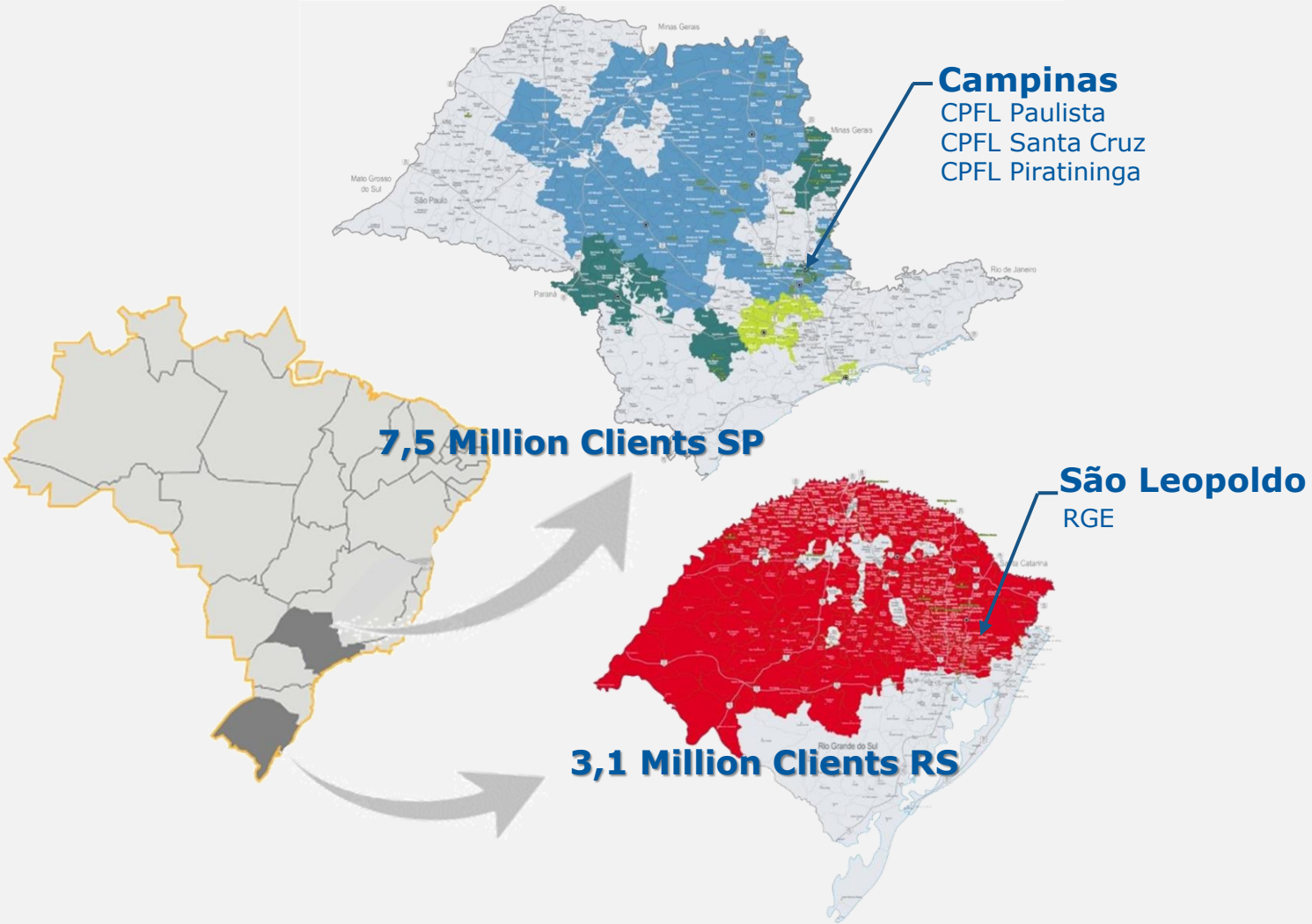

# Investor Education

## Distribution Quality Indicators

# OPERATION CPFL ENERGIA

# OPERATION CPFL

## COI – Integrated Operations Center




cpfl paulista
**5 Million Clients**

cpfl santa cruz
**0,5 Million Clients**

cpfl piratininga
**2 Million Clients**

RGE
**3,1 Million Clients**

- **10,6 Million Clients**
- **687 Municipalities**
- **591 Substations**
- **300.593 km² Concession area**
- **354.907 km of Distribution lines**
- **Largest distributor in Brazil in energy sales**

CPFL ENERGIA

# SERVICE QUALITY INDICATORS

# INDICATORS - DESIGN, CONCEPTS AND METHODS

## Individual Continuity Indicators

**DIC** (Duration of Individual Interruption per Consumer Unit in hours) $$DIC = \sum_{i=1}^{n} t(i)$$

**FIC** (Frequency of Individual Interruption per Consumer Unit in hours) $$FIC = n$$

**DMIC** (Maximum Interruption Duration per Consumer Unit in hours) $$DMIC = t(i)\ max$$

## Collective continuity indicators

**DEC** (System Average Interruption Duration Index) $$DEC = \frac{\sum_{i=1}^{Cc} DIC(i)}{Cc}$$

**FEC** (System Average Interruption Frequency Index) $$FEC = \frac{\sum_{i=1}^{Cc} FIC(i)}{Cc}$$

Source: Module 8 of PRODIST - Distribution Rules and Procedures (Prodist) — National Electric Energy Agency

# Critical Day

**Concept:** Day on which the number of **Emergency Occurrences**, in a given electrical set of consumer units, exceed the average plus three standard deviations of the daily values.
The average and standard deviation to be used will be those for the 24 (twenty-four) months prior to the current year, including the critical days already identified.
On these days, the **DICRI** indicator is calculated: Duration of Individual Interruption on a Critical Day per consumer unit or connection point.

$$DICRI = t_{crítico}$$

Where:
$t_{crítico}$ = Duration of interruption on Critical Day.

**Emergency Occurrences:** All occurrences with field crew dispatch, with or without interruption

Source: Module 8 of PRODIST - Distribution Rules and Procedures (Prodist) — National Electric Energy Agency

# Interruption in Emergency Situation:

Interruption originating in the distribution system, resulting from an Event that demonstrably makes it impossible for the distributor to act immediately and that has not been caused or aggravated by the it and that is:

- Resulting from an Event associated with a Decree of Declaration of State of Emergency or State of Public Calamity issued by a competent body; or
- Resulting from an Event whose sum of the CHI of the interruptions that occurred in the distribution system is greater than that calculated according to the following equation:

$$CHI_{limite} = 2.612 \times N^{0,35}$$

Where:

N = number of consumer units billed and served in LV or MV in the month of October of the year prior to the assessment period

| Company | Qtd. Customers OCT 2023 | ISE Limit 2024 |
|---|---|---|
| **CPFL Paulista** | 4.821.539 | 570.280 |
| **CPFL Piratininga** | 1.882.032 | 410.292 |
| **CPFL Santa Cruz** | 494.060 | 256.919 |
| **RGE** | 3.050.432 | 485.847 |

## IMPORTANT: Weather related causes only

Source: Module 8 of PRODIST - Distribution Rules and Procedures (Prodist) — National Electric Energy Agency

