

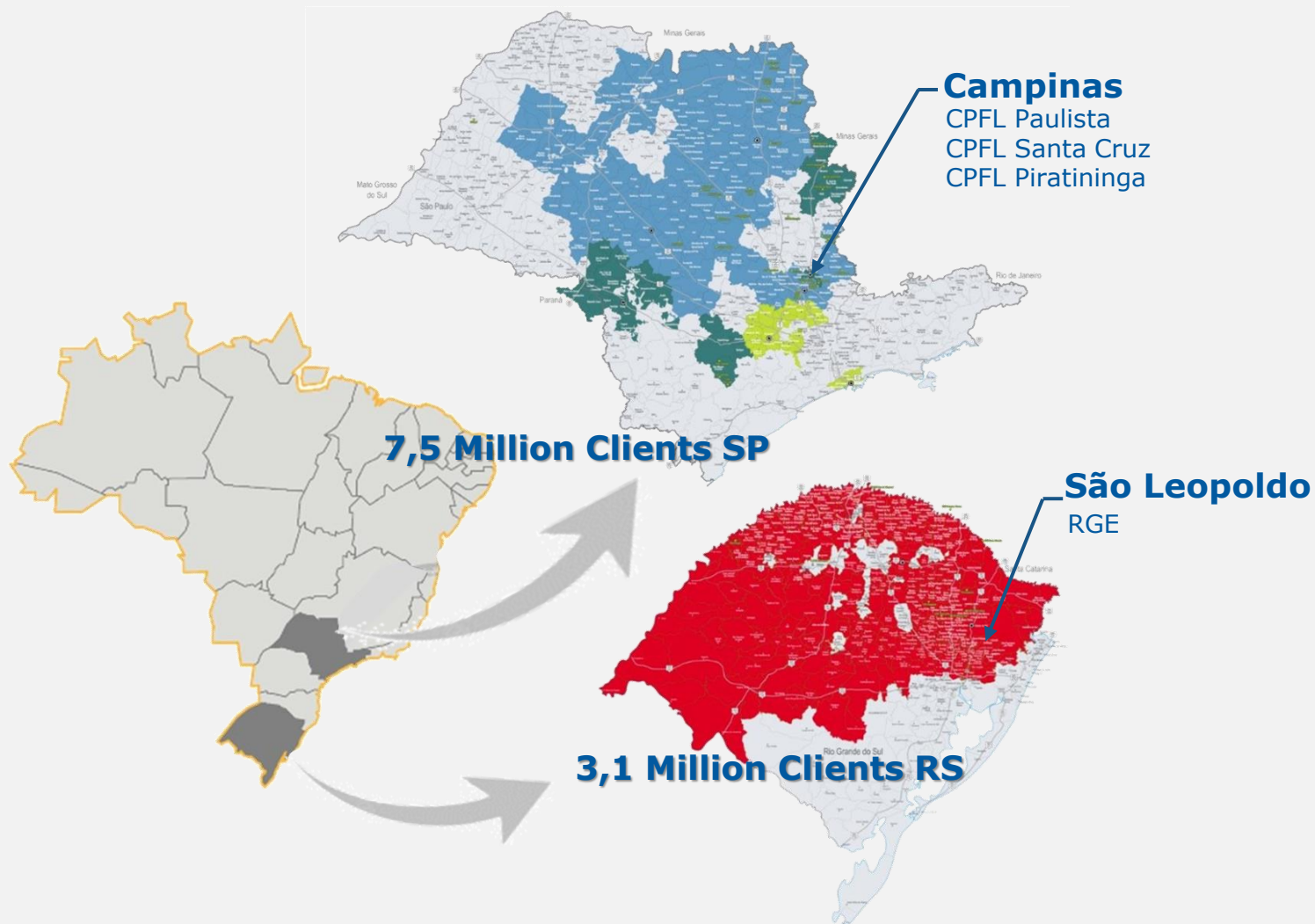
Investor Education

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

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)

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

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

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

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



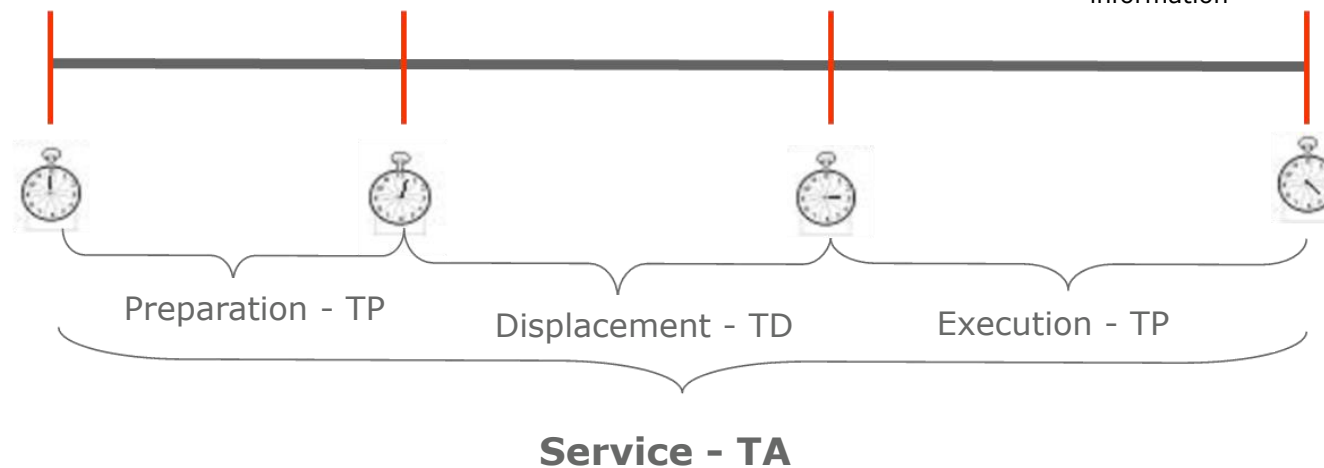
Time at which the operations center allocates Crew to respond to incidents



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



$$\text{TMAE} = \text{TMP} + \text{TMD} + \text{TME}$$

Where:

