Cyber Security
Cyber Security Regulation in Brazilian Electric Power System.

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Diversity of the sector

Distribution, Generation, Transmission

- Type of services;
- Monopoly vs. competition;
- State owned versus private companies.

Commercialization

CCEE, ONS (ISO - Independent System Operator) e EPE

- Several entities.
**Diversity of the sector**

**Distribution**
- Largest with more than 11 million consumers
- Smallest with 1,000 consumers

**Transmission:**
- Largest with revenue of R$ 2 billion
- Smallest with revenue of R$ 1.1 million

**Generation**
- 5 MW to 14 GW Itaipu
Chronology

Operational requirement included in December 2016

ONS Updated the Roadmap for Cybersecurity Evolution

ABRATE’s Framework

Review of Grid Procedures, that included the cyber policies

ONS proposal dec/2019

1st Public Hearing in May/2020

ANEEL Workshop in aug/2020

2nd Public Hearing (with the RIA)*

ONS and Agent centers must have (...) technological resources to protect against cyber attacks.

* CP 7/2021, opened until April 26th
Regulatory Problem, causes and consequences

Risk of cybersecurity incidents in the Electric Power System.

• malicious and cybercriminal agents;
• lack of adequate security;
• connectivity;
• lack of specialized human resources.

• supply disruption;
• inability to carry out technical, commercial or billing operations;
• Data loss.
General and specific objectives

Minimize the impacts of cybersecurity incidents on the electric power system.
Desired goals

• *Increased resilience of ONS (Brazilian ISO) systems and agents connected to the Operator;*
Alternative solutions

- **Alternative 1 (A1):** Do not regulate;
Alternative Choice Analysis – Risk matrix

Risk of cybersecurity incidents in the Electric Power System
Alternative choice analysis – Evaluation Criteria

Implementation time
Degree of effort
Simplification
Administrative burden
Regulatory impact
Applicability
Society acceptance
Political acceptance
Available technology
Available knowledge
Available resources

A2 (89,5)
A3 (88,0)
A1 (84,5)
A4 (70,9)
### Decision matrix

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<tr>
<th>Alternatives</th>
<th>Alternative 1</th>
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<tr>
<td>Risk Analysis Position</td>
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<td>Criteria Evaluation Position</td>
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