

Effort to Refurbish Fire Equipment Saves Township Thousands.

A New Reality

Wauseon is a community that has always had great pride and trust in their Fire Department, and an iconic image of our City has been white fire trucks. The color red is often referred to as the “real” color of fire trucks, however, most other fire departments refer to our trucks as “not yet ripened.” This tradition in Wauseon goes back to the 1960’s when it was decided to paint the trucks white in an effort to save money. In those days, funds were raised from the Fireman’s Association to purchase all of the needed equipment, and as the price of vehicles outpaced the available donated funds, purchasing switched to the reality of a government model. Fast-forward to today, and we find ourselves in the new reality of refurbishing fire engines.

We’ve come a long way since the horse drawn steam engines were used to transport firefighters and equipment to the scene. Just as the technology has evolved, so has the price tag of purchasing new equipment. A new fire engine today exceeds \$500,000 and often encroaches on the \$800,000 depending on the additional options selected and the required safety features and electronics built into new apparatus.

In an effort to reduce maintenance costs and capital outlay for equipment purchases, the Wauseon Fire Department and Clinton Township Trustees have begun using the refurbishment process to extend the service life of fire apparatus. This is not a situation where you simply throw on a little paint and update some tools and mechanical features, fire apparatus have to meet a standard. The requirements are addressed by the National Fire Protection Association



1. Refurbished Rural Water Supply Engine for Wauseon FD

(NFPA) in section 1912, *Standard for Fire Apparatus Refurbishing*, to ensure that a safe and effective public safety vehicle is on the road.

Before choosing to refurbish an apparatus, many considerations are taken into account, but the primary one is safety. This is the safety of the persons operating the vehicle, the firefighters, and the safety of the public. Just because an old truck looks good, it does not mean that all of the mechanical systems are up to date, such as the brakes, transmission,

pump, frame rails, and passenger compartment safety features. These areas of concern are all addressed by the NFPA Standards, and are seriously evaluated before choosing the refurbishment method.

In 2016, the Wauseon Fire Department began the process of analyzing the best course of action in updating a 1988 Spartan, 1500 GPM pumper (*figure 2*). This vehicle, being 28 years old, lacked the proper safety equipment, such as seat belts, the pump was failing due to the unavailability of repair parts, and the steel body and water tank were corroding. We were at the point of taking this vehicle out of service because of these issues, but the drivetrain on this truck was rock-solid. The Detroit Diesel engine and the Allison automatic transmission have been serviced religiously since it was purchased, and it worked flawlessly.

Mileage on a piece of fire apparatus is an almost-useless measure of the value of the vehicle. The vehicles spend many hours idling without the pump or transmission engaged, and these hours are harder on the motor than running highway speed. Additionally, the type of mileage driven is often very different. A one mile response through Wauseon can be substantially harder on a vehicle than 8-10 miles on the highway in the township. As was the case with the 1988 Spartan pumper, it had less than 20,000 miles on the odometer, however, the maintenance cost and condition of major components was a key factor in needing to replace this vehicle.

We also took a good look at the obsolescence of the 1988 vehicle. What was consider state-of-the art 28 years ago when it was purchased was no longer able to

meet our needs in the realm of safety, functionality and reliability. Age did play a factor in our decision process, however, the variables that affected the value of this fire truck were far too great to make a decision on one simple factor.

The Fire Department also took a look at the fact that new doesn't always mean better when shopping for fire apparatus replacement. With the new EPA engine requirements that have come into place since 2011 more headaches and maintenance issues with sensors and computer related diagnostics and push button controls have surfaced. This 1988 vehicle contained a bullet-proof engine and transmission combination that only needed fuel and air to run, so no computer required meant less trouble down the road. The decision was made to use the powertrain (engine & transmission) and possibly the entire glider kit (frame and axles) from the 1988 vehicle and refurbish or construct a new piece of apparatus based on our current needs.

As we looked at the different options for replacing our cab and body it became clear that fire apparatus manufacturers were no longer making truck cabs that would fit over our powertrain configuration due to OEM design changes over the years. Because of this, we began to look for



2. WFD 1988 Spartan Fire Engine that was replaced. This vehicle's drivetrain was used in the new engine refurbishment project.

used apparatus so that we could reuse components to suit our needs, and this is how we found the 1993 Pierce fire truck in Blue Ash, Ohio (*figure 3*). Blue Ash is a small city near Cincinnati, and we found that their truck was in phenomenal shape. This truck drew our attention because its cab and chassis design could accommodate our engine and transmission, and the body and



3. 1993 Blue Ash Engine purchased by Clinton Twp. WFD

chassis of this vehicle was in impeccable condition for the age of the vehicle. This acquisition saved us a great amount of money in that we now had a cab, body and pump configuration that suited our needs. In addition, this truck already had a poly water tank and an aluminum body that were not susceptible to corrosion and needed very little repair to return to new condition.

After the acquisition of the 1993 truck from Blue Ash was complete we had a full review and estimate completed on the equipment we were planning on combining into one re-purposed fire apparatus. This was done by the original manufacturer, Pierce Mfg. of Appleton, WI. After an agreed upon contract was in place, the work process began in the late summer of 2017.

