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Mexico Changes Methodology for Calculating Fuel-Free Energy in Electric Power Cogeneration Systems

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On May 26, 2023, the Energy Regulatory Commission (CRE) published agreement No. A/018/2023 in the Official Gazette of the Federation (DOF), updating the reference values of the methodologies for calculating electric power cogeneration system efficiency and the criteria for determining efficient cogeneration, as well as the criteria for efficiency and methodology of calculating the percentage of fuel-free energy established in the resolutions RES/003/2011, RES/206/2014, /RES/291/2012, and RES/1838/2016 (the "Agreement"), which took effect May 27, 2023.

The below tables compare the relevant changes made by the Agreement to each of the resolutions.

I. RES/206/2014

The Agreement modifies Section 1 of the methodology for calculating the efficiency of electric energy cogeneration systems and the criteria for determining efficient cogeneration.

Modifications	RES/206/2014	A/018/2023
Section 1 – Reach and Objectives	----------	**1.1.V.** Contribute to the rational and sustainable transition of current energy, industrial, technological, and economic systems that rely on based on the transformation of nonrenewable energy resources, towards another energy system based on the sustainable use of electric energy.
Implementation of new definitions	----------	**2.0.** Cogeneration: generation of electric energy produced in conjunction with steam or another secondary thermal energy, or both; when the thermal energy not used in the processes is used for the direct or indirect production of electric energy or when fuels produced in its processes are used for the direct or indirect generation of electric energy and provided that, in either case: a) The electricity generated is used to satisfy the needs of establishments associated with cogeneration, provided that the energy and economic efficiency of the entire process increases and that the process produces more electric energy than conventional generation plants. The permit holder may not be the operator of the processes that give rise to the cogeneration. b) The applicant must make surplus electricity available to the Federal Electricity Commission, pursuant to the terms of Article 36-Bis of the Public Electricity Service Law.
	----------	**2.1 Bis.** Fuel-free energy (ELC): Electric energy that falls under the definition of "clean energy," according to the current methodologies.

II. RES/291/2012

The Agreement modifies the sixteenth and eighteenth provisions of the general provisions for accrediting efficient cogeneration systems.

Modifications	RES/291/2012	A/018/2023
Changes to Chapter IV, "Procedures for the measurement of variables for the evaluation of cogeneration systems". New definitions.	**Sixteenth.** The General Provisions discussed in this Resolution note in the sixth provision that permit holders with cogeneration systems that are either under construction or about to begin production fall into the "efficient cogeneration" category, as long as they comply with the requirements established in this document. The Model Interconnection Agreement will be modified to include the above provisions.	**Sixteenth.** The systems referred to in the preceding provision are considered efficient as long as they do not use an additional fossil fuel for the generation of electric energy. Authorized persons must evaluate the cogeneration system to verify, among other things, that the cogeneration process uses thermal energy to generate electricity. If additional fuel consumption is observed during such evaluation, this must be recorded in the corresponding technical report.
	Eighteenth. In compliance with the provisions of Article 69-H of the Federal Law of Administrative Procedure, published on	**Eighteenth.** The systems referred to in the preceding provision are considered efficient as

Modifications	RES/291/2012	A/018/2023
	March 8, 2012, this Commission, through the Office of the Secretary of Energy, submitted to the Federal Commission for Regulatory Improvement (COFEMER) the Regulatory Impact Statement (MIR) corresponding to the preliminary draft of this Resolution.	long as they do not use an additional fossil fuel for the generation of electric energy. Authorized persons must verify that in the cogeneration process, fuels not necessarily produced via the same cogeneration process are used for the generation of electric energy. If additional fuel consumption is observed during the evaluation of the cogeneration system, this must be recorded in the corresponding technical report.

III. RES/1838/2016

The Agreement modifies the general administrative provisions containing the efficiency criteria and establishing the calculation methodology to determine the percentage of fuel-free energy in energy sources and electric power generation processes.

Modifications	RES/1838/2016	A/018/2023
Changes to Case VI of the Reach of Chapter I	----------	**Case IV.** Plants using auxiliary cooling technology to improve the thermal efficiency of the compressor-turbine ratio.
Changes to Chapter 4	**4.1 Scope.** This case will apply to clean generators and distributed clean generation, as established in the Guidelines and the Electric Industry Law (LIE), whose power plants are in operation and which use fossil fuels and clean energy, to determine their percentage of fuel-free energy. This case is applicable, by way of example but not limitation, to the energy generated by sugar mills that comply with the efficiency criteria established by the CRE and emissions criteria established by the Ministry of the Environment and Natural Resources.	Although the scope of Chapter 4 remains in force as established in RES/1838/2016, the Agreement adds the following condition: It is applicable to electric generation with two or more thermodynamic cycles sequenced for the maximum use of the residual thermal energy of its main cycle that comply with the efficiency criteria established by the CRE
	----------	In Section 4.4, the Agreement adds that electric energy is considered “clean” if it is generated from fuel-free energy provided by one or several lower sequential thermodynamic cycles that take advantage of the residual heat of a thermal machine in a main thermodynamic cycle which uses natural gas or cleaner fuels, without using any additional or supplementary fossil fuel. The section establishes different variables used to calculate elements such as the electrical efficiency of the generation package. Section 4.4 also establishes the necessary conditions for power plants that use natural

Modifications	RES/1838/2016	A/018/2023
		gas or cleaner fuels and have lower sequential cycles to be considered "clean" energy.
Addition of Chapter 8, "Case VI. Power plants that use auxiliary cooling technology to improve the thermal efficiency of the compressor-turbine ratio."	----------	The case referred to in Chapter 8 applies to power plant units that use auxiliary cooling to condition the air entering the thermodynamic cycle, which complies with the efficiency criteria established by the CRE. The Agreement establishes variables and equations to determine the fuel-free energy of power plant units that use auxiliary cooling technologies, differentiating between auxiliary cooling technologies based on evaporative cooling and power plant units with non-evaporative external auxiliary cooling.

Conclusion

According to the newly established conditions, combined cycle power plants are considered clean energy sources. However, the Energy Transition Law (LTE) states that "electricity generation through combined cycle plants may not be considered as efficient generation."

This redefinition, which grants combined cycle plants the status of clean energy, allows power plants to enter the Clean Energy Certificates market, which aims to serve as a tool to measure progress towards an energy transition to renewables and Mexico's decarbonization. Likewise, the reconceptualization of what constitutes clean energy expands the amount of fuel-free energy in the country's energy matrix, but it does so by using fossil fuel sources, and therefore does not strictly comply with the requirements established for an energy transition.

Thus, by considering combined cycle plants as clean energy plants, the CRE intends to promote compliance with its environmental goals to counteract the effects of climate change. These goals are national and international in scope. On the one hand, the LTE states that by 2024, Mexico will generate 35% of its electricity from renewable sources. On the other hand, via the Paris Agreement, Mexico has committed to the international community to reduce its greenhouse gas emissions by 22% by 2030. However, by 2022, the share of clean energy in the country's energy matrix was 27% short of its 32% target.

** This GT Alert does not apply to matters or laws in the United States, nor to other jurisdictions outside of Mexico.*

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