Neoenergia

WWRF Huddle 2025

Privately Owned and Operated Networks Beyond 5G

2025 September

Neoenergia

Neoenergia at a Glance

Leader in Brazil's energy transition

Distribution

- **R$ 40 bn** in Asset Base
- **87 TWh[1]** Injected energy
- **40 M** People served

Transmission[2]

- **18** Assets in the portfolio
- **8,6 K** km of lines
- **22** own substations

Generation

- **1,7 GW** Wind and Solar
- **1,9 GW** Hydro
- **0,5 GW** Thermal

Commercial

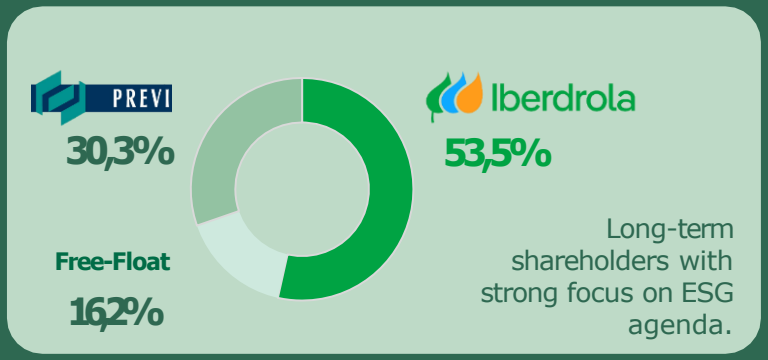
- **5,5 TWh** of energy sold
- **700 K** mass customers
- **958 GWh/year** in PPAs

