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INTEGRAL ATTENTION TO SERVICE SOLUTIONS

Abstract:

This article shows the compliance and improvement of service installation times (metering equipment) in the country's electricity distribution companies, as established in the Quality Regulation 004/001. In this context, the measurement of time was considered, from the moment the customer's request for service is received until its installation by the Distributor; compliance with two guiding objectives, SATISFIED CUSTOMERS AND HEALTHY FINANCES. The type of research was quantitative and user surveys were used as a research technique. The results obtained showed customer satisfaction with respect to the quality, timeliness and cost of the service. Finally, this methodology was implemented in the Commercial Service Quality Regulation, as regards civil works, as a measurement system and it is currently in charge of Distributors within their operating costs.

Keywords:

Efficient resource management

JEL Classification: M19

Introduction

The commercial service reports established in the Quality Regulation 004/001 that the Electric Company submits to the Regulatory Entity, formerly CONELEC, now ARCERNNR, regarding the measurement of the time from the date of payment of the energy service request until its installation, for the years prior to 2007, were higher than the results established by the Regulation.

The Electric Company, through the Facilities Department, established several work policies aimed at reducing service times, such as hiring labor for the installation of connections and meters, but this action did not help to improve service times as expected.

In order to achieve an improvement in the results of the commercial service, two stages were established in the Work Plan: an initial pilot plan and the development of the project.

In the development of the project, a market study was considered for the growth and maturity stage, taking into account the initial experiences and those obtained in the pilot plan; supported by the needs for change or modification, as well as the analysis of the causes that do not allow the fulfillment of the objectives, in addition to the internal and external factors that affect the Enrollment Process, so that the solution to the problem is integral with the participation of all the personnel of the Facilities Department.

The internal factors that affected the timely attention of service requests were the lack of materials in the warehouses and the time used in the delivery of materials, while the external factor contributed to the delay in time in the completion of civil works by the user, affecting the Company's human and economic resources due to the number of visits made to the site.

As a result of the analysis of the existing problems in the Electric Company within its Business Processes, it incorporated indicators that measure the attention times of both Design and Installation activities; creating parallel work strategies for the continuous improvement of these indexes.

Unit prices for materials and labor were defined for the participation of contractors in the installation of connections, meters and civil works, the latter initially considering only the installation of the grounding system, connection support and meter box. Currently, the civil works consider all the infrastructure activities necessary for the installation of connections in areas, subway, including the extension of interior installations in the case of meter relocation.

Through an open and public contest, the invitation to all natural and legal persons to participate in the qualification as private electricians was socialized. The process included compliance with the requirements, training course and evaluation.

During the course of the pilot plan, which began at the end of 2006, and the development of the definitive project during 2007, the necessary adjustments were made as a result of the analyses and surveys conducted with the Client, reaching the conclusion that it is a totally viable project.

The adjustments made in the project were oriented to the compliance of norms and procedures established by means of instructions and indicators in the Business Processes, as well as to the availability of the advances in the development of computer applications, reorganization of human resources, mobilization, and implementation of new activities.

Currently, the average time for new services and modification of existing services is three days, improving the time established in the Regulation, taking into account that the work performed involves civil works, an activity incorporated in the country's electricity distribution companies.

Problem statement

The greatest difficulty faced by the country's electric utilities is to comply with the quality indexes of the commercial service referred to in the time required to install the service connection and meter; a task that was affected by the lack of opportunity of labor and materials for its execution, as well as in the provision of internal civil works at the customer's domicile, as established in the Substitute Regulation of the Electricity Supply Regulation.

The lack of timeliness in the supply of household electricity service resulted in the growth of commercial losses, an indicator that in our country reflects the commercial and distribution management of the electric utilities, and that in addition to non-compliance, affects the VAD indicator, added value of distribution, a resource with which the highest governing body, the Ministry of Energy and Regulator, leverages investment projects in customer service; in 2006 the referred indicator was at %, a value above the established limit, at %.

Another aspect was the high financial cost in operating expenses assumed by the Company, immersed in the reprocesses to approve a service installation order, due to the home visits to verify compliance with the civil works in charge of the client; an average of three days to approve the work order.

Prior to the installation of the service, the clients had to contact personnel from three different sections of the Company, so that they could know the necessary civil works, the value of the budget and the date of installation of the service.

