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Brazil Energy Journal

POWER DISTRIBUTED GENERATION

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Overview

Power Distributed Generation ("DG"), one of the fastest-growing Distributed Energy Resources in the world, has also been ramping up quickly over the past years in Brazil. Brazilian law refers to DG as renewable power generation — mainly solar photovoltaic —by a captive customer of a power distribution concession area based on on-site or off-site power plants connected to the utility's distribution grid.

Power captive customers, whose electric energy are supplied by power distribution concessionaires (utilities), are allowed to install DG projects up to 3-5 MW (depending whether the energy source can be dispatched or not). In addition to the possibility of installing off-site DG projects, customers may also share an off-site power plant as members of a consortium, co-op, condominium, or civil association. The Brazilian net metering regulation allows customers to use the credits arising from excess power generated by the DG project within 60 months.

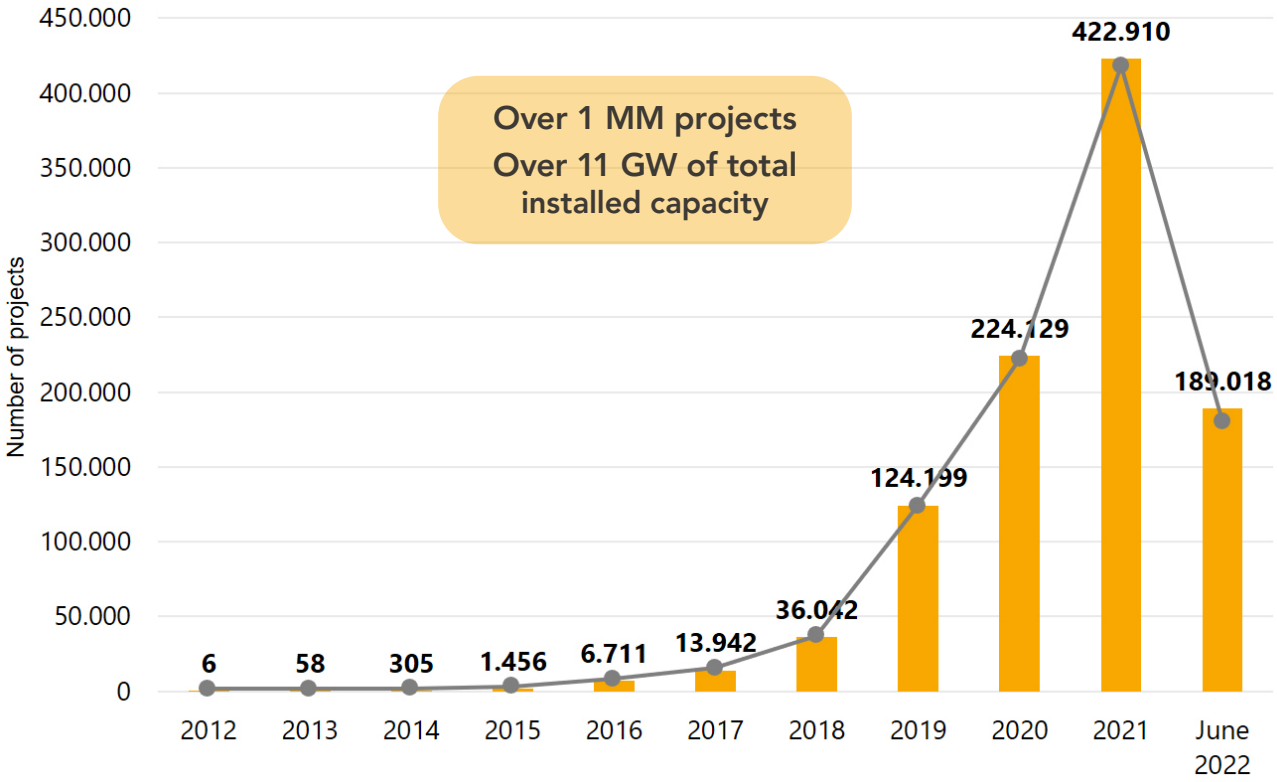
DG projects are subject to federal legislation and federal regulations issued by the Brazilian Electricity Regulatory Agency ("ANEEL"), especially the recently enacted Federal Law No. 14,300/2022 ("DG Legal Framework") as well as ANEEL Normative Resolution No. 482/2012, as amended ("REN 482").

Currently, there are 1,018,792 operational DG projects, which added 11.03 GW of installed capacity to the Brazilian power generation matrix, and 99% of these projects are solar photovoltaic installations, which are more affordable than other renewable energy sources. Most DG projects are on-site power plants (84%) of residential consumers (77%) and located in the Southeast and South regions of the country —especially in the States of São Paulo (16%), Minas Gerais (15%) and Rio Grande do Sul (13%)[1].