The engine and transmission of the 1988 Spartan was removed at a local truck repair shop and crated for transport. In September the 1993 Pierce was driven to Wisconsin by members of the Wauseon Fire Department. The Fire Department staff spent a day at the Pierce refurbish and repair shop in Weyauwega, WI, just outside Appleton (*Figure 4.*) meeting with mechanical service personnel to discuss tear down and completion process of the refurbishment. After the vehicle had been on site for a few weeks, we received a complete report back on the additional findings and repair recommendations from Pierce that has come from the complete inspection and testing of the vehicle. In addition, we made changes on a few of the lighting and cab options as well as the tools and appliances that were to be mounted during the repair process.



4. Captain Jason Fisher and Pierce Mfg. rep Don Daemmrigh inspect the Wauseon refurbishment project in Weyauwega, WI.

Just a little more than six months after delivering the 1993 Pierce chassis to Wisconsin, the Wauseon Fire Department was delivered a completely refurbished and repurposed fire engine designed to our specifications.

Evolving Apparatus Needs

The repurposing of this fire apparatus was the critical component of this process. To most people, a fire truck is a fire truck; but each one has a distinct purpose. With the large area that the Wauseon Fire Department covers we have several different types of fires and many different types of building construction and water supply concerns. A large majority of our structure fire responses are concentrated in the rural areas we serve where no pressurized hydrant supply is available. Therefore, different types of water supply equipment are needed to satisfying fire flow requirements.

The insurance rates that our citizens pay on the residential and commercial property are based on an Insurance Services Office (ISO) rating that most insurance companies use to determine the rates they charge each customer.

This rating involves many complex factors, but water supply accounts for 40% of the classification rating of a fire department. This portion of the rating used to be based strictly on the distance to a pressurized water source (fire hydrant) with less than a mile in distance being the optimal situation. In recent years ISO has been looking closer at a fire department's ability to deliver the needed fire flow (NFF) to a structure, and this is where a rural water supply engine makes a difference. The equipment and appliance set up we provided put together on this apparatus is directly designed with the purpose of getting rural water flowing on the fire, as an established rate, in a faster manner. This vehicle is equipped with a large compliment of drafting hose for ponds and dry hydrants, and it has over 2,500 ft. of supply hose for extended rural hitch and conventional hose lays.

Since taking delivery of this vehicle we have had the opportunity to use it on two major rural fires, and on both occasions it proved invaluable for maintaining the required fire flow needed for each incident. We also regularly dispatch this engine whenever our aerial tower is



5 Safety upgrades such as new seats and belts, and cabinet reconstruction for rural water tools were all part of the repurposing of this apparatus.



First rural fire dispatch for new supply engine 806 in Sept. 2018

needed on mutual aid calls with other jurisdictions. This allows extra hose and pumping capabilities often needed on large volume fires, and it allows our first response apparatus to remain in service and available to Wauseon. This engine is also now a regular part of the Fulton County tanker task force. This task force is a mutual aid agreement with all of the surrounding area fire departments to dispatch a fleet of tankers with one call to rural fires when needed. This process eliminates the need for the responding fire department to determine and coordinate the closest surrounding water supply vehicles. This response process works off a pre-determined location matrix, and the nearest fire departments are dispatched accordingly by the Fulton County 911 Center at the Sheriff's Office.

Continuous Improvement

Our goal at the fire department is the continuous improvement of our service delivery to our citizens and visitors. This always comes at a cost. The fire department is tasked with many dynamic and comprehensive duties, and our community often has to make complex decisions about the planning and delivery of emergency services. A community's investment in its fire department is a proven and reliable indicator of the amount of trust placed in us. We cannot erode this trust and it is up to us to deliver the best service possible in a safe, efficient, and effective manner that meets the needs of our stakeholders.

This recent refurbishing and repurposing of a fire engine will provide two-thirds the life cycle for less than half the cost of new, and we are very pleased with the outcome of this vehicle project. The fire department also recently refurbished an ambulance body. In 2017, a ten year old ambulance body was sent to New Jersey and placed on a new Chevrolet chassis. Like the fire engine, this process saved the tax payers of our county tens of thousands of dollars, and we have an ambulance that provides very reliable service at half of the cost of new.

The fire department cannot refurbish vehicles forever, because at some point you have to buy new. However, the Wauseon Fire Department is in great shape for a considerable period of time in regards to the fire engines and the ladder truck. We plan on refurbishing a 1998 engine in the coming year, and in about 2025 our ladder truck will be due for this process as well. This is not the end-all answer for the cost of fire equipment. The needs of the community are always considered first before making decisions about large capital expenditures. Those needs can change and the calls for service continue to increase, so our forecasting has to remain flexible. For the near future, our vehicle acquisition will focus on smaller, service type vehicles, such as multi-use quick response trucks that are actually used more frequently and can be staffed with fewer people. This will allow us to spread our coverage footprint and reduce the amount of time it takes to provide a professional response to your emergency.