

ENGIE Brasil Energia S.A.
12nd Investor Day

August 22, 2018

DISCLAIMER

This publication may include forward-looking statements on events or results pursuant to Brazilian and international securities' regulations. These forward-looking statements are based on certain assumptions and analyzes made by ENGIE Brasil Energia S.A. ("ENGIE Brasil Energia", "Company" or "EBE"), - previously denominated Tractebel Energia S.A. -, in accordance with its experience and the economic scenario, market conditions and expected events, many of which are outside the control of ENGIE Brasil Energia. Important factors which can lead to significant differences between effective results and the forward-looking statements with respect to events or results, include the business strategy of ENGIE Brasil Energia, economic and international conditions, technology, financial strategy, development of the government services industry, hydrological conditions, conditions in the financial markets, uncertainty surrounding the results of its future operations, plans, objectives, expectations and intentions and other factors. In the light of these factors, the effective results of ENGIE Brasil Energia may differ significantly from those indicated or implicit in the forward-looking statements with respect to events or results.

The information and opinions contained herein should not be understood as a recommendation to potential investors and no investment decision should be based on the veracity, topicality or completeness of this information or these opinions. None of the advisors to ENGIE Brasil Energia or the parties related thereto or their representatives shall accept responsibility for any losses, which may occur as a result of the use or the content in this presentation.

This material includes forward-looking statements as to events subject to risks and uncertainties, which based on existing expectations and forecasts on future events and tendencies, may affect the businesses of ENGIE Brasil Energia. These forward-looking statements include forecasts of economic growth and energy supply and demand as well as information on competitive position, the regulatory environment, growth potential opportunities and other matters. Innumerous factors can affect adversely the estimates and assumptions on which these statements are based.

CONTENT



01 **Who are we?**

02 **Regulatory Environment Update**

03 **Competitive Differentials**
Case studies

04 ***Walk the talk***

05 **ENGIE Brasil Energia Strategy**

06 **Jaguara HPP & Miranda HPP**

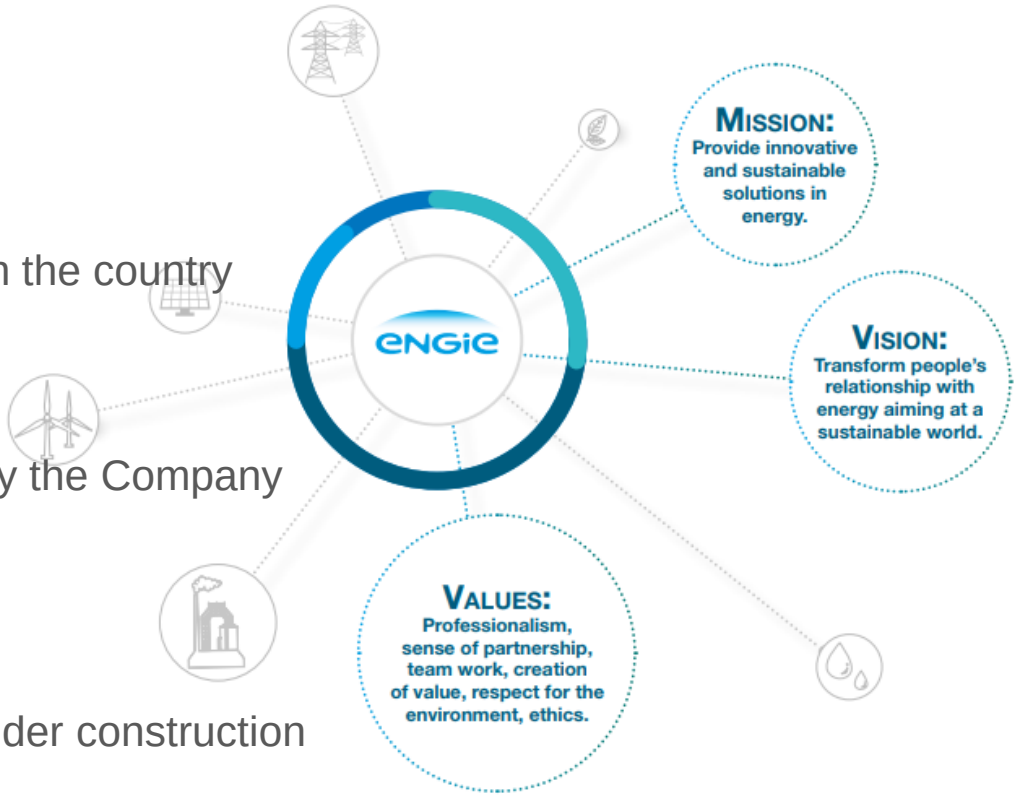
01

Who are we?

Eduardo Antonio Gori Sattamini
(Chief Executive Officer)

ENGIE BRASIL ENERGIA
Who are we?

- **Long-term presence** in Brazil
- **Largest private generator** of energy in the country
- Revenues of **BRL 7 billion** in 2017
- 31 power plants: **9,429 MW** operated by the Company
- 89% in **clean and renewable** sources
- **Expansion: 1,002 MW** of capacity and **1,050 Km in** transmission lines under construction
- More than **400 clients** with signed Free Market agreements
- **1,171 employees**
- Component of the Corporate Sustainability Index (ISE) since its inception
- Part of **ENGIE**, the largest independent energy group in the world





02

Regulatory Environment Update

Edson Luiz da Silva
(Chief Strategy and Regulation Officer)

AGENDA



02

a. Opening up of the Market

b. Introducing of Capacity Remuneration

c. Challenges for ENGIE



02

a

Opening up of the Market

SECTOR REFORM AND MARKET OPENING



Principle drivers of Reform

- Market opening and a reduction in barriers against the participation of new agents
- Economic response as a vector for aligning individual and systemic interests
- Adequate allocation of risks to ensure their individual management
- Respect for current agreements and adherence to the requirements and the roles of each institution



Dilemma of market opening

- Providing the consumer with the right to choose is an element which drives efficiency through the competitive mechanism itself

So why the fear and the precaution in opening the market?

SECURITY X ADEQUACY

Security of supply

- Capacity of the electricity system to support sudden outages such as short circuits and/or equipment failure
- Operating Horizon

Suitability of supply

- Capacity of the electricity system to meet demand on the basis of a given supply criterion
- Expansion Horizon

HOW IS EXPANSION MADE FEASIBLE TODAY?

Sales thru the ACL



Sales thru the ACR

70% **Revenue via long-term agreements (ACR auctions)**

- If we want a totally free market where all can choose their own supplier:
  - How can we fund the construction of new plants, when we cannot oblige the consumer to enter into long-term supply agreements?
  - What to do with the sunk costs if the consumers enter into an agreement with a new source supplying more competitive energy?



