



PROCOLOMBIA
EXPORTS TOURISM INVESTMENT COUNTRY BRAND



**Gobierno de
Colombia**

LEGAL GUIDE TO DO BUSINESS IN

COLOMBIA 

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CHAPTER 9

*ENERGY
MARKET*

COLOMBIA 

ENERGY MARKET

9.1. Colombian electricity market

9.1.1. Electricity as a public utility

The regime for the provision of public electric power services in Colombia is generally developed in the Political Constitution of 1991 and Laws 142 and 143 of 1994.

The generation, distribution, transmission, and commercialization of electric energy are domiciliary public services or activities complementary to the domiciliary public service of electric energy. Therefore, the legal regime applicable in its entirety is this special regime. One of the fundamental pillars of the scheme for providing public services is freedom of enterprise. Public, private or mixed agents (public and private capital) have the right to organize and operate companies whose purpose is the provision of a public service or one of its complementary activities. Article 15.1 of Law 142 of 1994 incorporates the legal

figure of “Empresa de Servicios Públicos” (E.S.P. for its acronym in Spanish) or Public Service Company as one of the persons authorized to provide public services in the national territory.

The E.S.P. may be Official, Mixed or Private depending on the participation of private or state origin in its capital stock, but they have the similarity of developing their activity in competition (to the extent that each specific activity allows it) and contracting under the provisions of private law. The incorporation of an E.S.P. or the modification of an existing company to become an E.S.P. does not require prior authorization from any authority, and, in that sense, the process of incorporation or modification to an E.S.P. will have to follow the process of any other type of commercial company.

9.1.2. Institutions of the electricity sector

The electricity sector is mainly comprised of the following authorities:

9.1.2.1. Ministry of Mines and Energy (MME)

Among the functions of the Ministry of Mines and Energy (MME for its acronym in Spanish), in relation to public utilities, are the following:

- i. Establish the technical requirements to be met by the companies.
- ii. Elaborate a plan for the expansion of the coverage of the public service to be supervised by the Ministry at least every five years.
- iii. Identify the amount of subsidies that the Nation should provide for the respective public service.
- iv. Gather information on new technologies and management systems in the sector.
- v. To promote, under the direction of the President of the Republic and in coordination with the Ministry of Foreign Affairs, international negotiations related to the relevant public service.
- vi. Develop and maintain an adequate sectoral information system for the use of the authorities and the general public.

9.1.2.2. Mining-Energy Planning Unit (UPME)

Organized as a Special Administrative Unit attached to the Ministry of Mines and Energy, the functions of the UPME

(for its acronym in Spanish) include establishing the energy requirements of the country's population and economic agents, based on demand projections that take into account the most likely evolution of demographic and economic variables and energy resource prices, issuing tax incentive certificates in accordance with Law 1715 of 2014 and its amendments, and preparing the National Energy Plan and the Electricity Sector Expansion Plan, in accordance with the National Development Plan, among other functions.

9.1.2.3. Energy and Gas Regulatory Commission (CREG)

Organized as a Special Administrative Unit of the Ministry of Mines and Energy, the CREG (for its acronym in Spanish) is composed by the Minister of Mines and Energy, who presides it, the Minister of Finance and Public Credit, the Director of the National Planning Department (DNP for its acronym in Spanish), five full-time experts in energy matters (appointed by the President of the Republic for four-year terms) and the Superintendent of Residential Public Utilities, with voice but no vote.

9.1.2.4. Superintendency of Residential Public Utilities (SSPD)

The SSPD (for its acronym in Spanish) is a technical body, attached to the National Planning Department (DNP), with legal personality, administrative and patrimonial autonomy. It performs specific control and surveillance functions independently of the Service Commissions and with the immediate collaboration of the delegated superintendents. The superintendent

and his delegates are freely appointed and removed by the President of the Republic.

9.1.2.5. Trade Exchange System Administrator (ASIC)

The ASIC (for its acronym in Spanish) is the unit responsible for the registration of long-term energy contracts, settlement, billing, collection and payment of the value of energy acts or contracts on the exchange by generators and traders, maintenance of the required information systems and computer programs, and performance of the tasks necessary for the proper functioning of the Trading Exchange System.

9.1.2.6. Liquidator and Account Manager

Entity in charge of settling and billing the charges for the use of the National Interconnected System (SIN for its acronym in Spanish) networks, determining the regulated income to the transporters and managing the accounts for the use of the networks caused to the agents of the wholesale market, in accordance with the regulations in force.

9.1.2.7. National Dispatch Center (CND)

It is the authority in charge of planning, supervision and control of the integrated operation of the generation, interconnection and transmission resources of the National Interconnected System (SIN). It is also in charge of giving instructions to the regional dispatch centers to coordinate the maneuvers of the facilities to have a safe and reliable operation, in accordance with

the operation regulations and all the agreements of the National Operation Council.

9.1.2.8. National Operating Council (CNO)

The main function of this body, (the CNO for its acronym in Spanish) is to agree on the technical aspects to guarantee that the integrated operation of the National Interconnected System (SIN) is safe, reliable and economic, and to be the executing body of the operating regulations. The decisions of the National Operation Council may be appealed before the Energy and Gas Regulation Commission (CREG).

