The future of distributed energy in the UK and Brazil

GREAT for PARTNERSHIP
BRITAIN & NORTHERN IRELAND

UK & Brazil: Partners in Energy
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Counselor

Brazilian Association of Distributed Generation

Association of companies and entrepreneurs working on the Distributed Generation (DG) market based on renewable energy sources (solar photovoltaic, SHP, wind, biomass, biogas, etc).

Founded in 2015; currently with more than 900 member

- Solution providers
- EPC's
- Integrators
- Installers
- Distributors
- Manufacturers
- Consultants
- Energy traders,
- Investors
- Entrepreneurs,
- others.

Specialized services for members

- Legal and Tax Advice
- Public bidding documents
- Networking
- Access to regulatory agencies and government agencies

- Certification of Professionals: Installers (SENAI) and Engiennerig
- Discounts on Training
- Offices throughout Brazil
- Technical discussion groups
- Technical courses on GD

Institutional relationship

Actions and coordination with government agents at the Federal, State and Municipal levels (executive, legislative and judiciary)

- MME
- ANEEL
- CCEE
- MMA
- ABGD
- EPE
- Parliament
- Senate
- CADE
- Public Ministry
- CVM

ABGD

Associação Brasileira de Geração Distribuída

www.abgd.com.br

https://www.linkedin.com/company/abgd/

@abgd_oficial

Other Social Midias

Phases of DG in Brazil

GD 1.0

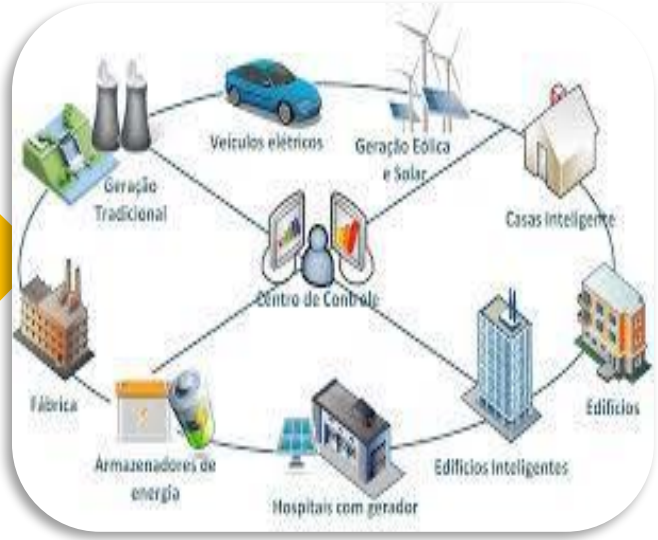
- Article 14 of Decree Law No. 5.163 of 2004.

GD 2.0

- REN 482/2012
  Micro and mini-generation Energy Compensation

GD 3.0

- REN 687/2015
  Use of any renewable energy source
  36 to 60 months
  remote self-consumption
  shared generation



GD 4.0

- Legal and regulatory stability
  Prosumidor is the center

Distributed Generation (DG)

Defined by ANEEL's Normative Resolution (**RN 482/2012)**, which established the conditions for **micro (< 75 kW)** and **mini (< 5 MW*)** power generation to access the electricity distribution network, allowing consumer to generate their own energy and compensate it in a energy net metering scheme.

