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Preferential Subject N° - PS2

Reference framework for cybersecurity of companies participating in the Wholesale Electricity Market in Mexico

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Currently, the National Electricity Sector in Mexico is in an important process of change involving the creation of the Wholesale Electricity Market (WEM). This was established by the Energy Constitutional Reform approved in 2013. In this context, new and important cybersecurity challenges arise because, among other things, large volumes of information will be handled, it will be necessary to adapt existing and to develop new information systems according with the rules of the WEM, in addition, it will be necessary to interconnect corporate computer systems with power generation control and measurement systems, for that reason are necessary cybersecurity schemes in the different domains of operation: Information Technologies, Telecommunications and data transmission and Operational Technologies. The productive company of the government that will have participation in the WEM will have to face these challenges.

There are several models and frameworks for cybersecurity, however, due to the special characteristics of the new Wholesale Electricity Market (WEM) in Mexico and to the current circumstances of transition, in this paper we propose the integration of a new reference framework that meets all the requirements mentioned and all another that is appropriate to the WEM context in Mexico.

The proposed cybersecurity reference framework is based on the integration of different security standards (ISO/IEC 27002, IEC-62351), a maturity model (ES-C2M2), a framework core (of NIST for Improving Critical Infrastructure Cybersecurity and the derived Energy Sector Cybersecurity Framework) and Mexican regulations on management of information technologies (MAAGTICSI) and in the Mexican laws about protection of personal data. In addition, the proposed reference framework is oriented to the protection of the information assets of the different areas involved in the commercialization of electrical energy considering following aspects:



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1. Objectives and requirements for cybersecurity
2. Management of Cybersecurity
3. Data and communications network architecture
4. Threats to the sector
5. Protection mechanisms for computer devices and data network
6. Cryptographic protection mechanisms
7. Strengthening the human factor and specialized cybersecurity teams
8. Protection of personal data

The main expected benefit of the proposed solution is the implementation of cybersecurity through the selection of security controls and information protection mechanisms, with the advantage that it would be in a more agile way to have clearly defined and bounded security controls that are adequate and meet the requirements of the WEM in Mexico. Another advantage is that the implementation of security controls not necessarily depends on a previous risk analysis, since the maturity model can be used to implement the necessary security controls according to the level of security desired and in this way the cybersecurity implementation time it could be shorter.

Currently, the proposed framework is in the final stages of specification and in preliminary phase of implementation, in the following stages, the reference framework will be implemented in the area of energy commercialization of the productive company of the Mexican state denominated "CFE Generation" and it could be possible that it be applied later in the Energy Regulatory Commission and the National Energy Control Centre, both Mexican government agencies.