# INDICATORS - DESIGN, CONCEPTS AND METHODS

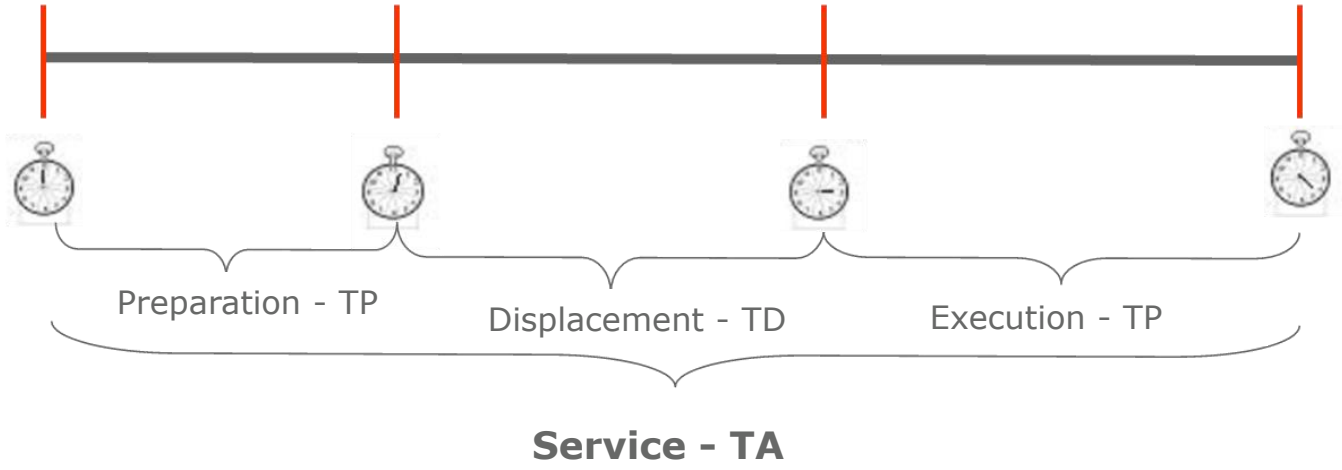
## Service Time Indicators


Time when the consumer contacts the company informing them of the power failure or indication of the telesupervision system

Time at which the operations center allocates Crew to respond to incidents

The field crew informs that has arrived at the service location to begin carrying out the maintenance service

The field crew informs the completion of maintenance service for the event and confirms the power restoration to the customer and other relevant information



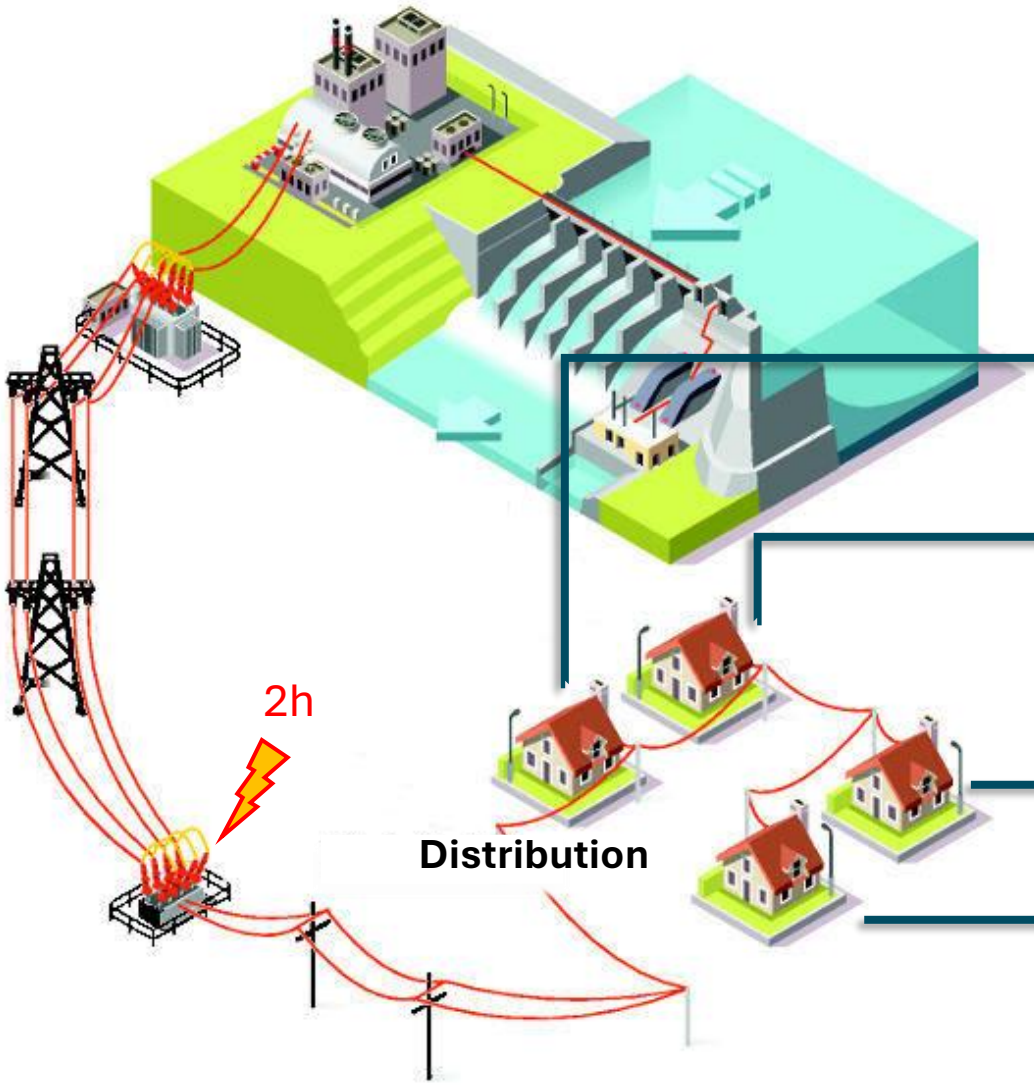

**TMAE = TMP + TMD + TME**

**Where:**

**TMAE:** Average Emergency Service Time
**TMP:** Average Preparation Time
**TMD:** Average displacement time
**TME:** Average time of execution

Source: Module 8 of PRODIST - Distribution Rules and Procedures (Prodist) — National Electric Energy Agency