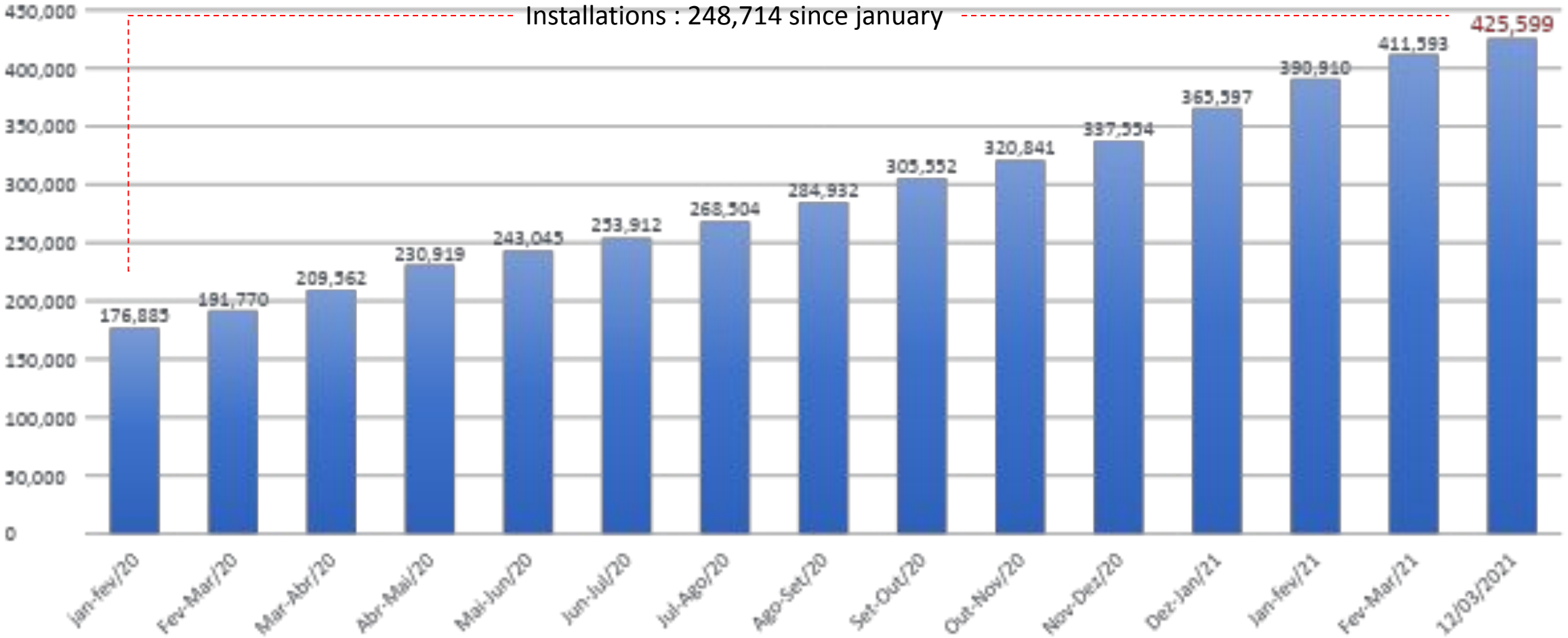
* Hydro < 3 MW

Benefits of GD

The benefits of GD for the electrical system are widely known without dispute:

- **Alleviate the energy demand** from national grid and helps **saving water from hydroelectric reservoirs**
- **Reduce the use of thermal power plants**, which are more **expensive and polluting**
- **Eliminates and/or postpones investments in transmission grids** as well as in new centralized generation power plants
- **Reduces maintenance costs**, reduces **electrical losses** from transmission and distribution grids, **improves security** of supply and operation of the energy system, therefore **reducing the price of energy for everyone**.

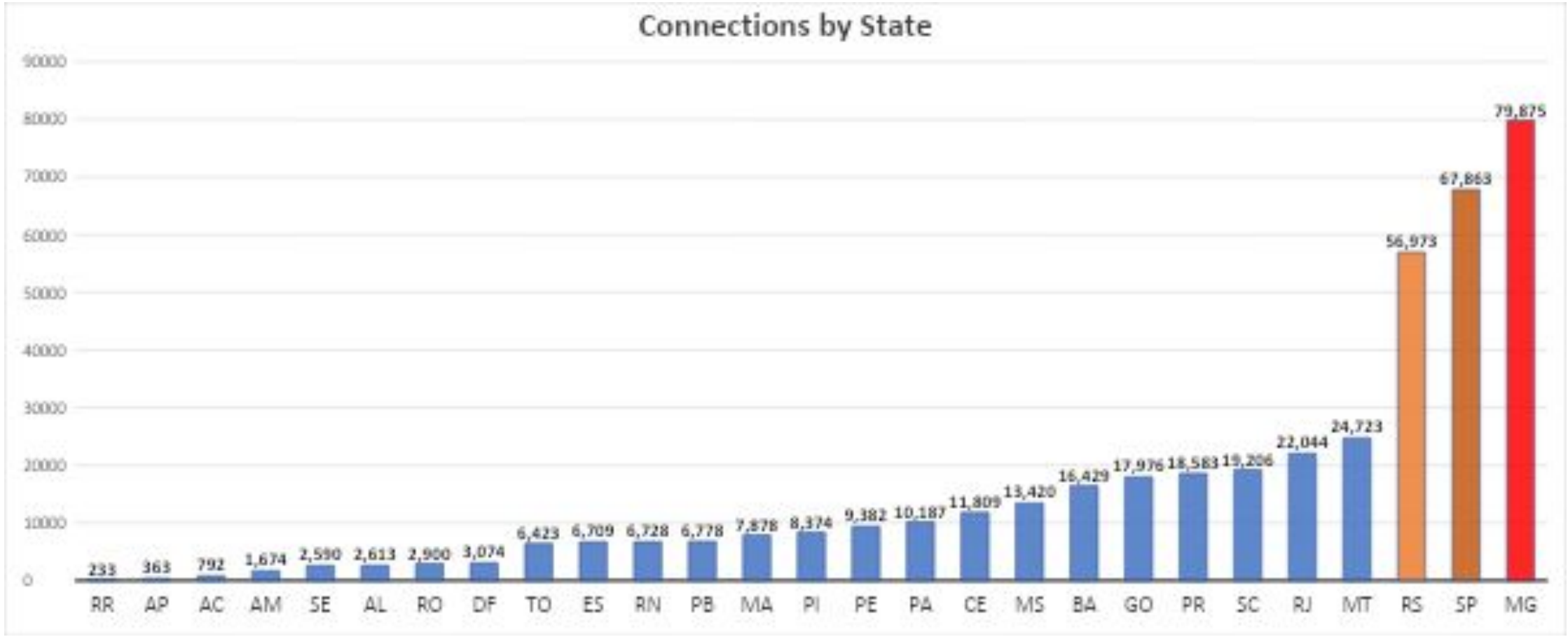
Cumulative Installations



Source: ANEEL 2021– compiled by ABGD

Total Power: 5.174.761,63 kW (units : 541.749)