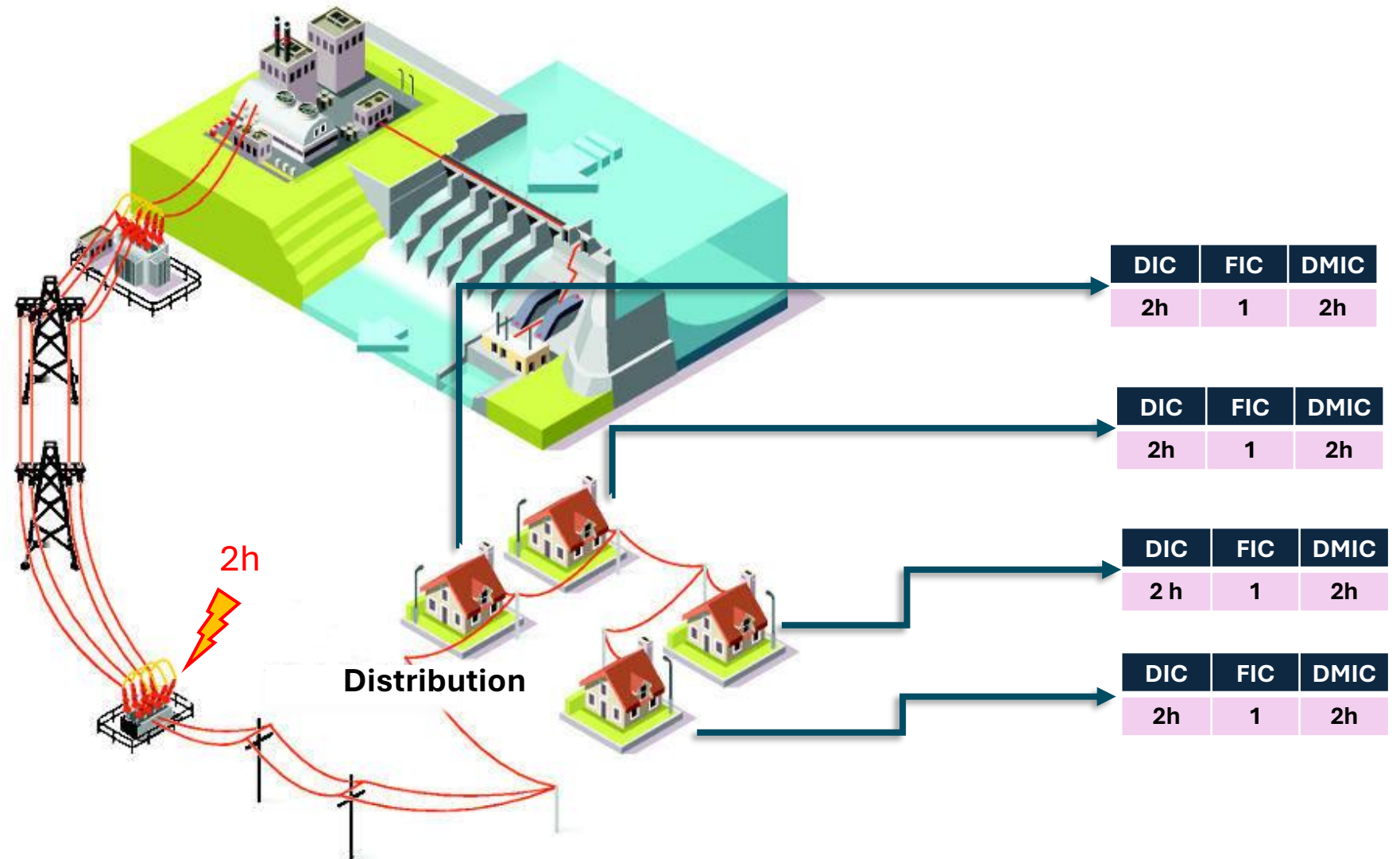
TMAE: Average Emergency Service Time

TMP: Average Preparation Time

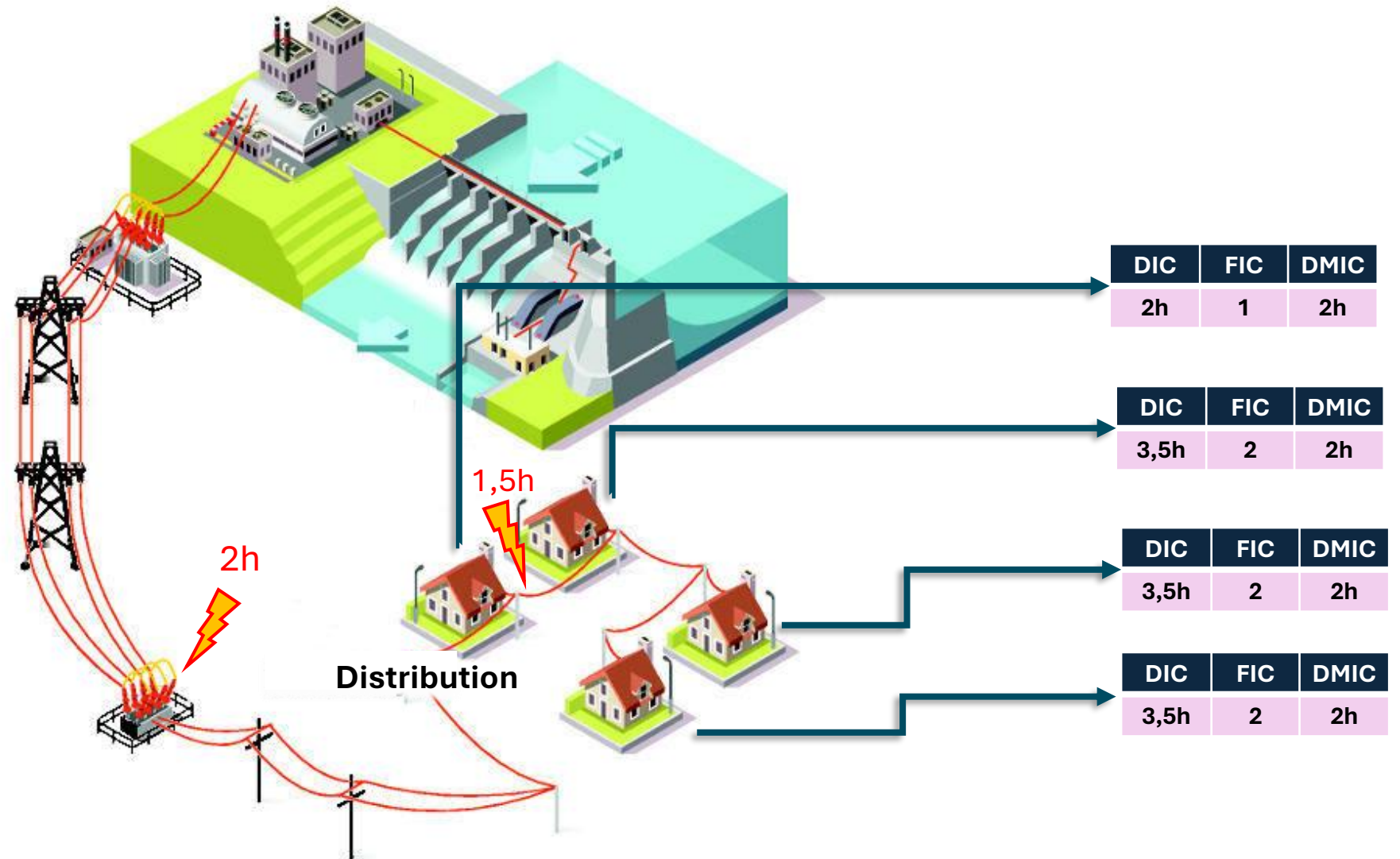
TMD: Average displacement time

TME: Average time of execution

Calculation of indicators



Calculation of indicators



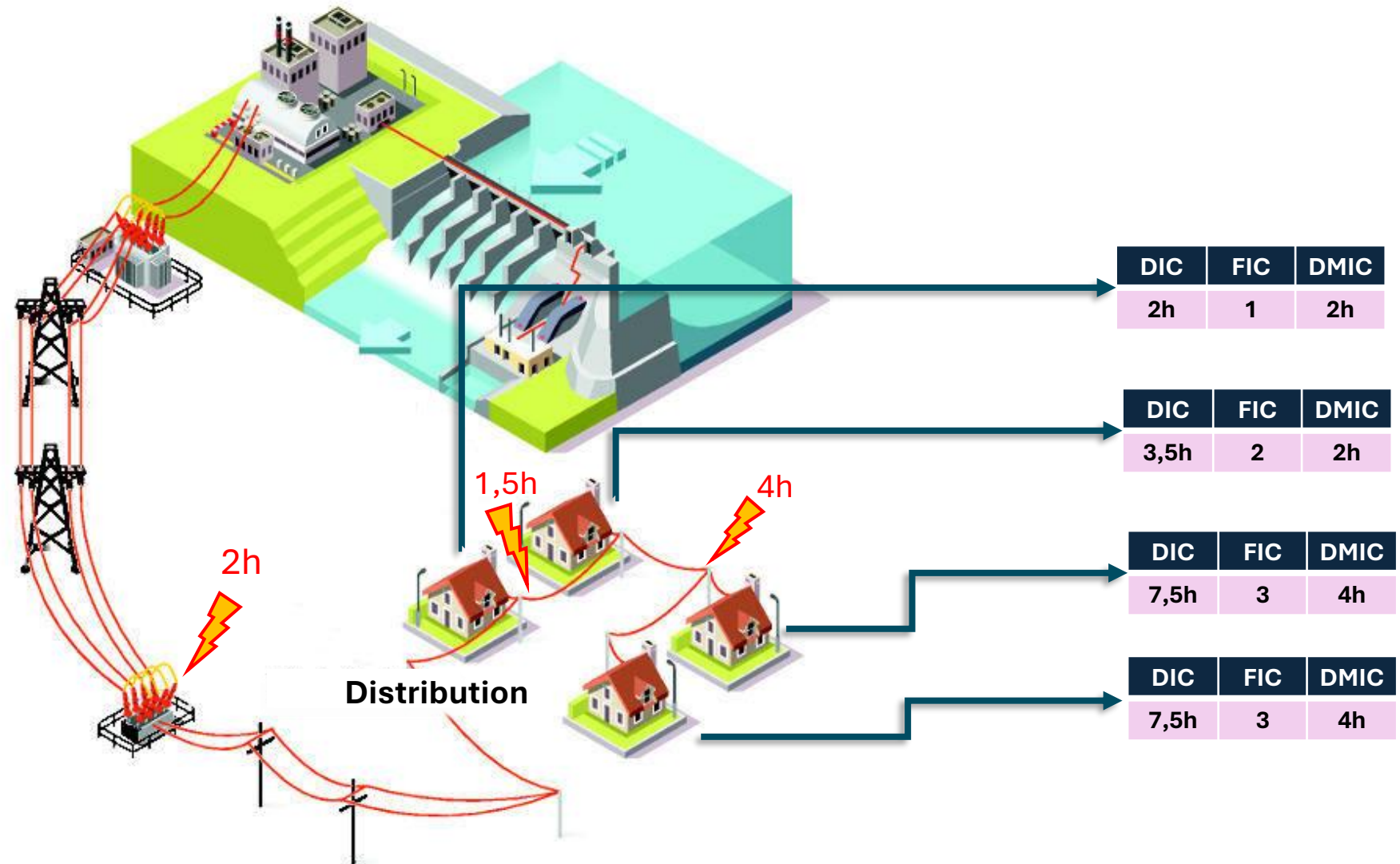
