

Distributed generation: A rising energy market in Chile. By Felipe Bahamondez



16 September 2020 | By: [Felipe Bahamondez](#)

In the last 10 years, Chile has gone through a renewable revolution led mainly by solar, wind and mini-hydro projects. Ten years ago, renewables were almost nonexistent in Chile; today, they make up nearly 20 percent of the country's energy matrix and the amount is increasing every day. And if big hydro projects are taken into account, we can say that more than 50 percent of the energy matrix comes from renewable sources.

Gone are the times of volatile high spot energy prices that were an obstacle to development. Around 2013, renewable generators started to look for stable power purchase agreements (PPAs) both in public tenders to service residential customers and with companies with relevant consumption. The public tenders went from prices of US\$129/MWh in 2013 to US\$32.50 /MWh in 2017, with the energy coming completely from renewable sources.

In the last five years, a new market has appeared in Chile, offering a new business opportunity: distributed energy, which is a type of decentralized electrical generation performed by different small grid-connected or distribution system connected generators. In Chile, distributed generation is better known as small generation means, or PMG (from its acronym in Spanish) and small means of distributed generation, or PMGD. In this alert, we will look at this growing market, which has features that make it attractive for investors in uncertain times.

Markets to commercialize electricity in Chile and recent trends

Energy generating activity in Chile has established two markets, a primary market and a secondary market.

The primary market is highly competitive and is based on the existence of bilateral contracts between generators and large customers, including distributors representing small residential clients. This market is the ultimate goal of the energy companies' economic model, which is the supply of electricity.

In contrast, the secondary market derives from dispatching generating units following the principles of economic operation of all generators, regardless of their ownership. This is the so-called spot market.

In the primary market, there are competitive and stabilized prices produced by unregulated competition and the unregulated effects of supply and demand principles. In the secondary market prices are highly variable, since they are determined by the economic dispatch and by restrictions due to common contingencies of the electric system.

Distributed generation market: PMGs and PMGDs

PMGs are projects with installed capacities up to 9,000 kW and are connected to the main transmission, sub-transmission or additional transmission grid. PMGDs are means of generation whose capacity surplus is lower than or equal to 9,000 kW and which are connected to the facilities of a distribution company or to the facilities of a company that owns electrical energy distribution lines that are used public domestic goods.

Both are regulated by Decree No. 244 of January 17, 2006, issued by the Ministry of Economy, which approved the Regulation of Non-Conventional and Small Generation Means established in the Energy Law (hereinafter, the Regulation), and also have the same characteristics: they can be "self-dispatched," receive transmission toll reductions, and access the stabilized price regime.

In the case of a PMGD, article 39 of the Regulation states that the owners or operators of a PMGD included in the injection and withdrawal balance sheets may elect to sell their energy to the system at an instantaneous marginal cost or to a regime of stabilized price, an option that must be communicated to the coordinator at least six months before the PMGD starts operating.

Article 40 of the Regulation establishes that the instantaneous marginal cost corresponds to the marginal time cost calculated by the coordinator in the corresponding primary distribution substation bar; and article 41 establishes that the stabilized price regime corresponds to the short-term energy node price of the trunk bars associated with the primary distribution substation bar corresponding to the PMGD injection.

The stabilized price is a theoretical price that can be understood as an approximation of the short- and long-term energy market prices, where short-term price takes into account the weighted value of all PPAs currently operating in the market and the long-term price for the weighted average of the spot market prices for the next four years.

The potential variation of both prices is stabilized by a band mechanism, defined in article 168 of D.F.L. N° 4, General Law of Electric Services, and the price is calculated every six months by the National Commission of Energy. This methodology grants stability over time and in each period-to-period calculation of the generator's energy injection valorizations.

Nowadays, a standard practice in the market is that a portfolio of PMGD projects is presented to investors in order to achieve financing. Projects subject to the stabilized price scheme have already been successfully financed by multilateral banks and Chilean commercial banks, setting a precedent in the Chilean energy market and making PMGDs a new viable option for developers and investors in Chile.

Finally, there are some regulatory changes under way which will likely be enacted during 2020 that will replace the Regulation. The coming new regulation will be contained in Supreme Decree 88, which will generally maintain the special status of PMG and PMGD projects.

Connecting a PMGD project to a distribution network

The process to connect a PMGD to a distribution network is well defined by the Regulation and the PMGD Connection and Operation Technical Standard, or NTCO (Norma Técnica de Conexión y Operación de PMGD).

This process consists of the delivery and exchange of a set of forms and documents between the party interested in connecting a PMGD and the distribution company. The exchanged documents contain specific information about the facilities of the party interested in connecting a PMGD and the facilities of the distribution company.

The paramount event in this process is the issuance of an informe de criterios de conexión (hereinafter, an ICC) by the relevant distribution company, which contains the conditions under which the PMGD will be connected with the distribution facilities. The ICC will be valid for nine months.

In addition to the ICC, the distribution company could issue an informe de criterios de costos, which establishes the costs associated with the modifications to the distribution facilities which will be needed for operating the relevant facilities in safe conditions once the PMGD is connected to them.

Once the reports are issued, the distribution company and the owner of the PMGD can sign a connection and operation agreement, which establishes the technical obligations that the owner of the PMGD must comply with for safely injecting and withdrawing power and energy from the electrical system.

The ICC will be valid for nine months with the possibility of extending such term – with reasonable cause – for another nine months, if the interested party shows that the works are progressing and can justify the extension of the effective date of the ICC.

The PMGD owner and the distribution company must execute a connection and operation agreement, which will regulate the

obligations to be complied with by the PMGD.

Finally, consider that although the process is very well defined in terms of periods for document delivery and evaluation, hiring an engineering company which specializes in the market can greatly ease the process.

Environmental considerations

Environmental Framework Law No. 19,300 of 1994 (EFL) provides a system of environmental impact assessments which certain projects or activities likely to cause a negative environmental impact should undergo.

The EFL lists the categories of projects that will be subject to the process, distinguishing between those that might cause a significant impact and those that might not. Projects that might cause a significant impact will be subject to a procedure called an environmental impact study (EIA) and those that might not will be subject to a procedure called an environmental impact declaration (DIA). The requirements and conditions applicable to the EIA are higher than those applicable to the DIA. The EFL list, which details the categories of projects that will be subject to the referred environmental processes, includes power plants of more than 3 MW. Therefore, PMG and PMGD projects that are over 3MW up to 9MW must file only a DIA. For projects that are under 3MW, the DIA is not mandatory and the project is exempted from environmental approvals. This will considerably reduce the development time of and investment in these projects.

Learn more about Chile's distributed energy market by contacting the author.