R$ 47 bn in net revenue
Highest NOR in the energy sector

R$ 12,5 bn EBITDA

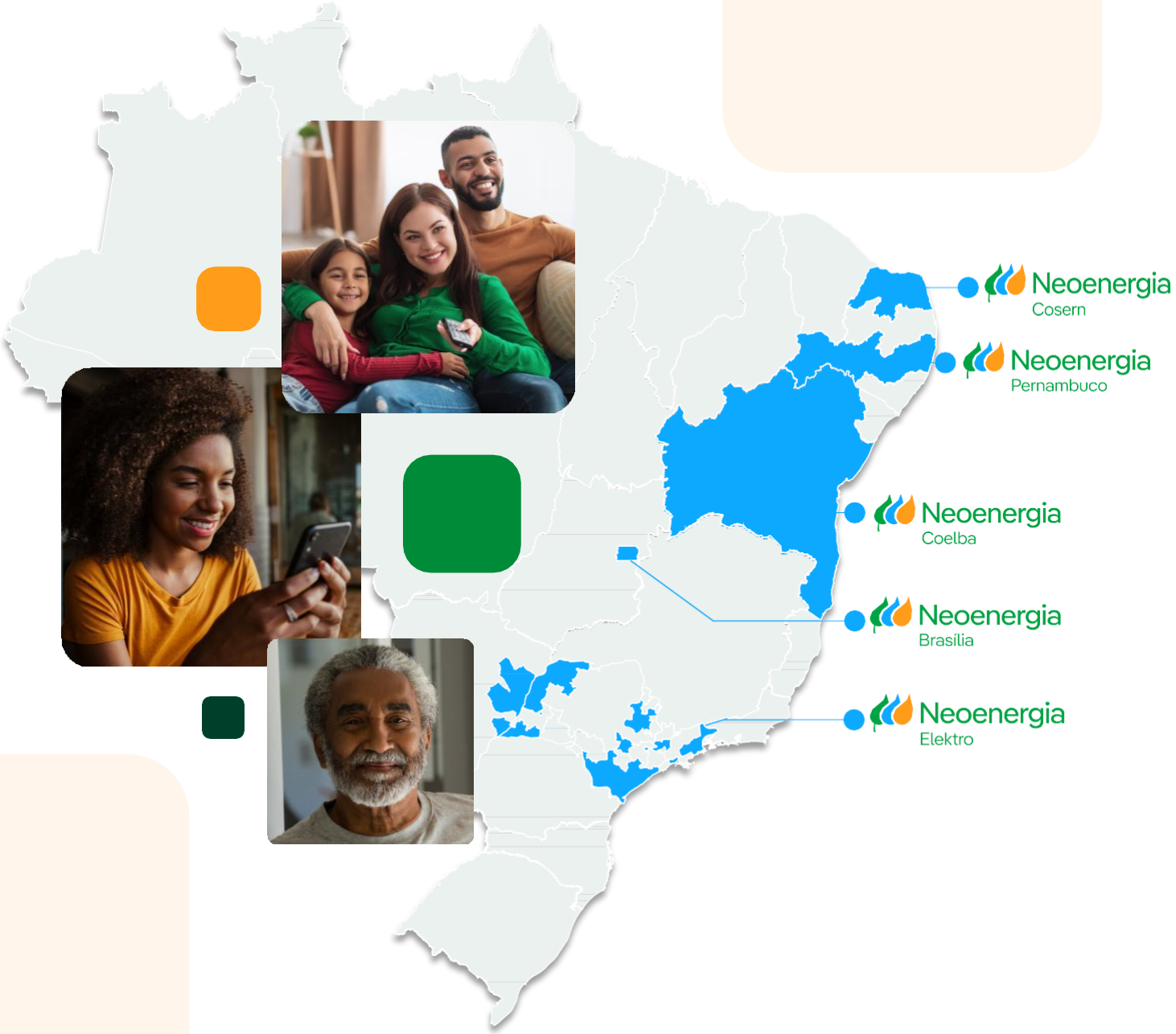
R$ 14,7 bn in Purchases
99% national

42,6 thousand direct jobsZ



Notes: 1Includes Distributed Generation market. 2 Assets in operation and under construction.
3,15,528 own employees, 26,414 contractors from third parties, 196 interns and 422 apprentices.

Largest electricity distributor in number of customers



17M of customers
+1.5M new customers every 5 years

87 TWh Injected energy
CAGR 3% over the last 5 years

R$ 40 bn of Asset Base
R$ 23 billion invested in distribution over the last 5 years

80% of medium and low voltage networks already digitalized

External Scenario and Regulatory Environment

Digitalization actions are **essential** to respond to **trends** in the **external scenario** and **regulatory environment**

Customers with higher **expectations** about **quality of service**

Greater **network resilience** against **climatic events**

Increased demand for **performance** in **technical indicators**

Active participation of consumers

Integration of **distributed energy resources**

Digitalization

Digitalization Strategy

ESG commitment to the evolution of **digitalization**, with a smarter operation, supported by robust telecommunications solutions and systems

80% 2024 ▶ 83% 2025 ▶ 90% 2030

Grid Digitalizaton

Expansion of devices and automated substations

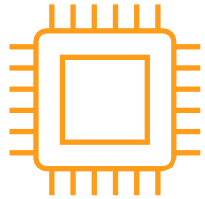
Operational Digitalization

Workforce management supported by intelligent systems

Mobility and Connectivity

Resilient and efficient mobility and connectivity

Data Usage and Artificial Intelligence



AI application to improve operation and customer service

Challenges of current networks

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Standardization

Non-interoperable devices increase **network management complexity**

Spectral efficiency

Limitations in data transmission capacity

Coverage

Especially in **remote** or **hard-to-reach regions**

Scalability

Doesn't keep up with the **growth rate of connected devices**, resulting in performance and reliability issues.