Calculation of indicators

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

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

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

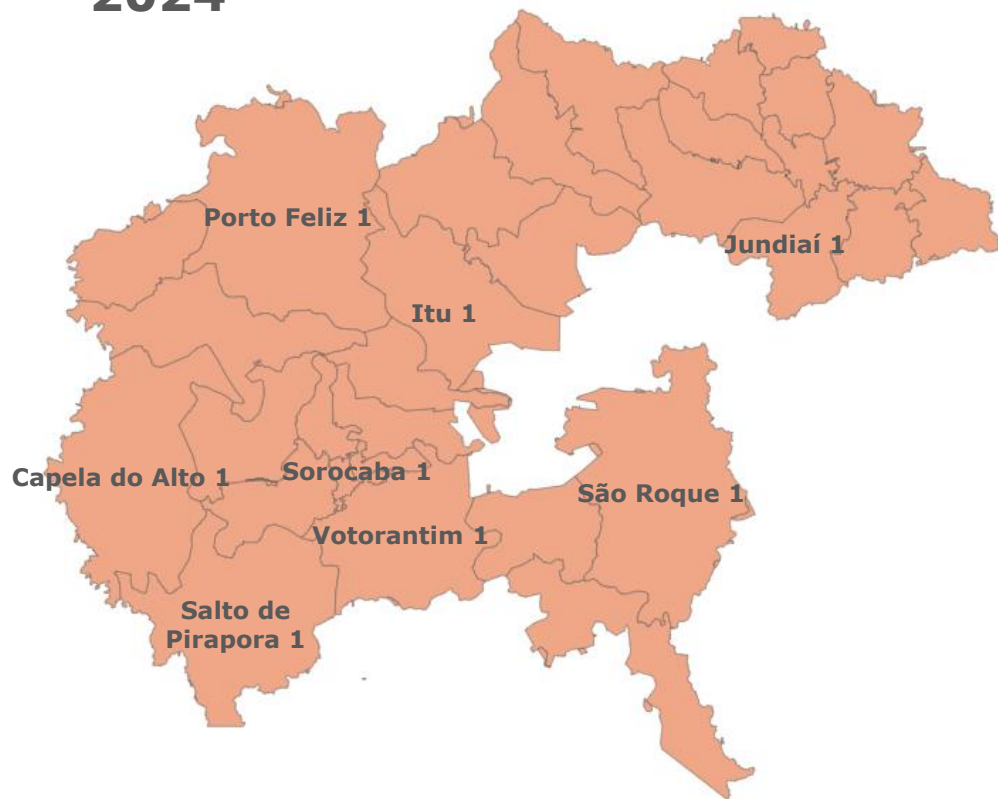
$$FEC = \frac{1+2+3+3}{4} = 2,25int.$$



ELECTRICAL SETs

FORMATION OF ELECTRICAL SET