# Calculation of indicators



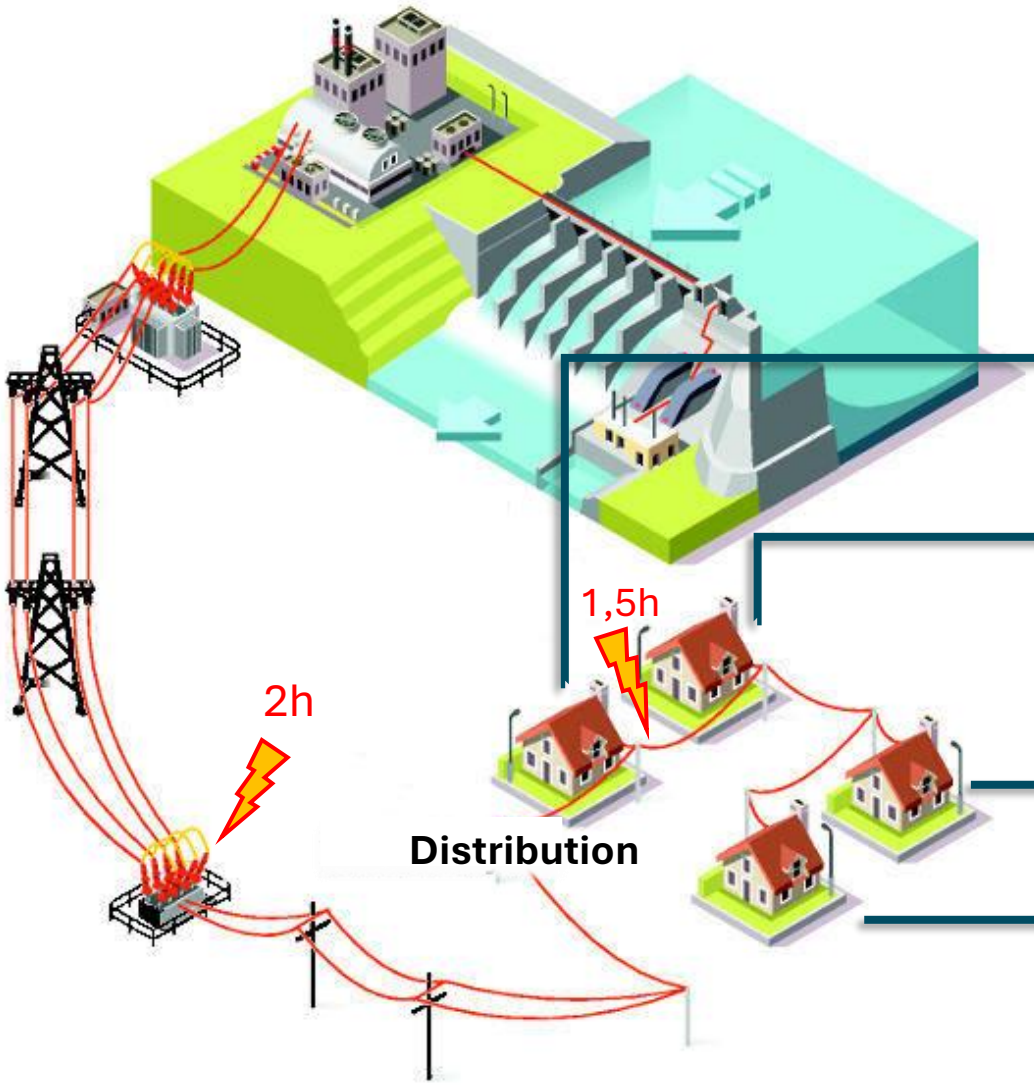

| DIC | FIC | DMIC |
|---|---|---|
| 2h | 1 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 2h | 1 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 2 h | 1 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 2h | 1 | 2h |

# Calculation of indicators




| DIC | FIC | DMIC |
|---|---|---|
| 2h | 1 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 3,5h | 2 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 3,5h | 2 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 3,5h | 2 | 2h |

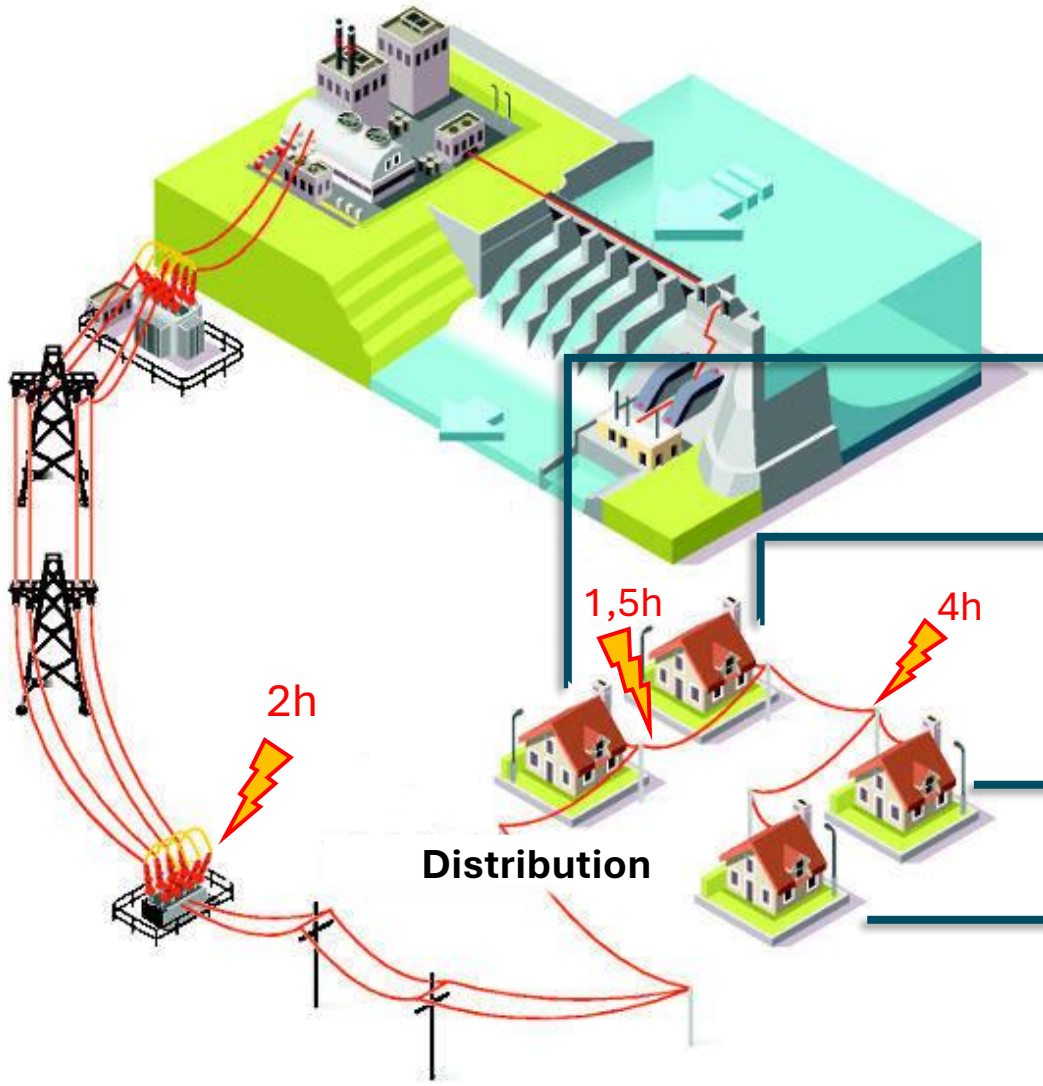
# Calculation of indicators

$$DEC = \frac{\sum_{i=1}^{Cc} DIC(i)}{Cc}$$

$$DEC = \frac{2+3{,}5+7{,}5+7{,}5}{4} = 5{,}13h$$

$$FEC = \frac{\sum_{i=1}^{Cc} FIC(i)}{Cc}$$

$$FEC = \frac{1+2+3+3}{4} = 2{,}25int.$$




| DIC | FIC | DMIC |
|---|---|---|
| 2h | 1 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 3,5h | 2 | 2h |