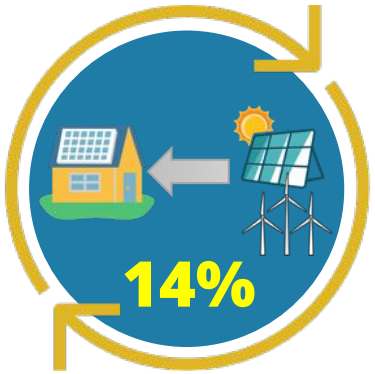
Installation per state



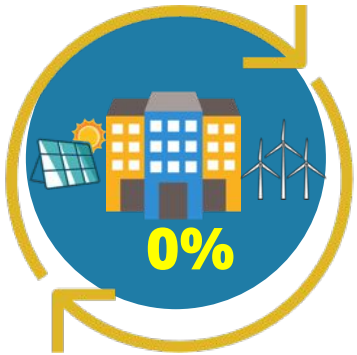
Source: ANEEL 2021– compiled by ABGD

Installation per consumer

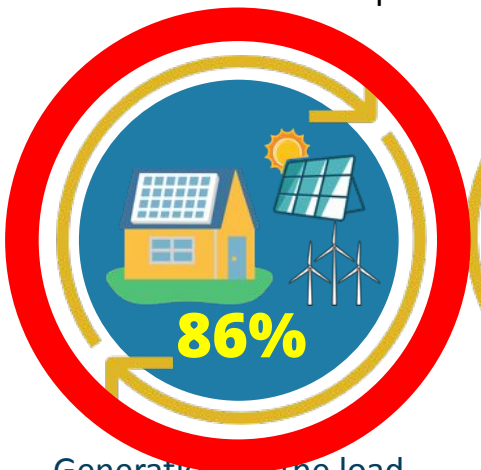
No. of installations per modality



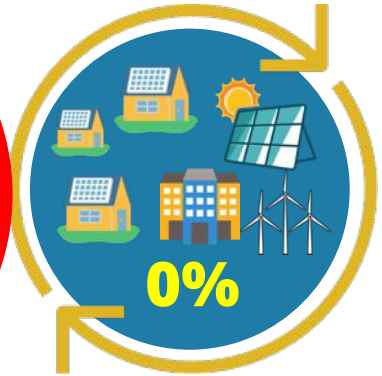
Remote Self-Consumption



Condominiums

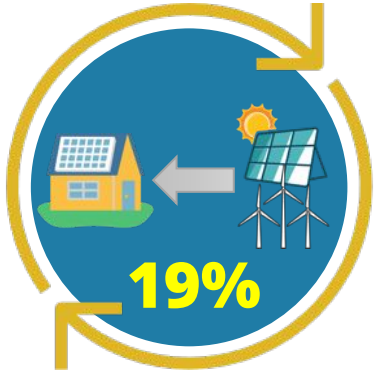


Generation on the load

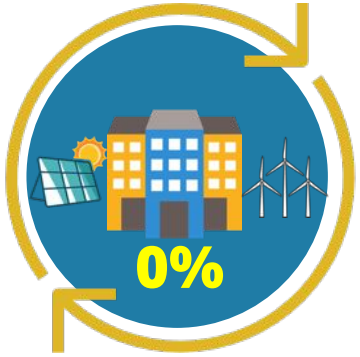


Shared Generation

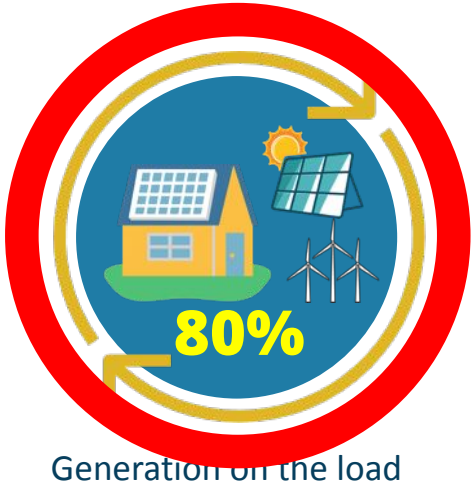
Installed capacity per modality



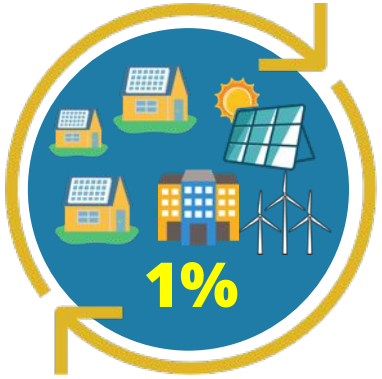
Remote Self-Consumption



Condominiums



Generation on the load



Shared Generation

Remote self-consumption:
Two or more units belonging to the same individual or company

