Memorandum

TO: Mayor Dean Kaufert
Mayor Don Merkes
Neenah Common Council Members
Menasha Common Council Members

FROM: Al Auxier, Chief

DATE: July 28, 2015

RE: Pumper 35, NMFR's Reserve Engine, Update

In my July 15, 2015 memo, I informed you of the problem that we have with Pumper 35, which is our only reserve engine. Staff has been researching the option to make the repairs or if it is better to replace Pumper 35. Here is an update of where we are at.

It is imperative that we move forward, as soon as possible, to solve the problem of making sure we have an adequate number of vehicles to properly provide emergency services to the Cities of Neenah and Menasha. First let me explain the vehicle status and operations of our Department.

Pumper 35 is our only reserve engine and it is put into service when one of our front line vehicles needs repairs or has routine service performed by our mechanics. It is also staffed, and placed into service, when there is a significant incident and we need an additional crew at the scene or if the front line units are tied up at a significant incident, for a long period of time, this engine will respond to other calls that continue to come in while the front line engines are tied up.

We have four frontline engines and one of these are located at each of our four stations. Our Quint (aerial truck) is located at Station 32 and responds to all major incidents in both Cities. When there is a major incident four vehicles (three front line engines and our Quint) will respond which leaves three of our stations four stations unable to respond in their districts to any additional calls. The fourth station is left to cover all additional calls, in both Cities, until additional off duty members are called in and staff our reserve engine. Once this is staffed, we have two engines to cover emergencies in both Cities.

As I mentioned in my July 15th memo, the cost for repairing would start at approximately $15,000 - $25,000 and could go up substantially if they find more issues when they start the repairs. Staff looked at making the repairing as a solution but one additional information was

obtained on the possible financial impact, age of this truck and possibility of more repairs it has been recommend we do not go this route. In talking with Leslie Niles, from F.A.E., Brindlee Mountain, a used fire truck firm, said that if the vehicle was in good working order they would estimate its value at around $25,000. Pumper 35 is a 1991 Engine and it is strongly recommended fire vehicles of this age are taken out of service.

The Truck Committee look at the specifications of new and demo vehicles to replace this truck from Pierce Manufacturing, Seagraves and Marion Truck. Pricing on a new, or demo model, range from $340,000 - $505,000 and covered a broad range of models. Rather than include all the specifications, and drawings, I am including a spreadsheet of specifications we have received at this time. I am also going to elaborate on we received on pricing.

1. Pierce 2015 Enforcer side mount pumper, which is coming off line mid-August and cost would be $410,000. This vehicle would have a full warranty.
2. Pierce 2014 Saber SLT PUC pumper, which came off line last June, and has about 7,000 miles on it. Cost would be $355,000. This vehicle would have a full bumper to bumper warranty from Pierce but only remaining years on vendor equipment.
3. Pierce 2014 Dash CF PUC pumper, which came off line last September and has about 3,000 miles on it. Cost would be $505,000. This vehicle would have a full bumper to bumper warranty from Pierce but only remaining years on vendor equipment.
4. Pierce 2015 Enforcer PUC pumper, which is coming off line this week. Cost is $472,000.
5. Pierce 2015 Saber PUC pumper (2010 chassis) due to come off line in mid-August. Cost would be $381,000. This vehicle would have a full warranty.
6. Pierce 2015 Saber PUC pumper (new FR chassis) due to come off line in mid-October. Cost would be $387,000. This vehicle would have a full warranty.
7. Marion 2015 Gladiator pumper which would take 6 months to manufacture. Cost would be $480,000. This vehicle would have a full warranty.
8. Marion 2015 Metro Star-X pumper which would take 6 months to manufacture. Cost would be $340,000. The price is based on a model they built for New London Fire Department. This vehicle would have a full warranty.
9. Seagraves 2015 Marauder II stainless steel cab pumper which would take 210 days to manufacture. Cost would be $480,000. Seagraves does not have any demo models and produces trucks when ordered. This vehicle would have a full warranty.
10. Smeal 2015 Metro-Star pumper, new demo to come off line in September. Cost would be $417,000. This vehicle would have a full warranty.

An additional $20,000 would be needed to cover cost of installing customer provided two way radio, graphics and lettering, adding hard suction troughs in hatch with rear door, adding cold climate package, adding EMS cabinet and adding Husky 3 foam system with 4 discharges.

