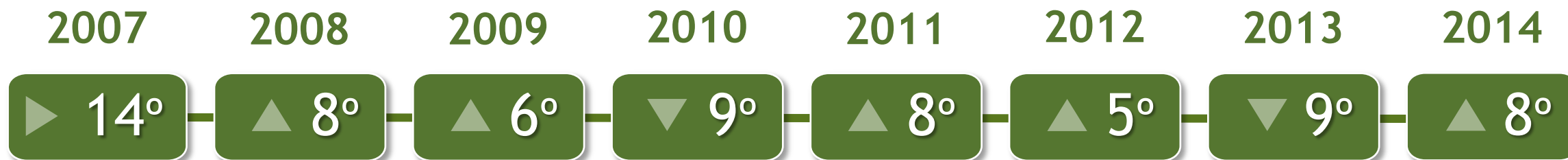
PROCON ranking² (Eletropaulo)



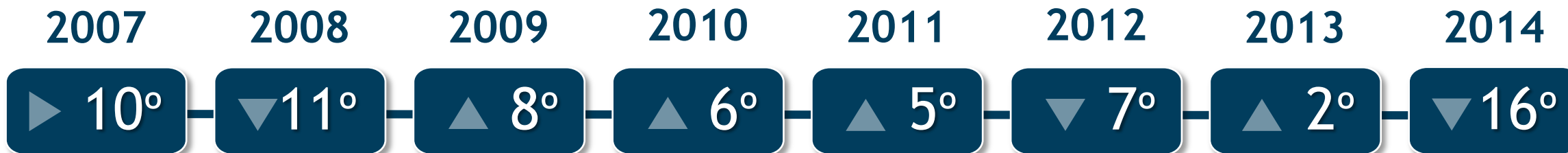
- Eletropaulo had the 3rd best SAIFI in Brazil in the 3T14; AES Sul reached TOP 10 (7.38 occurrences);
- Eletropaulo had the 6th SAIDI in Brazil (8.34 hours); AES Sul with best performance in history (14.08 hours);
- Eletropaulo had reduced amount of claims by 33.33%, from 2012 to 2013 (384 in 2013).

Abradee's¹ Ranking

AES Eletropaulo



AES Sul



New distribution and sub-transmission operations center allows efficiency gains

Modern layout maximizes the dispatch efficiency and decision making during the outage power restoration

- Integration of DOC¹ and SOC² technicians into a modern and collaborative workplace:
 - enabling to rearrange positions at any time optimizing the use of resources
 - improving operational efficiency
 - encouraging a multifunctional profile



Modern and integrated systems contributes to the best allocation of resources

Integrated and automated systems allow the monitoring of sub-transmission and distribution grid and the best allocation of resources for operational efficiency gains

- State of the art in technologies for management of events and teams, providing a global vision of emergency teams location throughout the concession area;
- Service orders transmission through data devices, dispatching service teams that are closer to the location, minimizing attendance time;
- Innovative technology for forecasting and monitoring of summer rains, strategically located in the Company's substations anticipating the resources allocation