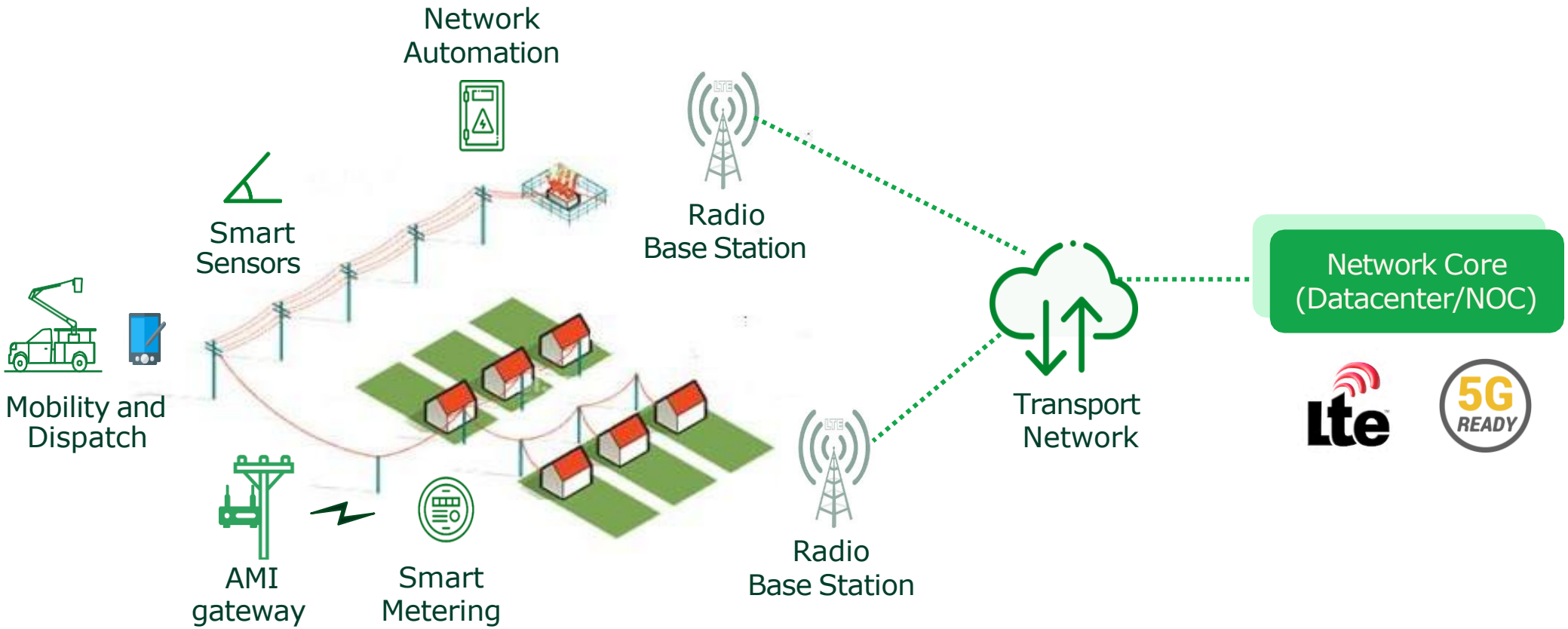
LTE Network

Standardized and **interoperable technology**

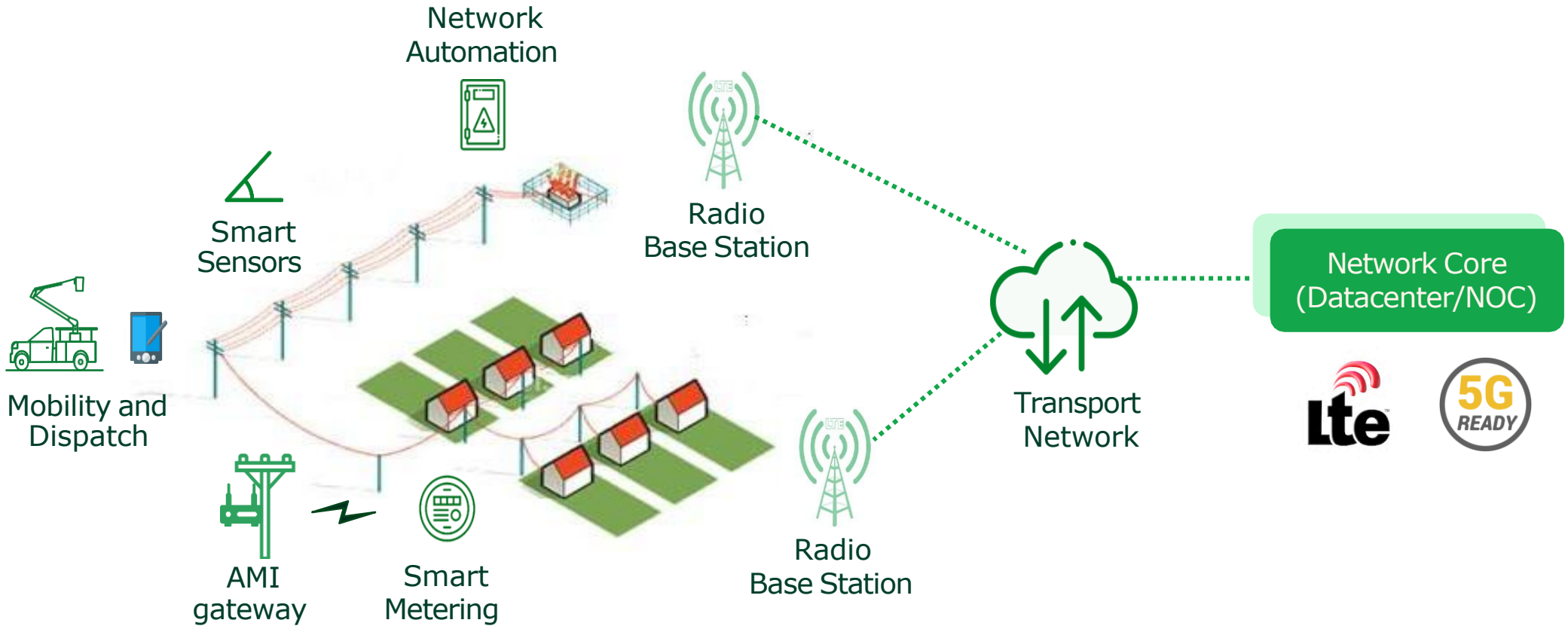
Spectral efficiency with maximized ROI

Customizable Growth: **Flexible Coverage**

Scalable: High capacity to aggregate devices



LTE Network



MULTI-SERVICE NETWORK

- Able to aggregate **existing and future services**

DEVICES

- **IoT** Devices:
  - **Low-cost** communication
  - **Massive** number of devices
- **Hybrid** devices:
  - **Agile** Deployment
  - **Distributed** expansion

Technologies

Comparison

	4G/LTE	CAT-M1	NB-IoT
Bandwidth	3 MHz	1.4 MHz	200 KHz
