# EMV in the USA: What Petroleum Retailers Need to Know

As the broader payments industry prepares for EMV migration into the United States, petroleum retailers face unique challenges with pay-at-the-pump systems and forecourt architectures not found in other industry verticals.

The time is approaching for retailers to take action, and fueling sites have double duty in order to meet the EMV liability shift deadlines, addressing card acceptance changes on both the in-store point-of-sale (POS) systems, as well as fuel dispensers on their forecourt. By now, many in the industry are aware that there are new payment protocol changes coming, but for some in the U.S., the topic of EMV still generates questions – what is it, and more specifically, what does it mean for the petroleum retailer?

**What is EMV?**

EMV, named after the originators EuroPay, MasterCard and Visa, is a global specification for credit and debit payment cards based on chip technology. Unlike the traditional magnetic stripe card, EMV credit and debit cards contain a microprocessor chip imbedded into the plastic. EMV covers the processing of these credit and debit card payments at a payment terminal with both contact (insert) and contactless (tap) methods of use. Unlike magnetic stripe transactions, where typically only the card's track data containing account number and validity dates are processed, every chip card transaction contains dozens of pieces of information exchanged between the card, the terminal, and the acquiring bank's host.

The EMV liability shift has been established for the U.S. Banks are starting to issue EMV chip cards to cardholders. As a result, those card holders will soon be aware of the increased protection and start to look for payment terminals that accept the EMV specifications. Published reports indicate that the U.S. EMV shift could be as early as 2015, but some industry experts predict adoption will occur in the later part of this decade.

**How will EMV impact the forecourt?**

The biggest impact of EMV to a fuel retailer in the U.S. is likely the upgrade of the infrastructure on their forecourt. In addition to exchanging much larger amounts of data via its chip technology, EMV, because it is a different type of protocol, contains increased security measures than current credit and debit cards with mag-stripes. On existing serial-based connections like RS-485, it would take too long to process a payment; as the RS-485's twisted-pair wiring does not have enough bandwidth to support the increased data throughput. Therefore, the industry is moving to a TCP/IP solution that is able to handle more information, quickly and securely. Think of it as upgrading from dial-up internet to a cable internet connection. This infrastructure requires that the forecourt provides expanded throughput to every fueling point.

In order for retailers to get the proper connections to support EMV, there are a few options to consider:

1. The optimal approach is to run IP connections to every fueling point by installing new underground conduit and pulling Ethernet cable through, which works well for new sites under construction. However, for existing sites, this solution involves breaking up concrete to lay new conduits and running the new cables. It also means seeking the right permits and managing the downtime on the forecourt – considerations that may be costly.
2. The alternative for existing sites that already have conduit laid under their forecourt is to run IP connections to every fueling point by pulling the Ethernet cable through the existing channels. The site owner would have to consider the cost of the cable, plus the labor to do the installation and connection at both ends of the terminals.
3. A more economical solution would be to use connection alternatives that allow the retailer to run IP connectivity over existing wires used for serial communications. One such alternative is the Wayne Connect™ IP-485® network solution. It consists of an in-store controller that hooks into the network router hub and connects to the twisted-pair wiring that runs from the back room box, through the existing conduit, and out to the dispensers. For each dispenser there is a complementary module that the twisted-pair wiring terminates into. This Wayne Connect in-dispenser module provides the Ethernet connection to the Wayne iX™ motherboard. This option has significant cost savings versus new conduit and cables.

Questions have been in the industry about using a wireless connection to support EMV. Unfortunately, the limitations of wireless (intermittent issues, limited coverage, and the potential threat of hackers who attack wireless networks) make that a less desirable option. In addition, site owners could experience interference from a vehicle blocking the signal reducing the ability to have reliable communications.

**How will EMV impact fuel dispensers?**

At a minimum, supporting EMV specifications on fuel dispensers may involve just replacing the card readers and installing software updates. However, it could also involve replacement of the entire payment terminal, depending on the dispenser model. Additionally, not all dispensers have upgrade

kits available, meaning the entire dispenser would have to be replaced. The key here is that the electronics platform in the dispenser needs to become a secure payment platform supporting EMV with a new card reader and encrypted key-pad.

