



# PERSPECTIVES

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## Evaluating Equipment Replacement Costs for Gas Station Losses

Our perspectives feature the viewpoints of our subject matter experts on current topics and emerging trends.

## OVERVIEW

Gone are the days of pulling into the corner gas station and running over a faded red hose to ring a bell, which in turn alerts the station owner, whose feet are sticking out from under a vehicle in the garage, that he has a customer at the pump.

While the numbers flip on the dispenser, he checks your oil, fills your tires with air, and washes your windshield to a streak-free shine. Then you hand him cash and head off to your next adventure.

Today's gas stations have convenience stores, car washes, and other modern services (all of which may uniquely impact [gas station business and related business losses](#)). The equipment has become so technologically advanced that careful evaluation by trusted and qualified equipment professionals is imperative for all claimed losses to prevent hidden upgrades, unnecessary replacements, and potential fraud.

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**Figure 1** - This \$578.00 repair was turned in as a \$24,568.00 total loss replacement.

## INTRODUCTION

Fuel station technology is evolving rapidly. Fuel dispensers, underground storage tank monitoring systems, and point of sale systems are closely integrated and reliant on each other for the station to function. If one component of a system is damaged, compatibility with other components can be affected. Due to the implementation of complex security features and technological advances, evaluations must start with reviewing quotes to verify if the replacement equipment is of like kind and quality and that the proposed replacement will not require replacement of other components or costly upgrades. Verification of proposed pricing is no longer adequate.

It is impossible to refute a police report stating a driver ran into a fuel dispenser, photos showing damages, or video surveillance of a thief smashing the cash drawer for the point of sale system. However, replacement is not always the best option. It is imperative that models, serial numbers, options, and upgrades are well documented for the damaged equipment and that regulatory compliance for each demographic area be taken into account before a final disposition is made for the equipment, and replacement pricing is finalized.

The purpose of this paper is to summarize the history of the petroleum industry, credit card processing equipment, and technological advances which must be addressed for any gas station evaluation. An overview of the gas station equipment and components which are frequently upgraded, but should be excluded from claims, will also be reviewed. Every claim is unique and the information contained in this discussion is not meant as a substitute for individual evaluation of each loss.

## HISTORY

The first self-service gas station opened in 1947. Twenty years later, only about 16% of stations were self-serve. In the mid-80s, the biggest thing to hit the retail fueling industry was Dresser Wayne's introduction of Pay-At-The-Pump technology. Pay-At-The-Pump technology required significant engineering to ensure the card readers worked with different networks and point of sale systems. Although 80% of gas stations were self-service by the late 80s, it took until 2002 for those same stations to integrate Pay-At-The-Pump convenience.



**Figure 2**

Over the past 15 years, since Pay-At-The-Pump has become widely available, the changes in technology and security have been exponential and have significantly increased the cost of fuel dispensers. In 2011, the average retail cost of a brand new dispenser with a credit card reader was \$11,500. Today, the average cost is \$19,000 without hybrid card readers and \$22,000 with hybrid card readers. This reflects a 60% increase in the retail cost of a single dispenser in just six years.

Cash registers have turned into Point of Sale systems (POS) and have become more complex. Convenience stores can network store inventory, fuel sales, and fuel inventory into one convenient reporting system. Bar codes and scanners are now the norm for in store purchases. Newer POS systems have completely automated Pay-At-The-Pump and the type of system needed is dependent on the number of dispensers at the station.

Underground storage tanks (UST) were originally made from steel which is susceptible to corrosion. A cathodic protection (CP) system is required to prevent corrosion and subsequent leaking of the fuel and potential ground water contamination. In 1988, EPA regulations requested

owners to locate, remove, upgrade, or replace USTs, and many were replaced with corrosion resistant materials or double walled tanks to prevent leaks. In addition to the tanks themselves, EPA regulations gave stations until 1998 to phase-in spill prevention and leak detection equipment for their underground storage tanks.