2024



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

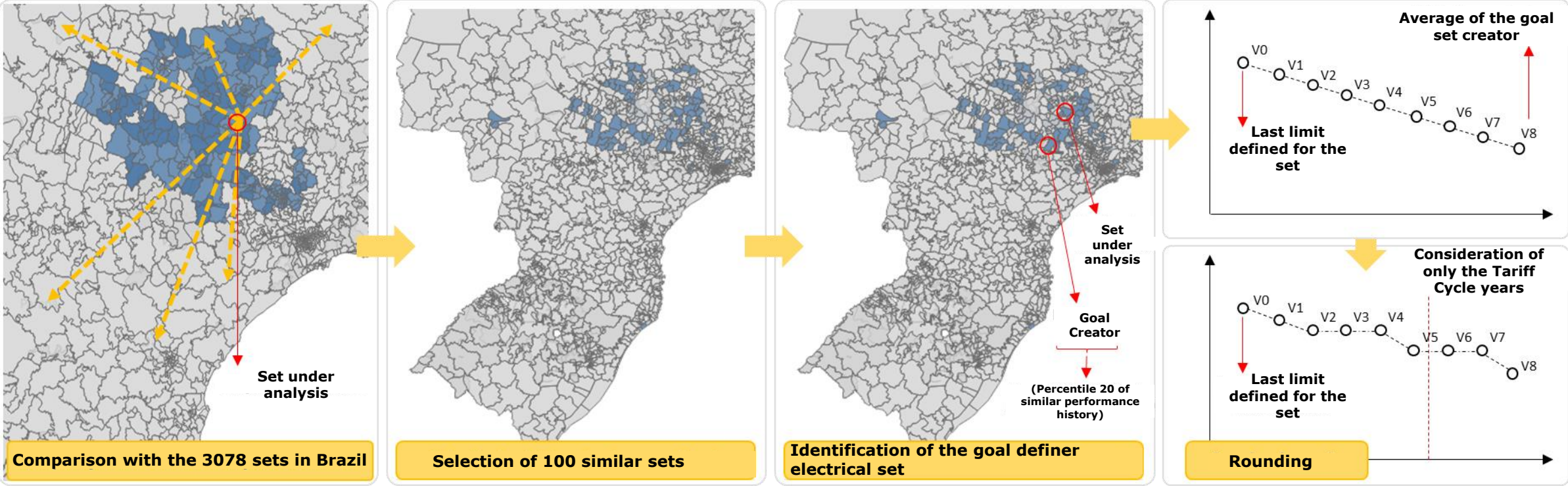
Where:

SED = Substation of Distribution

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



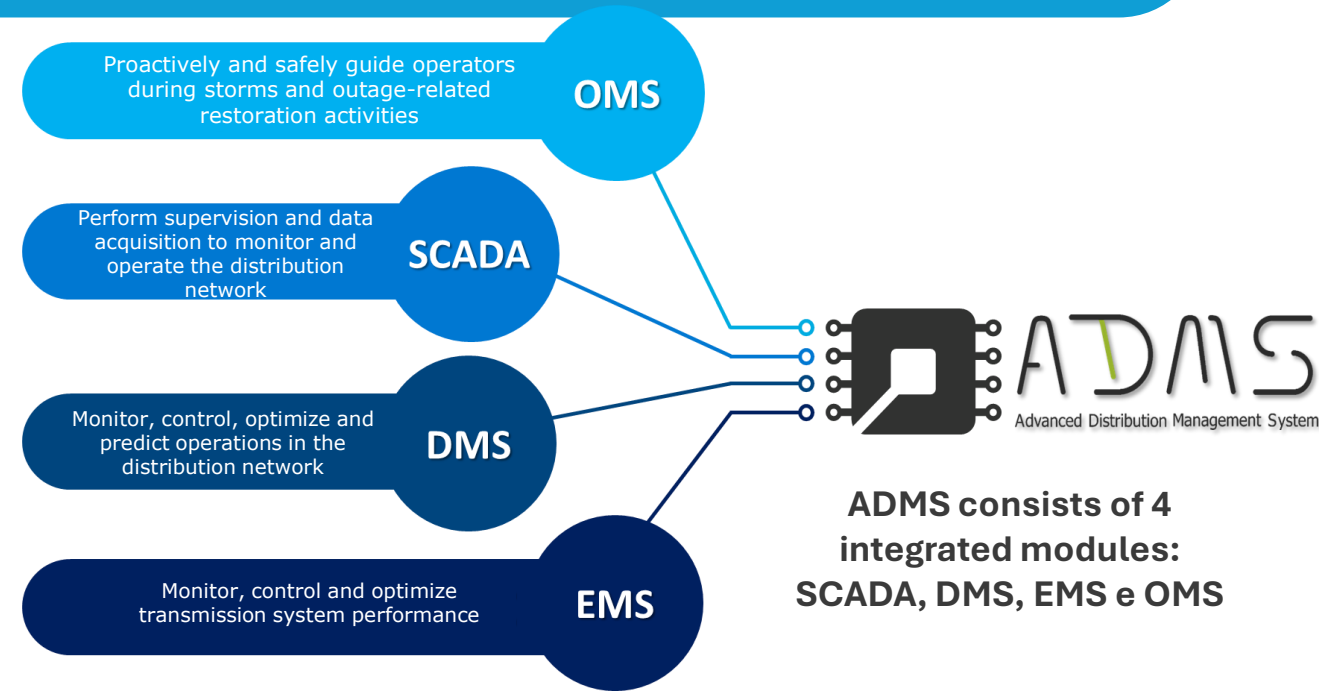
Module for the study and optimization of electrical assets