There are several business models in the Brazilian DG market. Because Brazilian captive customers are not allowed to purchase power from or sell power to parties other than the utility to which they are connected to, DG developers and investors offer customers equipment supplies or equipment leases, which may be combined with real estate leases for off-site projects; equipment operation and maintenance (O&M); power management; and other ancillary services.

Regulatory incentives and subsidies have spurred this exponential growth of the DG industry in Brazil, where captive customers are keen to reduce costs with expensive electricity rates. In addition, access to multiple financing lines from development and commercial financial institutions as well as technological developments resulting in cheaper and more efficient equipment have also contributed to this expansion.

The chart below shows the historic growth of DG projects in Brazil to date[2].



[1] Based on ANEEL's information dated June 6, 2022, available at: https://app.powerbi.com/view?r=eyJrIjoiY2VmMmUwN2QtYWFiOS00ZDE3LWI3N-DMtZDk0NGI4MGU2NTkxIiwidCI6IjQwZDZmOWI4LWVjYTctNDZhMi05MmQ0LWVhNGU5YzAxNzBlMSIsImMiOjR9

[2]. Id., ibid.

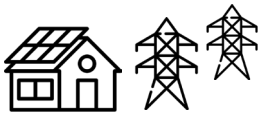
Inside the REN 482

REN 482, issued by ANEEL about 10 years ago, was the groundbreaking regulatory framework applicable to DG and established the general conditions for the access of DG to the electric power distribution system and also instituted the Brazilian net metering model — the Electric Energy Compensation System ("SCEE").

REN 482 divided the power distributed generation systems into two categories based on the respective installed capacity, namely, micro and mini distributed generation.

The resolution also classified the types of DG systems into four modalities:

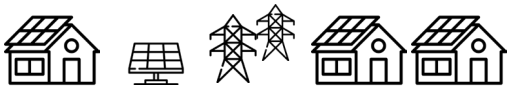
1 Next to the Load



Characterized by a consumer unit with an on-site power plant owned by an individual or a legal entity located in the same location where the power will be consumed and the excess power will be compensated.

2 Remote Self-Consumption

Same ownership

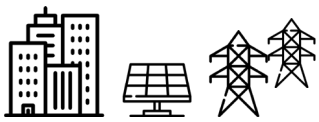


Same concession area

Characterized by a consumer unit owned by an individual or a legal entity, including a head office and branches, with an off-site power plant (i.e., DG in a different location from its consumer units) within the same distribution concession area.

3 Project with Multiple Consuming Units

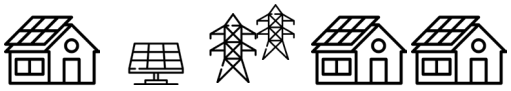
Common area



Characterized by an on-site power plant connected to consumer units that are located in the same property or in contiguous properties with independent power consumption and a distinct consumer unit for the common areas and under the responsibility of the condominium, the administration or the owner of the project.

4 Shared Generation

Different ownerships (consortium, cooperative, voluntary condominium, building condominium)



Same concession area

Characterized by consumer units owned by individuals or legal entities that form a consortium, co-op, voluntary condominium, building condominium or civil association; are located within the same distribution concession area; and share an off-site power plant.

DG Legal Framework

After a couple of years of intense discussion, Federal Law No. 14,300/2022 was enacted in January 2022 and established the legal framework for the Brazilian DG industry, increasing legal certainty to the regulatory concepts introduced by REN 482.

The DG Legal Framework provides greater legal certainty for boosting the Brazilian DG industry. The Brazilian Energy Research Company ("EPE") forecasts that the DG installed capacity in the country will reach 24.5 GW by 2030[3] — which would mean more than a 200% increase in eight years.

The key provisions of DG Legal Framework are described below:

- **New Rules of Net Metering to End Cross-Subsidy:** The current net metering rules allow full compensation for excess power generation (in the form of a credit) to all tariff components, which are (i) the Distribution System Use Tariff – TUSD related to the use of the distribution system (sub-divided into TUSD Wire A – Transmission, TUSD Wire B – Distribution, TUSD Charges and TUSD Losses) and (ii) Energy Tariff – TE (sub-divided into TE Charges and TE Energy) ("Existing Net Metering Rules"). In other words, currently, consumers with DG do not pay for the use of the distribution grid and sectorial charges in relation to their DG credits, which costs are borne by the other customers. Therefore, the DG Legal Framework established new net metering rules to end this cross-subsidy and determined that the compensation of the of the excess power generation (credit) shall apply exclusively to the Energy Tariff – TE ("New Net Metering Rules").

