

 	<b>TECHNICAL REPORT</b> <b>IT/EPE/DEE/STE/081/2019</b>	Date: <b>10/10/2019</b>
	<b>Subject:</b> Transmission Expansion Program (PET) / Long-Term Expansion Plan (PELP) Cycle 2019 – 2nd Semester	
	<b>Related Documents:</b> PET/PELP Cycle 2019 – 2nd Semester	

## 1. INTRODUCTION

The main goal of this Technical Report is to give an overview of the results presented in the document called Transmission Expansion Program (PET) / Long-Term Expansion Plan (PELP) Cycle 2019 – 2nd Semester (only available in Portuguese).

It is worth highlighting that the PET/PELP document is a semiannual executive report containing all the expansion assets of the National Interconnected System (SIN) that have not been granted yet (auctioned or authorized) and are defined on the transmission planning studies conducted by EPE.

The preparation of this document is part of the responsibilities of EPE established in the Decree No. 5.184 on August 16, 2004, which states that the company must develop the short-term, medium-term and long-term transmission expansion plans.

The first part of the report (PET) addresses the set of determinative planned assets and considers the period of first six years, that is, until 2025. In turn, the second part (PELP) focuses on the indicative facilities (they may be revised) and comprises the period from the seventh year on.

It should be noted that both parts of the document are made up of technical files that present a brief description of each planned asset.

## 2. MAIN ASSUMPTIONS

The items below describe the main assumptions considered in the preparation of the document PET/PELP Cycle 2019 – 2nd Semester.

### a) Types of Assets

This document only contemplates the Basic Network, Basic Border Network and DIT<sup>1</sup> facilities that have not been granted yet (auctioned or authorized).

---

<sup>1</sup> Other Transmission Facilities that cannot be classified as Basic Network, Basic Border Network or Distribution Network.

## **b) Reference Date for the New Assets**

The assets whose planning studies have been completed by September 2019 were included in this document.

## **c) Composition of Geoelectric Regions**

The facilities were grouped according to their geoelectric region. In this sense, the Interconnected National System (SIN) was divided into five geoelectric regions, which are composed of the following states:

<b>Regions</b>	<b>States</b>
North	Pará, Tocantins, Maranhão, Amapá, Amazonas and Roraima
Northeast	Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe and Bahia
Southeast	Espírito Santo, Rio de Janeiro, Minas Gerais and São Paulo
Midwest	Goiás, Distrito Federal, Mato Grosso, Acre and Rondônia
South	Rio Grande do Sul, Santa Catarina, Paraná and Mato Grosso do Sul

## **d) Associated Dates**

The dates associated with each of the assets described in this document were established based on the following concepts:

- **Required Date:** this is the date in which the transmission assets are required to be in operation according to the results of the transmission planning studies. It is important to emphasize that this date may be updated depending on future system conditions such as increase/decrease of load growth, new generation connections etc.
- **Trend Date:** this date represents the most realistic date for the transmission asset commissioning according to the current granting process deadlines.

## **e) Planning Horizons**

Facilities that have a Trend Date up to the sixth year were addressed in the first part of the document (PET), while the remaining assets were included in the second part (PELP). Therefore the first part takes into consideration the assets with Trend Date up to 2025. From 2026 on, the assets were included in the second part.

### f) Transmission Line Quantitatives

For the purpose of indicating the total of transmission line lengths, double-circuit lines and HVDC bipoles were considered as two single-circuits. Also, in the case of tie lines, the line lengths were added to the total quantity of the "from" terminal of the line.