PROVIDING A SUITABLE LEVEL OF SUPPLY in a freer market

- The key is to ensure the existence of receivables adequate for the financing of expansion and, at the same time, ensure that the sunk costs are not borne exclusively by those consumers remaining in the regulated environment
- Some actions:

1

To create an additional long-term receivable which stabilizes part of the revenue flow from the generator but which supports and makes sense economically as a catalyst for suitability of supply over the long-term

- introducing of capacity remuneration

2

Gives greater realism and credibility to the spot price, for fostering liquidity and the creation of new products for mitigating risk in the wholesale market

- The spot price offers guarantees of credible receivables

3

To establish a gradual market opening, permitting investments to be made during a maturing/learning phase of the new regulatory framework and allowing legacy costs to be adequately administered



02

b

Introducing of Capacity Remuneration

WHAT IS CAPACITY?

» It depends...
- It is the critical variable considered in the supply criterion

Thermoelectric systems



Risk aversion of a **capacity deficit**

Investment in plants until the available power is **sufficient** to meet peak demand plus a margin

$P_{Avail} = 1.05 \times D_{Max}$

Hydroelectric systems



Risk aversion of a **energy deficit**

Investment in plants until the meeting of the **energy load** is guaranteed at a given level of risk

PG = Load

NCRE systems



Risk aversion of a **flexibility deficit**

Investment until the continuity of supply is **guaranteed** given a certain scenario of disequilibrium

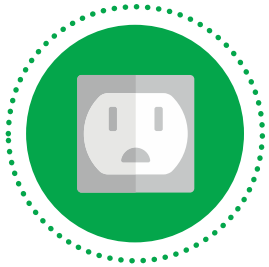
$Flex_{Operational} > Flex_{Critical}$

WHAT WE USE TODAY IN BRAZIL



Energy Market

- Is the market in which differences between the measurement (consumption or generation) and the agreements are valued at the PLD
- The entity is exposed when measurement is different from the contracted volume

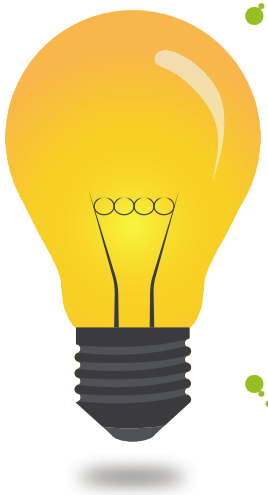


Capacity Market

- Is the market where the positive differences between the requirements (consumption and sales agreements) and the resources (physical guarantee or purchase agreements) are valued according to the penalty
- The agent is exposed when requirements are greater than resources. considering a moving window of 12 months

BREAKDOWN OF THE CAPACITY AND ENERGY MARKETS

» Can the centralized contracting of capacity coexist with the energy free market?
  - Yes, but it needs an explicit separation between Energy and Capacity



Capacity Market

- Centralized contracting within a reasonable timeframe, mandatory, for all consumers where costs are recovered via charge

Energy Market (agreements)

- Long-term contracting serves as protection against PLD volatility
- ACR auctions maintained
- For ACL, the principle of free choice of supplier is maintained

Short-term Market

- The maximum PLD amount is calibrated so that the expected revenue from energy + capacity = Marginal Cost of Expansion (MCE)

CAPACITY AND ENERGY
what would the generator receivables look like?

CURRENT:

Sales thru the ACL



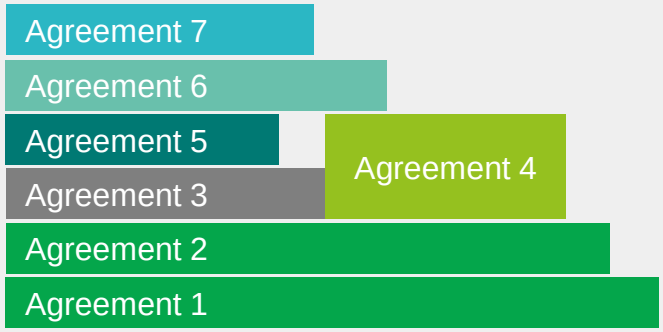
Sales thru the ACR

70% **Revenue via long-term contracting (ACR Auctions)**

CAPACITY AND ENERGY
what would the generator receivables look like?

AFTER:

Sales thru the ACL



Capacity Auction

X% **Revenue related to capacity (suitability) which the plant offers to the system**

CAPACITY AND ENERGY
contracting auctions

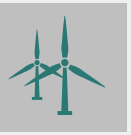
NCRE Systems



Risk aversion of a
flexibility deficit

Investment
until the continuity of supply is **guaranteed** given a certain scenario of disequilibrium

$Flex_{Operational} > Flex_{Critical}$



- The inclusion of large scale renewable intermittent generation in the matrix has drawn attention to the need to ensure that in addition to energy security, the system has adequate **operational flexibility**
- If renewable generation technologies (e.g.: wind and solar) are cheaper in terms of the **levelized cost of energy (LCOE),** how to ensure that other plants are also contracted to guarantee **adequacy of supplies**?

CAPACITY AND ENERGY
contracting auctions

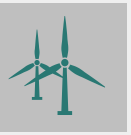
NCRE Systems



Risk aversion of a **flexibility deficit**

Investment
until the continuity of supply is **guaranteed** given a certain scenario of disequilibrium

$Flex_{Operational} > Flex_{Critical}$



» Ways of operationalizing:

