Eletronuclear
Restart of Angra 3
Current Status and Perspectives
WNA Spotlight
April 03, 2019
Eletronuclear is a mixed capital company controlled by Eletrobrás with minority shareholders such as Light and DAEE.

### Eletronuclear's Corporate Structure

- **Eletrobrás**
  - ON: 99.97%
  - PN: 99.72%
- **DAEE**
  - ON: 0.02%
  - PN: 0.13%
- **Light**
  - ON: 0.00%
  - PN: 0.09%
- **Outros**
  - ON: 0.01%
  - PN: 0.06%

### Assets in Operation

#### Angra 1
- Installed Power: 640 MW
- Power Generation (2018): 568 MWmed

#### Angra 2
- Installed Power: 1,350 MW
- Generated Power (2018): 1,280 MWmed

### Comments and Analysis

- The company is a subsidiary of Eletrobrás with approximately 99%.
- Eletronuclear, through its NPPs, is responsible for generating about 3% of the electricity consumed in Brazil and more than 30% of the state of RJ.
- The company has an asset under construction with expected COD in Jul / 2026.

### Power Plant Under Construction

#### Angra 3
- Installed Power: 1,405 MW
- Reference Price (2018): R$ 480 / MWh
- Status of Civil Works: 67.1%
- Investments to be made: R$ 14.5 Bn
- Additional period of construction: 55 months
Restart of Angra 3
History of the Project

Timeline of the Angra 3 project - From its conception to its standstill

**Project Timeline**

- **1984**: Launch of the Angra Project 3
- **1986**: The works of Angra 3 were interrupted
- **2010**: Restart of the works
- **2015**: Interruption of works after MP 579
- **2016**: Cost to Complete Report
- **2017**: Deloitte Reports
- **2018**: A&M Reports
- **CNPE**

**Comments and Analysis**

- The project from the 1980s was restarted in 2010 and halted again in 2015 due to the lack of resources of Eletrobras after MP 579.
- In 2016, to resume the project, Eletronuclear performed its own calculation of Angra 3 cost to complete and the viable tariff to resume the project and presented these results to the MME.
- MME requested that the company hire a consulting firm (Deloitte) to independently evaluate the cost to complete in 2017.
- Eletrobras sent a report to the MME requesting the change of the plant tariff after Deloitte’s report delivery.
- In 2018, looking for the construction completion with the help of a new partner, Eletronuclear hired Alvarez & Marsal to assist it in this process. In October, CNPE approved a new reference price for the energy.
Scenarios Studied for the Completion of Angra 3

1. Cancellation of Project
   - Not feasible due to cancellation costs

2. Completion Without a Partner
   - Not feasible due to the level of investment and the need for expertise

3. SPV Model
   - Angra 3 finalization in the SPV model

4. Corporate Model
   - Partner in Eletronuclear as a whole

5. Non-Corporate Model
   - Hiring a company to finish Angra 3 without being a shareholder of Eletronuclear

Legend
- Rejected
- Under Study
For the resumption of the work, Eletronuclear obtained the rebalance of Angra 3 tariff and is preparing to resume the construction of the plant with companies on the sector.

**Latest Events of the Restart of Angra 3**

1. CNPE requested study of measures to make Angra 3 viable

   Grupo de Trabalho instituído pela Resolução CNPE nº 7/2018

   Relatório

   Medidas para a Viabilização da Usina Nuclear Angra 3

2. Report of the Interministerial Working Group established R$ 480/MWh as a reference tariff

   Art. 1º Aprovar o Relatório elaborado pelo GT, que recomenda, considerando os objetivos expostos na Resolução CNPE nº 7, de 5 de junho de 2018, adotar como referência para o preço de energia de Angra 3 o valor de R$ 480,00/MWh (quatrocentos e oitenta Reais por Megawatt-hora), a valores de julho de 2018.

3. CNPE approved the reference rate and referred the definition of the partner attraction model to the Investment Partnership Program

   Art. 2º Determinar ao Ministério de Minas e Energia que proponha ao Conselho do Programa de Parcerias de Investimentos- CPPI, criado pela Lei nº 13.334, de 13 de setembro de 2016:
Restart of Angra 3
Map of Activities for the restart

It was developed with the aid of the Investment Partnerships Program a flow of activities for the resumption of Angra 3

Legend
- Eletrobras Board with support from CPPI
- Eletrobras and Eletronuclear
- BNDES/BB/CAIXA
- CNPE
- CPPI

Flow of Activities
1. CNPE’s resolution Publication
2. Market Sounding
3. Market Sounding Report
4. Acceptance of Angra 3 by PPI
5. Formation of Interministerial committee
6. Evaluation of reports produced by Eletronuclear
7. Definition of the Business Model
8. Presentation to the TCU
9. Term of Reference and hiring of consultants
10. Product Delivery and Validation
11. Selection conditions definition
12. Corporate approval acts
13. Publication of Public Call Notice
14. Bidding Process
Restart of Angra 3
How will be the Market Sounding?

A Market Sounding process to assess the business models to attract a private partner for completion of Angra 3

**Model Selection Process**

- PPI Governance
- Market Sounding Feedback
- Approval of Eletrobras

**Main Comments**

1) The Marketing Sounding process will occur on April. During the month, the company will interact with potential partners for Angra 3, the possible models will be presented and feedback will be collected.

1) In parallel, legal and economic-financial studies are being carried out to support Eletrobras on the decision of the model to be chosen.

2) At the end of this process the business model will be announced, and the process for the competitive process will begin.
Market Sounding participants are companies with proven international experience in construction and commissioning of PWR nuclear power plants.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Resources</th>
<th>Construction</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology vendors</td>
<td>Access to resources (including funding) in their countries of origin</td>
<td>Technical Experience in Construction Management</td>
<td>Availability to invest in nuclear generation assets in Brazil</td>
</tr>
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</table>
The company has to invest about R$ 14.5 Billion to complete Angra 3 and the main items of this investment are Electromechanical Erection, International Supplies and Foreign Engineering.

**Comments and Analysis**

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¹ Study of Jun/18
The restart of the project will occur with the publication of the partner selection notice in December / 19 and the signing of the SPA on November 20.

**Schedule Pre-Work Activities**

- **Oct/2018**: Reference Price Approval
- **Dec/2019**: Publication of the Call for Selection of Partner
- **Nov/2020**: Signature SPA with Partner
- **May/2021**: Mobilization of teams to resume work
- **2026**: Start of Commercial Operation of Angra 3

**Comments and Analysis**

- The main activities for the resumption of the project are the publication of the call for selection of a partner and the signature of the SPA with the winner of the competitive process.
- The resumption of the project will occur with the publication of the partner selection call in December / 19, the signing of the SPA in November / 20 and the site mobilization by May / 21.
Thank you!

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