Ready to support increased automation and smart devices in the field



More precise location of the problem, less travel and traffic risks



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

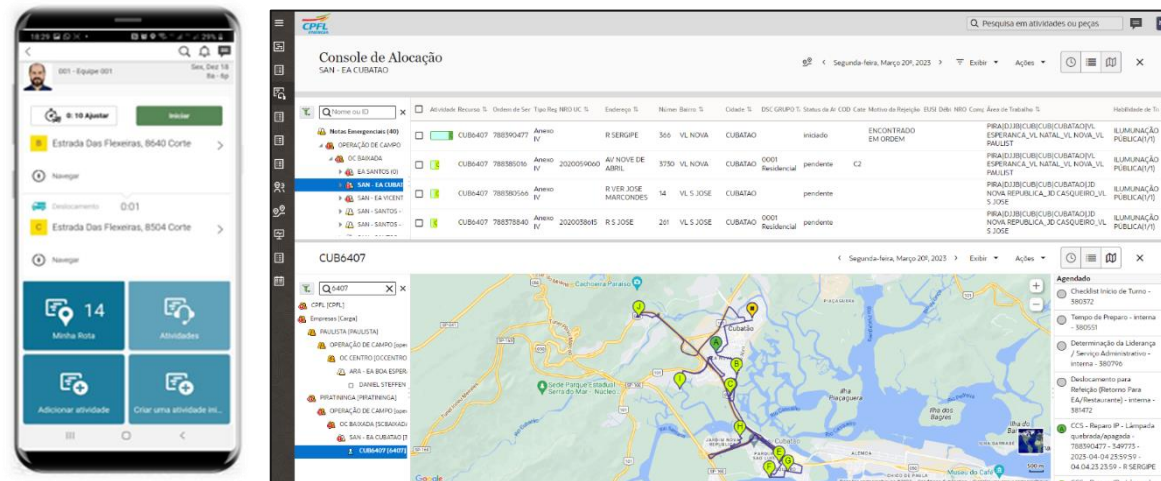


100% Customizable

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



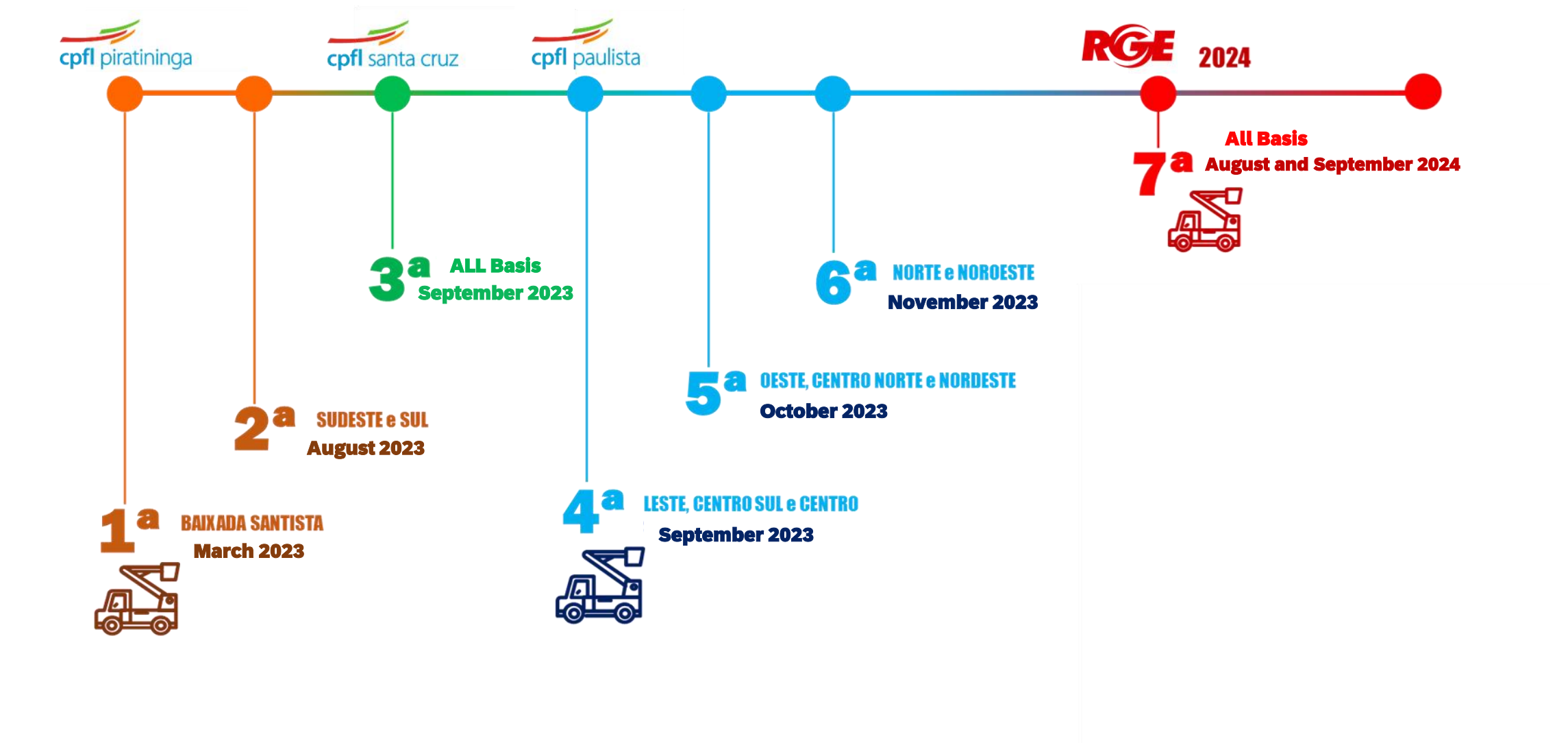
New system uses AI in Team Dispatch planning and Metrics Prioritization