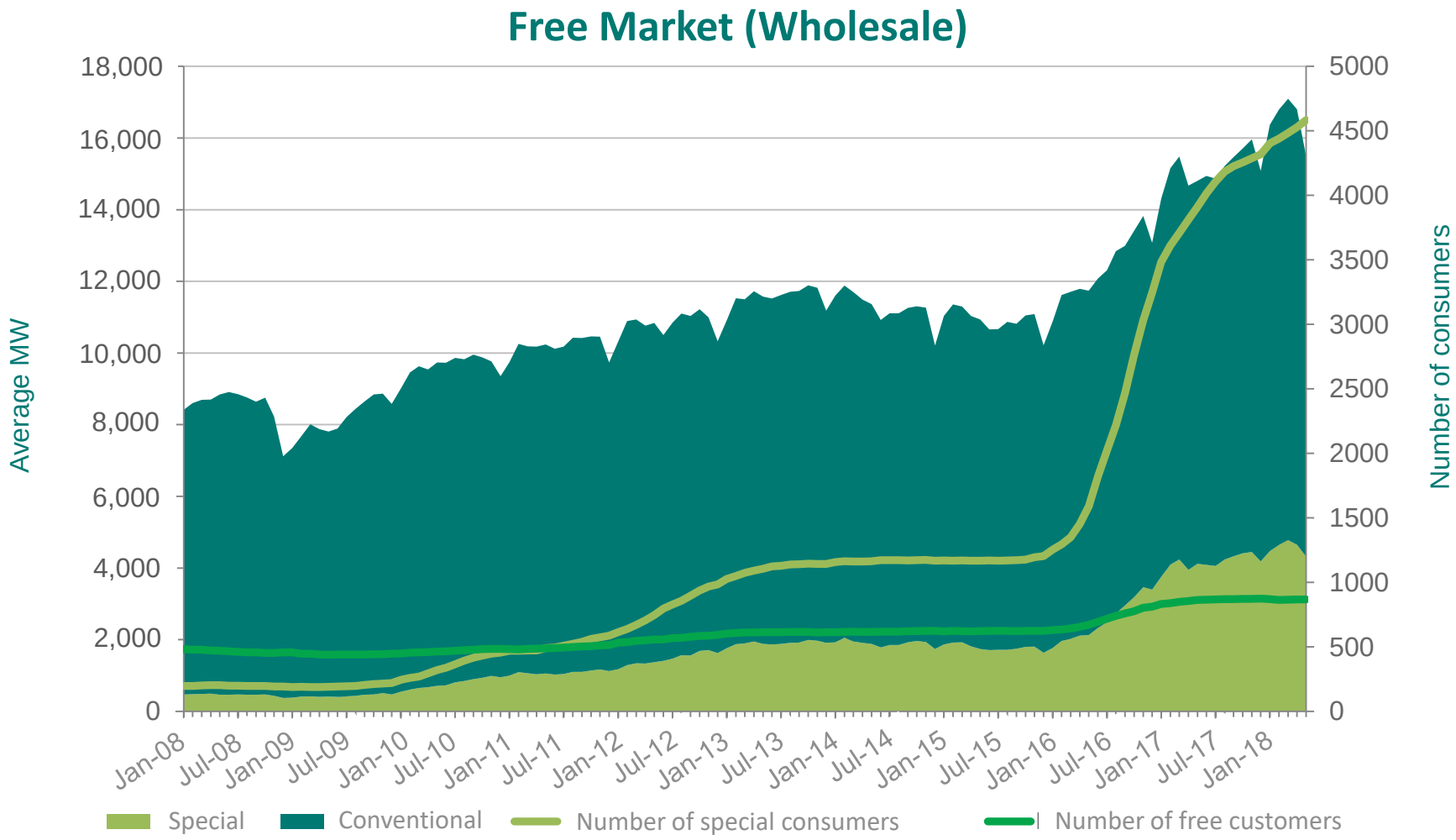
1. Establish on **a centralized basis** (EPE) the needs of **each source** and to hold segregated auctions, or
2. Hold a **single auction**, equalizing the competition through the "correct" valued of the **characteristics** of each source:
   a) Through handicaps
   b) Technical requirements for connection, for instance:
      - to be able to perform ramp up until x MW/h
      - to be able to keep constant generation for x minutes
   c) The definition of homogenous energy products tends to be critical
3. In addition, create market for ancillary services



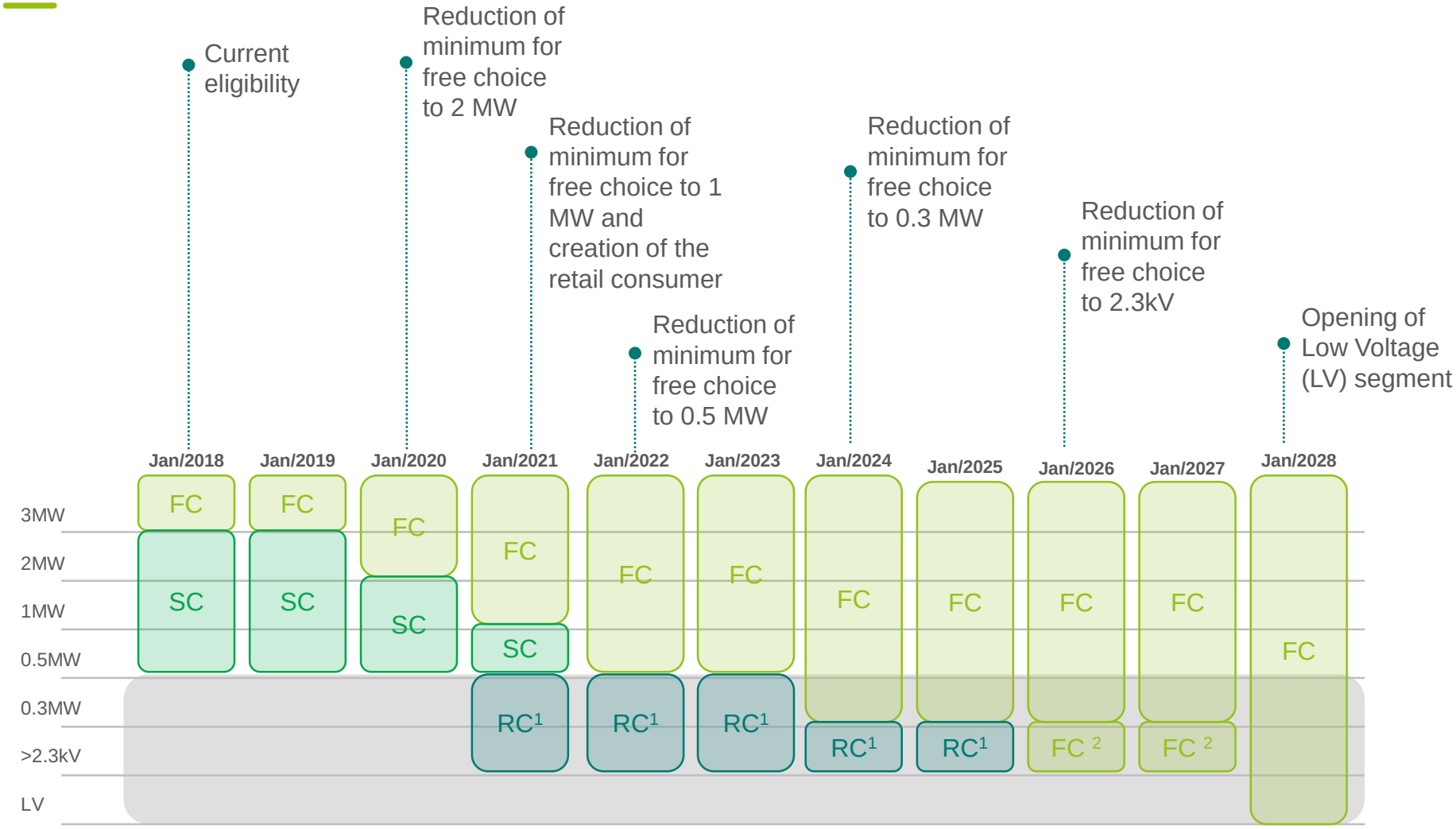
02

Challenges for ENGIE

FREE MARKET
how it has been so far



FREE MARKET
how it will become



FREE MARKET
volume and incremental number of consumers

Period	Demand Threshold	Number of incremental consumers	Incremental Market [GWh/year]	Incremental Market [avg.MW]	Incremental Market * [%]
Jan/20	<3,000 KW and >2,000KW	236	6,205	708	4%
Jan/21	<2,000 KW and >1,000KW	1,295	9,968	1,138	6%
Jan/22	<1,000 KW and >500KW	5,180	14,952	1,707	9%
Jan/24	<500 KW and >300KW	5,341	25,062	2,861	16%
Jan/26	Any connection >2.3kV	170,296	17,327	1,978	11%
Jan/28	Any demand	Entire market	Entire market	Entire market	-

* Percentage of the current free market (base 2017)
Source: Internal studies, estimated numbers.