**Figure 3**

## TRENDS AFFECTING GAS STATION EQUIPMENT ANALYSIS

There are some claims which should obviously be questioned. For example, if only one dispenser was hit by a vehicle and damaged beyond repair, why are all of the dispensers being quoted for replacement? Or, a thief damaged the POS system inside a store, but the quote presented includes probes for the underground storage tank monitoring system. Other claim submissions may not elicit any questions; however, without knowledge of the anatomy of a gas station, the history of the equipment,

regulatory requirements, and security compliance it may be impossible to ask questions to obtain the correct replacement models and accurate pricing.

Many of the upgrades we see are related to credit and debit card security. EPP (Encrypted Pin Pad) and EMV (Europay, MasterCard, Visa) chip card technology compliance are the most prevalent and are expensive for gas stations to complete on their own. Security upgrades apply to both POS systems and dispensers. Older Pay-At-The-Pump dispensers, like Gilbarco Advantages and Wayne Vistas, had magnetic stripe card readers and soft key pads to enter PIN numbers. The readers were in a single unit door allowing anyone with a generic key to access the reader. They were inherently prone to tampering. Additionally, when paying with a debit card at the pump, the soft keys used to enter your PIN were not sufficiently encrypted. EPP pin pads are now the standard in all brands of new dispensers including Gilbarco, Wayne, and Bennett. Unless a used or remanufactured dispenser is purchased, a dispenser with soft keys would no longer be available.

EMV, or chip, technology was introduced in the mid- 1990s and primarily utilized in Europe. The United States has seen a shift toward EMV with bank card issuers providing cards with chips for their customers. Most retailers were required to upgrade their technology to utilize the chip security by October of 2015 or be responsible for fraudulent charges.



*Figure 4 - Soft key pin pad.*

Gas stations are unique to most other retailers. Not only do the card readers and pin pads at the checkout need to

be compliant, but also at each individual dispenser. The manufacturers of the dispensers and POS systems were required to go through a complex certification process for each EMV device prior to manufacture. The industry was originally given until October of 2017 to implement the changes. This deadline was further extended to 2020 due to implementation difficulties; furthermore, Visa has extended the deadline to April 2021. American Express, Discover, and Mastercard have not announced any extensions to date though they typically follow Visa.



*Figure 5 - EPP pin pad.*

Stations have two options. New dispensers can be purchased with hybrid card readers which read both chips and magnetic stripes, or older dispensers can be retrofitted with compliant equipment. Pulling new wiring to the dispensers is also needed in many cases. The POS system must also be upgraded or replaced with compliant technology in order for the entire system to be secure. For a station with four dispensers and a single terminal POS, the average cost to upgrade everything is approximately \$147,000.

The average cost for upgrading with retrofit kits is \$50,000 to \$70,000, depending on the brand of dispenser. Proposals with upgraded displays and media packages are frequently seen, as they are required with the new EMV/ EPP security requirements.

## EXAMPLE EVALUATION 1

A fuel dispenser was hit by a vehicle at a relatively high speed and the dispenser was knocked off the island. The insured submitted a proposal for replacement of both dispensers at the loss location and the POS system. The POS system was a VeriFone Ruby Sapphire. The client asked for a review to determine if the proposal was reasonable and pricing was fair, since it included an undamaged dispenser and POS.

Review of photographs supplied showed a Schlumberger dispenser damaged beyond repair. Schlumberger dispensers are no longer in production and used or remanufactured dispensers are depleted. Replacement was required.

The insured’s proposal was for a currently available Wayne Ovation dispenser; however, it was for a model with more grade selections than the insured had on the damaged dispenser. Pricing is obtained by the consultant for the closest like kind and quality dispenser. Because

different communication technologies are used between Schlumberger and Wayne, the only option to restore the station to pre-loss condition was to replace both of the stations dispensers.

The insured also presented a quote for a replacement POS system. The POS was not damaged in the loss and the proposal was for an upgraded, EMV compliant system.