The average time from application submission to installation date was 60 days for the baseline project evaluation year.

Methodology

The application of the methodology contributed to the reduction of the integral attention times of service requests to values lower than those established in the Quality Regulation, considering the following parameters:

- Market study and cause-effect analysis; it allowed to establish the technical, financial, technological, organizational and market parameters that help to optimize the time of attention in activities.

- Implementation of Quality and Productivity, with the purpose of defining indicators that allow the control of the activities developed in the Enrollment Process.

- Implementation of Continuous Improvement results, defining an adequate restructuring of operational and administrative activities of the personnel of the Design and Budget and Connections Sections, under the Facilities Department.

- Establish and implement a functional organization chart that considers the location of strategic zones in the Urban service area, as well as the redistribution and promotion of the Human Resources that participate in the project.

Market Research

1. Affected population with estimated billings.
   The previous working conditions and policies were based on the National Service Connections Law, which defined the technical conditions for the connection of services, but there were no norms that instructed the objective location of the measurement sites.

   The initial housing constructions in the neighborhoods have been substantially modified due to family growth or the need to occupy as much space as possible, even going to the extreme of not respecting front setbacks and sidewalk spaces. This type of modifications in the constructive part of the houses has caused that the metering sites are totally impossible to enter, depending on the user the facility for the operation and maintenance of the metering equipment by the Company.

   The impossibility of entering homes has caused more than one inconvenience, not only with the delivery of estimated bills, but also with the insecurity of customers, who are the targets of assaults and robberies by people posing as employees of Empresa Eléctrica who commit crimes.

2. Acceptance of work performed by the Electric Company.
   Surveys were conducted to determine the degree of user satisfaction with respect to the civil works policy and the timeliness of the service, resulting in the following results.