CHALLENGES

To work proactively on the details of the new regulatory framework in an environment conditioned by significant limits

- Transition to a context in which market fundamentals prevail over centralized decisions
- Introduction of the hourly price
- Gradual reduction in subsidies
- End of the Itaipu agreement
- End of the GasBol supply agreements
- End of inefficient thermal agreements

Prepare ENGIE for the new environment

- Implementation of compatible infrastructure with greater price granularity
  - Risk management
  - Back office
- Adjustment of commercial strategy and expansion in the universe of products



03

Competitive Differentials

Case studies

Carlos Freitas
(Chief Financial and Investor Relations Officer)

COMPETITIVE DIFFERENTIALS

how do we manifest our differentials

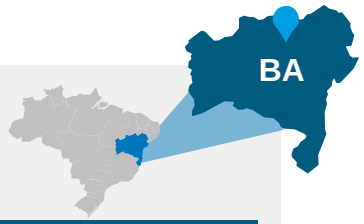


CASE STUDY:
making Umburanas Wind Complex viable

Development of projects

Umburanas WC

Auction:
Nov/2014 (A-5)



Mix of Free and Regulated Market

Acquisition Price: R$ 16.9 million

Total Installed Capacity:
360 MW

ACR: 102.5 MW | **ACL:** 257.5 MW

ACR Contracted Price:
R$ 168 /MWh

Commercial Capacity
207.5 avg.MW

Investment :
R$ 1.7 billion - (Oct/2017)



CHALLENGES

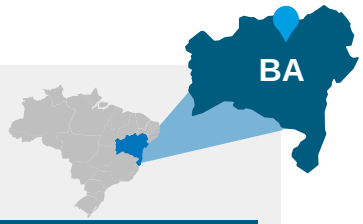
- Acquisition of the project in the market (Renova);
- Financial restructuring of the project;
- Redefinition of the project with Aneel;
- Tight schedule.

SOLUTIONS FOUND

- ☑ Contractual schedule with suppliers;
- ☑ Mix of PPAs in the Regulated and Free markets;
- ☑ Logistical optimizations;
- ☑ New schedule and technical configuration.

CASE STUDY:
making Umburanas Wind Complex viable

Development of projects



Umburanas WC

Auction:
Nov/2014 (A-5)

Mix of Free and Regulated Market

Acquisition Price: R$ 16.9 million

Total Installed Capacity: 360 MW

ACR: 102.5 MW | **ACL: 257.5 MW**

ACR Contracted Price: R$ 168 /MWh

Commercial Capacity 207.5 avg.MW

Investment : R$ 1.7 billion - (Oct/2017)

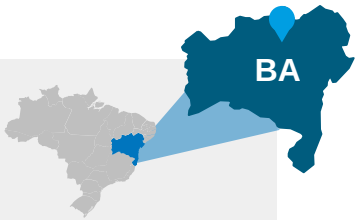


BENEFITS

- **High capacity factor**
- Increase in the participation of **renewable sources**
- Attractive **rate of return**
- Project with capacity for **expansion**

CASE STUDY:
Campo Largo Wind Complex - Phase 1

Execution capacity



Campo Largo WC

Auction:
Nov/2014 (A-5)

Discount in relation to price ceiling: 1%

Total Installed Capacity:
326.7 MW

ACR: 178.2 MW | **ACL:** 148.5 MW

ACR Contracted Price:
R$ 166 /MWh

Commercial Capacity
164.9 avg.MW

Investment:
R$ 1.8 billion – (Jun/2014)



CHALLENGES

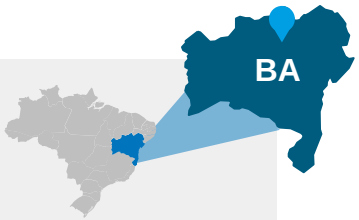
- Contracting in the ACR market in a competitive environment;
- Prospecting clients in the Free Market;
- Financing for Free Market with the BNDES;
- Local community requirements.

SOLUTIONS FOUND

- ☑ Mix of PPAs in the Regulated and Free markets;
- ☑ Creative solutions with the BNDES;
- ☑ 25 socio-environmental projects surrounding the Complex

CASE STUDY:
Campo Largo Wind Complex - Phase 1

Execution capacity



Campo Largo WC

Auction:
Nov/2014 (A-5)

Discount in relation to price ceiling: 1%

Total Installed Capacity:
326.7 MW

ACR: 178.2 MW
ACL: 148.5 MW

ACR Contracted Price:
R$ 166 /MWh

Commercial Capacity
164.9 avg.MW

Investment:
R$ 1.8 billion – (Jun/2014)



BENEFITS

Anticipation of operational startup

Increased share in **renewable sources**

Socio-economic Development

Capacity for **expansion**

CASE STUDY:
modernization of plants

Excellence and **technology** in operation



Modernization of Salto Santiago HPP

Operation start: 1980

Total Installed Capacity:
1,420 MW

Assured Energy:
733.3 avg.MW

Amount invested in modernization
R$ 427.5 million



CHALLENGES

- End of equipment's useful life;
- Possibility of failures and breakdowns.

SOLUTIONS FOUND

- ☑ Modernization of the units;
- ☑ Digitalization of systems and processes;
- ☑ Technology updated with increase in turbine and generator productivity.

CASE STUDY:
modernization of plants

Excellence and **technology** in operation



Modernization of Salto Santiago HPP

Operation start: 1980

Total Installed Capacity: **1,420 MW**

Assured Energy: **733.3 avg.MW**

Amount invested in modernization **R$ 427.5 million**



BENEFITS

Greater **reliability** and **uptime**

Extension of the economic life of the plant

Reduction in O&M costs

Benchmarking for other modernizations

Assured energy increased by 7.9 avg.MW

CASE STUDY:
Generation Operation Center (COG)

Excellence and **technology** in operation

Generation Operation Center (COG)

Growth of **107%** in the installed capacity. Generating Complex jumped from **8** to **31** plants.