| DIC | FIC | DMIC |
|---|---|---|
| 7,5h | 3 | 4h |

| DIC | FIC | DMIC |
|---|---|---|
| 7,5h | 3 | 4h |

# ELECTRICAL SETs

# FORMATION OF ELECTRICAL SET

2024


cpfl piratininga

**Set is formed from SED**

**Covers networks MT downstream of the SED**

**Rules by Quantity of Consumer units**

+10k new set needed

**Rules for Aggregation / Segregation**

Aggregation: Contiguous areas and one of the sets with less than 10k

**CPFL Energia - 343 SETs**

Paulista: 176
Santa Cruz: 21
Piratininga: 45
RGE: 101

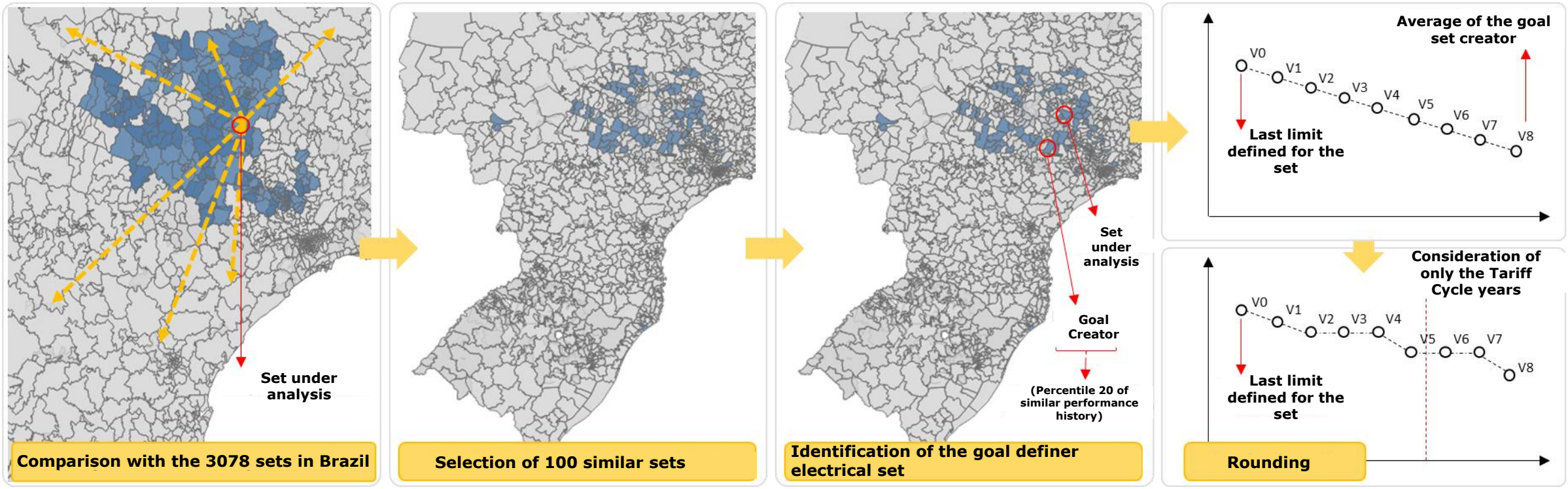
**Where:**

**SED = Substation of Distribuition**

# DEFINITION OF REGULATORY TARGETS – ELETRICAL SET

## Attributes used - Comparative Method

| | | | | | | |
|---|---|---|---|---|---|---|
| DEC | % NUC High Density | % Vegetation | % Three Phase Grid | Pluviometry | Consumption - Residential units | NUC Industrial |
| FEC | Equal to the parameters of DEC | | | | | NUC Commercial |




NUC = Number of consumer units

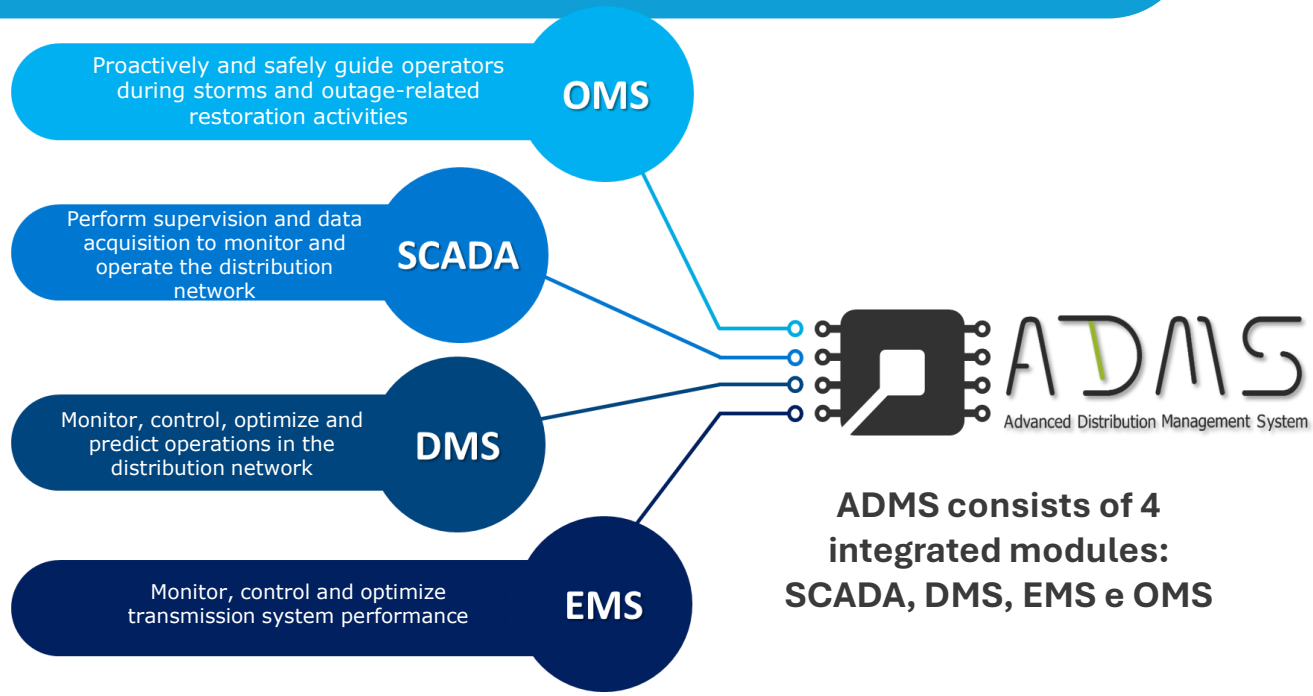
# TECHNICAL AND OPERATIONAL SYSTEMS

# OPERATING SYSTEM - ADMS

**CPFL is the pioneering company in Brazil in implementing this system with a complete package.**

## Main benefits of ADMS

- Increased of digitalization results in improved DEC and FEC
- Unification of procedures and systems (synergy)
- Validation of actions before they are carried out
- Module for the study and optimization of electrical assets
- Ready to support increased automation and smart devices in the field
- More precise location of the problem, less travel and traffic risks