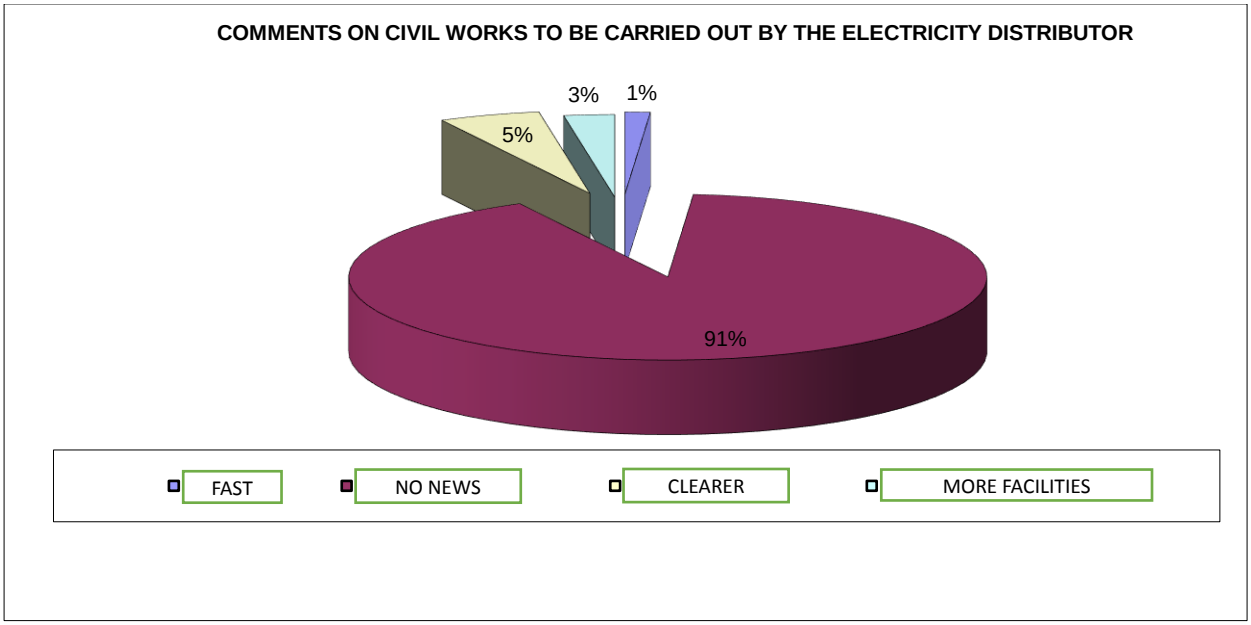


Figure 1, Comment customers, civil works

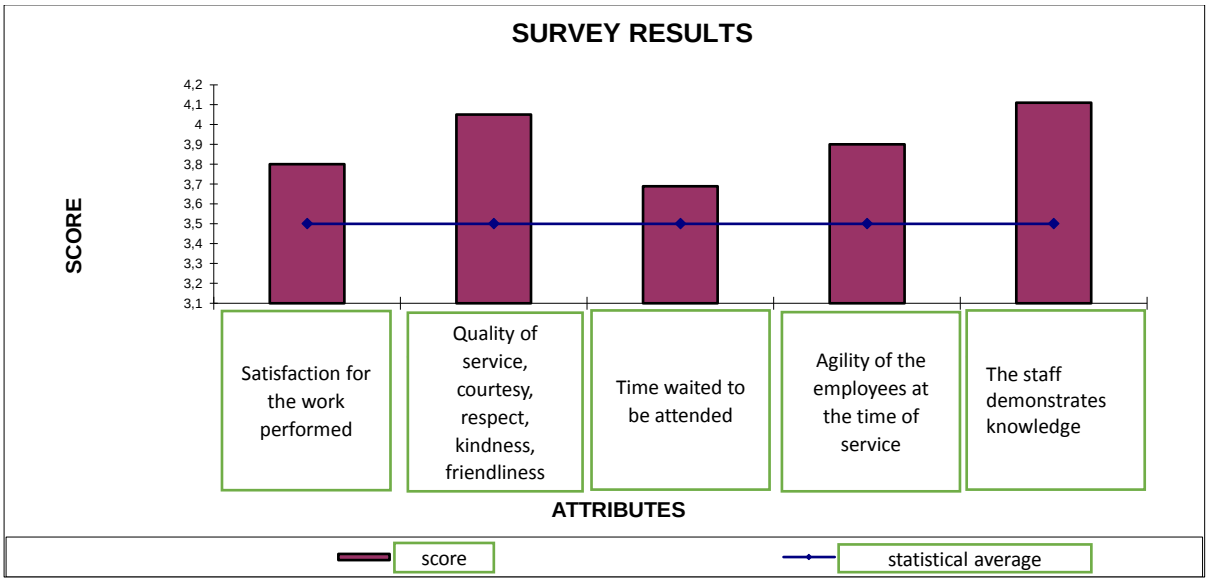


Figure 2 Survey Results. August 2007

In Figure 2, the average expected satisfaction was 3.5 for all attributes, all of which exceeded according to survey results.

3. Technical Study

First Stage PILOT

3.1 Reasons for disapproval of civil works.

To obtain the information on the reasons for rejection, an SQL (SOLRECHA Rejected Applications) was processed in the SIDECOM database, which groups the different rejection codes used to enter rejected applications into the marketing system.