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

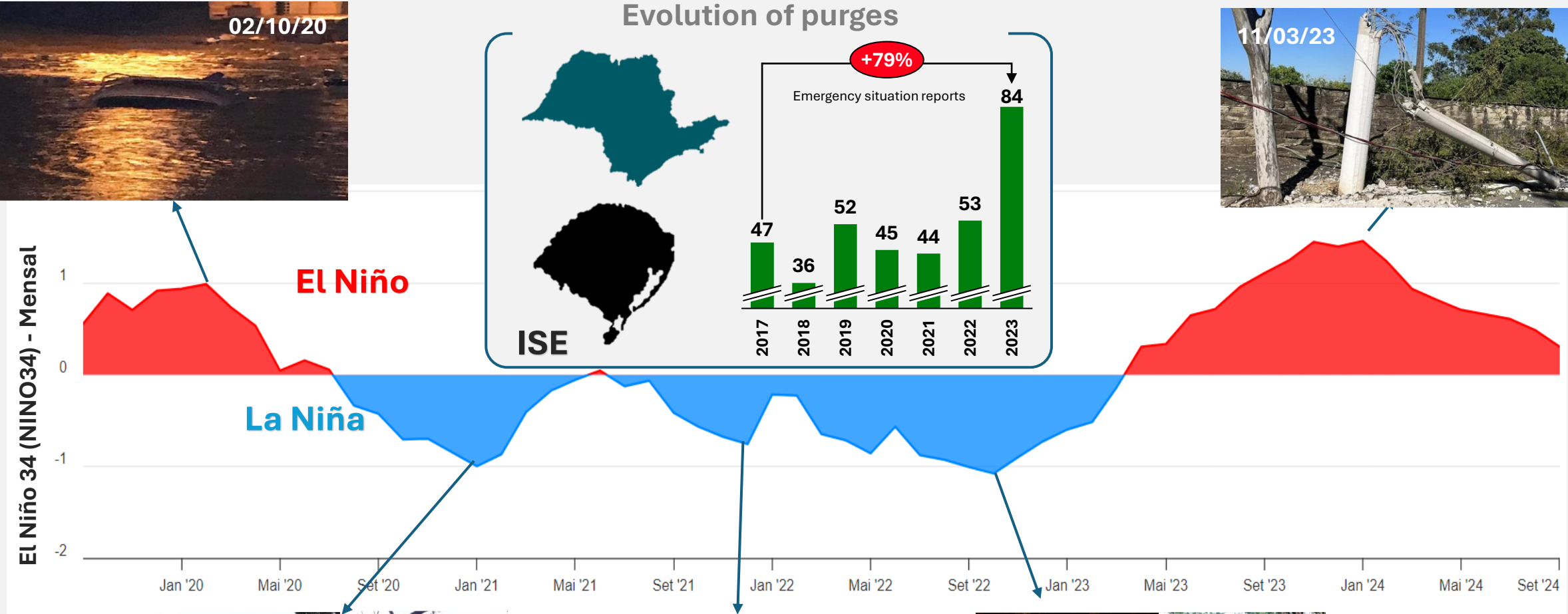


Timeline- OFS




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
GOVERNO DO ESTADO
SÃO PAULO SÃO 10901

Portal de Educação Ambiental

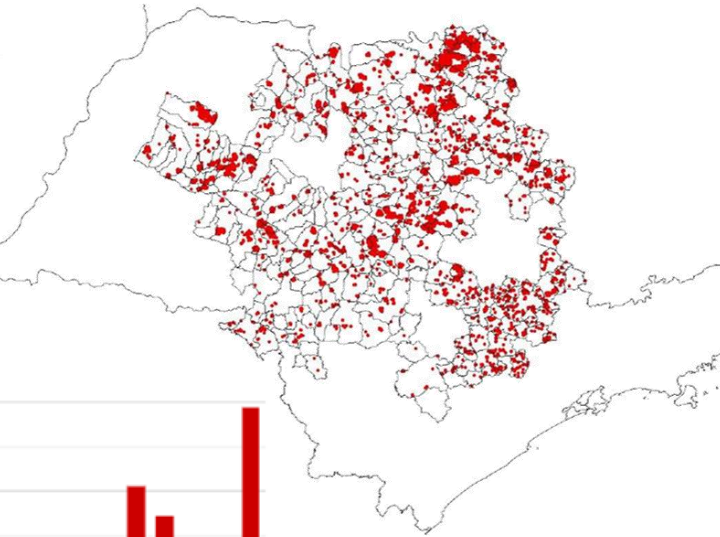
Início Conheça o Portal Políticas de Meio Ambiente Vida Sustentável Participe! Onde Tem EA? Prateleira Ambiental EAD

Dicionário Ambiental Ei, Professores! Agenda Faça parte

VOCÊ CONHECE A OPERAÇÃO SÃO PAULO SEM FOGO?



A **Operação São Paulo Sem Fogo** tem como principal objetivo prevenir e combater incêndios florestais e queimadas em grandes áreas verdes próximas a regiões rurais e urbanas. Ela é constituída pelos seguintes órgãos: Secretaria de Meio Ambiente, Infraestrutura e Logística (SEMIL), por meio da Coordenadoria de Fiscalização e Biodiversidade – CFB; Secretaria de Segurança Pública e Defesa Civil do Estado; Corpo de Bombeiros; Polícia Militar Ambiental; Companhia Ambiental do Estado de São Paulo (CETESB); DER (Departamento de Estradas de Rodagem); Fundação Florestal (FF); e Secretaria de Agricultura e Abastecimento (SAA). Um Comitê Executivo realiza a articulação dessas instituições.



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 quimada

Bruna Sales
18/09/2024 09:31, atualizado 19/09/2024 13:28

Compartilhe notícia

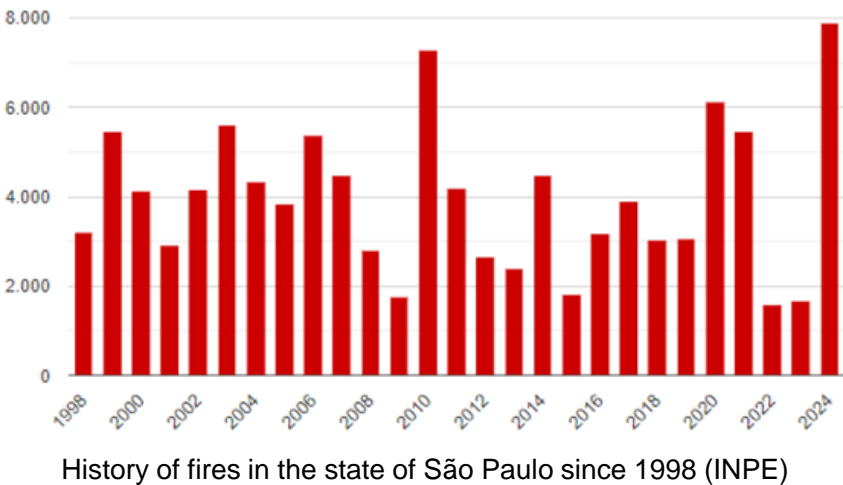


RISCO DE INCÊNDIO 19/09/2024



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.



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

Temporal provoca estragos em Teutônia e Lajeado; parte de cobertura de prédio foi levada pelo vento

Veículo foi registrado no final da tarde desta sexta-feira (21) em Teutônia, a água da chuva inundou salas de aula de três escolas municipais. Houve desabamento de casas.