**ADMS consists of 4 integrated modules: SCADA, DMS, EMS e OMS**

# OPERATING SYSTEM - OFS

**Automatic ticket Dispatch System with team routing, priority control and alerts, team visualization and event handling.**

## Main benefits of OFS

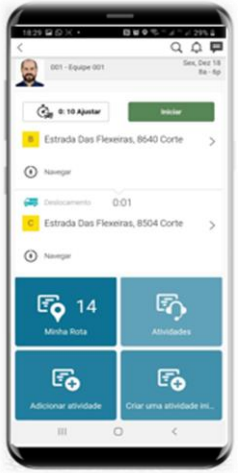
**Time-based**
Each activity is measured in real time for each unique individual, a continuous study of time and motion

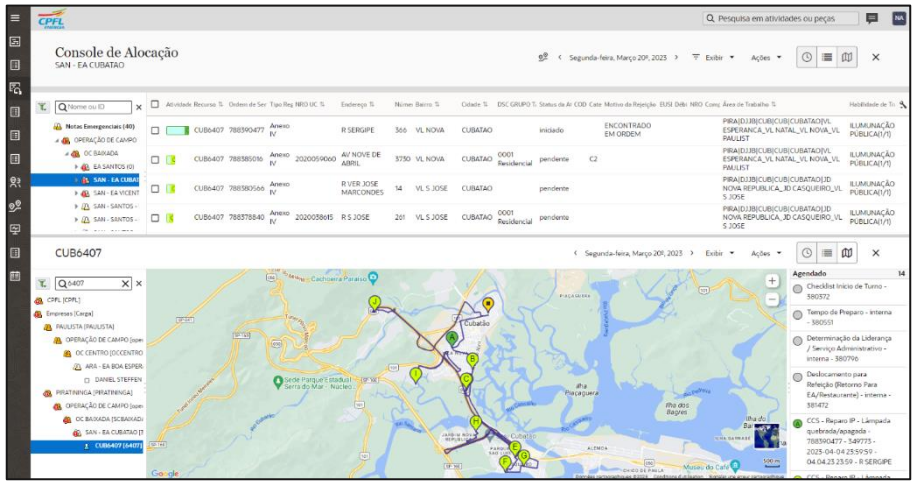
**Self – learning**
The solution learns each employee's historical performance and creates a unique performance pattern profile

**Predictive**
Leveraging unique patterns, the solution delivers 98% accuracy when an employee starts and completes each job

**100% Customizable**
OFS was built and continues to develop, the idea that any type of business can use to achieve its goals