### g) Reference Price Database

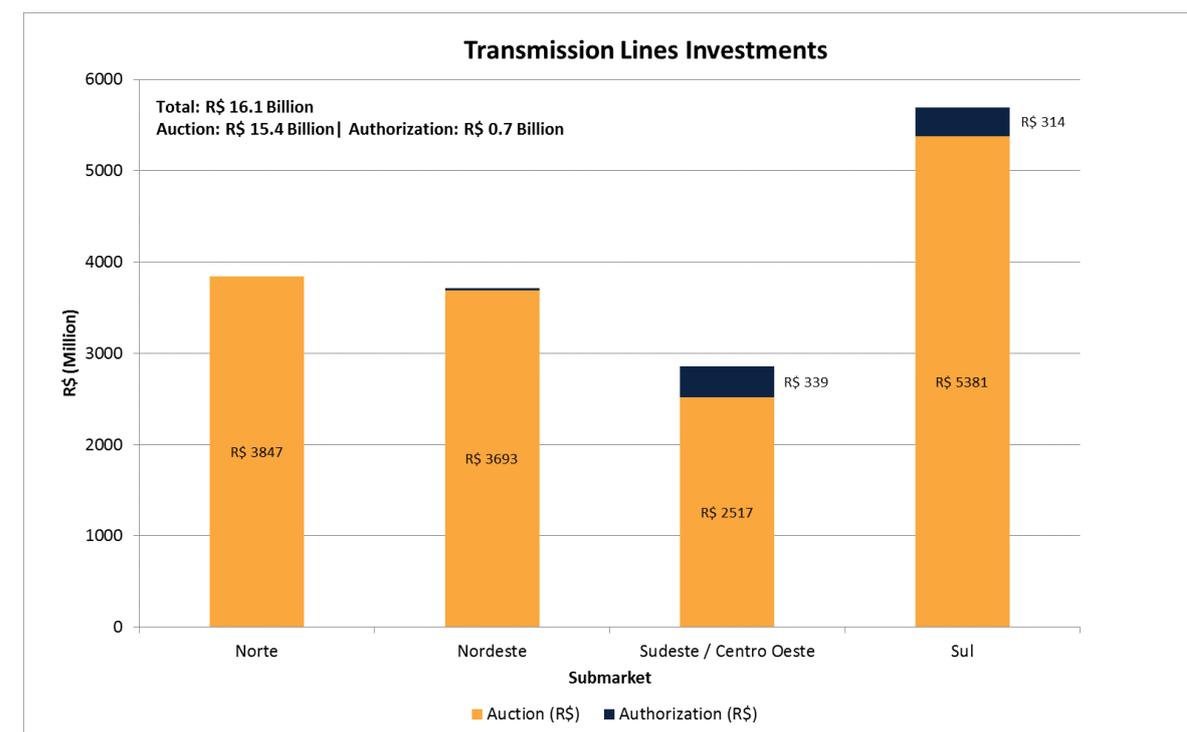
The investment estimates presented in the document were based on the most recent files published by ANEEL (Resolution No. 2,514 of February 19, 2019), that were later updated by EPE in order to change the reference price date to May 2019 ([LINK](#)).