**How will EMV impact the point-of-sale device?**

Upgrading the inside of the fueling store is very similar to its forecourt; the POS systems have to be upgraded to speak the language of EMV – different protocols, different communication methods. As the dispenser application changes so does its protocol, meaning the POS system must update its software to speak to the dispensers. In addition, site owners have to change their POS-to-host applications because the host language is going to be different – new data fields, new rules. The POS system is in the middle of the communication process; it has to speak a new language to the dispenser and to the host, and then it has to have an update PIN-pad card reader as a peripheral to support the chip cards being presented at the store.

**What should a petroleum retailer consider when implementing EMV?**

1. **Focus on the big picture** - To implement and coordinate EMV, create a migration program and cross-functional task force for your sites. In addition, set your own milestones for a multi-year transition. The liability shift for indoor is two years ahead of the liability shift for outdoor, and retailers need to evaluate the timing of both. One school of thought is to implement the EMV migration indoor and outdoor at the same time in order to sustain a consistent consumer experience both inside the store and out on the forecourt.
2. **Engage early with the payment processor** - As the retailer looks at the whole environment, they first need to work with their payment processor (e.g. Chase, First Data, World Pay, etc.) to understand what will change on their POS-to-host communications. This conversation would identify clear direction regarding the types of EMV cards will they accept, an explanation of the processing rules, and the cut-over timing. Then the retailer should look at their environment with their merchant processor (or acquirer) to understand the acceptance considerations and authorization process. Cards may be issued as contact chip cards, contactless cards or both; therefore, fuel retailers will need to determine which will be accepted on the forecourt and in-store, as well as the authorization process (online and offline PIN or alternative customer verification method (CVM)).
3. **Plan equipment migrations well ahead of time** - Retailers should look at their host systems first to understand if there may be possible modifications for internal systems, networks, and architectures. In some cases, retailers run their own transactional switch that may include modems, broadband, and upgrades to servers impacting data throughput communications from the retailer to the host.

Then the site owner should evaluate current forecourt and POS equipment capabilities and the availability of equipment and service providers. The key thing is for retailers to conduct an age assessment of their dispenser payment terminals – are they 5 years old, 10 years old, 20 years old?

This may help determine which upgrades will have to take place. Site owners also should consider the lifespan of their equipment and capabilities of various upgrade kit options in order to avoid regret spend from equipment upgrade limitations.

There is no crystal ball to predict the true impact EMV will have on fueling site owners across the U.S. But as retailers grapple with capital spend, IT infrastructure, and other EMV implementation decisions, the industry is witnessing the birth of new ideas that may help petroleum sites turn EMV-required infrastructure and equipment upgrades into cost-effective benefits for both owner and customer. And in the midst of this transition, U.S. petroleum retailers have an opportunity to engage their customers and to earn their loyalty. Certain payment platforms offer new, expanded loyalty and media capabilities and initiatives that benefit customers. Applying infrastructure upgrades may help prepare sites for the adoption of other emerging payment methods such as near-field communications (NFC) and alternative mobile payments. The retailers that take an active approarch to upgrading their sites for EMV regulations while taking into account these additional considerations may reduce the cost, complexity, and risk of the industry’s newest guidelines.

In his role as product manager for payment solutions at Wayne, A GE Energy Business, Tim Weston leads the strategy, marketing, and technical direction for the company’s dispenser payment systems and related security initiatives. His current focus includes EMV readiness and deployments in the U.S. and bringing to market emerging contactless/NFC and mobile payment solutions for fuel dispensers. In addition, he serves as representative to numerous industry technology and standards organizations, including: the PCI Security Standards Council, EMV Migration Forum, and PCATS. Tim holds a Bachelor of Science degree in Information Systems Engineering Technology from the University of Central Florida.



 