Condominiums:
Horizontal or vertical condominiums, residential or commercial

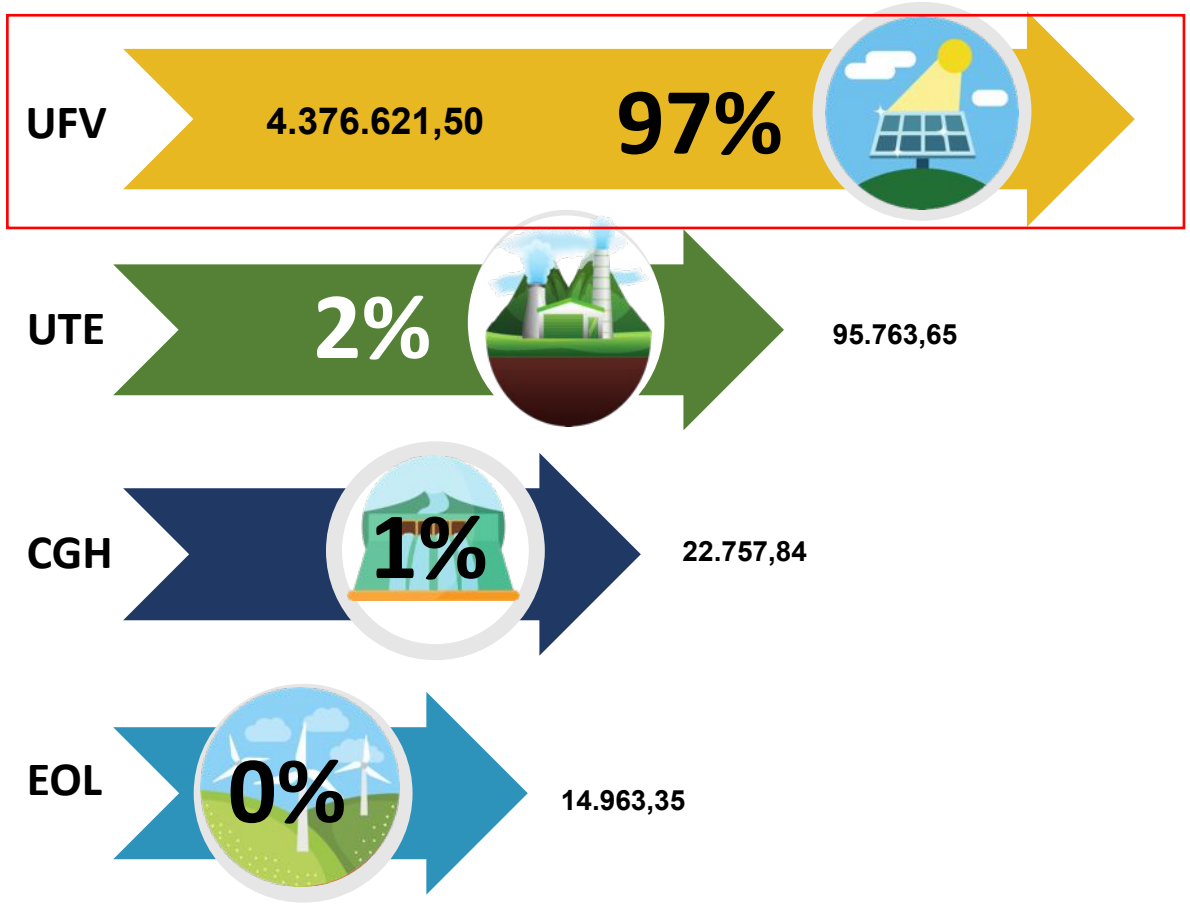
Generation on the load:
A single residence, business or industry.