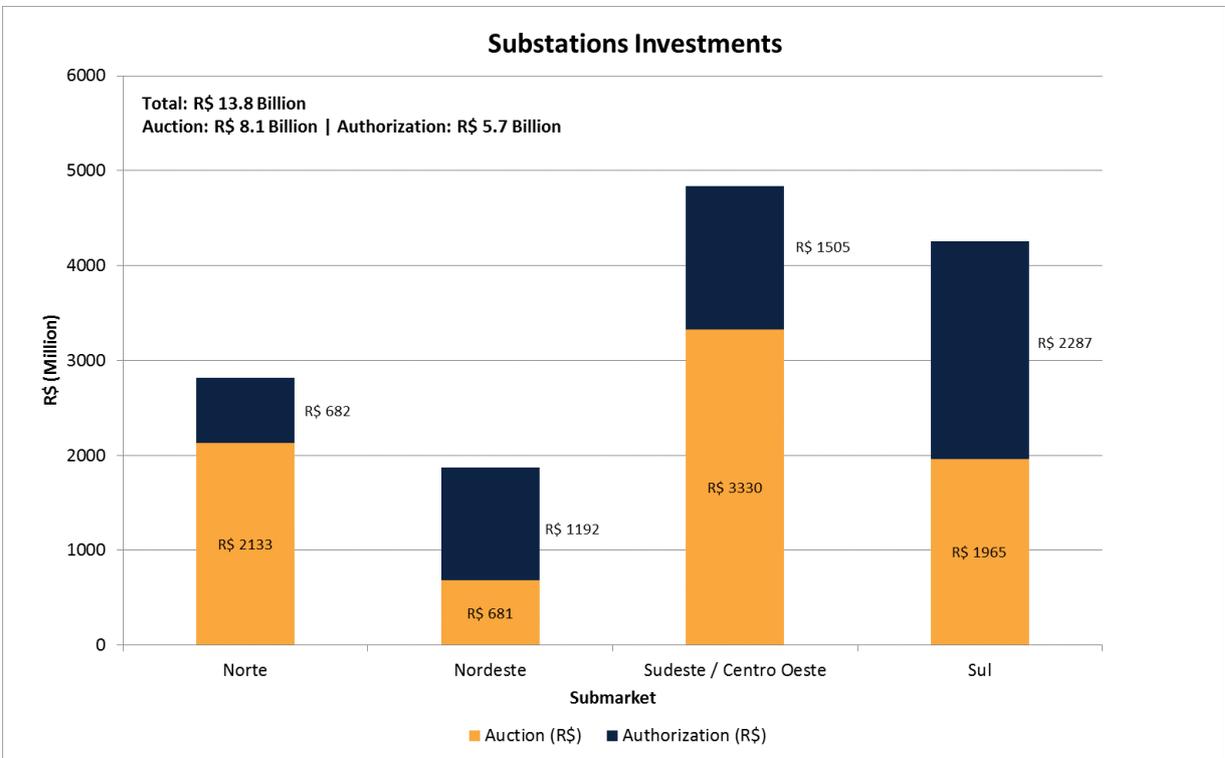
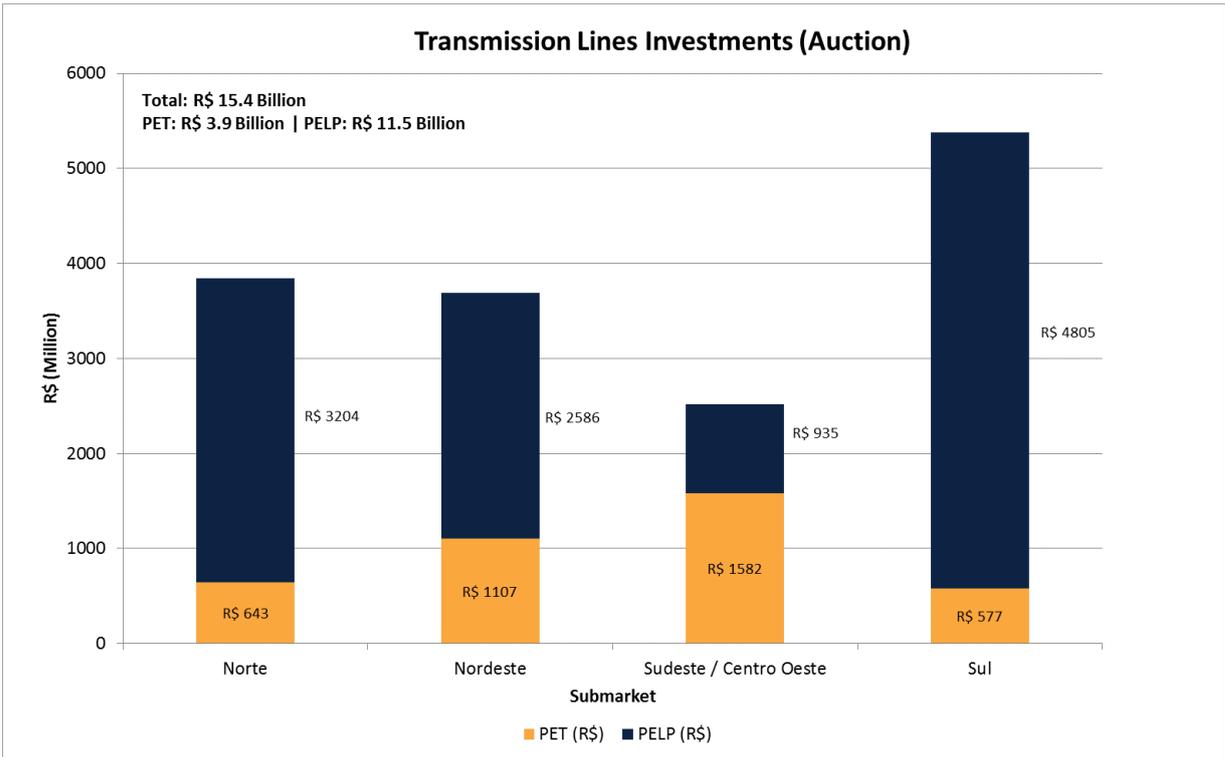
The investment cost of special installations that are not present in ANEEL's database were considered as having the same cost that were identified in the planning studies (updated to May 2019 using the IGP-M index).