Temporal causa queda de árvores, destelhamentos e danifica escola recém inaugurada no Vale do Taquari



February

25 a 26

Peak CI 86k
Events: 1.417

Temporal deixa estragos e bloqueia ligação entre Ivoti e Estância Velha

Professores de Estância Velha orientam motoristas a utilizarem a BR-116 (2 de fevereiro, 2023 às 19h)



Temporal derruba parede do Sindicato para cima da garagem dos Bombeiros de Bom Princípio

Fernando Jatto (22 de fevereiro, 2023 às 19h)



March

29 a 30

Peak CI: 55 k
Events: 2.344

Temporal deixa estragos em Júlio de Castilhos e indígenas são abrigados em ginásio

Segundo a Defesa Civil do município, pelo menos 30 casas ficaram destruídas na cidade



Temporal atinge o RS e deixa milhares sem luz



June and July

15 a 18

Peak CI: 79 k
Events: 2.609

12 a 14 Jul
Peak CI: 130 k
Events: 4.124

Ciclone no RS: temporais causam alagamentos, bloqueio de estradas, cancelamento de voos e falta de luz

Rajadas de vento atingiram 100 km/h. Há mortos e desaparecidos. Em algumas cidades, choveu pelo menos 200 milímetros em 24 horas. Há pelo menos 400 mil pontos sem energia elétrica. Alguns invadiram casas, hospitais e universidades

Por g1 e RBS TV (15/06/2023 08h16) - Atualizado há um mês



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Por g1 e RBS TV (16/06/2023 08h16) - Atualizado há um mês



September

03 a 08

Peak CI: 73 k
Events: 7.539

Temporal no RS: ponte de ferro é destruída por correnteza de rio na região da Serra; VÍDEO

Investigação na década de 30 durante o governo de Getúlio Vargas, ponte foi construída a 22 metros de altura, no meio do rio

Por g1 e RBS TV (03/09/2023 08h16) - Atualizado há um mês



Temporais no RS: Estado registrou quase 400 mil raios em um dia

Defesa Civil do Rio Grande do Sul está combatendo estragos nos municípios mais afetados

Por Gleda Rangel - São Paulo (03/09/2023 08h16) - Atualizado há um mês



October

03 a 05

Peak CI: 56 k
Events: 2.370

16 a 18

Peak CI: 129 k
Events: 3.855

Municípios gaúchos registram temporal de granizo nesta terça-feira

Em São Nicolau, Defesa Civil municipal estima pelo menos seis imóveis atingidos

Por g1 e RBS TV (16/10/2023 08h16) - Atualizado há um mês



Ciclone: chuva supera média prevista para todo o mês de outubro no RS e em SC

Uma área próxima de 500 km² sofreu fortes chuvas e ventos fortes, depois de uma seca prolongada

Por g1 e RBS TV (16/10/2023 08h16) - Atualizado há um mês



November

11 a 14

Peak CI: 42 k
Events: 3.296

17 a 20

Peak CI: 150 k
Events: 4.125

Vale do Taquari se prepara para o pior e prefeitos alertam moradores

Devido à previsão de chuva forte, os moradores devem se preparar para possíveis alagamentos

Por g1 e RBS TV (17/11/2023 08h16) - Atualizado há um mês



Grande volume de chuvas e enchentes causam diversos problemas em Bento Gonçalves

Desde a noite de sexta-feira (17), equipes trabalham para solucionar os problemas causados pela forte chuva e auxiliar os moradores afetados. Confira alguns dos impactos no município

Por g1 e RBS TV (18/11/2023 08h16) - Atualizado há um mês



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



TEMPORAL PROVOCA ESTRAGOS, CAUSA MORTE E DEIXA 37 MIL CLIENTES SEM LUZ NO RS

Devido à previsão de chuva forte, os moradores devem se preparar para possíveis alagamentos

Por g1 e RBS TV (15/12/2023 08h16) - Atualizado há um mês

Temporal causa queda de árvores e de postes em Santa Rosa

Três pontos da cidade estão sem luz, muita ventania



364 Decree emergency situation issued in RS em 2023



10 Cyclones in the Second Semester

Increased incidence of phenomena 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

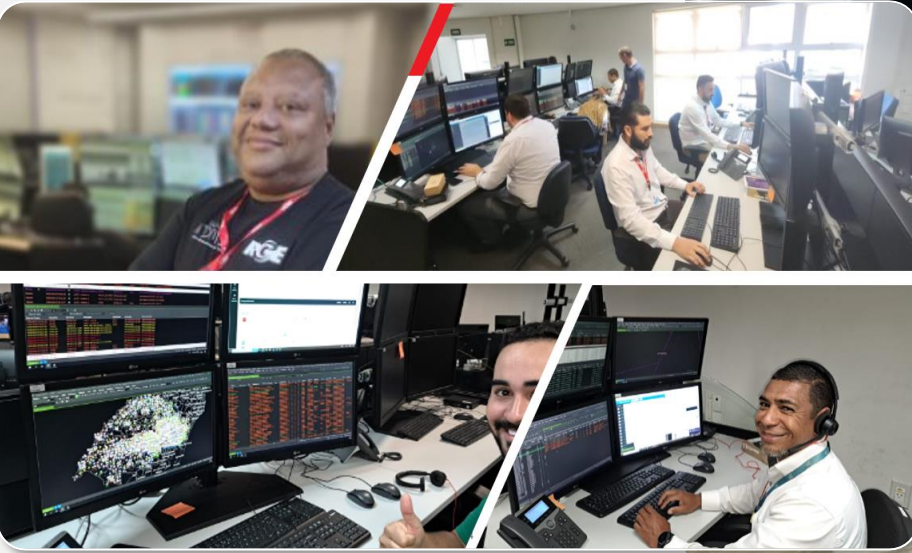
In the first semester of 2024, the Rio Grande do Sul Faced extreme weather events that resulted in one of the biggest climate tragedies in the state's history.

CLIMATE CHALLENGES – INTEGRATION BETWEEN DISTRIBUTION COMPANIES

Mobilization of all Group CPFL ENERGIA



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



CLIMATE CHALLENGES – CRITICAL

Working together with other companies   Celesc 



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.