The vendor was contacted and asked that they quote a Wayne Fusion controller. This would allow the new Ovation dispensers to work with the existing Ruby Sapphire system, eliminating upgrades and saving over \$10,000.00 on materials and reducing labor hours for rewiring, installation and programming.

We have noted a unique trend in gas station claims with regard to the immediate time frame leading up to EMV deadlines (2014/2015 & 2016/2017). Submitted proposals typically included more EMV upgrades when the pressure to comply was imminent and tapered off each time there was an extension.

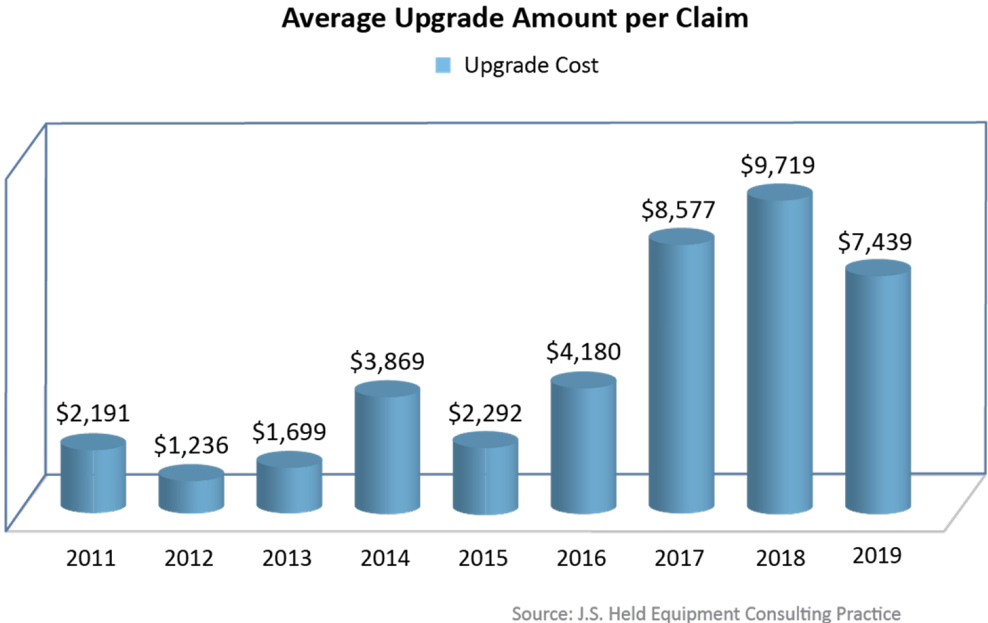


Figure 6 - Average upgrade amount per claim.

Gas station claims reviewed from 2011 through 2013 were primarily for dispensers damaged by a vehicle or thieves vandalizing the POS drawers during a robbery. Beginning in late 2014 and early 2015 we began to see claims for equipment damaged by lightning strikes or power surges. A new era of gas station evaluations began. We quickly found that vendors were providing proposals for EMV compliant equipment rather than like kind and quality replacements. Frequently repairs were upgrades for compliance or wear and tear, rather than loss related.

Close review of photos and coordination with parts lists is needed to determine if the submitted charges are truly related to the loss. Knowing the anatomy of both the fuel dispenser and the integration of the systems is imperative for all gas station losses in order to prevent overpayment of claims as the push for mandatory EMV compliance is closer to becoming a reality.

The graph below demonstrates the increasing disparity in pricing for submitted proposals with upgrades and actual pricing without upgrades.