## New system uses AI in Team Dispatch planning and Metrics Prioritization

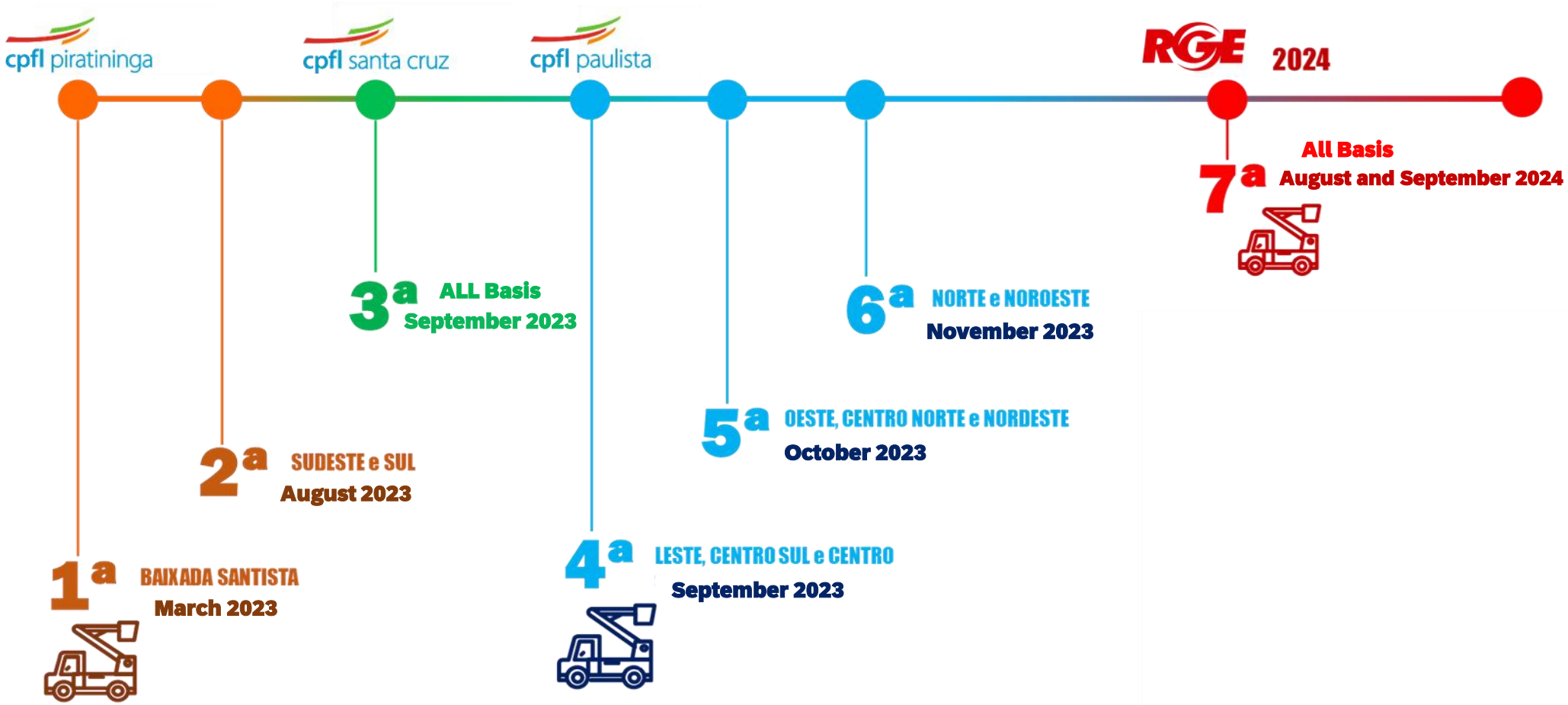



RGE
Uma empresa CPFL Energia

**More than 1.000 antennas purchased, installed in the vehicles of field operation teams**

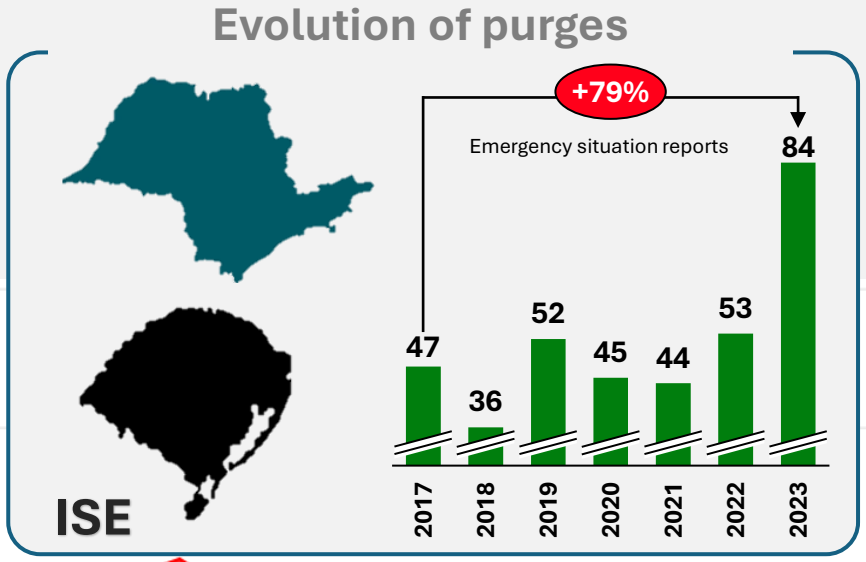

# Timeline- OFS

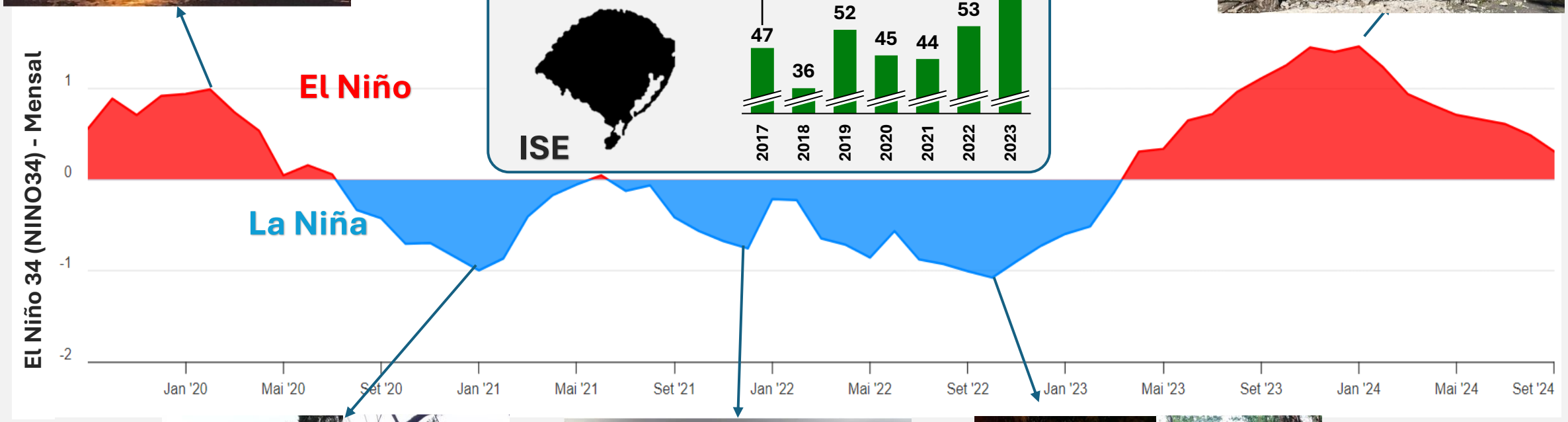


# CLIMATE CHALLENGES

# CLIMATE CHALLENGES – EXTREME WEATHER EVENTS





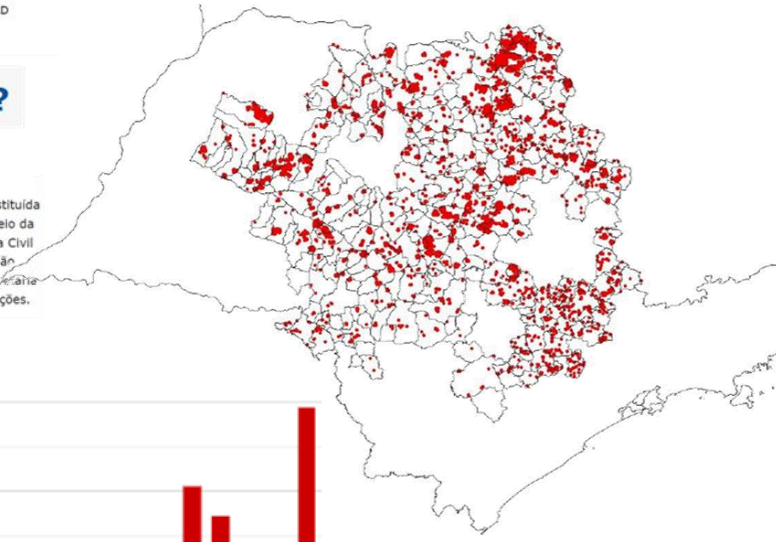



# CLIMATE CHALLENGES – FIRES IN SP

## Mobilization of authorities, including the creation of a crisis committee and Operation "SP No Fire", for monitoring and fighting fires.

### Temperature

Extreme weather conditions, intense heat, low humidity and extreme drought

São Paulo

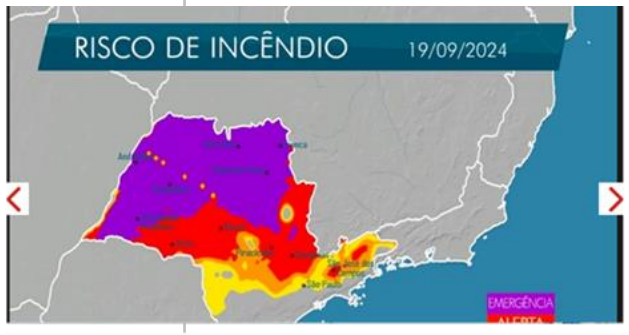
**Interior de SP registra 3 municípios com focos ativos de incêndio**

O estado de São Paulo registra nesta quinta (19/9) três focos ativos de incêndio e 48 municípios seguem em alerta máximo para queimada

Bruno Sales

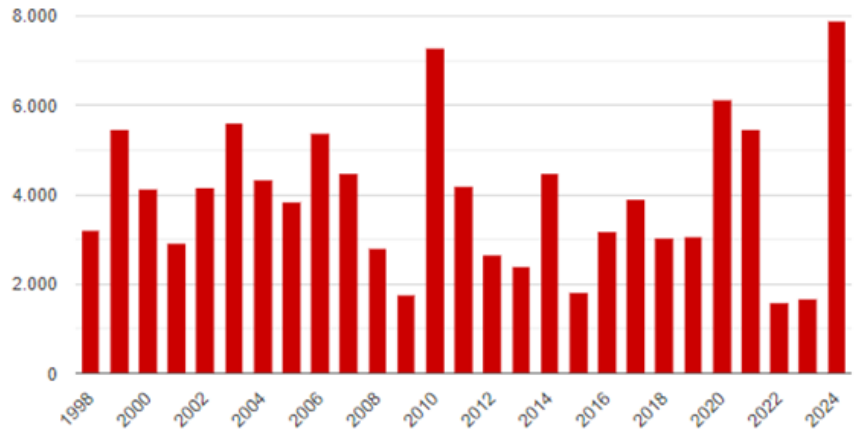
Compartilhar notícia

Google News




**Monitoramento de incêndios do Inpe**

Segundo dados do Inpe, 1.789 focos ativos de incêndio foram registrados em setembro até essa terça no estado de São Paulo, número 4,7 vezes maior que o total de focos registrados em todo o mês de setembro do ano passado, quando 375 focos ativos foram contabilizados.