- **Vested Right re. Existing Net Metering Rules:** The Existing Net Metering Rules will apply up to the end of 2045 to consumer units: (i) with DG existing on the date of enactment of the DG Legal Framework (January 7, 2022) or (ii) that request access to the distribution network within 12 months from that date (January 7, 2023) provided that their DG projects achieve COD within (a) 4 months for micro DG; (b) 12 months for photovoltaic mini DG; and (c) 30 months for other projects, counted from the access opinion date. After January 7, 2023, the following events will cause the extinction of the vested right: (i) failure of the DG project to achieve COD within the terms mentioned above; (ii) termination of the contractual relationship with the distribution concessionaire, except in case of transfer of ownership of the consumer unit; (iii) irregularity in the measurement system caused by the consumer; or (iv) with increased amount of installed capacity of the DG project, which request for increase occurs after January 7, 2023.

- **Transition Periods from Existing to New Net Metering Rules:** For those consumers units with no vested right to the Existing Net Metering Rules, the New Net Metering Rules will apply gradually from 2023 to 2028, 2029 or 2031 depending on the date of request of access to the distribution grid or certain characteristics of the GD project, as follows:

Transition Periods of DG Legal Framework

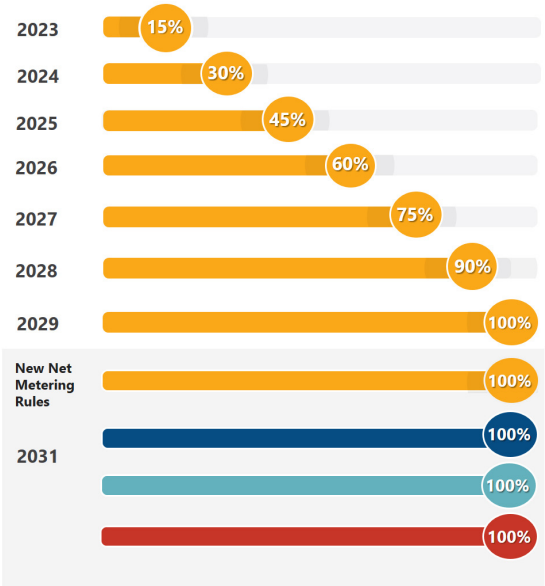
% to be applied to the credits (compensated power)

TUSD Wire B | TUSD Wire A | TUSD R&D, EE and TFSEE* | Other TUSD components

*Charges of Research and Development, Energy Efficiency, and Inspection Tax of Electric Power Services

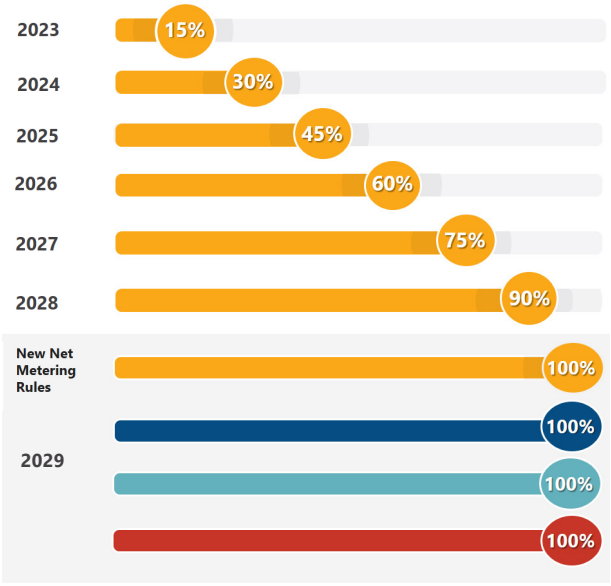
9-Year Transition Period

For consumers that request access to the distribution network between **February 8, 2023** and **July 7, 2023**



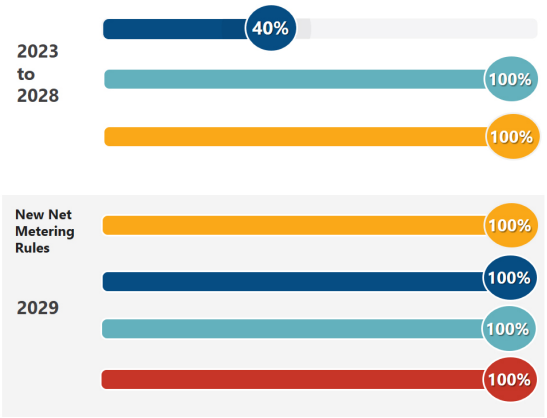
7-Year Transition Period

For consumers that request access to the distribution network as of **July 8, 2023**



7-Year Transition Period (Higher TUSD)

For **mini DG** of dispatchable source with installed capacity **greater than 0.5 MW** under remote self-consumption or shared generation where a single consumer is entitled to **25% or more** of the excess generation (credits)



- **New Limits of Installed Capacity**: The installed capacity of micro DG with qualified cogeneration or renewable energy sources must be lower or equal to 75 kW. The installed capacity of mini DG with non-dispatchable energy sources must be between 75 kW and 3 MW and, with dispatchable energy sources (i.e., hydro, qualified cogeneration, biomass and biogas), must be between 75 kW and 5 MW. Photovoltaic plants may be deemed dispatchable if they have batteries with storage capacity of at least 20% of their monthly generation capacity. The current limit of installed capacity of 5 MW will be applicable to all consumers with vested rights regarding the Existing Net Metering Rules until the end of 2045.