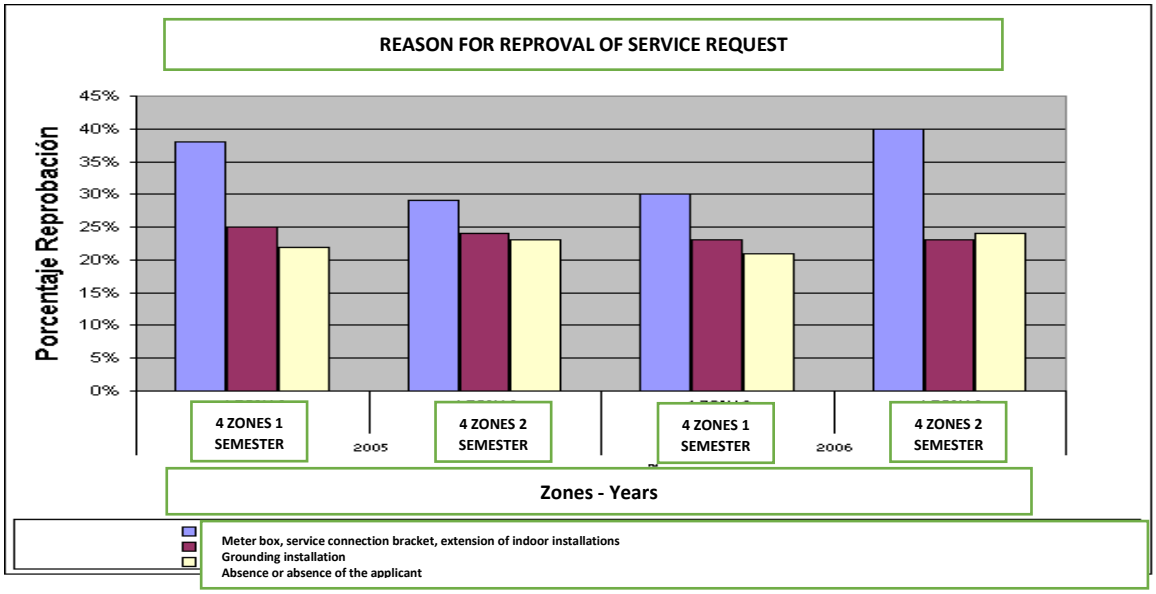


Figure 3, Reasons for Rejection Service Requests

Figure 3, for 2005 and 2006, shows the behavior of the percentage of reprovals for reasons of civil works, with respect to the total, exceeding 60%; while the inspections not carried out due to absence and lack of direction of the applicant is greater than 20%.

3.2 Definition of the technical characteristics of the materials to be used in the civil works.

The technical conditions of the main materials to be used in civil works were defined:

Anti-theft box - Box and matrix key with anti-fraud system. Of metallic construction with electrostatic paint, or plastic with polycarbonate material. Additionally, the dimensions must satisfy the installation of any type of electromechanical, electronic, single-phase or polyphase metering equipment.

Grounding Support - 2 ½" galvanized pipe, 2 mm wall thickness.

Grounding Rod - Copper rod, 1.80 m high and 16 mm diameter, and 254 micron coating.

Extension of Indoor Installations - TW conductors 4,6,8,10 AWG calibers, wiring.

Troughs .- Plastic with additional fastening material and accessories.

Subway service manholes - Box built on the floor with plastered walls and a cover with the following dimensions: 60 cm x 60 cm and a depth of 50 cm.

Ducts for inspection wells: Galvanized iron pipe, reinforced PVC, polyethylene (reinforced hose), conduit pipes. In any case, the duct diameter shall be at least 2 inches.

At present, there are approximately 50 civil work items, the most frequent being those indicated above, but it is important to note that each activity or civil work that is incorporated is also included in the instructions, defining how to perform the task and the type of material to be used.

3.3 Preparation of Instructions for the Construction of civil works.

Based on the condition and type of materials, an instruction manual for construction and installation of civil works was prepared, which is part of the Registration Procedure, ISO Quality System, code DC.DDI.751.IN.01.

The instructions have been updated according to the new activities that are incorporated as part of the civil works.

The instructions have been updated according to the new activities that are incorporated as part of the civil works.

The purpose of these instructions is to define to the labor service provider, the Contractor, the manner and conditions for the execution of the work, since the payments are defined through unit prices.

3.4 Elaboration of authorization forms for civil works.

The factor of payment of the civil works by the client was considered very important. Paying in cash or approaching the Agency to negotiate a credit is time consuming for the client, and it is unlikely that all of them will pay immediately, which means that the failures remain at the percentages shown for 2005 and 2006, i.e. without improvement.

Legal Counsel defined the legal terms necessary so that, by means of an authorization, the client allows the Company to give credit to the budgeted amounts for civil works and also added the possibility of including the cost of the Deposit in Guarantee and Contribution, so that in a period of six months, the client will be billed with no down payment and with fixed installments the total amounts of the electric energy service.

Form Code DC.DDI.751.FRO.01 "AUTHORIZATION OF CHARGE FOR THE EXECUTION OF CIVIL WORKS OF ELECTRICAL INFRASTRUCTURE FOR CONNECTIONS AND METERS", which is part of the Registration Process of the ISO Quality System, was prepared and approved with the support of Legal Counsel for the validity and support of the Distributor in case of disagreements with the user.

It should be noted that the percentage of observations was marginal, reaching an average of one percent of claims with respect to the total number of requests handled, compared to a baseline condition of 60% of rejected and unattended requests.