9.1.3. Electric power production chain

The energy supply chain is composed of the following activities, namely:

9.1.3.1. Generation

Generation is the first link in the energy supply chain through which energy sources are transformed; in Colombia, the most common is the generation of hydraulic energy and there is also evidence of the use of thermal energy (gas, coal and liquid fuels). Currently, and due to the used investment mechanisms, incentives and tax benefits, non-conventional sources have had a technological and information advance which allows the entry of new projects and works aimed at generating with non-conventional renewable energy sources, such as photovoltaic and wind power.

Additionally, there are no entry barriers for agents whose quality may vary, i.e.,

there are generators, self-generators or co-generators, thus allowing free competition for all those public, mixed or private entities that wish to enter the market; on the other hand, they have the opportunity to set the prices to be offered since, although they are regulated by the CREG, there is no impediment for the negotiation and placement of the cost of the energy generation service; however, there are standard systems to establish the monetary measurements.

9.1.3.2. Transmission

Continuing the procedure or supply chain, the second step or link in the chain of energy service provision is transmission; this activity is understood as the transportation or conduction of the electric energy that comes from the generation plants. In Colombia, we find this process through the National Transmission System (STN for its acronym in Spanish) which is regulated by the CREG. This activity is part of a natural monopoly which is admitted in the Colombian legislation. The expansion of this system is made through public calls for tenders administered by the UPME and the income of the link is given through the charge for the use of transmission networks that is paid through the tariff for all users (regulated and non-regulated) connected to the National Interconnected System (SIN), as defined by the CREG.

The National Transmission System (STN) is comprised of the substations, pylons and cables required to transport electric power, taking into account the respective voltage levels, which range between 220kV and 500kV.

9.1.3.3. Distribution

The third point or link in the supply chain corresponds to the distribution

of energy, which is distributed from the consumption centers to the final consumer; the size of these facilities is smaller than those found in the National Transmission System (STN), since they are part of the regional lines which are called Regional Transmission Systems (STR for its acronym in Spanish) and Local Distribution Systems (SDL for its acronym in Spanish). This link is also considered as a natural monopoly, since users cannot decide or choose the individual transmission or distribution agent to meet the energy demand acquired.

9.1.3.4. Commercialization

The commercialization activity is at the fourth level of the supply chain and is part of a system of purchase and sale of electricity mediated by the wholesale market (long or term contracts and transactions in the Energy Exchange) or the sale of the product to operations carried out in the same market or to end users.

In this sense, it is understood that end users (regulated and non-regulated) have a relationship with the distributor who is responsible for the quality and availability of the network connected to the service and, on the other hand, users have a relationship with the marketer who will oversee measuring, billing and charging for the service to users.

It is important to mention that Law 1955 of 2019, through which the National Development Plan 2018-2022 "Pact for Colombia, Pact for Equity" is issued, determined in its Article 290 the obligation of the CREG to issue regulations to ensure the efficient provision of public services, to promote competition, prevent abuses of dominant position and guarantee the rights of users, within the regulation of fuel gas, electricity and public lighting services.

Likewise, it should be noted that the energy market has an Administrator of the Trading Exchange System (ASIC for its acronym in Spanish) of the company XM, who is in charge of:

- i. Register the boundaries, i.e., the energy consumption measurement systems, their location and their representative.
- ii. Register the contracts entered into between the agents.
- iii. Settle and invoice the resulting energy exchanges between the market's generating and trading agents, who sell and buy in the energy exchange.
- iv. Collect the proceeds from stock exchange transactions and International Electricity Transactions.
- v. Settle, collect and distribute the money from the charges for the use of the national and regional transmission systems among the transmitting agents and distributors owners of such networks. This activity is carried out by XM through the Liquidator and Administrator of Accounts for Use of the National and Regional Transmission Systems (LAC for its acronym in Spanish).

Finally, the Commercial Exchange System (SIC for its acronym in Spanish) is the set of rules and procedures established in the operating regulations that define the obligations and credits of generators, traders, and transporters for energy acts or contracts in the exchange according to the central dispatch.

The SIC includes the settlement process of the value of the exchanges, the preparation and updating of the statement of account of each generator,

transporter, and trader participating in the Energy Exchange, the invoicing, payment, and collection of the value of the transactions made in the same exchange.

All agents (generators and marketers) must register as agents with the market and provide guarantees or adjust them if necessary. The purpose of these guarantees is to ensure compliance with the obligations arising from the Wholesale Energy Market (MEM for its acronym in Spanish) agents, corresponding to energy transactions in the exchange, reconciliations, complementary services, charges for the use of the National Transmission System, services and, in general, for any concept invoiced by XM in its capacity as ASIC and LAC. Additionally, guarantees to cover charges for use of the STR and SDL are also contemplated.

9.1.4. Electricity tariffs

In order to determine the tariff formulas for the provision of electric energy services, Law 142 of 1994 establishes that the rules on the tariff regime of public utility companies provided for in this law, the rules of the Code of Administrative Procedure and Contentious Administrative Matters (CPACA for its acronym in Spanish), and the following special rules shall be applied:

- i. CREG's executive coordination will drive all actions for its determination.
- ii. If the action is initiated ex officio, the CREG must have sufficient studies to define the formula in question; if it is initiated at the request of a utility company, the applicant must accompany such studies.

