

CASE STUDY FRANCE

THE PREPARATION PROCESS

The field for a new regulation on mandatory electrical safety inspections in France was leveled by **GRESEL** (*Groupe de Réflexion sur la Sécurité Electrique dans le Logement*). GRESEL was founded in 2003 as a unique coalition between consumer organizations and professional associations from the sector. Together and based on consensus they formulated recommendations for the government. Those recommendations were based on extensive data and statistics gathered by fire brigades and consolidated by insurance companies and by *l’Observatoire National de la Sécurité Electrique* (ONSE).

THE REGULATION IN FORCE

The new French regulation ENL n° 2006-872 on the inspection of electrical installations in dwellings was passed 13 July 2006 and came into force on 1 January 2009. It obliges an inspection of electrical installations which are 15 years or older at every sales transaction of the property (*Diagnostic Electrique Obligatoire* or *DEO* in French). An exemption is given if such an inspection has been executed and followed up successfully in the past 3 years.

The inspections within the framework of this regulation are goal-oriented. They do not verify whether the installation is built in conformity with the electrical standard NF C15-100, but rather aim at mapping the risk for electrocution and fire of electrical source. This risk has been defined in the new standard NF C 16-600, which stipulates a list of minimum safety requirements. All anomalies to these requirements are codified (B1 to B11), facilitating reporting. The inspection report informs the purchaser on the state of the property they intend to buy, thereby increasing the transparency of the sales transaction.

Residential electrical safety categories according to French inspection standard UTE XP-C 16-600	
Anomaly code	Electrical safety requirement that is breached
B1	An easy accessible General Control and Protection Appliance (GCPA), containing the general connection switch
B2	Presence of at least one appropriate differential connection device
B3	Presence of an appropriate earthing and earthing connections
B4	Presence of an overcurrent protection device on each circuit, adapted to the conductor section on the circuit
B5	Equipotential bonding in rooms containing a bath or shower
B6	Keeping zones with different rules in rooms containing a bath or shower
B7	An insulating case for all electrical connections, avoiding the risk of direct contact with live parts
B8	Absence of worn-out or inappropriate equipment + use of the right color codes for wiring
B9	Correct installation of equipment powered from a common space but situated in a private dwelling, or vice versa
B10	Correct installation of the electrical equipment related to a private swimming pool
B11	Other recommended verifications

Table 1—Safety categories on which mandatory residential electrical safety inspections in France must report.

A law which came into force 1 July 2017 extends the system of mandatory inspections to rented dwellings having an electrical installation more than 15 years old. The inspections must verify whether the electrical installation meets six safety criteria, effectively corresponding to codes B1 to B8 (B2-B3 and B5-B6 taken together) of XP-C 16-600 (see *Table 1—Safety categories on which mandatory residential electrical safety inspections in France must report.* above). Following the inspection, a certificate of conformity valid for six years may be issued.

MAIN RESULTS

According to the Impact Assessment of GRESEL [i], mandatory electrical inspections were carried out on 2.5 million residential electrical wiring systems between 2009 (when the new law came into force) and 2013. Those inspections directly led to over 1.5 million safety upgrades or renovations of existing electrical wiring in the same period. Every year, **between 43% and 45% of the sales of existing homes in France are followed by safety upgrades or renovations** that directly result from a mandatory electrical inspection.

DETECTED ANOMALIES OF ELECTRICAL SAFETY

Promotelec and FIDI (*Fédération interprofessionnelle du diagnostic immobilier*) investigated 6,000 diagnostic inspection reports from the first year of the new regulation (2009) [ii]. This sample contained a balanced mix of houses and apartments. It also contained a high diversity of locations throughout the country (85 *départements*), of diagnostic companies who executed the inspection (80 companies), and of the year of the dwelling's construction.

The investigation revealed that in 72% of the cases, the electrical installation violated at least three of the minimum safety requirements. Such a figure is not surprising, since half of the EU housing stock dates from before 1970, and many of those homes have not yet undergone a renovation of the electrical installation.