Data Rate (UP / DL)	5 Mbps / 10 Mbps	1Mbps / 588 Kbps	160 Kbps / 120 Kbps
Latency	<100ms	<150ms	<1.5s
Energy consumption	●●●	●●	●
Cost	●●●	●●	●

High device **density**

Operation on **public and private networks**

Integration with the **multi-service** LTE network

Evolution toward **5G**

Public Coverage Map

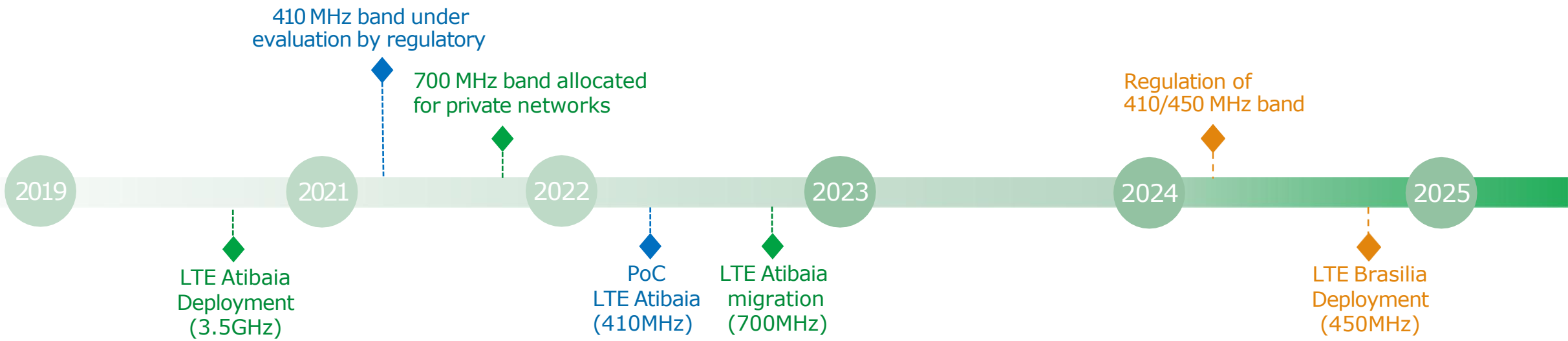
Population coverage (%)	4G/LTE	CAT-M1	Nb-IoT	5G
Neoenergia Cosern	94,4%	93,7%	99,3%	67,3%
Neoenergia Pernambuco	92,7%	93,7%	99,3%	67,1%
Neoenergia Coelba	83,4%	98,7%	99,6%	48,4%
Neoenergia Brasília	99,5%	93,8%	99,5%	98,8%
Neoenergia Elektro	99,1%	100%	100%	87,6%