The rate formulas shall be in effect for five years, unless prior agreement is

reached between the public utility and the CREG to modify or extend them for an equal period. Once the period of validity of the tariff formulas has expired, they will continue to be in force until the CREG establishes new ones.

Exceptionally, these formulas may be modified at any time, *ex officio* or at the request of a party, when it is evident that serious errors were made in their calculation, that the interests of the users or of the company are unfairly harmed, or that there have been reasons of fortuitous event or force majeure that seriously compromise the financial capacity of the company to continue providing the service under the tariff conditions foreseen.

This provision was complemented by paragraph 1 of article 290 of Law 1955 of 2019, which established notwithstanding the provisions of article 126 of Law 142 of 1994, the power of the CREG to modify the tariff formulas during its validity when this is strictly necessary and motivated by the inclusion of new agents, activities or technologies, complying with the criteria established in said article for the implementation of the regulation. The foregoing, in addition to the fact that, according to the aforementioned article, the powers set forth in this article may be assumed by the President of the Republic or by the Ministry of Mines and Energy, depending on who is responsible for the function delegated to the CREG.

9.1.5. The National Interconnected System (SIN) and the Non-Interconnected Zones (ZNI)

9.1.5.1. SIN

According to our legal system, the SIN is the system composed of generation plants and equipment, the interconnection

network, the regional and interregional transmission networks, the distribution networks, and the electrical loads of users connected to each other.

9.1.5.2. ZNI

As established by Law 855 of 2003, the Non-Interconnected Zones - NIZ (ZNI for its acronym in Spanish) in Colombia are those areas of the country, such as municipalities, townships, localities, and villages that are not connected to the National Interconnected System (SIN), and therefore, must obtain electricity through independent systems.

The provision of electric energy services in the ZNI must guarantee the continuity, quality and security of supply, and the cost of the service must be fair and equitable for users. The CREG is responsible for issuing the regulation that guarantees the provision of electric power service in the ZNI.

The regulation establishes a series of incentives for investment in electric power generation projects in NIZs, in order to promote the expansion of electricity coverage and improve the living conditions of the communities that live in them. Among these benefits, the regulation provides for the possibility of accessing credits and resources, including those collected through the Financial Support Fund for the Energization of Non-Interconnected Zones (FAZNI for its acronym in Spanish).

9.2. Non-Conventional Energy Sources (FNCE).

9.2.1. Regulatory framework.

In order to clarify the scope of the regulation of Non-Conventional Renewable Energy Sources (FNCE for its

acronym in Spanish) within the current energy system, it is necessary to take into account the purposes and objectives of the following laws, decrees and resolutions:

- **Law 1715 of May 13, 2014:** Whereby the integration of non-conventional renewable energies to the National Energy System is regulated.
- **Decree 2469 of December 2, 2014:** Whereby energy policy guidelines are established regarding the delivery of self-generation surpluses.
- **Decree 2492 of December 3, 2014:** Whereby provisions are adopted regarding the implementation of demand response mechanisms.
- **Decree 1623 of August 11, 2015:** Whereby Decree 1073 of 2015 is amended and added, regarding the establishment of policy guidelines for the expansion of electric power service coverage in the National Interconnected System and Non-Interconnected Zones.
- **Decree 2143 of November 4, 2015:** Whereby the Sole Regulatory Decree of the Administrative Sector of Mines and Energy, 1073 of 2015, is added in relation to the definition of the guidelines for the application of the incentives established in Chapter III of Law 1715 of 2014.
- **Resolution Ministry of Environment and Sustainable Development 1312 of August 11, 2016:** Whereby the terms of reference are adopted for the preparation of the Environmental Impact Assessment (EIA - same acronym in Spanish), required for the processing of the environmental license for projects for the use of continental wind energy sources and other determinations are made.
- **Resolution UPME 319 of 2022:** Whereby the requirements and procedure for the evaluation of applications for evaluation and

issuance of certificates that allow access to the tax incentives of Law 1715 of 2014 are established.

- **Law 1955 of May 25, 2019:** Whereby the National Development Plan 2018 - 2022 is issued. "Pact for Colombia, pact for equity".
- **Law 2099 of 2021:** Whereby provisions are issued for the energy transition, the dynamization of the energy market, the economic reactivation of the country and other provisions are issued.

9.2.2 Principal milestones for the development of FNCE generation projects in Colombia.

9.2.2.1. In property matters

Securing the land where both the project and the power evacuation line will be located requires the project developer to carry out multiple activities in order to evaluate the technical and legal feasibility of the land, as well as the negotiation of its use by the owners, or, as the case may be, the use of the different legal figures available to the developer under the type of activity it carries out.

As activities to be carried out by the developer for the optimal securing of the land, the following are highlighted: The preparation of a Title Study, determination of the useful area of the property eliminating constructions, restrictions, easements, and subscription of land use contracts. According to the modalities used in Colombia and the constitution of electric power easements, among others.

9.2.2.2. In environmental matters

The environmental license is the mechanism through which the competent environmental authority approves the execution of works, projects or activities that may cause serious deterioration of

renewable natural resources, as well as the environment, or introduce considerable modifications to the landscape.