CHALLENGES

- Distance between plants;
- Management of teams;
- Identification of risks for remote operations;
- Need for more robust control and supervisory systems;
- Unreliable telecom system.

SOLUTIONS FOUND

- ☑ Centralized plant operations;
- ☑ Enhanced monitoring systems;
- ☑ Revision of processes;
- ☑ Implementation contingencies site;
- ☑ Telecom via satellite, with triple redundancy.

CASE STUDY:
Generation Operation Center (COG)

Excellence and **technology** in operation

Generation Operation Center (COG)

Growth of **107%** in the installed capacity.
Generating Complex jumped from **8** to **31** plants.





BENEFITS

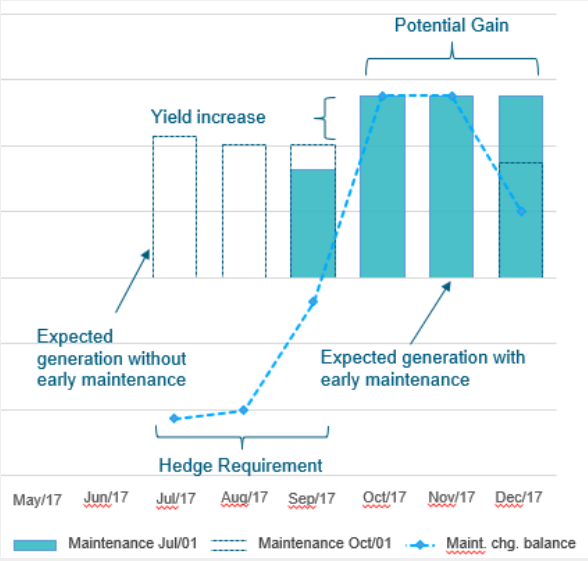
- Optimization of **human resources**
- **Reduction** of O&M costs
- Focus on **operation of the plants**
- **Greater agility** in decision-making
- **High degree** of normatization in the operation

CASE STUDY:
generation portfolio management

Consistent
portfolio management
and **mitigation of risks**

Estimate of UTLC Generation (2017)

Need to **anticipate the maintenance stoppage at UTLC** from October to July 2017 risking degradation of performance and increasing the possibility of unscheduled stoppages



CHALLENGES

- System's critical situation in 2H17;
- High energy volumes to be replaced (~300 avg. MW);
- Period for closing off uncovered positions.

SOLUTIONS FOUND

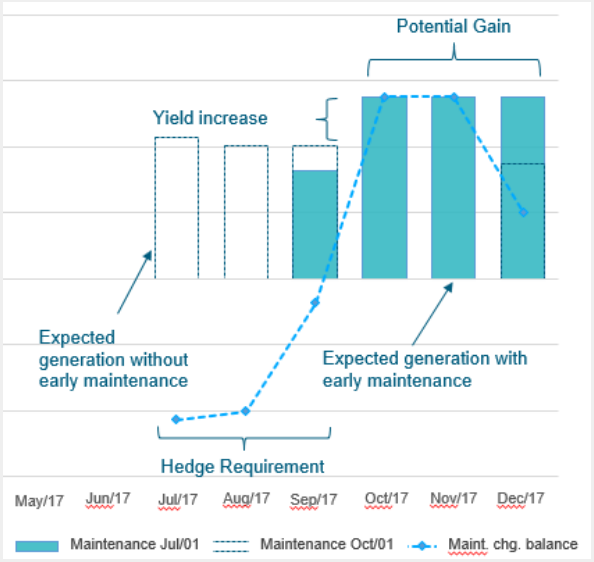
- Strategy of hedging the new maintenance date;
- Leveraging the synergies between the Plant's technical team and the portfolio management team;
- 18 short-term operations (swap, purchase and sale) for neutralizing exposure.

CASE STUDY:
generation portfolio management

Consistent
portfolio management
and **mitigation of risks**

Estimate of UTLC Generation (2017)

Need to **anticipate the maintenance stoppage at UTLC** from October to July 2017 risking degradation of performance and increasing the possibility of unscheduled stoppages



BENEFITS

Neutralization of the exposure from anticipated maintenance stoppage

Additional gain from
increased output from the unit

CASE STUDY:
pioneering spirit and innovations in the Free Market

Consolidated position in the **Free Market** for energy

Operations in the Free Market

EBE has become a **reference** in the Free Market by offering **customized service and products**, which have become standard nowadays.



CHALLENGES

- To foster migration from the Captive Market;
- To meet the multiple needs of clients drawn from various sectors and profiles of consumption;
- Credit management.

SOLUTIONS FOUND

- ☑ Representation on the CCEE;
- ☑ Innovative agreements (e.g.: price ceiling at the captive tariff);
- ☑ Customized agreements, for adherence and retailer;
- ☑ Portfolio diversification;
- ☑ Structured credit analysis;
- ☑ Portfolio of contractual guarantees.

CASE STUDY:
pioneering spirit and innovations in the Free Market

Consolidated position in the **Free Market** for energy

Operations in the Free Market

EBE has become a **reference** in the Free Market by offering **customized service and products**, which have become standard nowadays.



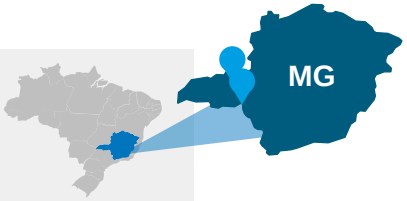
BENEFITS

- Consistent **growth** in the Free Market
- **Contracting** for medium term
- **Predictability** of cash flow
- **Zero** delinquency
- **Creation of value** for clients and Company

CASE STUDY:
funding for Jaguara and Miranda HPPs

Discipline and financial soundness

Jaguara and Miranda HPPs
Auction: Sep/2017



Concession term: 30 years

Total Installed Capacity:	Commercial Capacity:
832 MW	539.2 avg.MW

Quotas Ratio
ACL: 70 / 30%

Investment:
R$ 3.5 billion (Sep/2017)





CHALLENGES

- Restricted timeframe of just 60 days;
- Significant volume to be financed;
- Structuring of the operation.