A large number of the vehicles listed are from Pierce only because they are large enough to produce stock vehicles on a regular basis whereas Marion and Seagraves usually manufacture as vehicles are ordered.

The Truck Committee looked at all of these options, and after careful consideration of our needs, recommends our Joint Finance & Personnel consider item #6, the Pierce 2015 Saber PUC pumper (new FR chassis) due to come off line in mid-October, to replace Pumper 35. The new pumper would actually be placed at Station 35 and would take the place of Engine 35 as Engine 35, the 1997 Pierce Saber, would be the actual vehicle that would take the place of Pumper 35 as a reserve engine in our fleet.

I am requesting consideration, and action, on either moving forward with a recommendation to both Common Councils, or scheduling a special meeting of NMFR's Joint Finance and Personnel Committee meeting to further discuss, and come up with recommendation, to both Common Council's regarding moving forward with either repair or replacement of Pumper 35. At may become necessary to call a Special meeting of the Cities of Neenah and Menasha Common Councils to discuss this as the opportunity to get a replacement vehicle of this caliber and price does not come along very often. I encourage consideration of our Joint Finance & Personnel Committees and both Councils to act on this as soon possible.

If you have any questions, or need to further explanation of anything, please feel free to contact me.

Attachment

Pumper Specifications Comparison Chart

Option	Saber, 28138	Saber 28574	Enforcer 28140	Enforcer 28570	Dash CF 27514	Saber 27366	Marion RP	Marion NLFD	Seagrave 10016	Smeal 4469
Demo or New	New	New	New	New	Demo	Demo	Demo	New	New	Demo
Available	Aug 2015	Oct 2015	August 2015	July 2015	Sept 2014	June 2014	Immediately	~6 months	210 days	Sept 2015
Chassis	Saber 2010	Saber FR	Enforcer	Enforcer	Dash CF	Saber	Gladiator	Metro Star-X	Marauder	Metro-Star
Engine	Cummins	Cummins	Cummins	Cummins	DDC DD13	Cummins	Cummins	Cummins		Cummins
Steel/Alumin.	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	S. S.	Aluminum
Pump	1500	1500	1500	1500	1500	1500	1500	1250		2000
Pump Manf.	PUC	PUC	Waterous	PUC	PUC	PUC	Hale	Hale		Waterous
Water Tank	750	750	750	750	750	750	750	1000		700
Foam Pump	Future	Future	Future	Future	Future	Future	Foamlogix	FoamPro 1600		FoamPro 1600
Foam Cell	30 gal.	30 gal.	30 gal	30 gal	30 gal	30 gal	20 gal	20 gal		30 gal
Ladder Stor.	Body	Body	Body	Body	Body	Body				Hyd. Rack
Front Suspen.	Axle	Axle	TAK-4	TAK-4	TAK-4	Axle				Axle
Doors	Amdor	Amdor	Amdor	Gortite	Amdor	Amdor	Amdor	Amdor		Hinged
Generator	No	No	No	No	Harrison 6kW		Harrison 10kW			No
Back-Up Cam	No	Yes	Yes	Yes	Yes	No	Yes			Yes
Warranties										
Basic	1 year	1 year	1 year	1 year	1 year	1 year				1 year
Steering	3 year	3 year	3 year	3 year	3 year	1 year				
Engine	5 yr	5 year	5 year	5 year	5 year	5 year				5 year
Frame	50 year	50 year	50 year	50 year	50 year	50 year				Lifetime
Ind. Suspen.			3 year	3 year	3 year					
Axle	2 year	3 year	3 year	2 year	2 year	2 year				2 year
ABS Brakes	3 year	3 year	3 year	3 year	3 year	3 year				
Cab-Structure	10 year	10 yea	10 year	10 year	10 year	10 year				10 year
Cab-Paint	10 year P-R	10 yr P-R	10 yr P-R	10 yr P-R	10 yr P-R	10 yr P-R				10 year
Electronics					5 year					
Camera		Yes	Yes	Yes	Yes					
LED Lights	Yes	Yes	Yes	Yes		Yes				
EVS Trans	5 year	5 year	5 year	5 year	5 year	5 year				5 years
Water Tank	Lifetime	Lifetime	Lifetime	Lifetime	Lifetime	Lifetime				Lifetime
Body - Paint	10 year P-R	10 year P-R	10 yr P-R	10 yr, P-R	10 yr P-R	10 yr P-R				7 year
Body-Structur	10 year$355,00	10 year	10 year	10 year	10 year	10 year				10 year
Roll up doors	10yr/5yr paint	10yr/5yr paint	10yr/5yr paint	6 year	10 yr/5yr paint	10 yr/5yr paint				
Pump	6 year	6 year	5 year	6 year	6 year	6 year				5 year
Plumbing	10 yr S/S	10 yr S/S	10 yr S/S	10 yr S/S	10 yr S/S	10 yr S/S				10 year
Camera	No	Yes	Yes	Yes	Yes	No				
Generator					2 year					
Price	$381,000	$387,000	$410,000	$472,000	$505,000	$355,000	$450,000	$339,800	~$485,000	$417,231