In the electricity sector, the National Environmental Licensing Authority (ANLA for its acronym in Spanish) is competent to grant environmental licenses for: (i) Construction and operation of electric power generating plants with an installed capacity equal to or greater than 100 MW; (ii) Projects for the exploration and use of alternative energy sources that are virtually polluting with an installed capacity equal to or greater than 100 MW; (iii) Laying of transmission lines in the STN, consisting of lines and corresponding substations with voltages equal to or greater than 220kv and; (iv) Nuclear power generation projects.

In turn, the Regional Autonomous Corporations (CARs for its acronym in Spanish) are competent to grant environmental licenses in the following cases: (i) Construction and operation of electric power generating plants with capacity greater than or equal to 10 MW and less than 100 MW; (ii) Laying of transmission lines in the STN, consisting of lines and corresponding substations with voltages between 50kv and less than to 220kv; (iii) Construction and operation of power plants generating energy from water resources with a capacity of less than 100 MW, except for small hydroelectric plants operating in the ZNI with a capacity of less than 10 MW and; (iv) Projects for the exploration and use of alternative energy sources with an installed capacity equal to or greater than 10 MW and less than 100 MW.

9.2.2.3. Connection to the National Interconnected System.

The CREG published Resolution 075 of 2021, Whereby the provisions and procedures for the allocation of transportation capacity in the National Interconnected System are defined. This resolution applies to those interested in connecting as generators, co-generators, self-generators or end users to the SIN. It also applies to the transporters **Class 1 projects¹**: responsible for the assets related to the connection to the SIN of the aforementioned interested parties, and to the commercializing agents in relation to the functions of this activity.

For the determination of the procedure to be carried out by the promoters for their connection to the SIN, the regulation differentiates between class 1 projects that correspond to end user connection projects to the STN or STR, and projects for connection of generation, cogeneration or self-generation to the SIN, different from the projects that are under the scope of Resolution CREG 174 of 2021 and its amendments.

Those interested in requesting the allocation of transportation capacity for class 1 projects must register at the Single Window before carrying out any procedure. The UPME will be responsible for receiving and resolving requests for the allocation of transportation capacity in the SIN for class 1 projects. For the request, the interested party must carry out a connection and physical space availability study, analyzing different alternatives to connect to the SIN, among

¹ Class 1 project: projects for the connection of end users to the STN or STR, and projects for the connection of generation, cogeneration, or self-generation to the SIN different from the projects under the scope of Resolution CREG 030 of 2018, or the one that modifies, adds or replaces it. Modifications requested to the already allocated capacities will also be considered class 1 projects.

other requirements. The allocation of transportation capacity of class 1 projects will be carried out annually, and the project that results with capacity allocation must grant a guarantee for capacity reserve of ten (10) USD for the number of kW of the allocated transportation capacity, as well as subscribe the connection contract and comply with the other obligations of the regulation, such as the delivery of the S Curve before the UPME.

Class 2 projects²: On the other hand, class 2 projects are projects for the connection, or modification of connection conditions, of end users in the SDLs. The *o con mayúsculas sostenidas*: Network Operator (OR by its acronym in Spanish), of the marketing market to which the assets for which the allocation of transmission capacity is requested belong, will be responsible for receiving and approving requests for class 2 projects.

The OR must have a digital information system containing all the necessary information for the allocation of transmission capacity to class 2 projects. The interested party in the connection of a class 2 project may request the allocation of transportation capacity directly, through a marketer, or through a third party. For the allocation of transportation capacity to a class 2 project, the delivery of a study and/or design of the project may be required for approval, depending on its characteristics.

9.2.2.4. Sale of energy

Law 143 of 1994 established two types of electricity system markets in Colombia:

- i. **Non-Regulated Market (NRM or MNR for its acronym in Spanish):** where electricity transactions between agents (traders - generators) and between these and non-regulated users are free and remunerated through the prices agreed upon by the parties.
- ii. **Regulated Market (RM or MR for its acronym in Spanish):** where electricity sales to end users are remunerated, without exception, through tariffs subject to regulation.

In order to be considered a non-regulated user and be able to access the deregulated and competitive market, monthly power and energy limits were established, as well as the obligation to have hourly telemetering equipment. Currently, a non-regulated user is considered to be a user with a monthly demand of 0.1 MW (power) or 55 MWh (energy).

In Colombia, the generator sells the electricity produced by its generation unit connected to the SIN in the Wholesale Energy Market (MEM³ for its acronym in Spanish), mainly in the following ways:

- i. **Through daily energy offers in the stock exchange or "Spot" market:** The physical supply of electricity is guaranteed in the short term, through the centralized dispatch of the generation units. This dispatch determines the amount of energy to be produced by the units connected to the SIN to meet the country's demand. On a daily basis, each generator submits a price and quantity

² Class 2 project: connection projects, or modification of connection conditions, of SDL end users.

³ This in turn is the market for large blocks of energy.

offer for all the hours of the following day. ASIC orders the offers from lowest to highest price until the identified demand is covered. The last generation offer needed to cover the last portion of demand determines the exchange price of all energy generated and consumed. This process is performed for all hours of the day.

It is important to clarify that in order to participate in the spot market, the generation unit must submit to centralized dispatch. This substantially determines how the different plants can market the energy they produce, i.e. whether they do so as explained above or whether they have special rules. The plants that are obliged to participate in the centralized dispatch are all those with an effective capacity greater than 20MW, to which all the dispatch obligations will apply. There is the possibility that plants between 1MW and 20 MW may voluntarily participate in the centralized dispatch, in which case all centralized dispatch rules will apply to them.