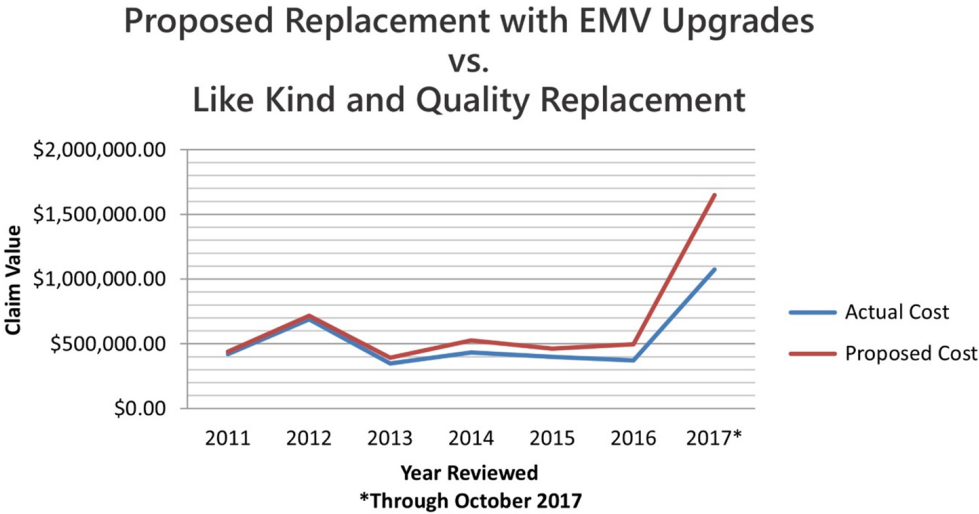


Figure 7 - Proposed replacement with EMV upgrades vs like kind and quality replacement.

From 2011 to 2016, the mean number of gas station equipment evaluations remained consistent for the equipment division. In 2017, we have noted an exponential increase in gas station claim reviews and the gap in pricing between proposed replacements and actual replacement values has doubled from 2016 to 2017. According to industry trade groups, Visa has extended to April 2021. Mastercard, Amex and Discover extensions are still unannounced.

## WHEN UPGRADES MAKE SENSE

There are some instances when an upgrade is more cost effective. For example, stations with corporate backing are likely to receive significant discounts for EMV compliant equipment. Corporate discounts can reduce the cost of an upgraded dispenser to less than the cost of the closest like kind and quality replacement. Careful evaluation should ensure items like re-wiring are not included for EMV compliance, but because of the loss itself.

Point of Sale (POS) system upgrades include adding terminals, proposing controllers which are not the closest like kind and quality to the damaged system, and adding scanners, customer displays and enhanced touch screens for the registers and uninterrupted power supplies. If the station obtains a proposal for a different brand of POS, there will be additional costs to ensure compatibility with the dispensers. Furthermore, there may be significant labor costs related to programming and entering inventory into the new system if it can't be restored from backup.

We've discovered that it is fairly easy to make it appear that a POS or dispenser has been damaged by a power surge just by changing port locations on the POS system, which mimics a problem with the communication boards. Evaluation by a technician trained in programming and start up of new dispensers is imperative to determine if there was truly surge damage.

## EXAMPLE EVALUATION 2

An insured submitted a claim for a POS system damaged by a power surge after a lightning strike. The proposal was for a VeriFone Dual Terminal Topaz/Commander POS system with all possible options for \$25,542. The assigned adjuster reviewed the loss and agreed to the replacement POS and pricing. It was not sent to J.S. Held consultants for review.

The insured later supplied proposals for damages to eight fuel dispensers totaling \$12,726.44 and the claim was assigned to a different adjuster who sent us the claim for review. They supplied the quote for \$25,542 for the POS along with the quotes for the parts and labor needed to repair the dispenser. We reviewed the parts on the proposal and contacted the vendor to determine if they were related to a compatibility issue with the new POS system.

We found that the POS system for which payment had already been made was a significant upgrade from their previous VeriFone Single Terminal Ruby Sapphire POS. The correct replacement would have been a Ruby Ci POS system with one terminal instead of two and a cost of approximately \$14,000. The vendor also stated the insured purchased a Gilbarco Passport POS which was not as easily integrated with Wayne dispensers, rather than the VeriFone for which he had submitted the proposal.

Photos provided did not support the damages indicated, particularly with the receipt printers and screens. The technician was unable to differentiate between surge damage, POS compatibility, and age-related wear and tear which is a red flag for our evaluations.

We spoke with Dresser Wayne tech support to determine the best way to evaluate the dispenser for surge damage and POS system compatibility.