Memorandum

TO: NMFR Joint Finance & Personnel Committee Members

FROM: Al Auxier, Chief

DATE: July 27, 2015

RE: Pumper 35 Repairs

Below is an overview of repairs that have been completed for the past couple of years. Please note preventative maintenance is **not** listed below.

2015 Repairs: To date, we have spent $6,054.08 for repairs to this vehicle.

- Brake repair
- Front intake valve rebuild
- Discharge valve replacement
- Light replacement.
- Power steering line blew on the way to a call. Pumper was in service for E32 as this was out for repairs. P35 was out of service for 1 ½ hours and we had no reserve engine to use during this time.
- Primer wire repair.

These are the known items that need repair for this vehicle:

- Anti-freeze leaking in the oil.
- Ladder (mounted on top of the truck) will not rotate clockwise.

2014 Repairs: In 2014, we spent $1,464.59 for repairs. Some of these were:

- Radio repair
- New charger and indicator.
- Primer wire replaced.
- Wires on fan behind firefighter seat were sparking. Wire was fixed.
- Electric transfer valve motor replaced.
- Cord reel switch replaced.
- Rear and front slack repaired as parking brake was not working when engaged. Vehicle rolled forward.
- 10 door struts replaced on compartment doors.
- Audible alarm replaced.
- Ladder rack switch replaced.
- Step by pump panel replaced.
- Front strobe light and reflector replaced.

2013 Repairs: In 2013, we spent $4,849.77 for repairs.

- Batteries replaced.
- Air eject repaired.
- Tank to pump valve replaced.
- Wheel cover replaced.
- Discharge gauge replaced.
- Tires replaced.
- Pipes and hoses replaced on radiator.
- Officer side roof mounted light replaced.

If you need any additional information, please feel free to let me know.

Thank you.

AA/tt

Memorandum

TO: NMFR Joint Finance & Personnel Committee

FROM: Al Auxier, Chief

DATE: July 27, 2015

RE: Pumper 35 Usage

As I stated in my previous memo, Pumper 35 is our only reserve engine and it is put into service when one of our front line vehicles needs repairs or has routine service performed by our mechanics. It is also staffed, and placed into service, when there is a significant incident and we need an additional crew at the scene or if the front line units are tied up at a significant incident, for a long period of time, this engine will respond to other calls that continue to come in while the front line engines are tied up.

Here is some information on our call volume for the last few years:

Time Period	Number of Calls	Number of Overlapping Incidents
1/1/15 – 6/30/15	1,218	136
2014	2,398	231
2013	2,283	243
2012	2,335	242
2011	2,419	348

Overlapping incidents are times when we have multiple engines out on calls. This could mean there are several engines out on one call and/or multiple engines each handling different calls.

So far in 2015, Pumper 35 responded on calls 55 days. This doesn't include the number of times it was put into service but didn't respond to a call.

I hope this information gives you an idea of how important it is for us to have a reserve vehicle.

AA/tt

Neenah-Menasha Fire Rescue

Memorandum

TO: **Al Auxier, Chief**

FROM: **Mike Sipin, Assistant Chief**

DATE: **July 17, 2015**

RE: **Pumper 35 Repair vs Replacement**

Given the recent developments with Pumper 35, research was conducted to provide information on the repair or replacement of the apparatus. Pumper 35 (P35) is a 1991 Pierce apparatus based on an Arrow Chassis, and contains a 50' Telesqurt. The pump is a 1250 gpm, two-stage style, with a Barber-Coleman pressure governor, that helps regulate pump pressures when multiple lines are flowing. The vehicle has 71,309 miles as of the writing of this memo.