On the other hand, smaller plants that do not participate in this dispatch, may commercialize their energy produced according to the following rules:

In the case of a distributed generator, it must take into account the regulation established in Resolution CREG 174 of 2021.

If it is a plant with an effective capacity greater than 1MW and less than 20MW, they can voluntarily submit to central dispatch and if they do not wish to do so, they can market the energy produced: i) by offering it to a marketer that serves the regulated market by participating in the calls for tenders opened by these companies or ii) to generators or marketers through freely agreed

conditions as long as it is for the attention of non-regulated users.

ii. Through long-term energy contracts:

These long-term contracts may be entered into to supply the Non-Regulated Market or the Regulated Market. The former will be the product of a more or less free negotiation with another market agent (generator or trader) or directly with an unregulated user; the latter are the product of regulated mechanisms (as will be explained below), i.e. there would not be full freedom in determining the business, especially because it involves the service of regulated users.

iii. Reliability Charge:

There is also the possibility of remunerating this activity with the provision of services that are not related to commercialization, but rather services associated with the reliability of the system. For example, through regulation services, security generation or participation in auctions for the allocation of firm energy obligations (OEF) of the reliability charge (CxC) of Resolution CREG 071 of 2006.

iv. Public Calls:

Another mechanism is the one defined by the CREG, through Resolution CREG 130 of 2019, which established the Public Calls through the Centralized System of Public Announcements (SICEP, by its acronym in Spanish and defined the procedure to be followed by a marketer in the execution of energy contracts for the regulated market.

9.2.2.5. UPME registration

In relation to the registry of generation projects, it is defined as a voluntary and informative mechanism used by the UPME to facilitate compliance with Law 143 of 1994. It is used to know the

different initiatives of generation projects in the country, so it is a fundamental input for the formulation of the Indicative Plan for Generation Expansion. With the entry into force of Resolution UPME 0520 of October 09, 2007, modified by Resolutions UPME 0638 of 2007 and 0143 of 2016, the registration procedure was formalized.

The process is divided into three phases, which are determined by the state of progress of the project: Phase 1 corresponds to the pre-feasibility stage of the project, Phase 2 refers to the feasibility stage of the project and Phase 3 refers to the fact that the project must already have definitive designs, as well as the execution schedule. Once the registration certificate expires without the respective renewal procedures having been carried out, the project's registration is considered expired and it is removed from the list of registered projects; however, the project information will continue in the UPME file.

9.2.2.6. Commercial operation

Commercial Operation refers to the moment in which the generation plant has satisfactorily fulfilled all the necessary requirements to start generating energy in the Wholesale Energy Market (MEM).

By means of Agreement CNO 1612 of 2022 (which is periodically updated by the CNO), it was approved the update of the Procedure for the start-up of transmission projects that include assets for use of the National Transmission System (STN), the Regional Transmission System (STR), users directly connected to the STN, the STR and generation resources.

The standard establishes the following general requirements for the entry into operation of generation resources:

- i. Registration of the project with the CND and basic information (Preliminary technical information, Preliminary models, Single-line diagrams, Adjustment and coordination of protections).
- ii. Kick-off meeting and coordination of activities for the incorporation of the project to the SIN.
- iii. Communication informing the CND of how the supervision will be carried out.
- iv. Communication in which the generating agent that will represent the generation project is informed. In the case of a new generating agent, it must be previously registered as a generating agent before the Commercial Exchange System (ASIC).
- v. Register commercial borders with ASIC.
- vi. Submit completed Annex 3, which lists the SOE signals that a project must have available and Annex 4, which lists the SCADA signals.
- vii. Completion of all tests described in the standard for commissioning and issuance of the corresponding certificates.
- viii. Coordinate with the CND the date and time of entry into operation and the Declaration in commercial operation.

9.2.3. Renewable auctions (MCLP or CLPE).

The National Government, with the purpose of promoting Long-Term Energy Contracting Mechanisms (MCPE for its acronym in Spanish) complementary to

the existing instruments in the Colombian electric system, is empowered to structure such procedures and include them in the possibilities in which a Marketer and a Generator may agree on Long- Term Energy Contracts (CLPE for its acronym in Spanish) and that these may be included in the regulated user's tariff formula.

As an example, the Ministry of Mines and Energy issued Decree 570 of 2018 on public policy guidelines for long-term contracting of generation projects. This decree served as the legal basis for the creation of the long-term energy auction for FNCER through Resolutions 40590 and 40591 of 2019 of the Ministry of Mines and Energy and implemented by the UPME.

The last long-term energy auction for FNCER was CLPE 03 of 2021, in which long- term energy supply contracts were assigned to 9 generation companies with 11 generation projects with a capacity of 796.3 MW, which signed contracts with 7 auction marketers and 46 marketers of the complementary mechanism, with a weighted average price of 135.85 COP/ kWh.

9.2.4. Reliability Charge.

Resolution CREG 071 of 2006 adopted the methodology for the remuneration of the Reliability Charge in the Wholesale Energy Market (MEM), in which it was established that, to guarantee the reliability of the electric energy service in the SIN, a Target Demand will be defined that must be covered by means of Firm Energy Obligations (OEF for its acronym in Spanish).

