



## UTILITIES- SMART GRID CASE STUDY

# Comision Federal de Electricidad (CFE)

## Deploys FreeWave's Wireless M2M Communications for SCADA and Smart Grid Applications

Mexico City, MX – CFE is the only electric power utility company in Mexico. It generates, transmits and distributes power and energy to nearly 100 million customers and is one of the largest utility organizations in the world with approximately 100,000 employees around the country. CFE also notes that it incorporates more than one million new customers each year. Nearly 98 percent of the 100 million-plus population in Mexico uses electricity, and CFE reaches close to 190,000 communities. CFE needed a vendor that could provide wireless machine-to-machine (M2M) data transmission for smart grid applications including power consumption, substation monitoring and Supervisory Control and Data Acquisition (SCADA) applications, such as control and monitoring of power networks.

### FreeWave Usage and Applications

Within the smart grid there are many types of devices connected to the main system, such as substations, and the automation of these devices helps streamline the processes within the smart grid and ensure effective delivery of power. During the distribution process, for example, a substantially large percentage of power is consumed. This emphasizes the importance of having a reliable system with important security features, accurate data and quick data transmission.

As CFE officials looked for a solution that could tackle the distance and line-of-sight challenges, CFE had to consider that there are many communications options for the smart grid. Industrially hardened wireless M2M communication solutions, including Frequency Hopping Spread Spectrum (FHSS) and licensed data radios, are proven to be reliable in the harshest environments and are often deployed in mission-critical and industrial applications. FreeWave's industrial wireless M2M solutions stood out because they provide enhanced capabilities for smart grid applications, such as distribution automation (DA), AMI back haul, distribution management (DMS), substation automation (SSA), load management (LM), demand response (DR), supervisory control and data acquisition (SCADA), and energy management (EMS). Through pilot testing and network design, FreeWave also was able to overcome the communication challenges that CFE faced in years past. CFE started using FreeWave's wireless M2M communications solutions more than five years ago, and their consistency, flexibility and technical support, resulted in the addition of many more M2M communication modules for different applications. Today, there are more than 2,000 FreeWave wireless M2M communication modules deployed across nine CFE divisions.

These solutions include FreeWave's FGR2-PE, FGR115-RC and HTPlus and are used for SCADA applications to monitor and control switch gears, reclosers and power meters. They also are being used in power generation and substation monitoring.

## Outcomes

Some of the wireless M2M communication networks are installed in heavily populated cities, such as Mexico City, Monterrey and Guadalajara, where the RF noise and line of sight can potentially cause major issues with most wireless M2M communications. FreeWave's network design and purpose-built solutions give CFE's M2M communications the flexibility to achieve optimal connectivity, despite skyscrapers, tree coverage and high RF noise levels.

## HIGHLIGHTS

- > Finished developing and installing a sophisticated wireless M2M network that serves more than 27 million residents connected to the Mexico City Smart Grid.
- > Enabled CFE to incorporate all the data coming from the wireless M2M communication modules to Local Area Networks (LAN), which not only saves time, but allows their entire communications network to operate seamlessly.
- > Successfully overcame all the relevant line of sight and long distance communication issues that plagued CFE's communication network in the past.



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