4G/LTE and 5G Coverage of Public Operators
Source: Anatel, May 2025
https://informacoes.anatel.gov.br/paineis/infraestrutura
CAT-M1 and Nb-IoT coverage
Source: Teleco, February 2025
https://www.teleco.com.br/lpwa_cobertura.asp

Regulatory Evolution vs Neoenergia Projects

REGULATION

DEPLOYMENT



ATIBAIA LTE NETWORK

- **6 operational sites** in the Atibaia/SP region:

  +80 thousand meters

  +83 reclosers

- *Semi-centralized self-healing*

LTE PILOT

- **Multi-service** network with **wide coverage**
- **Simplified** network architecture

- Combined strategy using **public and private network**

BRASÍLIA LTE NETWORK

Pioneer in the licensing of the 450MHz band in Brazil

Operational Communication – LTE 450 MHz

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Expansion of the **private multiservice network** to meet operational demands

Private Network

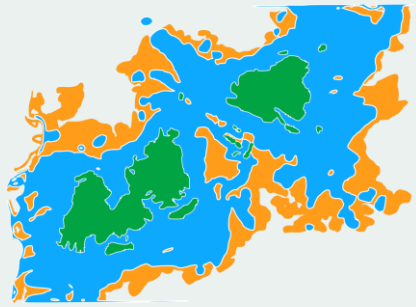
First Utility Company with a **private LTE network** in **450MHz** band

4 sites deployed in 2024
3 new sites in the Federal District in 2025

Scalable expansion planned for the coming years

Coverage

3x **More coverage** with the same infrastructure



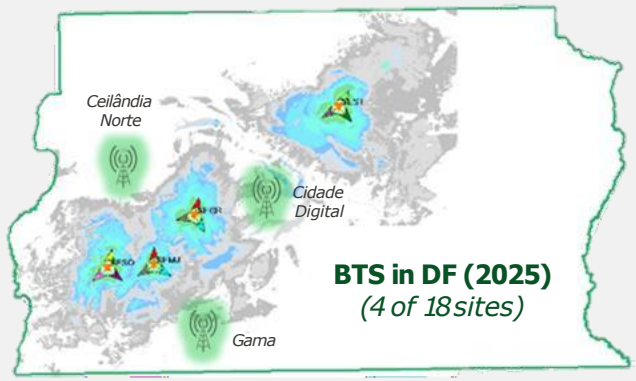
Cat-4 — *Mobility (Voice & Data)*

Cat-M — *Recloser*, *Multilink Gateway*

Nb-IoT — *Smart Meter*, *Smart sensor*

Connected Devices

50 Reclosers	**5** Multilink Gateways
5 K Smart Meters	**20** Smart Sensors



BTS in DF (2025)
(4 of 18 sites)

Product & Supplier Development

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Commitment to evolving digitalization to smarter operation through continuous innovation