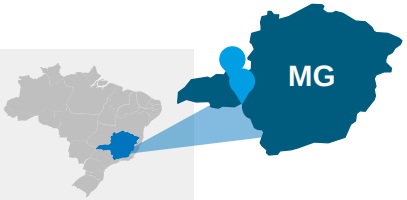
SOLUTIONS FOUND

- ☑ Bridging and Non Recourse loans;
- ☑ Issue both at the SPE as well as the Corporate level:
  - » At the SPEs: PN with a firm non-recourse takeout commitment
  - » At EBE: Law 4131 borrowing of 1, 3 and 5 years

CASE STUDY:
funding for Jaguara and Miranda HPPs

Discipline and financial soundness

Jaguara and Miranda HPPs
Auction: Sep/2017



Concession term: 30 years

Total Installed Capacity:	Commercial Capacity:
832 MW	539.2 avg.MW

Quotas Ratio
ACL: 70 / 30%

Investment:
R$ 3.5 billion (Sep/2017)





BENEFITS

Acquisition
totally financed with debt

Competitive rates,
in line with the brAAA rating

Ability to capture the **best windows of opportunity**
due to solid credit quality



04

Walk the talk

Eduardo Antonio Gori Sattamini
(Chief Executive Officer)

WALK THE TALK

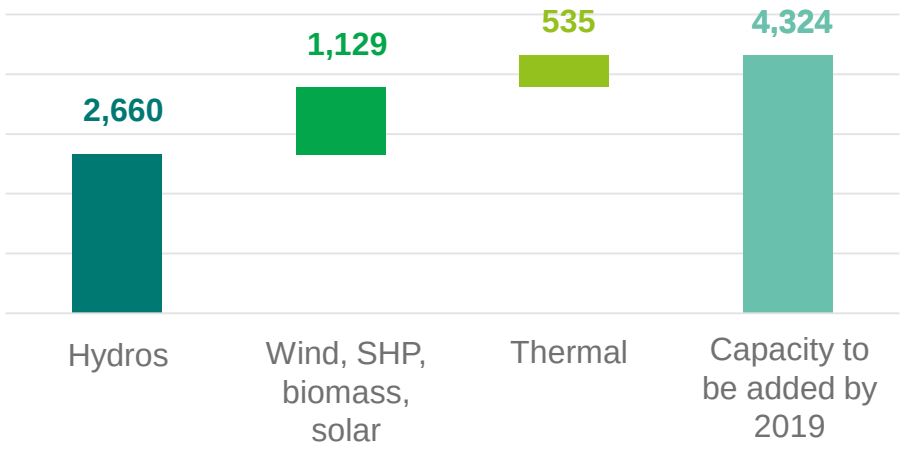
We have a recognized capacity in execution

Addition of installed Greenfield capacity

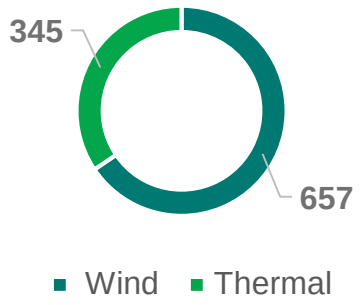
To expand participation in non-conventional renewables and gas-fired generation

1,002 MW under construction and **2,012** MW in development

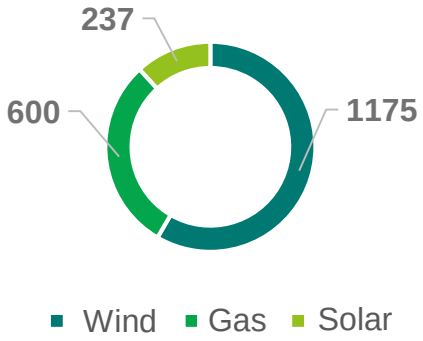
Evolution of Installed Capacity in Greenfield Projects (MWh)



Installed Capacity under Construction (MW)



Installed Capacity in Development (MW)