History of fires in the state of São Paulo since 1998 (INPE)

# CLIMATE CHALLENGES – BIG STORMS

## 13 Big storms in federal state of Rio Grande do Sul in 2023

### JANUARY

**21 a 22**

Peak CI 94k
Events: 1.256


### February

**25 a 26**

Peak CI 86k
Events: 1.417


### March

**29 a 30**

Peak CI: 55 k
Events: 2.344


### June and July

**15 a 18**

Peak CI: 79 k
Events: 2.609

**12 a 14 Jul**

Peak CI: 130 k
Events: 4.124


### September

**03 a 08**

Peak CI: 73 k
Events: 7.539


### October

**03 a 05**

Peak CI: 56 k
Events: 2.370

**16 a 18**

Peak CI: 129 k
Events: 3.855


### November

**11 a 14**

Peak CI: 42 k
Events: 3.296

**17 a 20**

Peak CI: 150 k
Events: 4.125


### December

**15 a 16**

Peak CI: 81 k
Events: 2.264

**18 a 19**

Peak CI: 103k
Events: 2.127

**29 a 30**

Peak CI: 220 k
Events: 2.591


**364 Decree** emergency situation issued in RS em 2023

**10 Cyclones in the Second Semester**

Increased incidence of phenomenons in the concession area with the registration of **10 Cyclones** Extratropical, Floods and recurring storms in the same region.

# CLIMATE CHALLENGES – CRITICAL

## 4 Big storms in federal state of Rio Grande do Sul in 2024

### JANUARY

**14 a 15**

Peak CI 144k
Events: 2.588

**16 a 18**

Peak CI 579k
Events: 8.936


Uma pessoa morre e outras 10 ficam feridas durante temporal em Cachoeirinha, diz Defesa Civil



### February

**21 a 22**

Peak CI 380k
Events: 6.848

Após onda de calor, temporal causa estragos no Rio Grande do Sul

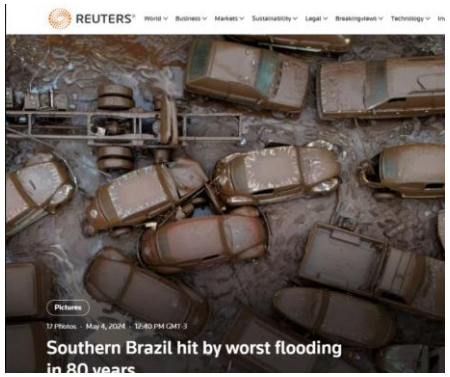
Ventos de mais de 140 km/h causam destruição no RS

### APRIL / MAY

**April 29th a May 5th – Biggest catastrophe in the RS**

**Peak CI: 315 k  Events: 28.073**








## Extreme Weather Events

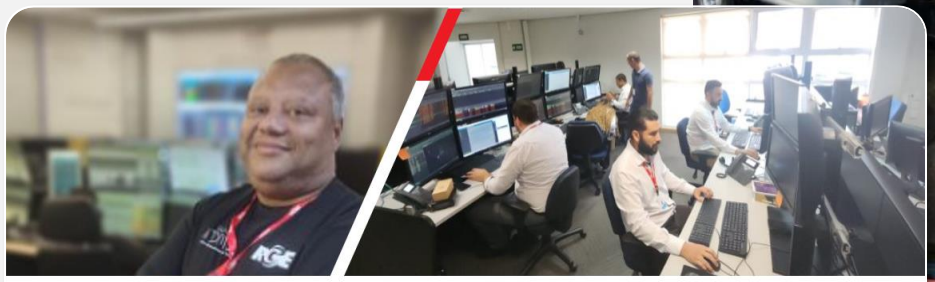
In the first semester of 2024, the Rio Grande do Sul Faced extreme weather events that resulted in one of the biggest climate tragedies in the state's history.

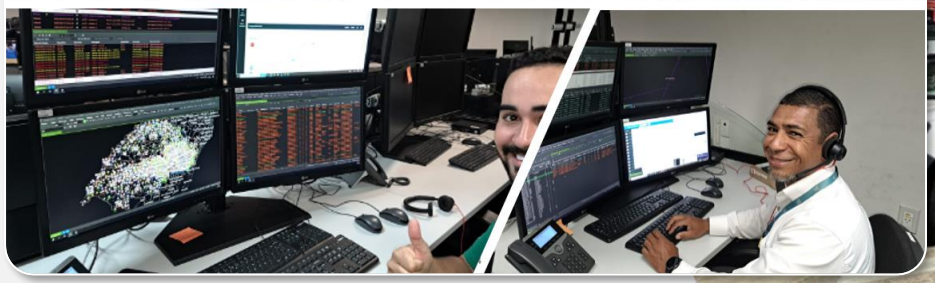
# CLIMATE CHALLENGES – INTEGRATION BETWEEN DISTRIBUTION COMPANIES

## Mobilization of all Group CPFL ENERGIA

cpfl paulista  cpfl piratininga  cpfl santa cruz

**SP operational Center working together with SOUTH Team to serve the events**





# CLIMATE CHALLENGES – CRITICAL

**Working together with other companies** CEMIG Celesc PPG

**Working together with the Brazilian Army**

**Helicopter support to fly over and map the affected areas, in addition with drones for inspection in difficult-to-access areas.**