3.5 Elaboration of unit prices for payment to contractors and payment to users .

The elaboration of unit prices was carried out by means of a cost study that considered:
Direct Costs.- Salary market salaries, mobilization, equipment and tools.
Indirect costs: Administration, office equipment, technological equipment.
General Expenses: Rent, utilities payments, etc.
Affecting Factors - Distance, difficulty.
Yield - Yield of the type of work.
Profitability: Profitability of 10%.

In calculating costs, depreciation rates for vehicles, tools, technological equipment, etc. were taken into account.

The instruction "PROCEDURE FOR THE DETERMINATION OF NON-PRICED PRICES" is part of the Company's Quality System with code DF.DEE.61.PRO.06, which is applied to the calculation of the price of any activity contracted by the Company.

3.6 Training of plant personnel, designers and inspection assistants.

All natural and legal persons interested in participating as private electricians in the installation of connections, meters and civil works were invited by means of a public call for bids under the unit price payment policy.

The invitation was attended by suppliers, both natural and legal persons, who were rated on three factors:
a) Work experience on the part of the contractors and operating personnel.
b) Economic solvency (initial investment in the project), purchase of materials for civil works. Capacity to respond economically as an initial investment of 50% of the contract value.
c) Operational capacity; personnel, mobilization, equipment and tools. After the first evaluation, sixty suppliers were qualified and participated in the training process prior to contracting, both in the urban and peripheral areas.

3.7 Qualification and training of contracted human resources, service providers.

Suppliers and qualified personnel participated in a training and evaluation process, concluding this stage with the definitive acceptance of 16 contractors, 5 for the urban zone and 11 for the peripheral zone.

3.8 Development of labor contracts.

Legal Counsel participated directly in the preparation of the model contract, with the legal terms considering the responsibility and handling of the materials delivered by the Company to the Contractor, as well as the documents and certificates of guarantee required for the economic advance that is delivered to the contractor (20% maximum of the value of the contract).

Second Stage PROJECT

3.9 Implementation of computer support in automatic budget evaluation

For IT support, the Software Development area developed three important applications:

a) Automatic valuation of civil works. - This application allowed the administrative personnel in the budget valuation process to obtain online the updated cost of the activity performed, in terms of the price to be invoiced to the client, including VAT; in addition to registering data to feed the data table that shows the amount of activity performed by the contractor for settlement purposes.
b) Data interface. - Computer development in which the suppliers participated in order to automate the sending and receiving of information on the work performed. This task was carried out by means of data entry and downloading of information via the Internet, with the respective data validation, which allowed obtaining the report of the work performed immediately.
c) Control indicators. - The SIDEBENCH marketing system was used to obtain information on the time and percentage of service requests. These indicators were part of the related objectives of the Quality System Enrollment Process and also one of them is part of the data sent to CONELEC as part of the Commercial Indexes, Quality Regulation 004/001.

3.9.1 Implementation of new civil works activities.
During the period of time of the plan and project, new civil works activities were incorporated, as a result of the requirements and needs of the users.

As an example, we can mention the adaptation of lockers for panel cabinets, junction boxes in the extension of interior installations, construction of concrete columns and mochetas for fastening the connection and meter, breaking and replacement of sidewalks and walls, opening of trenches, fastening structures for meters, embedding of meter boxes, etc.

3.9.2 Updating of unit prices.
Unit prices were established in the base line, and are updated on an annual basis according to the following factors:
(a) Annual inflation,
b) Increase in salary values in the wage market,
c) Cost of materials provided by the contractor, and,
d) Performance of work performed.

Organization Study

The internal and external analysis of the Facilities Department was carried out with the participation of all personnel during the implementation of the pilot plan, in order to establish the appropriate organization and structure of the Department.

1. SWOT Analysis, Facilities Department.

   The internal and external analysis of the Facilities Department was carried out with the participation of all the personnel during the implementation of the pilot plan, with the purpose of establishing the adequate organization and structure of the Department.

   The internal analysis highlighted the Strengths and Weaknesses of the resources of the Facilities Department, where it was ratified that the most important factor is the human factor, which has all the predisposition to be incorporated in any type of change that is for the benefit of the organization, as an example we can cite the participation of staff in the work in deferred and extended hours. Also the personnel is highly trained in their personal formation, as well as in the experience and abilities in carrying out their tasks.

   Additional resources such as technology (information systems) and the implementation of the quality system in the institution helped to facilitate the development of the final project.