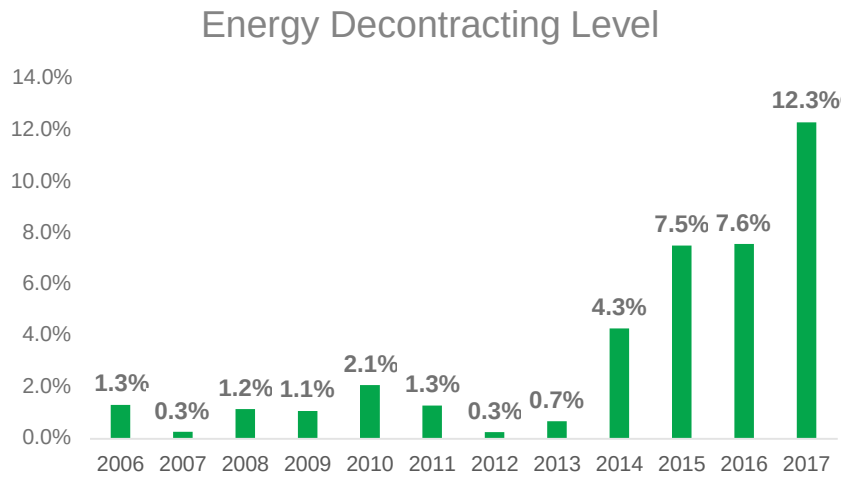
WALK THE TALK

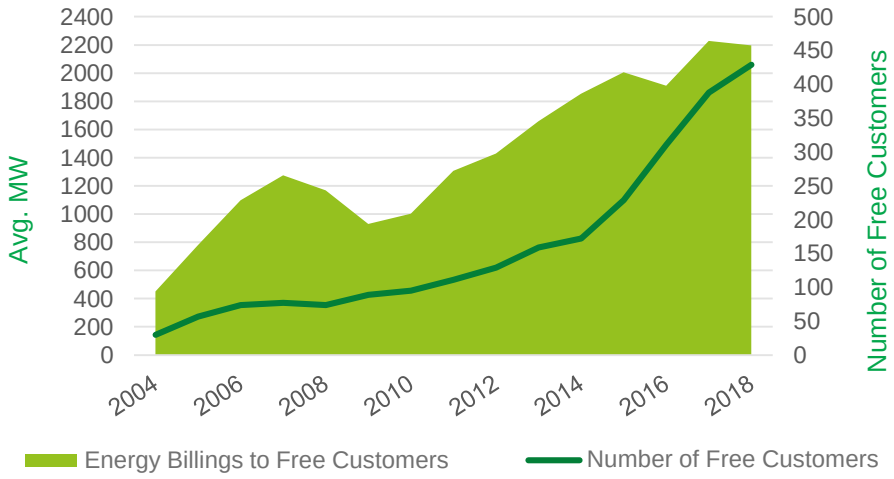
Efficient commercial strategy

Protection of results in the short and medium terms

Leadership in the Free Market

Consistent growth and **long-term presence**

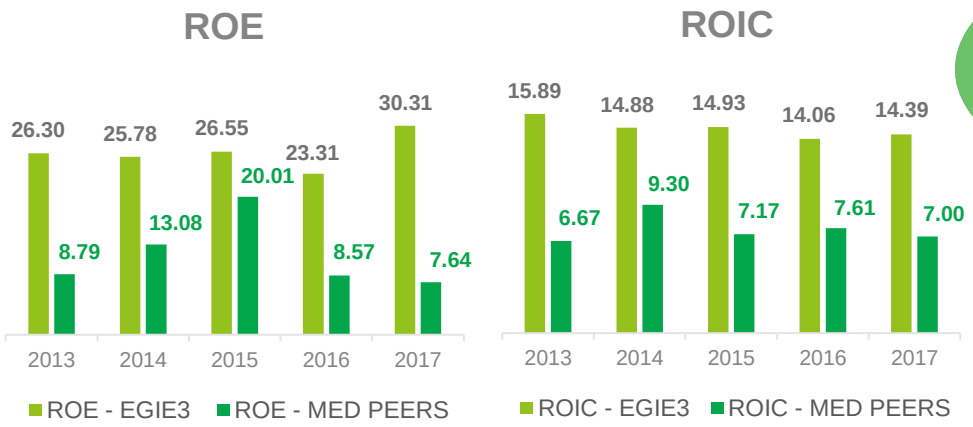




WALK THE TALK

"We do not want to grow for the sake of growing, we want to grow generating value"

ROE and ROIC levels **above the market median**

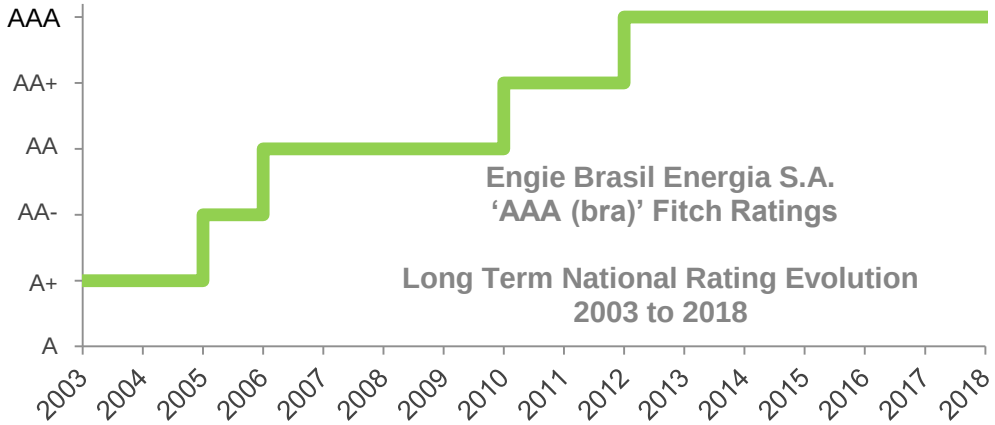


"Consistent portfolio management and mitigation of risk"

Note:
*Median Peer Group: incorporates peers in the electric sector which are part of the Ibovespa stock index.
Source: Economática

"Financial discipline and solidity"

AAA ratings confirmed in the past 6 years



WALK THE TALK

Decarbonization, Decentralization and Digitalization













Decomissioning of plants, distributed solar energy, retail trading, COG





EBE Strategy

Eduardo Antonio Gori Sattamini
(Chief Executive Officer)

ENGIE BRASIL ENERGIA STRATEGY



Growth in renewable sources



Greater proximity to clients



Creation of a generation, transmission and gas platform in infrastructure



Expansion of operational efficiency via state-of-the-art technology



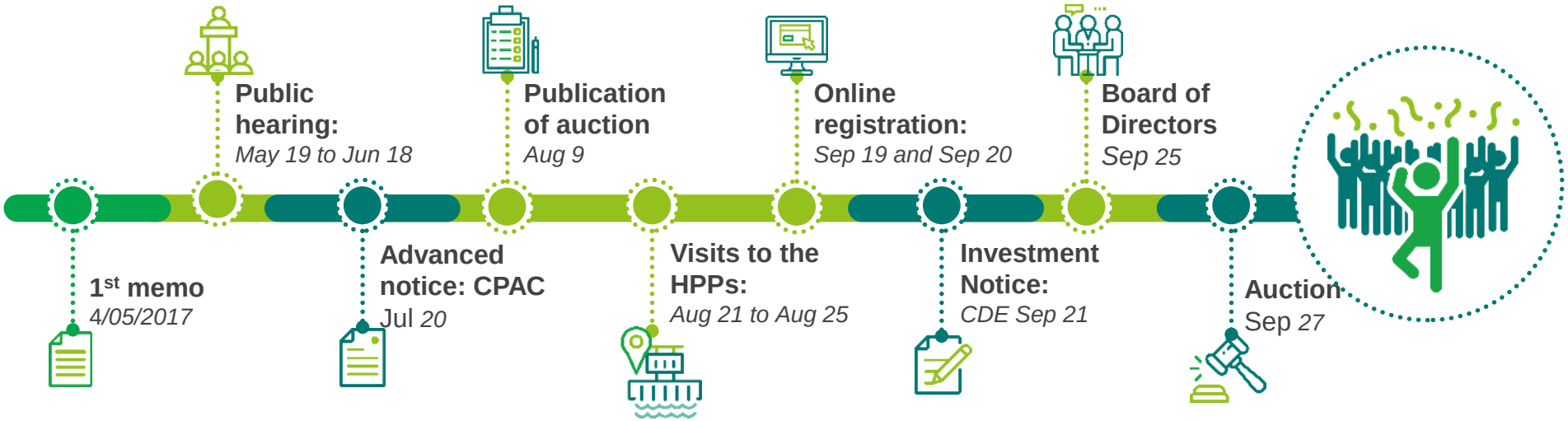
06

Jaguara HPP (UHJA) & Miranda HPP (UHMI)

José Luiz Jansson Laydner
(Chief Generation Officer)

A SHORT HISTORY

Timeline



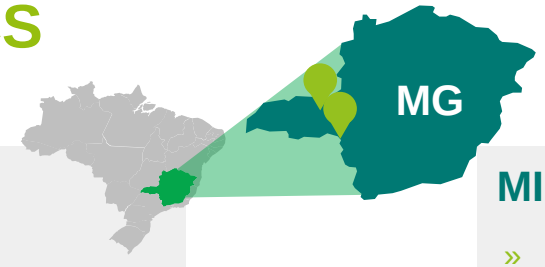
Competitors

- **State Power Inv. Co. (SPIC):** Chinese company with operations in Brazil through the recently acquired Pacific Hydro;
- **ENEL:** an Italian company with operations in Brazil in the generation, transmission and distribution areas.
- **Aliança:** Joint Venture between Cemig with VALE (55% Vale / 45% CEMIG), authorized to bid, although did not present proposals.