We then discussed this with a different Wayne vendor local to the station and asked them for an independent evaluation. Their assessment matched ours in that the dispenser components were not damaged by a surge, but were age related wear and tear. We recommended excluding the proposed repairs from the claim.

Had the claim been reviewed by us from the start, including the POS system and dispenser repairs, the total proposed cost of \$38,268.75 would have been reduced to \$14,329.85 by eliminating upgrades. The upgrades and unnecessary repairs totaled \$23,938.90. We were still able to eliminate the repairs which were not related to the loss, saving the carrier \$12,726.44.



*Figure 8 - Monochrome display.*

This monochrome display was claimed as damaged by a lightning strike and the proposed replacement was a color display required for EMV compliance.

A power surge would have burnt out the board and the display would have been blank. Monochrome displays typically last about 5 years before lines are noticeable on the display.

This was age-related wear and tear and not included in the claim.

2019 marked the 20-year anniversary of the EPA regulations for Underground Storage Tank (UST) regulations for leak detection and spill protection. Equipment failure due to wear and tear is starting to occur.

After a dispenser is damaged and the shear valves are broken, line testing is usually mandatory to ensure that the supply lines are not leaking. Invoices and proposals will include tank monitoring probes and leak detection valves which are not located in proximity to the damaged dispenser. The issues with these items were found due to the loss; however, the labor and materials should be excluded from the claim as they are maintenance related.

As the future of the petroleum industry evolves, underground tanks storing ethanol blended fuels greater than 10% and biodiesel blended fuels greater than 20% must have specialized parts which will not degrade with these blends. With alternate forms becoming more in demand, upgrades to claimed UST replacement parts will need to be closely monitored.

Underground storage tank monitoring systems vary tremendously in their capabilities and pricing. Verification of the model is extremely important. Material costs generally are similar from model to model, but newer versions offer upgrades such as being able to monitor the system and generate reports from cell phones, which may not have been part of the pre-loss system. The biggest factor in replacement is the labor involved with installation of the system. If there is damage to the controller inside the store, wiring and equipment in the tank should not require replacement, with the exception of a fire loss. Knowledge of tank monitoring system components is key in determining if the entire system requires replacement or only portions of that system. Routine maintenance items need to be excluded from the loss.

## EXAMPLE EVALUATION 3

A station submits a claim for vandalized underground storage tank drains which allowed water to enter the tanks, making the fuel unusable. The insured stated the spill protection valves were damaged.

Evaluation determined that the spill valves were original to the system and not regularly maintained. The valve was stuck open. The fill area was lower lying than the rest of the parking lot and the storm drains were clogged allowing water to pool over the area and subsequently enter into the tank.

Valve replacement was routine maintenance and excluded from the loss. The policy language excluded pumping and cleaning the tanks. Only the “damaged” fuel was recoverable.

## OTHER NOTABLE FACTORS IN GAS STATION CLAIM ANALYSIS

- Although EMV compliant equipment is almost exclusively quoted now, non-EMV compliant equipment is still available from the major manufacturers. Wayne has a back stock of dispensers, and materials for knock downs. Gilbarco Encore 500S dispensers without hybrid card readers are still available. Asking the right questions can ensure quotes are for the closest like kind and quality replacement dispensers and POS systems.
- Many times rewiring is included in the proposals; however, the wiring is seldom damaged from a loss. Generally, the proposed wiring is to connect the new security features to the POS system or for dispensers with large screens and media packages.
- Hanging hardware, i.e. hoses, nozzles, breakaways, etc. can frequently be removed from the damaged dispenser and installed on the new dispenser. Vapor recovery and DEF hanging hardware costs are 3 to 4 times more expensive than standard hardware.



