NON-RESIDENTIAL ELECTRICITY CONSUMPTION SURVEY FOR THE AGUASCALIENTES METROPOLITAN AREA (ENCENRE 2019)

1. Objective

The objective of the survey is to characterize small and medium-sized establishments in the Aguascalientes Metropolitan Area in relation to the usual practices of energy consumption, equipment and cost of electricity service, as well as in terms of environmental aspects.

2. Target population

The survey is aimed at establishments of small and medium-sized private companies in the commercial and service sectors.

3. Geographic coverage

The survey is designed to be representative at the level of the Aguascalientes Metropolitan Area, which includes the municipalities of Aguascalientes, Jesús María, and San Francisco de los Romo.

4. Survey framework

The sample design for ENCENRE-2019 is characterized by being probabilistic. Consequently, the results obtained from the survey can be generalized to the entire population of the study domain. The design, in turn, is stratified according to the number of employed personnel. The ultimate unit of selection is the establishment.

It was based on the official list of economic units of the National Statistical Directory of Economic Units (DENUE) published by the National Institute of Statistic and Geography (INEGI), which offers the identification data, location, economic activity and size of more than 5 million active economic units in the Mexican territory. Specifically, the following economic sectors were selected from the 2018 North American Industrial Classification System (SCIAN-2018), considering only private establishments:

NAICS Codes – Year 2018	Description
43	Wholesale trade
46	Retail trade
48-49	Transportation and warehousing
51	Information
52	Finance and insurance

53	Real estate rental and leasing
54	Professional, Scientific, and Technical Services
56	Administrative and Support and Waste Management and Remediation Services
61	Educational services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)

For the strata of employed personnel, establishments belonging to the following categories were considered:

Original INEGI stratum	Description	ENCENRE-2019
1	0 to 5	Not considered
2	6 to 10 workers	1
3	11 to 30 workers	2
4	31 to 50 workers	3
5	51 to 100 workers	3
6	101 to 250 workers	Not considered
7	251 or more workers	Not considered

Proportional stratified random sampling using the following formula:

$$n_h = (N_h/N) \cdot n$$

where

n_h = sample size of stratum h.
N_h = population size relative to stratum h
N = size of the entire population
n = full sample size

5. Sample size

Following the study objectives, the desired minimum sample size was 700 establishments. To calculate the sample size, the following formula was applied:

$$n = \frac{z^2 s^2}{r^2 \bar{x}^2 (1 - tnr)}$$

where:

n = sample size

z = value recorded in the statistical tables of the standard normal distribution for a predetermined confidence level.

s = estimate of the population standard deviation of the variable of interest (electricity consumption).

$\bar{x}$ = estimate of the average of the variable of interest (electricity consumption).

r = maximum acceptable relative error.

The following values were used: expected non-response rate of 25%, mean consumption of 2000 kWh and standard deviation of 1250, z-value = 1.96 and error of 5%. As a result, the sample size obtained was 800 establishments.