RESULT – DISCLOSURE - REPERCUSSION



CHARACTERISTICS



JAGUARA HPP

- **River:** Grande
- **Location:** Sacramento / MG
  Rifaina / SP

Total Installed Capacity:	Physical Guarantee:
424 MW (4 x 106 MW)	**341 avg.MW**

COD:	
1971	Operation: Run-of-River

OEM (Turbine/Generator): Mitsubishi/Siemens

SSs: 13.8/345 kV -> (SS Jaguara – CEMIG T)

OL: IBAMA - Validity: October / 2023
(Rectification 01/12/18)

Reservoir (perimeter / area):	Municipalities affected:
75 km / 33 km2	3



MIRANDA HPP

- **River:** Araguari
- **Location:** Indianópolis / MG
  Uberlândia / MG

Total Installed Capacity:	Physical Guarantee:
408 MW (3 x 136 MW)	**198.2 avg.MW**

COD:	
1998	Operation: Run-of-River

OEM (Turbine/Generator): IMPSA

SSs: 16.5/138 kV -> (SS Miranda – CEMIG D)

OL: COPAM / MG
Validity: February / 2012

Reservoir (perimeter / area):	Municipalities affected:
247 km / 52 km2	4



CHARACTERISTICS - PHOTOS

JAGUARA HPP



MIRANDA HPP



PRINCIPAL CORPORATE AND REGULATORY ACTIVITIES

Creation of SPEs

- Special Purpose Entities – SPEs (Companhia Energética Jaguara and Companhia Energética Miranda) were set up following the auction.
- Once the SPEs were in place, an effort was made to open branches.

Signature of the Concession Agreement

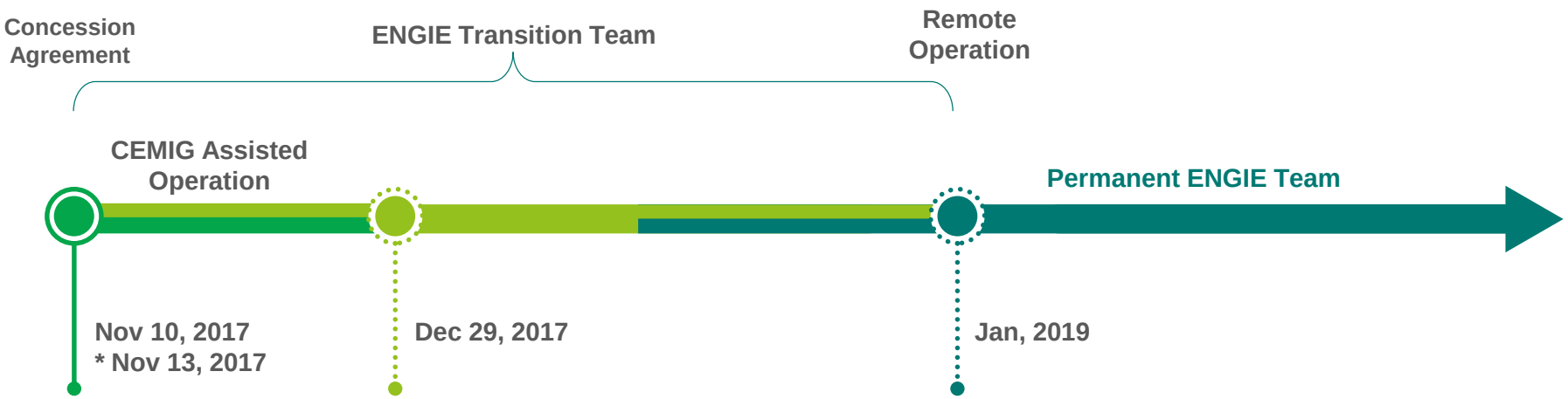
- Agreements signed on November 10, 2017.
- Payment of the Bonus for the Grant took place 20 days after the signature of the agreement.

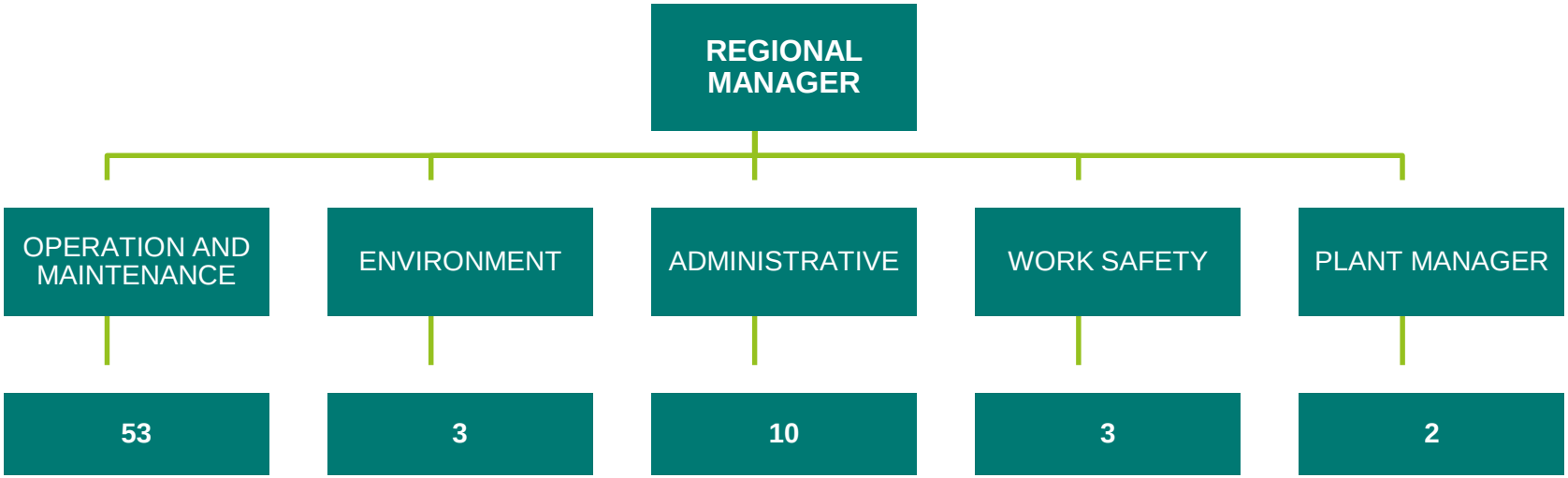
Adherence to the CCEE

Operating Agreement

Signature of connection agreements

ENGIE – O&M – BUSINESS PLAN





HANDOVER AND ACTIONS FOR “PERMANENT OPERATION”

- Formation of the transition team
- Handover
- Continuity of agreements
- Communication System (telephony, data links, radios, etc)
- Technical/historical operational documentation
- Technical diagnosis of the installations
  - Civil structures, principal equipment
- Plant infrastructure – spare parts, tooling, etc
- Relationship with stakeholders
  - Municipal governments, communities, electricity sector, environmental protection agency, etc
- Occupational health and safety
- Remote operation
- Investment plan (modernization)
- Formation of permanent team