Several options exist to address the major engine issue that has plagued the truck. The first is to repair the engine. The diesel engine in P35 is a 1991 Detroit Diesel, 6V92. This is an older style of engine which no longer meets today's stringent emissions requirements and has been out of production since 1995. Repairing the engine would take a significant amount of labor and cost. The Pierce Arrow chassis is not conducive to easy access of the engine, as it is not a tilt-cab chassis. The roof must be dismantled in order for the engine to be removed to make the repairs. Early "rough" verbal estimates range anywhere from $15,000-25,000 at a start to locate the suitable parts in order to rebuild the engine. Additional costs will incur from the intensive labor involved to remove and install the rebuilt engine. Costs could also rise based on what is found during the initial assessment. The issues with repairing or the engine are not the only issues impacting repairs. I had a conversation with Mark Evel, an independent contractor with Pierce Manufacturing who stated a new engine cannot be placed into P35. The current engine, as referenced, is no longer available, and can only be rebuilt. New engines will not fit as they are larger to meet the requirements under the emissions standards. Manufacturers were forced to redesign and engineer their chassis in order to allow the new engines to fit.

As mentioned in the introductory paragraph, P35 is an older piece of equipment. It is currently going on 25 years of service. It has performed well, but is now in need of possible replacement. Given the age, other mechanical issues will make the ability to find parts lengthy as well as expensive. Earlier this year, P35 was out of service for over two weeks while a repair facility attempted to locate parts for the brakes. This will only continue to happen as some of the various components may not be available. Another example of a potential repair issue lies with the Barber-Coleman pressure governor. This is one of the original types of electronic pressure regulating devices used on fire apparatus dating back to the mid-1980's. This particular style of governor is no longer in production. Newer pressure governors are electronic in nature and are tied into the diesel engine. A new-updated pressure governor can be installed, but at a costly level. In short, the age of the apparatus is a leading factor to repair or replace this apparatus. During a recent equipment day check, it was found the aerial turntable would not rotate in one direction without the high idle. This is a problem while pumping, as the pump disengages the high idle feature rendering the use of the aerial device useless.

NFPA (National Fire Protection Association) Standard 1901, *Standard for Automotive Fire Apparatus,* 2009 Edition calls for front-line fire apparatus to be replaced at the 20 year mark, with apparatus in reserve status replaced at the 25 year mark. Furthermore, NFPA 1911, *Standard for Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus,* 2012 Edition, recommends the following (NFPA, 2012):

> Fire department administrators and fire chiefs should exercise special care when evaluating the cost of refurbishing or updating an apparatus versus the cost of a new fire apparatus. In many cases, it will be found that refurbishing costs will greatly exceed the current value of similar apparatus that are over 20 years old, other than to paint or repair the apparatus, is a very poor investment.

Although considered consensus standards, the afore-mentioned NFPA standards, act as a "Standard of Care" document. Standard of care is defined as (Legal Dictionary, 2005):

> The watchfulness, attention, caution and prudence that a reasonable person in the circumstances would exercise. If a person's actions do not meet this standard of care, then his/her acts fail to meet the duty of care which all people (supposedly) have toward

others. Failure to meet the standard is negligence, and any damages resulting therefrom may be claimed in a lawsuit by the injured party. The problem is that the "standard" is often a subjective issue upon which reasonable people can differ

Additional issues should also be factored into this decision other than solely the NFPA standards.

Operational costs have a big impact on apparatus purchasing. John Hill, an apparatus budgeting consultant with First Bankers, stated in a Fire Rescue 1.com news article (2012) that older vehicles are less fuel-efficient than newer trucks. Older trucks also have intangible costs related to safety, such as air bag and roll protection, noise reduction, and emissions, to list a few. In short, a new truck reduces safety and liability costs.

The International Association of Fire Chiefs (IAFC) strongly urges its members to follow the NFPA standards when it comes to the purchasing, operating, and maintenance during the entire life cycle of that apparatus. "Every fire department has a responsibility to provide a safe apparatus and equipment for its personnel to safely perform their responsibilities to their community. The apparatus should be compliant with national standards and must also adhere to state and local requirements." (IAFC, 2004).