Reliability Charge is understood as the remuneration paid to a generating agent

for the availability of generation assets with the characteristics and parameters declared for the calculation of the ENFICC⁴, which guarantees compliance with the Firm Energy Obligation assigned to it in an Auction for the Assignment of Firm Energy Obligations or in the mechanism that takes its place. This energy is associated to the Backup Generation Capacity referred to in Article 23 of Law 143 of 1994 and is the one that can be committed to guarantee the users the reliability in the rendering of the electric energy service under critical conditions, understood as the situation presented by the Wholesale Energy Market when the exchange price is higher than the Shortage Price.

Article 18 of the resolution established that the CREG shall establish, by means of a Resolution, the opportunity in which the ASIC must carry out the Auction or the allocation mechanism that takes its place, as well as the schedule of the activities that must be executed.

Resolution CREG 101 024 of 2022 defines the procedures for the Reliability Charge auctions in the Wholesale Energy Market (MEM). The platform through which documentation is submitted, declared and exchanged with the Auction Manager is through the Unified Information System for the Reliability Charge OEF Allocation Processes (SUICC), still under design and structuring for future auctions.

The projects participating in the auction will have the following classification:

- **New plants and/or units.**
- **Special plants and/or units.**
- **Existing plants and/or units with works.**
- **Existing plants and/or units.**

⁴ ENFICC: maximum electrical energy that a generation plant can deliver continuously, under low hydrological maximum electrical energy that a generation plant can deliver continuously, under low hydrological conditions, in one year.

- **Plants or generation units with construction periods longer than the Planning Period, when applicable.**

Among the requirements to participate is that the interested party must be constituted as a Residential Public Utility Company (E.S.P. for its acronym in Spanish) and comply with all the provisions set forth in this resolution, as well as those set forth in the applicable CREG Resolutions 071 of 2006 and 061 of 2007. Finally, it should be noted that the period of validity of the assigned OEF varies according to the type of plant that participates in the auction.

9.2.5. Tax incentives for FNCER

In order to promote the incorporation of energy generation with non-conventional renewable energy sources - NCER (FNCER by its acronym in Spanish), there are in Colombia a series of incentives and tax benefits implemented from Law 1715 of 2014 - amended by Law 2099 of 2021-, so that the production of renewable energy has a greater scope and thus stimulate and promote sustainable development in the country. Based on the above, the Colombian legal system identifies four (4) important tax benefits for the generation of energy for FNCER, which are: (a) Special deduction to determine income tax, (b) Exclusion of goods and services from VAT, (c) Exemption from customs duties and (d) Accelerated depreciation.

In general terms, these incentives are available to individuals or legal entities that make direct investments in activities such as research and technological development in the field of energy production with FNCE and Efficient Energy Management (GEE for its acronym

in Spanish), including smart metering, or formulation and preliminary research, technical, financial, legal, economic and environmental final studies, acquisition of equipment, elements, machinery, and assembly and commissioning.

UPME included in Resolution UPME 319 of 2022 the list of goods and services required for the production of energy from FNCE and for the measurement and evaluation of potential resources, according to the technical criteria between these goods and services and FNCE.

9.2.5.1. Income tax benefit

Its application is configured through taxpayers who declare the tax and who, in the development of their activities, make new expenditures in research, development and investment to be able to produce and use energy generated by FNCE and Efficient Energy Management (GEE).

The benefit obtained is the possibility of deducting up to 50% of the value of the investments of the project for a period not exceeding 15 years, which are counted from the taxable year following the year in which the investment has come into operation.

9.2.5.2. VAT benefit

The regulation establishes that goods and services, domestic or imported, that are destined to pre-investment and investment for the production and use of energy from non-conventional sources, as well as for the measurement and evaluation of potential resources, and to advance actions and measures for efficient energy management, will be excluded from VAT.

9.2.5.3. Tariff benefit

Natural or legal persons that as of the effective date of Law 1715 of 2014 are holders of new investments in new FNCE projects and measurement and evaluation of potential resources or energy efficiency actions and measures, shall enjoy exemption from payment of Import Tariff Duties on machinery, equipment, materials and inputs intended exclusively for pre-investment and investment work that are not produced by the national industry and their only means of acquisition is subject to the importation of the same.

9.2.5.4. Benefit Accelerated depreciation

The accelerated depreciation will be applicable to machinery, equipment and civil works necessary for the pre-investment, investment and operation of the generation with FNCE and measurement and evaluation of the potential resources or actions and measures of energy efficiency, which are acquired and/or constructed, exclusively for that purpose, as of the effective date of this law. For these purposes, the annual depreciation rate shall not exceed 33.3% as a global annual rate. The rate may be varied annually by the owner of the project, prior communication to the DIAN, without exceeding the limit indicated above.