   The weak point of the internal analysis was identified in the lack of integration of personnel in activities that cannot be fragmented, such as the integral attention of service requests in both the design and installation stages, so as not to generate delays or pending tasks in the fulfillment of the Enrollment Process, due to the previous condition of the organizational structure of the Facilities Department.

   In the external analysis, opportunities and threats were observed, where the opportunities are oriented to similar experiences in other international distributors, where an added value is given to the electric energy service, such as the construction of civil works (PERU), sale of household appliances (CODENSA) COLOMBIA.

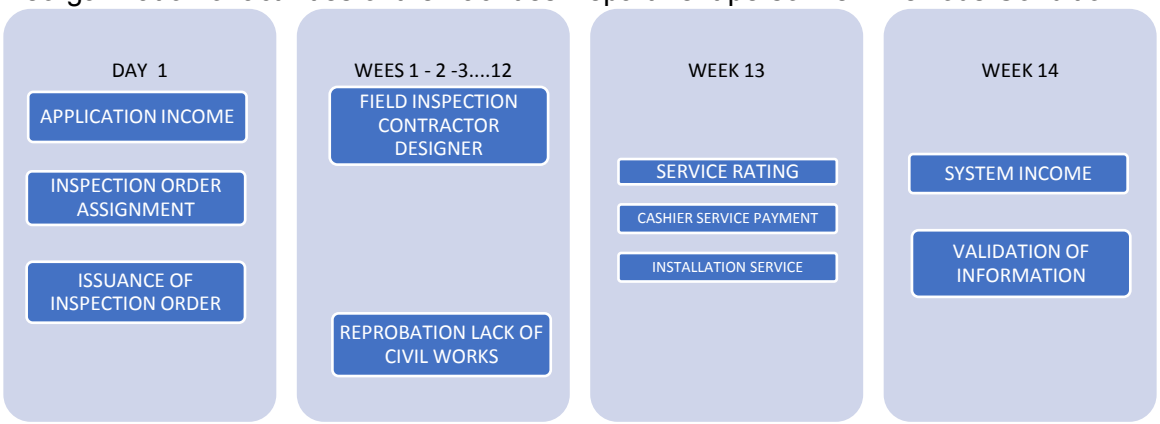
   Additionally, in the external analysis it was observed that the application of the Substitute Regulation to the Electricity Service Supply Regulation, helped to make the compliance of civil works by the user a requirement; as well as the definition of the Metering System by

the Company, where the meter box, fastening equipment and meter protection, which were previously considered as civil works, are now part of the Metering System.

Also in the external analysis, the growth of the population of new customers by 7% per year in 2006 and currently at 3%, and the monopoly that exists in all the distributors, helps to ensure that any change in the commercial processes will always keep the demand fixed.

Finally, after the internal and external analysis, it became evident that a reorganization of activities and a new organizational structure is necessary to optimize human resources and eliminate the downtime generated by performing isolated tasks.

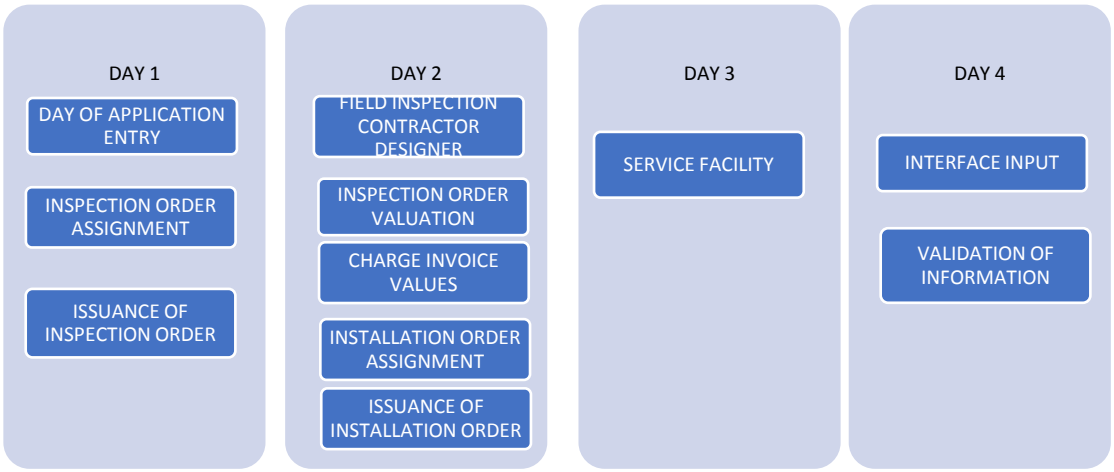
2. Reorganization of activities of the Facilities Department personnel. Previous Condition