Digital Radio

Public Cellular Router

Hybrid Router

TELECOM PARTNERS

NOKIA

ERICSSON

CelPlan

AUTOMATION & METERING PARTNERS

QUALCOMM

NEPEN

HARTBR

Telit Cinterion

M2M TELEMETRIA

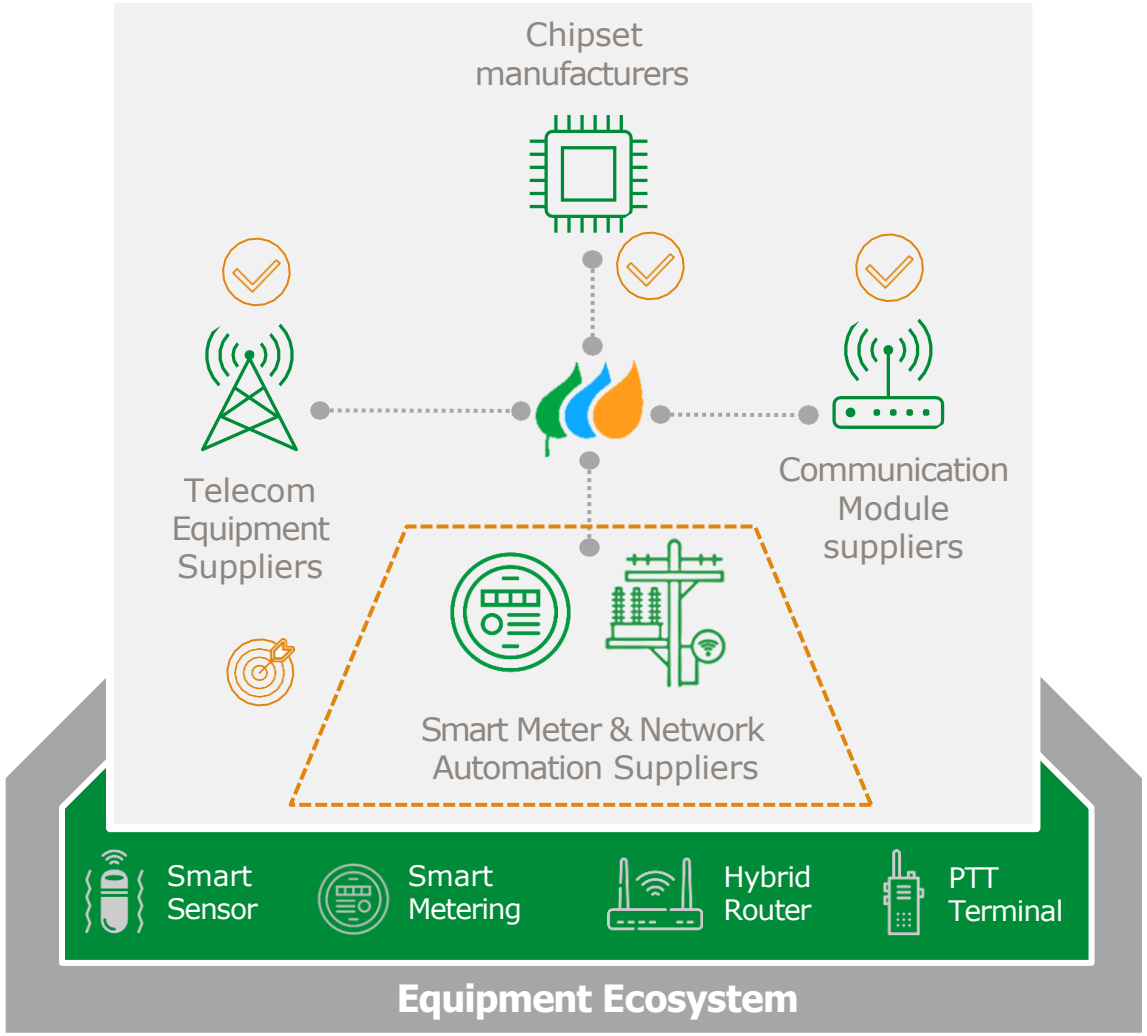
novus

CAS tecnologia

QUECTEL

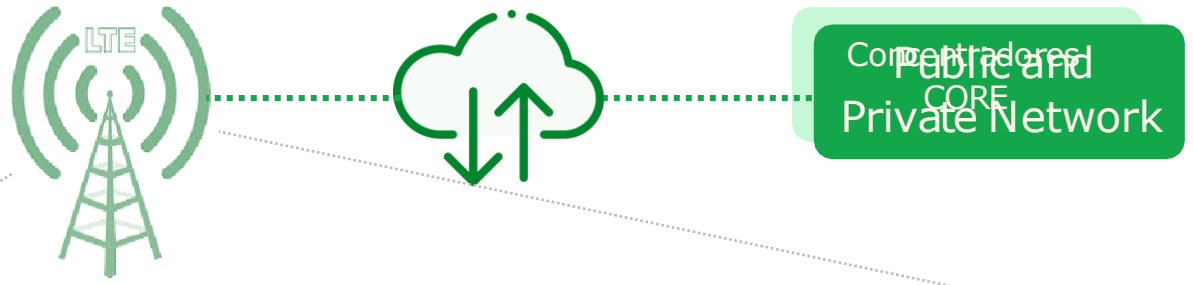
seven science system

TECSYS Digital Solutions



Ecosystem development

- Standardized technology
- Hybrid devices
- Scalable growth
- Scalable and Pulverized Expansion
- Operational and Financial Efficiency



Hybrid IoT Router | IoT Smart Meter | Fuse Switch IoT Sensor | Voice Terminal

Partner Suppliers:

- **Digitalization of the legacy network** for reclosers and grid automation devices
- **Financial efficiency** compared to other technologies (e.g. point-to-multipoint radio)

CAPEX savings

Agile deployment across all distributors, whether there is a private 4G/LTE network or not

Ecosystem development

- Standardized technology
- Hybrid devices
- Scalable growth
- Scalable and Pulverized Expansion
- Operational and Financial Efficiency

Concentradores
CORE
Public and Private Network

+NTN

In development
(pilot Q4/2025)

Hybrid IoT Router	IoT Smart Meter	Fuse Switch IoT Sensor	Voice Terminal

Partner Suppliers :

NEPEN

M2M TELEMETRIA

- **LTE connectivity** directly to the meter
- **Distributed** growth
- **Agile deployment**
- **Remote migration** between public and private networks

Under Homologation

Agile deployment across all distributors, whether there is a private 4G/LTE network or not

Ecosystem development

Neoenergia

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Concentradores

Public and Private Network

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In development
(pilot Q4/2025)

Hybrid IoT Router	IoT Smart Meter	Fuse Switch IoT Sensor	Voice Terminal