9.3. Self-generation of energy

9.3.1. Legal and regulatory framework

- **Law 1715 of 2014:** "Whereby the integration of non-conventional renewable energies to the National Energy System is regulated.
- **Law 1955 of 2019:** Whereby the National Development Plan 2018-2022 is issued. "Pacto por Colombia, Pacto por la Equidad" (Pact for Colombia, Pact for Equity)".
- **Law 2099 of 2021:** Whereby provisions are issued for the energy transition, the dynamization of the energy market, the economic reactivation of the country and other provisions are issued.
- **Decree 2469 of 2014:** Whereby energy policy guidelines are established regarding the delivery of self-generation surpluses.
- **Decree 348 of 2017:** Whereby Decree number 1073 of 2015 is added, regarding the establishment of public policy guidelines on efficient energy management and delivery of small-scale self-generation surpluses.
- **Resolution UPME 281 of 2015:** Whereby the maximum power limit of small-scale self-generation is defined.
- **Resolution CREG 15 of 2018:** Whereby the methodology for the remuneration of the electric power distribution activity in the National Interconnected System is established.
- **Resolution CREG 38 of 2018:** Whereby the activity of self-generation in non-interconnected areas is regulated and some provisions on distributed generation in non-interconnected areas are issued.
- **Resolution CREG 142 of 2019:** Formula for transfer

in the component of energy purchases to the regulated user of the prices of the contracts of the complementary mechanism contracts referred to in Resolution number 40725 of 2019 of the Ministry of Mines and Energy.

- **Resolution CREG 174 of 2021:** Whereby small-scale self-generation and distributed generation activities in the National Interconnected System are regulated.

9.3.2. Concepts of Large Scale and Small Scale.

Resolution CREG 174 of 2021 defines the self-generator at large scale (AGGE for its acronym in Spanish) as the self-generator with installed or nominal capacity higher than the limit defined in article one of Resolution UPME 281 of 2015, or the one that modifies or replaces it. In turn, it defines the small-scale self-generator (AGPE) as the one with installed or nominal capacity equal to or lower than the limit defined in the first article of Resolution UPME 281 of 2015, or the one that modifies or replaces it.

Resolution UPME 281 of 2015, whereby the maximum power limit of small-scale self-generation is defined as the maximum power limit of small-scale self-generation of one (1) MW, and will correspond to the installed capacity of the self-generator's generation system.

9.3.3. Connection.

In the case of self-generation activities, Resolution CREG 174 of 2021 establishes the following requirements for connection and operation:

In order for self-generators to make the connection request, a simplified connection form must be filled out and in the case of self-generators with installed or nominal capacity greater than 100 kW and with declared maximum power of less than 5 MW, a simplified connection study must also be carried out. The simplified connection study does not apply to self-generators without surplus delivery.

The Network Operator must guarantee that the order in which the networks are filled as a result of the capacity allocation is in the order of arrival or registration of the projects. The validity of the connection approval has the following rules:

- The date of notification of the approval of the connection shall be considered as the effective date of the approval.
- The start-up date suggested by the interested party is tentative.
- The term of the approval is six (6) months. In any case, the self-generator may request, free of charge, an additional term of three (3) months to make the connection.
- Once the approved or extended period of validity has elapsed without the self-generator having connected, a new procedure must be initiated and the Network Operator will release the assigned capacity.
- For self-generators with declared maximum power greater than 1 MW and less than 5 MW, the validity of the approval may only be extended once.

On the other hand, the connection contracts between the self-generator and

the Network Operator will be necessary only in the event that at the request of the self-generator the connection assets are supplied or installed by the RO or in the event that the capacity of the network has to be increased. The term for the signing of the contract between the parties is fifteen (15) business days, counted from the effective date of approval of the connection.

9.3.4. Backup service

This backup service, according to the provisions of Decree 2469 of 2014 and Decree 348 of 2017, must be contracted on a mandatory basis by self-generators with systems that exceed an installed capacity greater than or equal to 100 kW; that is, self-generators that do not have a self-generation system that exceeds 100kW are not required to enter into a grid capacity availability backup contract.

The main purpose of this contract is to remunerate (a) the investment associated with the infrastructure required for the connection of the self-generator, and (b) the costs of Administration, Operation and Maintenance (AOM) charged to the grid operator.

It generates a remuneration in favor of the Network Operator which will be freely agreed between the parties, in accordance with a methodology defined in the regulation.

9.3.5. Delivery of self-generation surpluses

Surplus energy is understood as the amount of excess or surplus energy that may be higher in any percentage than the value of its own consumption. As of the entry into force of Law 1715 of 2014, the

delivery of surpluses by self-generators is allowed, establishing different rules for the delivery and remuneration of such surpluses depending on whether it is an AGPE or an AGGE. The latter, in order to deliver surpluses to the grid, must be represented by a generating agent duly registered in the Wholesale Energy Market (MEM).

9.4. Some of the main contracts in the market

9.4.1. Power supply

Refers to contracts entered into by MEM agents for the purpose of buying and selling energy between agents and through them, supplying end users. For the registration of these contracts before ASIC by the MEM agents, at least the price, quantities and start date of the supply must be defined between the parties. Marketers may enter into supply contracts directly with non-regulated users, with the commercial conditions defined by mutual agreement between the parties.

9.4.2. Connection Contract

The connection contract is the one to be signed by any user interested in connecting to the SIN. Users can be a generator, a large consumer or a local distributor with a transporter of the STN.

Resolution CREG 075 of 2021 establishes the obligation of the interested party with assigned transportation capacity to sign a connection contract, with some differences depending on the classification of the project (class 1 or 2).

For class 1 projects according to the classification made by the regulation, the transporter responsible for the system

assets to which the class 1 project will be connected and the interested party must sign a connection contract that complies with the requirements established in the Connection Code and the requirements defined in the regulation.