The evaluation of the detected anomalies was as follows:

Anomaly code	Comments
B1	In 20.6% of the buildings, there was no easy accessible General Control and Protection Appliance (GCPA). The most common violation was that the GCPA was not placed inside the home.
B2	In 21.9% of the cases, there was no appropriate differential protection device.
B3	A large majority of the dwellings (78.7%) was lacking an appropriate earthing installation.
B4	In 42.9% of the cases, not every circuit was having an appropriate overcurrent protection device.
B5	In 47% of the dwellings, the equipotential bonding in rooms containing a bath or shower was not provided or not correctly installed.
B6	In 38.7% of the cases, the zones for electrical equipment in rooms containing a bath or shower were not respected.
B7	43% of the dwellings hold electrical connections that are not placed inside an insulating case, entailing the risk of direct contact with live elements. In 51.7% of the dwellings, conductors are not adequately protected by insulating pipes, moldings or skirting boards.
B8	In 35.4% of the cases, worn-out electrical equipment is still used. 26.5% of the dwellings make use of inappropriate equipment and 4.4% use green-and-yellow earthing cables as active conductors.

The study by Promotelec and FIDI also investigated the rate of adoption of the recommendations expressed in these 6,000 inspection reports. In 90% of the cases where unsafe features were found, the owner expressed the intention to improve the installation to meet safety requirements.

ECONOMIC EVALUATION

According to an impact assessment of the mandatory electrical inspection (DEO) by the Working Group on Electrical Safety in Housing (GRESEL), an average of approximately 500,000 inspections were carried annually during the first 5 years of the new law (2009 – 2013). Following these inspections an annual average of approximately 300,000 renovations were carried out. According to TNS Sofres and Promotelec studies, carried out by order of ONSE at the end of 2009, the new French regulation also has a significant socio-economic impact. Extrapolation of those studies leads to an annual turnover of inspections and renovations of 500 million euro, saving or creating approximately 7,200 jobs [iii].

EVALUATION OF THE REGULATION

The old housing stock in France contains abundant unsafe electrical features. The mandatory inspections and the NF C 16-600 standard appear to be effective instruments for tracing those deficiencies. The adoption rate of the resulting diagnostic reports is high to very high: the average number of safety upgrades carried out each year as a result of the mandatory inspections was approximately 300,000 in the period between 2009 and 2013. This is close to the estimated number of homes whose electrical wiring systems become worn or obsolete each year as a result of their age (approximately 300,000 per year as well, according to an estimate by ONSE). This means that the mandatory electrical inspections have a stabilizing effect on the number of run-down residential electrical wiring systems in France.

The new addition to the law that came into force on 1 July 2017 was crucial to gradually remedying the existing backlog. It widens the system of mandatory inspections to residential buildings with shared ownership and to rented dwellings who represents an annual volume 3 times higher than sales transaction of properties.

A first study on the mandatory inspections related to rented dwellings was carried out in December 2019 to assess the impact. It indicates that 83% of owners are carrying out or plan to carry out security work when anomalies have been found. It also indicates that when tenants find that the inspection report contains anomalies that have not been corrected, they ask in half of the cases to their lessor to correct them. We can therefore hope that this extension of the mandatory electrical inspection will make it possible to greatly increase the number of safety upgrades carried out each year in France.

In addition, GRESEL recommends a few actions to be combined with the current system of mandatory inspections:

- Public assistance to low income households for renovating their electrical installations according to safety standards
- Information and awareness campaigns on the safety of electrical installations
- The establishment of a statistical tool that regularly measures the state of the electrical installations throughout the country

Those measures could make the law on mandatory electrical safety inspections even more effective.

[i] *Assessment of the impact of the mandatory electrical inspection (DEO) law on the market for safety upgrades or renovations of electrical wiring in France*, Working Group on Electrical Safety in Housing, GRESEL, December 16, 2014

[ii] [Promotelec and FIDI study after one year of mandatory inspections in France](#)

[iii] TNS Sofres and Promotelec studies, carried out by order of ONSE at the end of 2009