Partner Suppliers :

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seven science system

TECSYS Digital Solutions

- Predictability to identify faults through **real-time monitoring**
- Field dispatch **optimization**
- **Eco-friendly device** powered by solar energy
- **Plug-and-play installation** without network de-energization

Under development
(pilot Q4/2025)

Agile deployment across all distributors, whether there is a private 4G/LTE network or not

Ecosystem development

- Standardized technology
- Hybrid devices
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Concentradores

CORE

Public and Private Network

Hybrid IoT Router	IoT Smart Meter	Fuse Switch IoT Sensor	Voice Terminal

Partner Suppliers :

tait communications

- **Mission-critical technology** via push-to-talk (PTT)
- **Voice communication** between field team and Operation Center
- **Mobility** within the coverage area of the **private and public network**

Under development
(pilot Q2/2026)

Agile deployment across all distributors, whether there is a private 4G/LTE network or not

Conclusions

We invest today in **technologies** that will support **advanced applications** for **electric grid management** *(Network Automation, Smart Metering, etc.)*...

Technology

Standardization, open and interoperable technologies to enable large-scale solutions with operational security

People

Training and **development** of professionals to work with **new technologies** and reinvent **processes** aligned with the **company's purpose**

Sectoral Environment

Regulatory model predictability with attractiveness for long-term investments

... ensuring a better **customer experience**

Thank you!

Alan Macieira

alan.macieira@neoenergia.com

19 99836-5008