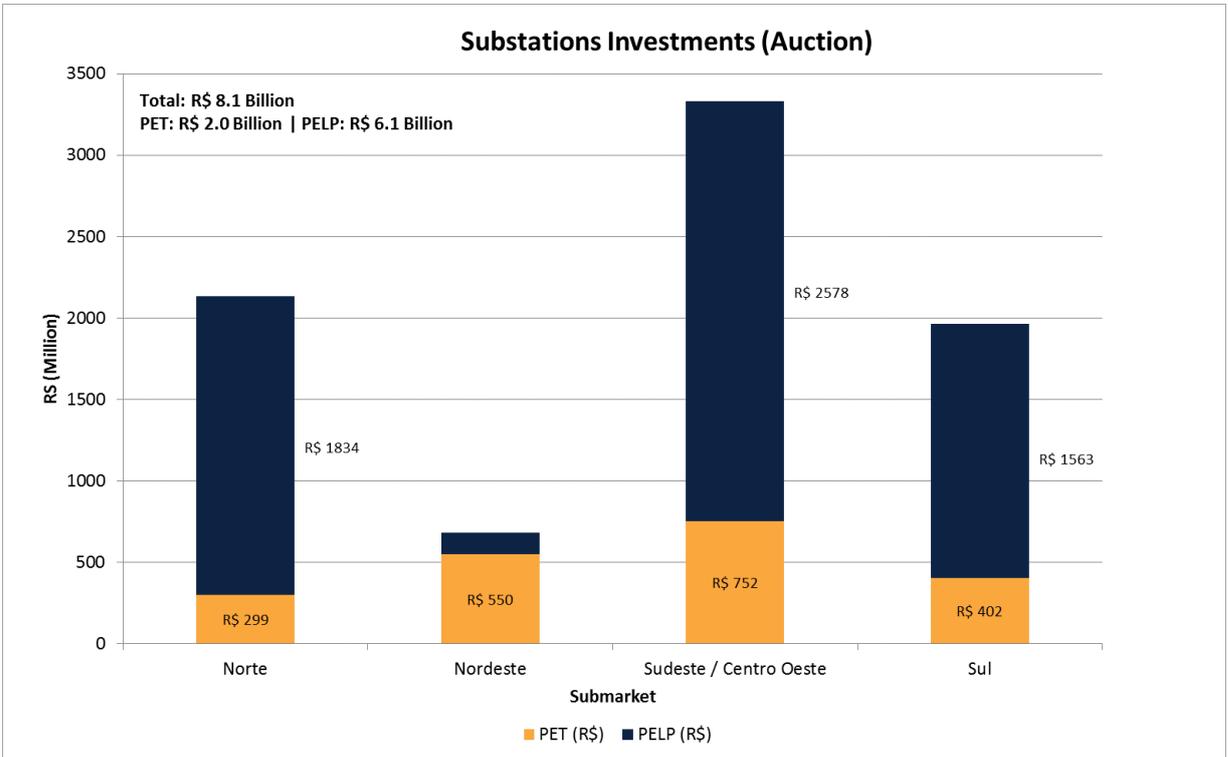
## 3. PET/PELP QUANTITATIVES

Considering the previous assumptions, the total investment costs associated with the assets described in document PET/PELP totals approximately R\$ 30 billion, of which R\$ 24 billion refer to new installations (transmission lines and substations) and R\$ 6 billion are related to expansions or reinforcements.

As an investment signal, the following figures present the general statistics for the transmission planning expansion, as well as the ones specifically related to the greenfield projects, which are suitable for the transmission auction process.







**IMPORTANT NOTE:**

Due to differences in assumptions, the comparison of the quantities indicated in the PET/PELP report with the ones presented in the Ten-Year Energy Expansion Plan (PDE) may lead to inaccurate conclusions and then should be avoided.

Unlike the PET/PELP report, the PDE document also takes into account the assets that have been granted and indicative estimates of expansions for the last years of the decade in order to capture recommendations of the ongoing studies. On the other hand, the PET/PELP report takes into consideration facilities that exceed PDE's ten-year horizon.