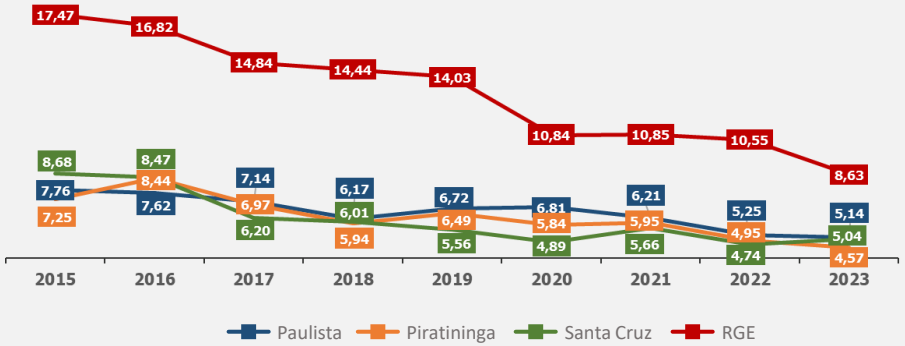
São Leopoldo-RS

CPFL ENERGIA

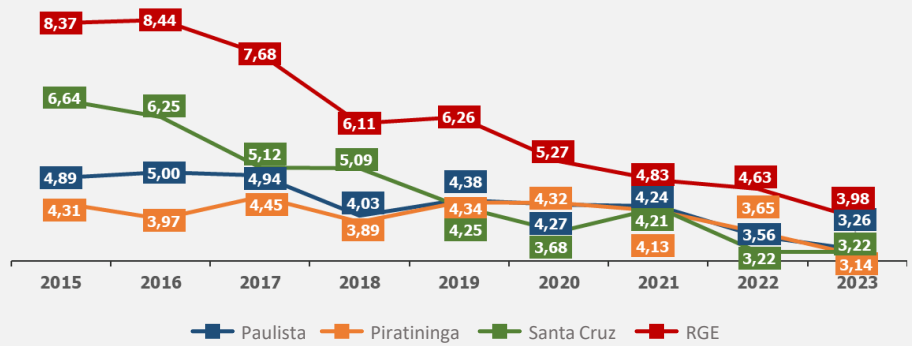
# RESULTS AND AWARDS

# INDICATORS – DEC E FEC

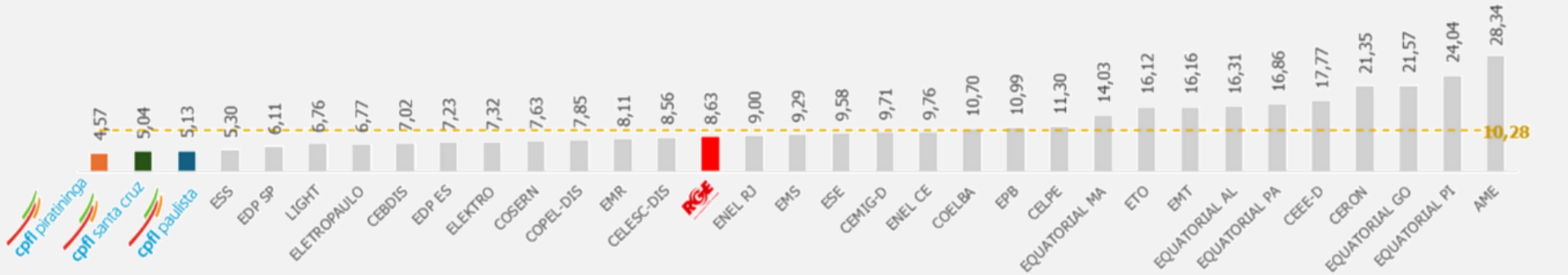
## HISTORICAL DEC ANEEL



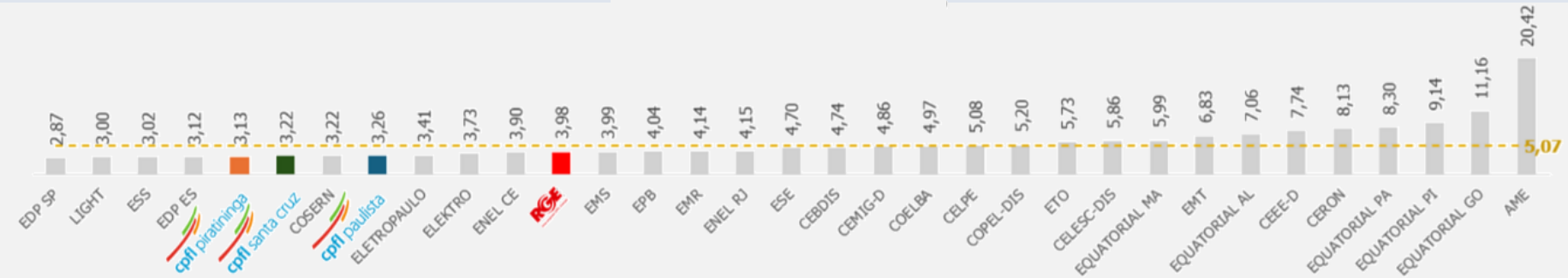

## HISTORICAL FEC ANEEL




## RANKING DEC




## RANKING FEC




ANEEL
AGÊNCIA NACIONAL DE ENERGIA ELÉTRICA

2023

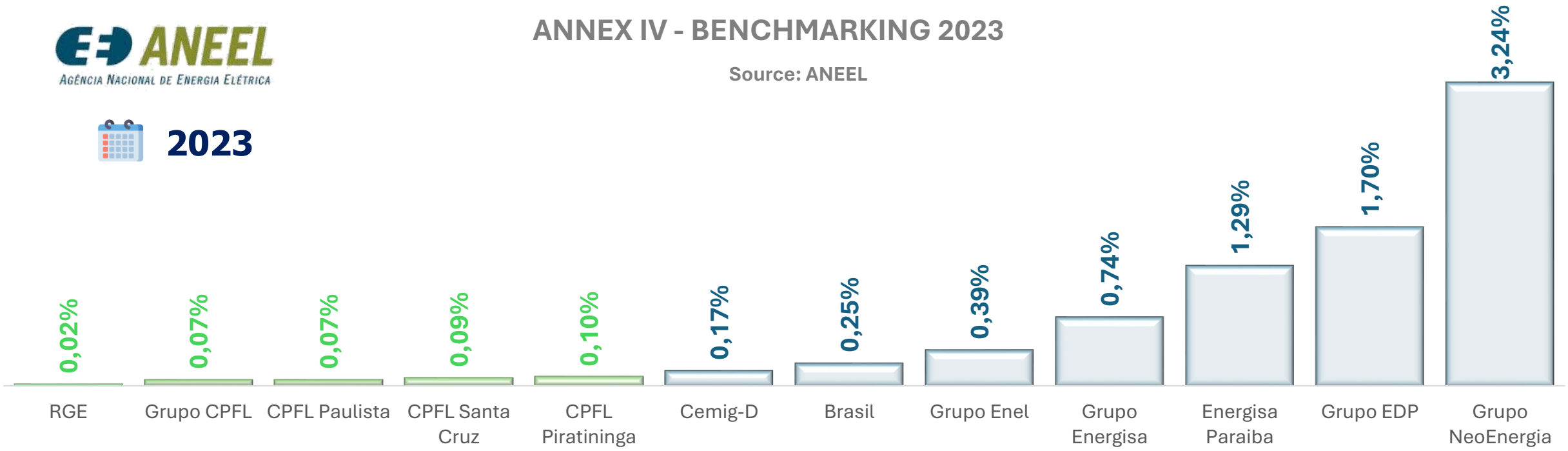
CPFL ENERGIA

# INDICATORS – ANNEX IV – COMMERCIAL DEADLINES

Monitoring the performance of distributors in relation to complaints received.
CPFL Group distributors are **national benchmarks** in commercial service, achieving rates of over 99.9% for **deadlines services**!!!

ANEEL
AGÊNCIA NACIONAL DE ENERGIA ELÉTRICA

**2023**



# Awards 2024

**ABRADEE Awards**

**Companies with more than 500 thousand consumers:**

Health and Safety (honorable mention)
- ✓ 3rd place CPFL Santa Cruz

ESG (Environment, Social and Governance)
- ✓ 1st place CPFL Paulista | 2nd place CPFL Piratininga | 3rd place CPFL Santa Cruz

Quality of management: 3rd place CPFL Santa Cruz

Customer evaluation: 1st place CPFL Santa Cruz

Operational Management:
- ✓ 2nd place CPFL Piratininga | 3rd place CPFL Santa Cruz

Performance Evolution:
- ✓ 2nd place CPFL Paulista | 3rd place RGE
- ✓ Southeast:
- ✓ 1st place CPFL Santa Cruz | 2nd place CPFL Paulista | 3rd place CPFL Piratininga
- ✓ South: – 1st place RGE

National:
- ✓ 1st place CPFL Santa Cruz | 2nd place CPFL Paulista

## Talk to IR

ri@cpfl.com.br

# Thank You!