Shared generation:
Diverse consumers gathered in a cooperative or consortium

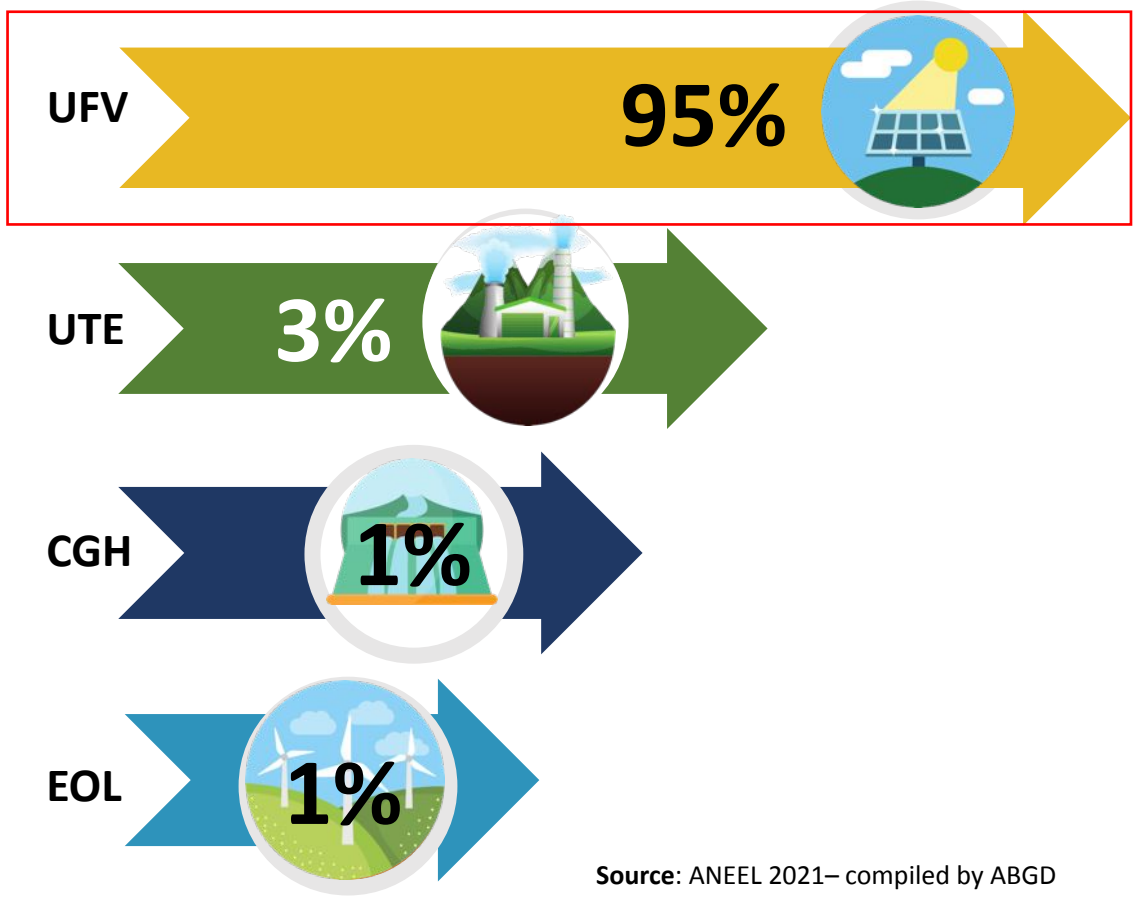
Source: ANEEL 2021– compiled by ABGD

GD figures

GD by source of energy



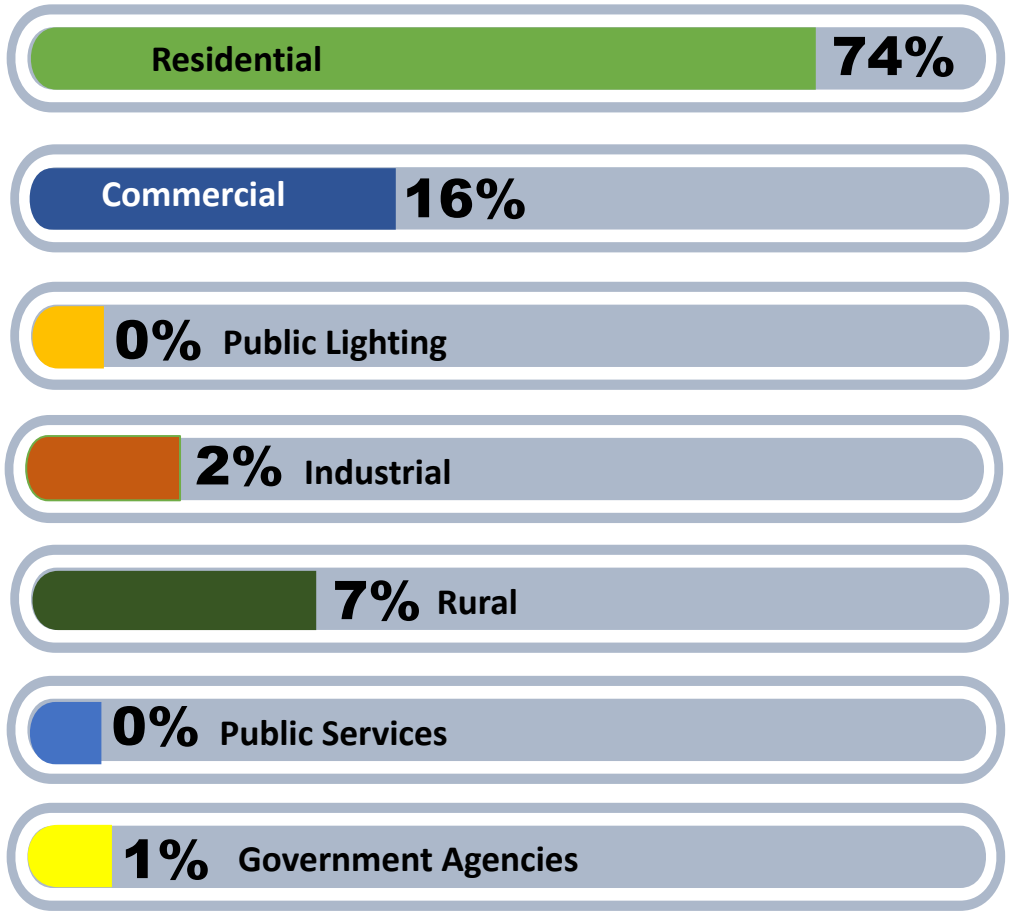
GD by injected energy



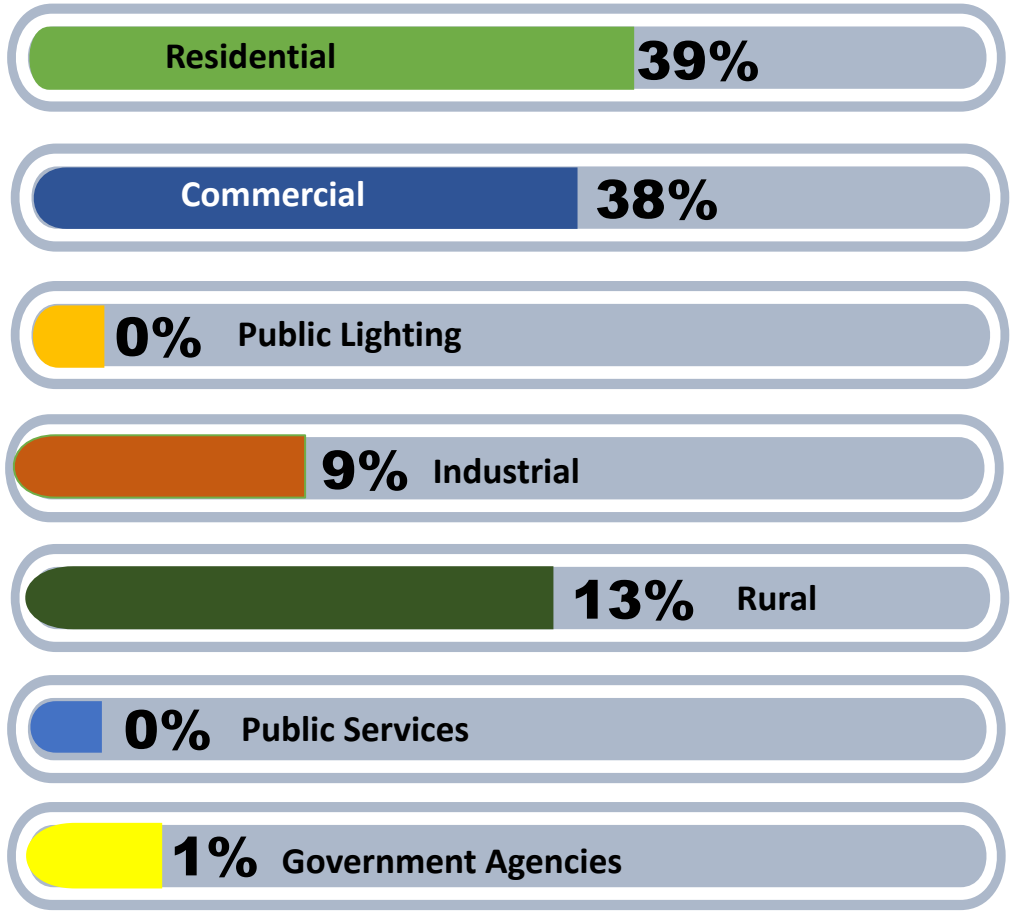
Source: ANEEL 2021– compiled by ABGD

GD figures

Installations per consumer type



Installed capacity consumer type



Source: ANEEL 2021– compiled by ABGD

#GDPARATODOS

GD profile in Brazil

- **P**redominantly made of ”behind the meter” near the load installations, with **86% of the installations** and **80% of the power capacity**.
- **Solar energy** systems account for **97% of the installations** and **95% of the energy injected** in the grid.