- Good photo documentation of the damaged equipment is invaluable in determining upgrades and condition for depreciation purposes.
- Be aware of general contractors vs. petroleum installation companies. The cost of the equipment and labor can increase significantly if a general contractor is involved.
- Ensure that vendors are supplying corporate discounts on their pricing if applicable.
- Stay up to date on regulatory changes and EPA requirements to prevent unnecessary fees.
- Always determine how a quote or proposal was obtained. Were the damages truly inspected or did the station call and ask for a quote?
- Many stations obtain quotes for brand new, top of the line equipment and then replace with used or refurbished equipment at a fraction of the cost. Actual cash values should reflect true depreciation to prevent this deceptive practice.
- Dispensers have salvage value, especially newer ones with some frame damage but intact electronics. POS systems may also have some salvage value.
- Concrete islands and replacement bollard costs can be included in the labor cost or can be subcontracted to a different vendor.

## CALIFORNIA CLAIMS

California is the one state that defies almost every generalization that can be made for gas station claims. In all other states, the company supplying the dispenser is usually the same company who will install the dispenser. Proposals from California will usually come from two separate companies. There are petroleum installers but most proposals will come from engineering firms and potentially include costs which are not required, i.e. engineering drawings. If a dispenser is hit in California, it is imperative that a like kind and quality dispenser be used for replacement.

In other states, certain repairs would never be considered because they are not cost effective. In California, however, \$9,000 for repair of a dispenser with an actual cash value of \$2,000 can prevent required upgrades to the station's entire fuel system which usually exceed \$175,000 because of vapor recovery systems.

Environmental regulations in California are stringent. Testing and permits are required for any dispenser replacement. Installers frequently inaccurately quote the permit fees because they use the incorrect city and/or county. Permits can range from \$75 to \$1,500. All stations are required to have vapor recovery systems using either vapor vacuums or balanced vapor recovery. In many cases the vapor vac can be moved from the damaged dispenser to the new dispenser, saving thousands of dollars for a damaged dispenser.

California claim costs will often exceed the national average by at least \$5,000; however, meticulous review of the proposals, verification of permit fees, and determining if the dispenser is of like kind and quality can ensure that settlement amounts are accurate.

## EXAMPLE EVALUATION 4

An RV damages the valance, the frame, and the nozzles on a discontinued Tokheim dispenser in a remote area of the Northern California Coast. In order to replace the one damaged dispenser with a new dispenser of a different brand, the entire station would require upgrades to the dispensers, POS, and USTs, as well as adding a vapor recovery system to be compliant with California laws at an estimated cost of \$278,320. Not all of this was covered by the policy.

We were able to obtain a quote to repair the dispenser, wiring, and under-dispenser valves totaling \$27,236. Although this exceeded the actual cash value for the dispenser, it was the most cost effective way to restore the station to pre-loss condition.

Upgrades due to regulatory compliance in California were circumvented, savings both the station owner and carrier a total of \$251,084.

## CONCLUSION

The gas station industry has evolved from full service stations to Pay-At-The-Pump dispensers where you can watch the news while you refuel. Changes in the gas station industry since the late 1940s have brought convenience and cost savings for customers as well as environmental safety for the population in general. With these changes, new and updated equipment and technology is necessary. EMV compliance for consumer security coupled with aging fuel station systems has spurred a frenzy in the petroleum industry in an effort to meet compliance deadlines.

Careful evaluation of every gas station claim is necessary. cursory review of quotes, proposals, and invoices for pricing alone is no longer sufficient. With the average retail cost of \$29,370 per dispenser to upgrade a station to EMV compliance, verification that the replacement equipment is the closest like kind and quality should be the basis for every review. Submitting proposals with upgrades is now the norm, rather than the exception.

The average cost of upgrades per claim has more than doubled from 2016 to 2017. Good photos of damages can prevent replacement of repairable equipment and assist with correlation of parts needed for loss related repairs versus routine maintenance related repairs. Until EMV compliance has been fully integrated into the gas station industry, carriers need to ask the right questions, rely on equipment experts to assist with the evaluations to ensure they aren't settling claims for more than they should, and, more broadly, call upon forensic accountants to analyze [gas station business income losses](#).

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We would like to thank Joseph C. Wagner and Shawn Bowers for providing insight and expertise that greatly assisted in this research.

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