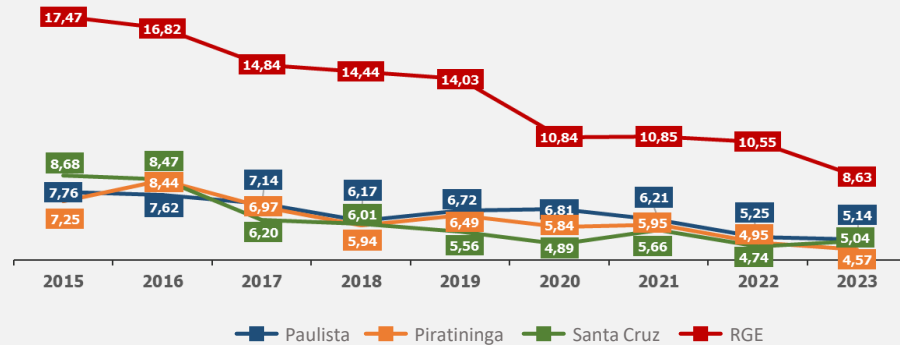
São Leopoldo-RS



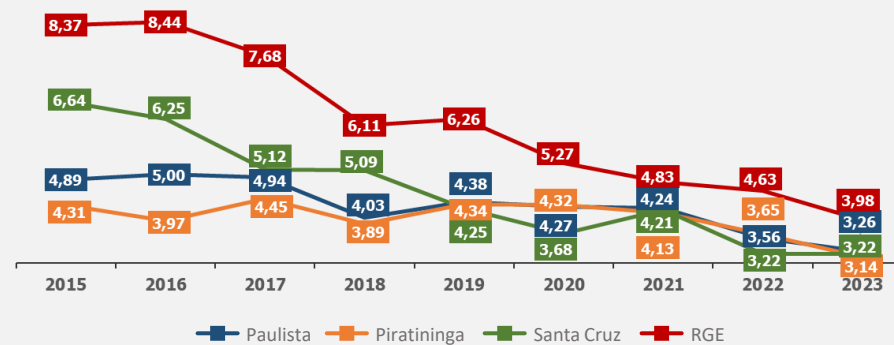
RESULTS AND AWARDS

INDICATORS – DEC E FEC

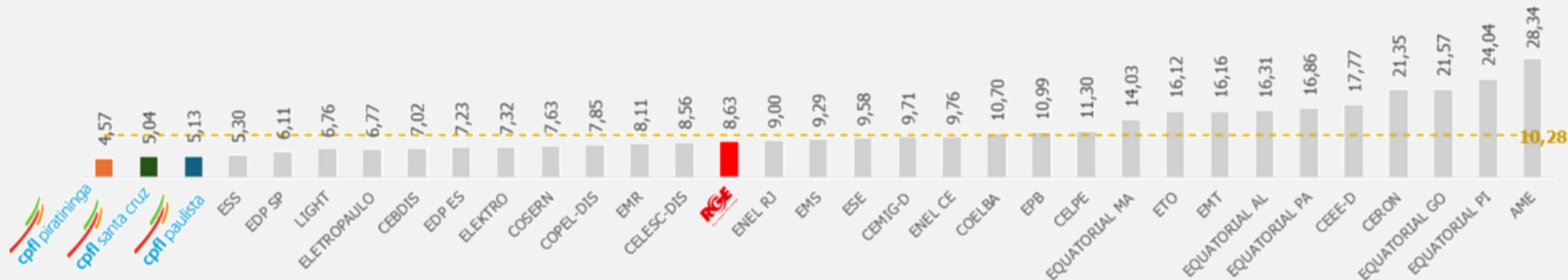
HISTORICAL DEC ANEEL



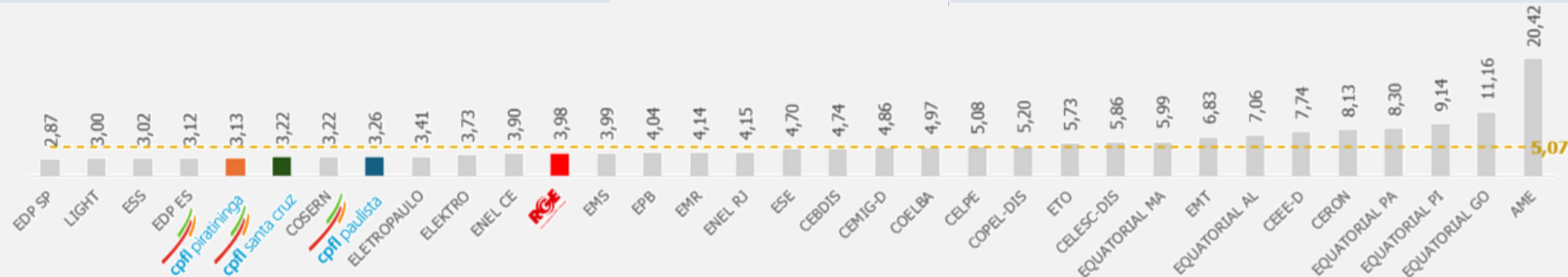
HISTORICAL FEC ANEEL



RANKING DEC

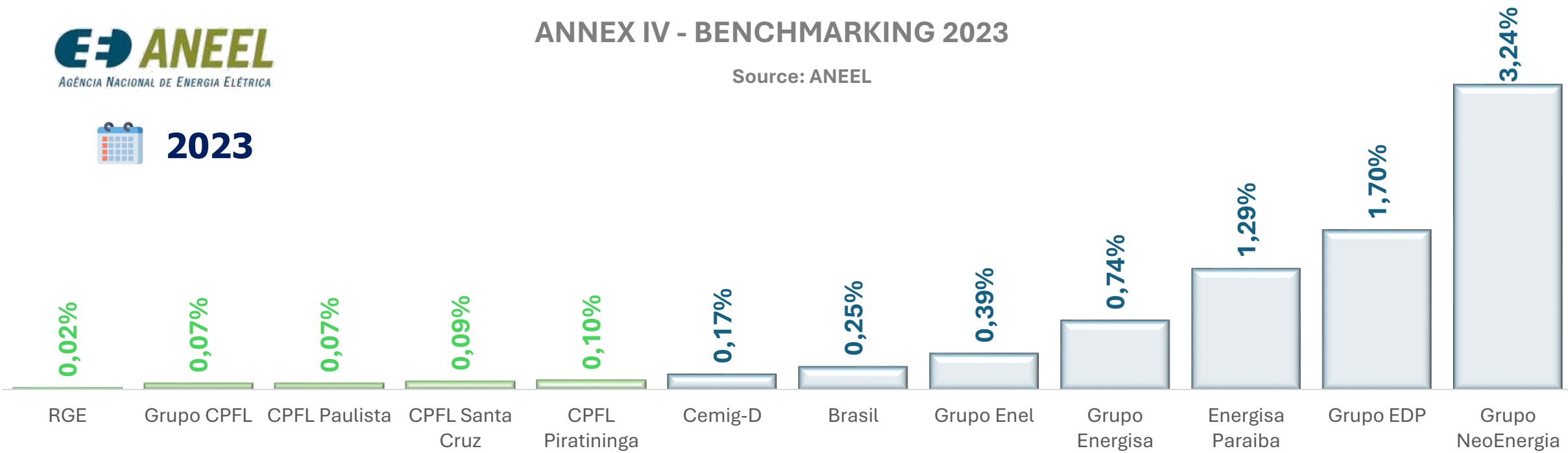


RANKING FEC



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!!!**



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

Investor Education

Distribution Quality Indicators

Thank You!