- Majority of **installations** are in **residences (76%)**, commercial buildings (16%) and rural (7%) but **installed capacity** are divided in **residences (39%), commercial (38%)** and rural (16%).

Source: ANEEL 2021– compiled by ABGD

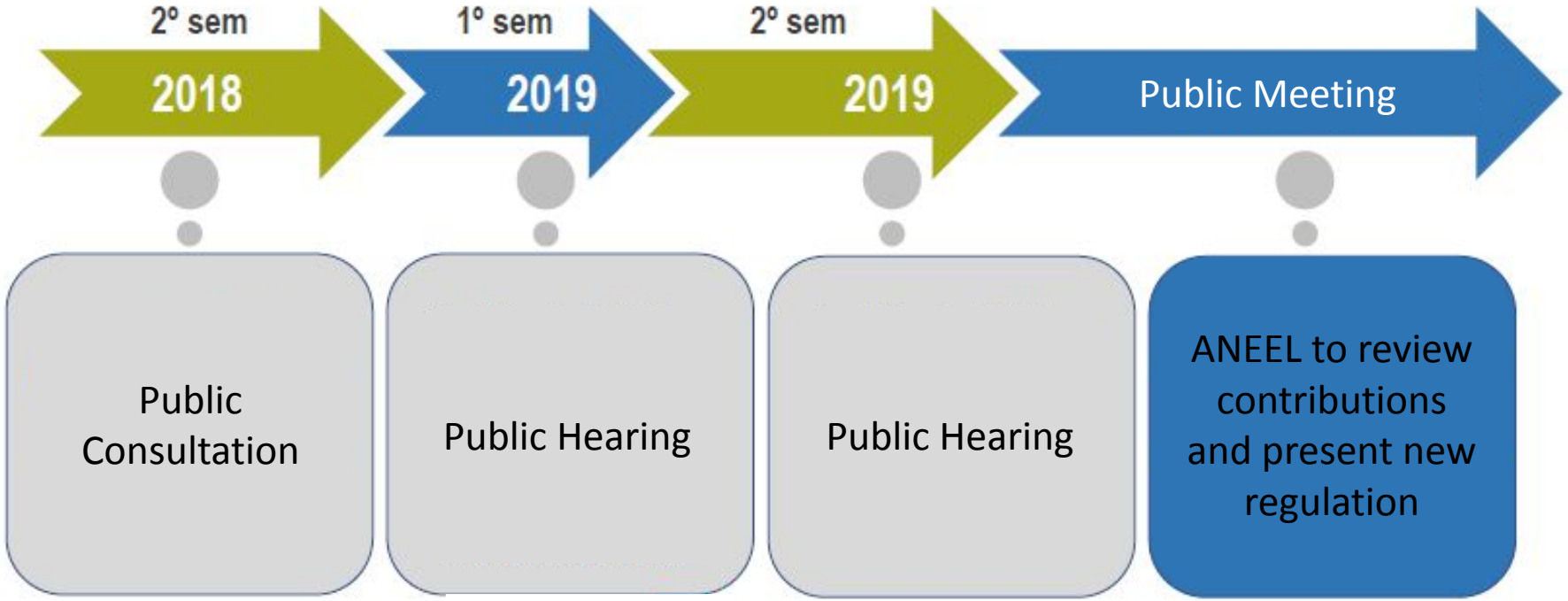
Solar DG in numbers

- In 2020, GD (solar) was responsible for investments of nearly **R$ 11 billion and generation of 74,000 jobs** / occupation.
- Investment forecast for 2021 is around **R$ 17 billion (£ 2,42 billions) and 150,000 new jobs**.
- By 2032, it is expected that all DG energy producers / consumers will generate **savings around R$ 13.8 billion**.

DG Regulation

- When DG practically did not exist in Brazil (2012), it was **regulated by ANEEL in the absence of specific legislation**.
- The creation of a **specific regulatory framework for DG has been in discussion since 2018**, in particular to accommodate the exponential growth of this segment.