The relevant activities for the inclusion of a new customer to the Distributor's commercial system have two well-defined stages, Design and Connections,

The established working condition was:
a) Inspection of an average of three visits prior to approving a service request, due to the verification of compliance with civil works.
b) Reinstatement of requests.
c) Payment of the budget by the client.
d) Installation of the service adapted to the civil works built by the client.

Current Condition



The works are carried out in an integral way, that is, inspection, payment of the budget (credit) and assignment for the installation of the service, the designer participates in the whole process with the support of the supervisor and coordination with the contractor.

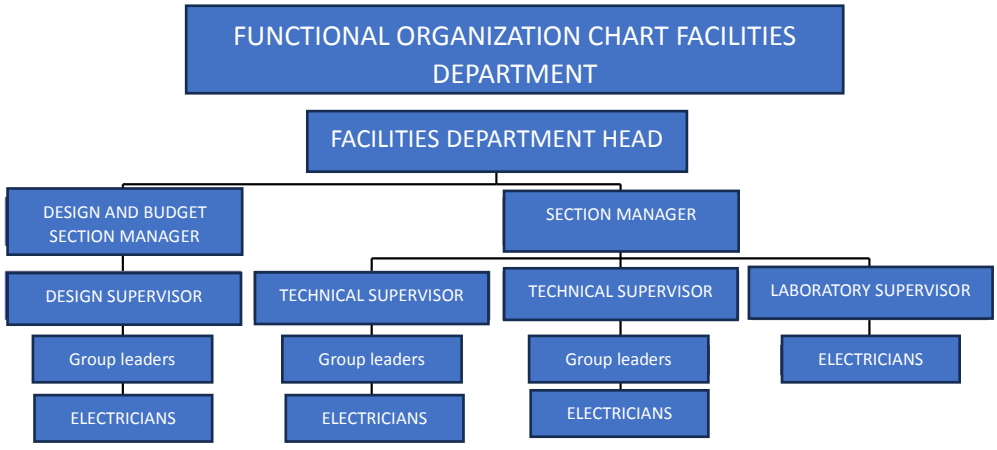
At the beginning of the process, when the request is received (first day), customer service personnel participate in the possibility of carrying out civil works in parallel with the installation of the service connection and meter, for which the customer signs the authorization for civil works.

On the second day the designer carries out inspection with the head of a group or in charge of contractors; visits the client and defines type of work and materials to be used, location of meter site, costs to be included in consumption charts, so that there is no possibility of rejection of the installation order for reasons of lack of location to the client or disagreements for civil works or location of meter site.

On the same day (second day) of the inspection in the afternoon the estimates are assessed on the basis of the initial authorization and agreement with the customer, the next day (third day) the group leader of the contractor with his staff performs the work approved the previous day including the civil works. The material necessary for the installation is stored in the contractor's warehouses, since the expenditures are biweekly or monthly depending on the amount of work done and the human resources available from the contractor.

After installation, the contractor reports the activities and work performed by means of Interfase electronic communication.

These new activities made it necessary to define a new organizational structure, as shown below, where the positions are associated with the new integral functions.



3. Change in the organizational structure of the Facilities Department Sections. Previous condition

Figure 3 Structural Organization Chart Facilities Department, Previous Condition

Figure 3 shows the previous condition of the Facilities Department's structural organization chart with its two Sections, Design and Connections, in which the activities were carried out in isolation as independent sub-processes.

Current status

For the reorganization and restructuring of the Facilities Department, the following aspects were considered:

a) Reorganization of personnel in a new work structure,
b) Definition of functions for the personnel according to the new reorganization,
c) Decentralization in strategic areas to help reduce mobilization time. Control by means of indicators.
d) Resources.