- **New Legal Entities for Shared Generation**: In addition to the consortium and co-op established under REN 482, consumers may also group through a voluntary condominium, building condominium, or civil association under the DG shared generation modality.

- **Performance Bond**: Subject to further regulation by ANEEL, in regard to new mini DG projects, consumers will have to submit a performance bond to the distribution concessionaire valid up to 30 days after the connection to the distribution network in the amount equivalent to (i) 2.5% of the investment for mini DG with installed capacity between 0.5 MW and 1 MW and (ii) 5% of the investment for mini DG with installed capacity equal to or greater than 1 MW. This obligation is not applicable to consumers under shared generation with consortiums or co-ops and multiple consuming units.

- **Prohibition of Trading of Access Opinions**: The law expressly forbids the trading of DG access opinions issued by the distribution concessionaires.

- **Transfer of Ownership of the Consumer Unit**: The transfer of ownership or corporate control of the owner of the consumer unit that requested an access opinion for connection of a DG project is permitted after the request to the distribution concessionaire for the inspection of the connection point (i.e., after construction of the DG project).

- **Sale of Excess Generation (Credits) and Provision of Other Ancillary Services**: Subject to further regulation by ANEEL, distribution concessionaires may hold public calls to purchase excess power (credits) or to engage ancillary services from DG projects in their concession areas.

- **Social Renewable Energy Program ("PERS")**: Aiming at democratizing the access to renewable energy, PERS will promote investments in renewable energy systems for the benefit of the low-income residential subclass. PERS will be financed by funds from the Energy Efficiency Program, complementary resources or other revenues of the distribution concessionaires that are destined for tariff reduction. PERS will be implemented through (i) the presentation of a plan by the distribution concessionaires to the Ministry of Mines and Energy, (ii) public calls held by the distribution concessionaires to register service providers and (iii) competitive calls held by distribution concessionaires for contracting service providers to implement the renewable energy systems.

- **Term for ANEEL and Distribution Concessionaires Adaptation**: ANEEL and the distribution concessionaires must adapt their regulations and proceedings in accordance with the DG Legal Framework by July 6, 2022.

[3] EPE (2021), Plano Decenal de Expansão de Energia 2030. Available at **https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-490/PDE%202030_RevisaoPosCP_rv2.pdf**

Legal Framework

ANEEL Normative Resolution No. 482/2012: Provides for the general conditions for the access of distributed micro and mini generation to the electric power distribution system and establishes the Electric Energy Compensation System, among other provisions.

ANEEL Normative Resolution No. 687/2015: Amends ANEEL Normative Resolution No. 482/2012 and ANEEL Procedures of Electric Power Distribution in the National Interconnected Grid.

Confaz ICMS Convention No. 16/2015: Authorizes the granting of the Tax on the Circulation of Goods and Services (ICMS) exemption in internal operations related to the circulation of electric power, subject to billing under the Electric Energy Compensation System established in ANEEL Normative Resolution No. 482/2012.

Federal Law No. 13,169/2015: Reduces to zero the rates of the contribution for the Social Integration Program and Public Service Employee Savings Program and the Contribution for Social Security Financing levied on the positive difference between the electric power supplied by the distribution company and the power credits of the consumer unit in the SCEE.

ANEEL Normative Resolution No. 786/2017: Amends ANEEL Normative Resolution No. 482/2012.

CNPE Resolution No. 15/2020: Establishes the National Guidelines for Public Policies of Distributed Micro and Mini Generation.

ANEEL Procedures of Power Distribution in the National Interconnected Grid – Module 3 (as approved by ANEEL Normative Resolution No. 956/2021): Provides for the connection to the electric power distribution system.

ANEEL Normative Resolution No. 1,000/2021: Establishes the Rules for the Provision of the Public Service of Electric Power Distribution and revokes the ANEEL Normative Resolution No. 414/2010, among other provisions.

Federal Law No. 14,300/2022: Provides for the Power Distributed Generation Legal Framework, the Electric Energy Compensation System and the Social Renewable Energy Program, among other provisions.

ANEEL Normative Resolution No. 1,009/2022: Establishes the rules related to the power contracting by agents in regulated and free power contracting environments.

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