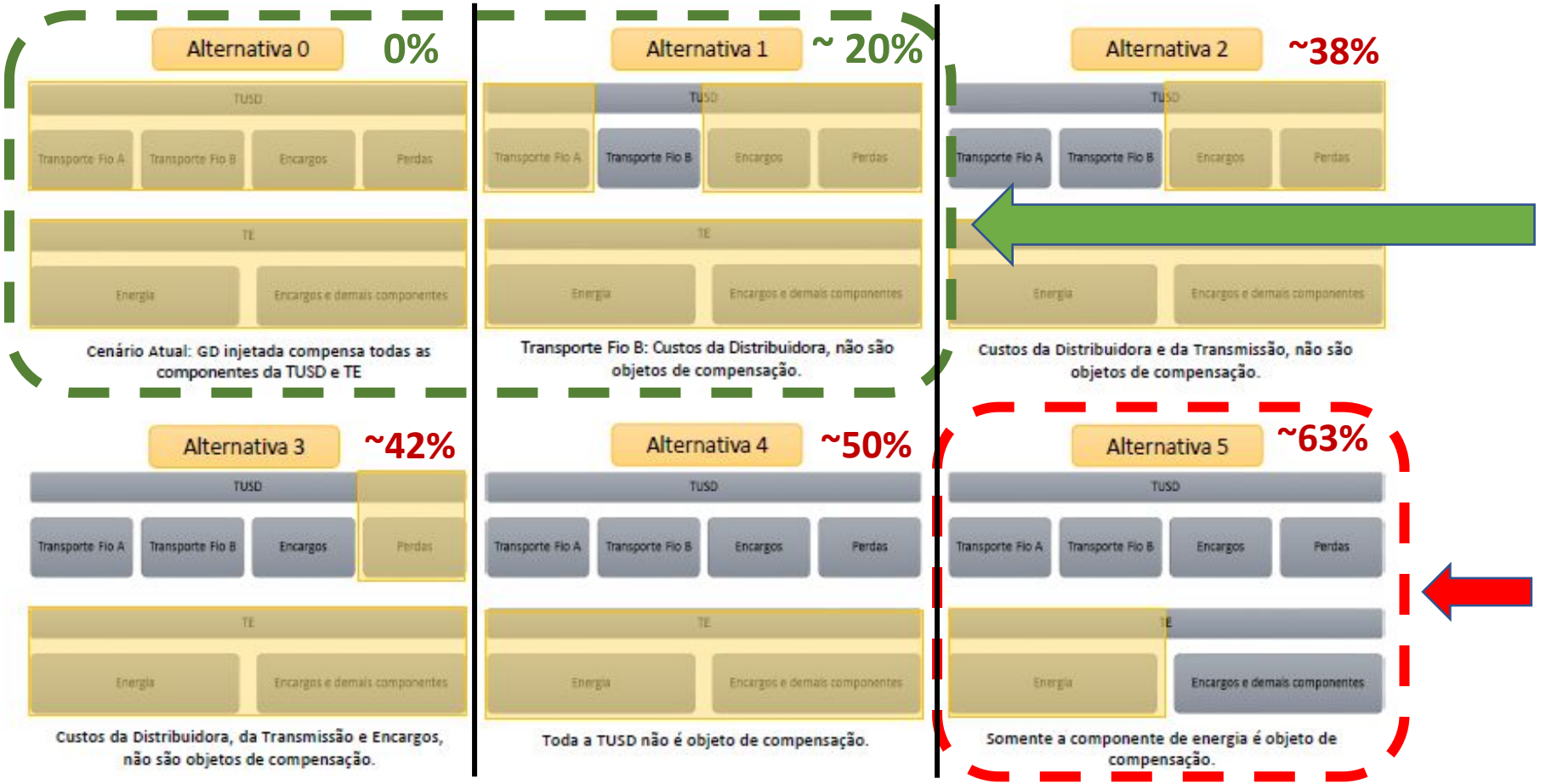
Review Process of RN 482 / ANEEL



In the end of 2019 ANEEL proposed new rules which was not well accepted by many stakeholders, in particular the DG Industry.

Source: Apresentação na ALMG

Review Process of RN 482 / ANEEL



Focus of the proposal presented by ABGD

ANEEL proposed the alternative 5 (additional charge of about 63%).

Fonte: Apresentação ANEEL – ALMG e ENASE

#GDPARATODOS

CNPE guidance for DG new policy framework

In December 2020, the **National Council for Energy Policy - CNPE**, the highest energy policy body in Brazil, **published Resolution no.15**, with five fundamental guidelines for the construction of public policies for DG:

- Non-discriminatory **access to energy distribution** grid
- **Legal and regulatory security**
- **Fair allocation of the costs to access and use the grid**, with new charges considering the externalities and benefits of DG
- **Transparency**, **unity and an agenda with deadlines** for reviewing the rules
- **Gradual transition** with intermediate steps **to improve the rules**.

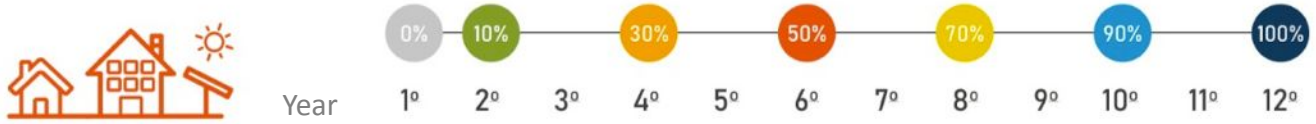
Substitute Bill No. 5829/2019 - Rational

- In line with CNPE Resolution no.15/2020
  - Promotes the **democratization of the use of solar energy**
  - This substitute Bill creates **opportunities for low income consumer**, a market of more than **70 million households**
  - It brings **legal certainty, clarity and predictability** for investors
  - Fully **remunerates** the utility for the "**use of the wire**" (Fio B)
  - Established a **10-year transition** period

New Regulatory Framework for GD

The substitute Bill No. 5829/19 presented in march 2021

Parcel TUSD – "B wire" to be paid by the consumer



- Local Generation (mini and micro
- Shared Generation - Commercial
- Shared Generation - Residential
- Multiple consumers
- Generation with dispatchable energy sources
- Self consumption up to 200 kW

- Self consumption bigger than 200 kW

100%

Represents about 28% of the net value of the energy tariff.