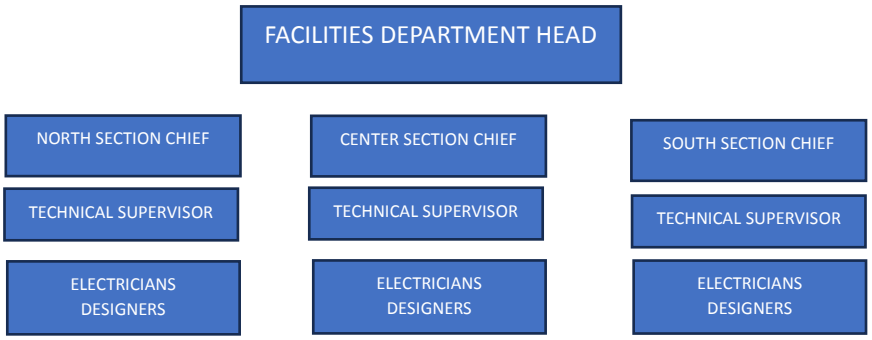


Figure 4 Structural Organization Chart Facilities Department, Current Condition

Currently, and after an external process with the firm Paredes & Associates, the appropriate organizational chart was established based on the personnel evaluation, defining the integral attention of the Design and Connections sub-processes in three zonal sections.

The changes were made from the Zonal Section Heads downwards, redistribution of supervisors and clerks, creation of supervisors, redistribution of electricians to designers, and the creation of the support of an analyst for the Installations Department.

Currently, the three Zonal Sections of the Facilities Department are already in place.

4. Promotion of personnel.

As part of the reorganization of functions and restructuring of the Facilities Department, work audits were carried out in the Northern Section Project to verify the new functions assigned to the personnel, resulting in the reclassification to Controllers (Technologist Training) level 22. Formerly designers level 18

Financial Study

4.4.1 Methodology for calculating unit prices for civil works.

The methodology for calculating unit prices establishes the cost parameters, direct, indirect, overhead, depreciation, performance and profit explained in the section on "Acti".

It should be noted that depending on the location or site of the work, the application or not of the distance factor, 20% in addition to the cost of the work, is automatically defined.
The prices of civil works invoiced to the client are defined on average regardless of their location, urban or peripheral. The distance factor is applied exclusively to the payment of work performed to the contractor.

Results

1) Percentage of rejections with respect to the total number of applications submitted, Reasons for Rejection.
2) Days of attention to applications after payment density discharge.
3) Percentage of services attended within the established deadline.

The results show the great difference between the three urban zones, Yavirac, Urinsaya and Turubamba in comparison with Ananzaya (Agencia Inca Zona Norte) where the project was implemented; the attention times after payment is for the month of February 2008 2.5 days and the percentage of requests attended within the established term is more than 95%, this shows that it is possible to comply with the Quality Regulation 004/001 established by CONELEC. But it is very important to analyze that the result of the times and percentage of attention includes the works with Civil Works, achieving the Electric Company to give an added value in its commercial activity.

Implemented in Resolution No. ARCERNNR-023/2023 REGULATION No. ARCONEL 001/2020 (Codified), numeral 9, which states: "WORKS TO ATTEND TO NEW REQUIREMENTS FOR ACCESS TO ELECTRIC SERVICE. The distributor shall determine the necessary works for the expansion of the electric network up to the point of delivery and the necessary civil works at said point, to serve the new consumer; it shall also determine the conditions to be met by the applicant's electric installations at the point of delivery for the provision of the public electric power service. The necessary works will be the responsibility of the distributor or the applicant as indicated in this Regulation".

Conclusions

The correct use of human, technological and material resources, through a reorganization of processes, helps to optimize service times; a result that can be seen in the time and service percentage graphs of the El Inca North Zone Agency where the project was implemented.

A flatter and more sequential organizational restructuring in which the personnel develop all the activities and tasks of the Enrollment Process, helps to create open functions, leaving aside specializations and bottlenecks.

The participation and promotion of personnel motivates them to be committed participants in the project, improving their professional, economic and labor level.

Recommendations

After the results obtained in the Northern Zone, this project is being implemented as of April 2008, in the rest of the Urban Zones; Yavirac, Urinsaya and Turubamba, and it also began in January 2008 in the Peripheral Zones Agency, in the same way it could be implemented in other Distributors.

Any change, especially in the personnel's tasks has difficulties, it is very necessary the permanent training and evaluation of the participants of the project, so that they are useful and participative.

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