To sign the contract, the parties will have a term of four (4) months, counted from the date of issuance of the connection concept, and may include the guarantees and other commitments agreed between them. If the above term elapses and there are still differences between the parties that do not allow reaching an agreement to sign the connection contract, a dispute resolution mechanism shall be used, and the parties are obliged to accept and comply with the conclusions of the same.

In addition, the parties must send reports to the Superintendency of Residential Public Utilities (SSPD), where the justified reasons for not signing the contract are given. With the information received, the SSPD will decide if there is a need to initiate an investigation to any of the parties to the contract negotiation.

In the case of class 2 projects, the Network Operator shall enter into a connection contract with the interested party, which shall be governed, as applicable, by the provisions of Resolution CREG 025 of 1995 and shall be entered into once the service feasibility has been approved. Additionally, the connection contract will include the remuneration of the assets built by the Network Operator for the interested party's connection.

9.4.3. Power Purchase Agreement - PPA (self-generation of energy)

The Power Purchase Agreement (PPA) or Long Term Power Purchase Agreement, is one of the most used contractual figures

for the supply of energy with renewable sources, which is due to its versatility and adaptation to the needs of the contracting parties. For the specific case of Colombian legislation and regulation, we must differentiate the PPA used for self-generation activity (self-consumption) and the PPA for energy generation activity as a public service.

In general terms, the elements and characteristics of the self-generation PPA are:

- i. **Bilateral:** the contract is entered into, on the one hand, between a user (hereinafter the "User") (who for the purposes of Colombian legislation will be a self-generator of energy) and on the other hand, a company (hereinafter the "Company") or natural person responsible for the design, supply of equipment, financing, construction, energy supply, operation and maintenance of the self-generation system.
- ii. **The main obligation of the User** is to make timely payment of the energy bill, while the company's obligation is to supply energy in conditions of quality and continuity in accordance with the conditions stipulated in the PPA.
- iii. **One of the essential elements** is the long term of the same, since the financing is being carried out by the Company, a term that allows the return of the investment is required.
- iv. **The price per kWh or the mechanism for defining the tariff and its indexer.**
- v. **Some essential clauses to include are:**

- a. Ownership of self-generation assets.
- b. The form of remuneration for the use of the same.
- c. Remuneration for the operation and maintenance of the self-generation plant.
- d. Remuneration for the supply of energy and the type of energy supply.
- e. Dismantling of the self-generation plant.
- f. The disposition or not of the land on which the self-generation assets will be installed.
- g. The ownership and regulation mechanism of energy surpluses; among others.

vii. Guarantees and insurance to be provided by the User and the Company.

viii. Termination events and penalties.

As it can be observed, under a correct wording of the clauses of a PPA (this will vary depending on each particular relationship), aspects such as the amortization of the price of self-generation assets can be covered, having the same or better conditions than these contracts and everything will depend on the wording of its clauses, the observance of what the regulation may establish and the adequate constitution of guarantees, in accordance with a due identification of the risks assumed by the Company and the User.

vi. Application and processing of tax incentives under Law 1715 of 2014.



9.5. Regulatory framework

The Colombian electricity market has a broad and extensive regulatory framework, so without being exhaustive, some of the main regulations applicable to the sector are presented below:

RULE	SUBJECT
Law 142 of 1994	Whereby the regime of residential public utilities is established and other provisions are issued.
Law 143 of 1994	Whereby the regime for the generation, interconnection, transmission, distribution and commercialization of electricity in the national territory is established, authorizations are granted and other provisions on energy matters are enacted.
Resolution CREG 024 of 1995	Whereby the commercial aspects of the wholesale energy market in the national interconnected system, which are part of the Operating Regulations, are regulated.
Resolution CREG 025 of 1995	Whereby the Networks Code is established as part of the Operating Regulations of the National Interconnected System.
Resolution CREG 022 of 2011	Whereby the provisions established in Resolution CREG-051 of 1998, modified by Resolutions CREG-004 and CREG-045 of 1999, whereby the general principles and procedures to define the reference expansion plan of the National Transmission System were approved, and the methodology to determine the Regulated Income for the Use of this System was established.
Resolution CREG 071 of 2006	Whereby the methodology for the remuneration of the Reliability Charge in the Wholesale Energy Market is adopted.
Law 1215 of 2008	Whereby measures are adopted regarding cogeneration of electric energy.
Resolution CREG 005 of 2010	Whereby the technical requirements and conditions to be met by cogeneration processes are determined and this activity is regulated.

RULE	SUBJECT
Law 1715 of 2014	Whereby the integration of non-conventional renewable energies to the national energy system is regulated.
Resolution CREG 015 of 2018	Whereby the methodology for the remuneration of the electricity distribution activity in the National Interconnected System is established.
Law 2099 of 2021	Whereby provisions are issued for the energy transition, the dynamization of the energy market, the economic reactivation of the country and other provisions are issued.



ABOGADOS & ASOCIADOS

ADDRESS

Bogotá, D.C., Colombia
Calle 19 No. 5-51, Office 506

E-MAIL

contacto@estudiolegalhernandez.com

PHONE NUMBER

+57 (601) 6500070 - 2837153 - 282 5703

WEB PAGE

<https://estudiolegalhernandez.com/>



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