Other remarks:

- 12 months grace period before regulation becomes effective
- Low income households stops paying availability costs, which will make DG viable to nearly 70 million households.

New Regulatory Framework for GD

The substitute Bill No. 5829/19 presented in march 2021 by Dep. Lafayette Andrada

Percentuais dizem respeito à porcentagem de pagamento do Fio B (100% do Fio B = +- 28% da tarifa líquida)

Geração Junto à Carga | Geração Compartilhada | EMUC | Autoconsumo até 200 kW | Fontes Despacháveis – qualquer modalidade											
2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0%	10%	10%	30%	30%	50%	50%	70%	70%	90%	90%	100%

Autoconsumo Remoto e G. Compartilhada quando um consumidor tiver 25% ou mais dos créditos.
12 meses após a publicação da Lei (para novos projetos):
100%

Em todos os cenários, as mudanças só começariam 12 meses após publicação da Lei.

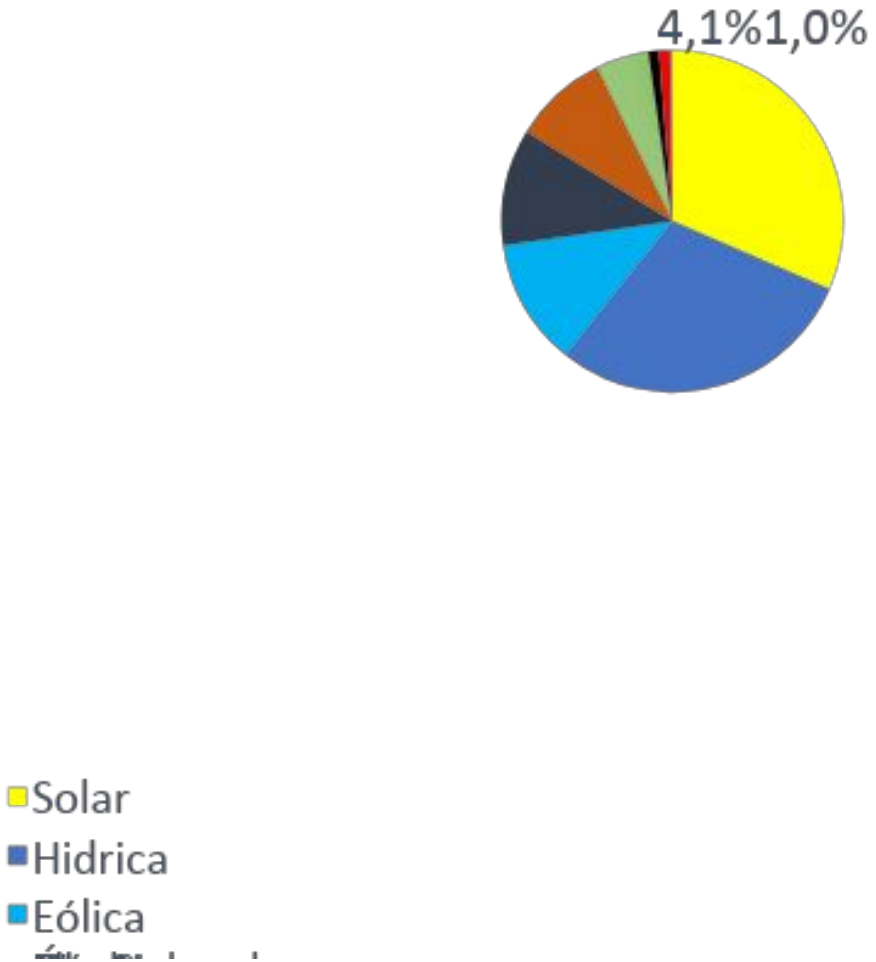
Direito adquirido até 2046.

UC de baixa tensão deixam de pagar o custo de disponibilidade de imediato.

Minigeração: Substituição da TUSD D (demanda) pela TUSDg de imediato.

- The Substitute Bill No. 5829/2019 from Dep. Lafayette Andrada is supported by several associations and organizations, including **ABSOLAR, ABGD, ABIOGÁS, ABRAPCH and ABREN, INEL, MSL, etc**.
- A **sectorial agreement is under construction** and about **to be voted by parliament** and now DG sector will continue its growth with new set of rules and **regulatory framework**, following the **CNPE policy**

Electrical Matrix – Projection for 2040



- Solar PV will represent ~32% of the electricity matrix in 2040
- Approximately 75% from distributed generation

Source : IRENA / Bloomberg Finance L.P.

Hybrid DG energy systems (PV + CGH)

SHP: 1,9 MW e PV: 1,27 MWp

Source: Grupo BC Energia – Rio Bonito - GO

Energy Storage + DG

Source: Energy Storage News / ALSOL – BYD – Belo Horizonte/MG

Contacts

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