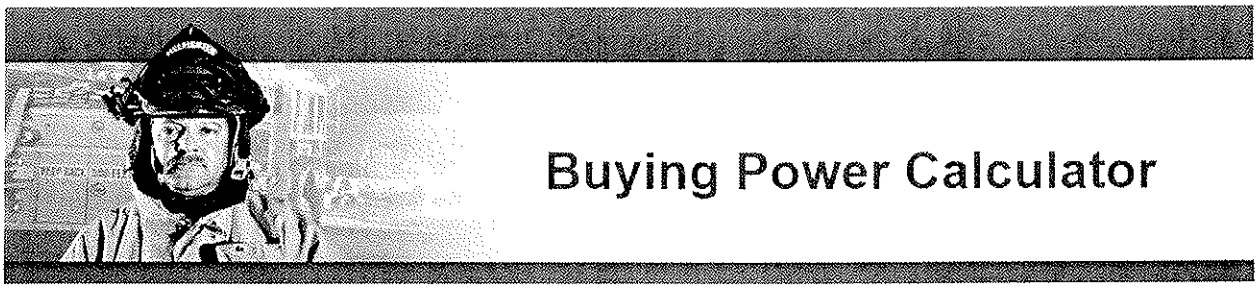
The advantages of replacing P35 are numerous. Safety innovations were mentioned earlier in this memo. The Fire Apparatus Mechanics Association (FAMA) drafted a "White Paper" that shows some of the safety innovations that are included in modern fire apparatus. (Piechura, 2009). Some of the many improvements to be gained with the purchase and acquisition of a new apparatus compared to repairing the current P35 include, but not limited to the following:

- Reduced noise levels from removing sirens and horns from roof, and allows for improved communications
- ABS brakes (mandated)
- Air disk brakes that shorten braking distances and eliminates brake fade
- Auxiliary brake system that improves stopping abilities, operator control, and increases brake life, reducing repairs
- Roll stability control that reduces potential for roll-over
- Cab integrity contains mandated roof crush integrity

- Electronic stability control helps to improve control of vehicle during emergency braking
- Tilt-cab design allows for greater accessibility to the engine area
- Diesel particulate filter system eliminates exhaust smoke particles and provides for a cleaner environment
- Side roll protection helps to reduce injuries from frontal crashes
- Vehicle data recorder provides a record of occupant actions (seat belt usage, etc) and driving habits.
- Steering geometry increases cramp angles and reduces turning radius
- Air ride suspension improves the ride quality and creates less shock to the occupants body and the chassis frame
- Independent front suspension improves the ride quality, cornering, and creates less shock to the cab and components
- Rollover stability standards have been improved to set minimum standards or include an electronic stability control device
- Battery conditioners are installed to improve battery life and reduce maintenance on batteries.
- Electrical load management system prevents overloads, preserves battery condition, and reduced maintenance frequency. Provides easier diagnostic abilities and serviceability. And the frequency of electrical system failures is reduced.
- Class A foam systems provide crews with the ability to knock fires down quicker as compared to straight water, allows for quicker clean up, and reduces rekindles.

The decision to repair over replacing in this case is not a responsible one financially. I pointed to reasons why repair is not worth the cost earlier. The decision to delay the replacement creates a larger cost in the future. The Buying Power Calculator, as shown in Figure 1, was created by John Hill, of First Bankers. It shows how the annual price increases can impact the price of an apparatus over a pre-determined period. Based on a $450,000 apparatus, you can see how the consumer's cost are impacted due to the annual manufacturer price increases, which typically average 3%.

Figure 1



It's as easy as 1 - 2 - 3 !

1. ENTER current truck price	$ 450,000	? Click here for help
2. ENTER truck inflation rate	3.00%	? Click here for help

	In 1 year	In 3 years	In 5 years	In 7 years	In 10 years
IF YOU WAIT TO PURCHASE: **The cost of the fire truck will be:**	**$463,500**	**$491,727**	**$521,673**	**$553,443**	**$604,762**
You lose this much buying power:	$13,500	$41,727	$71,673	$103,443	$154,762

For FREE help, ideas, suggestions, tools, and information about the financial issues when buying a fire truck, visit www.FirstBankers.net

Note: This information is provided for discussion purposes only. Version 2005.01

Recommendation:

Based on the information provided in this memo, it is the recommendation of the Truck Committee to replace P35 in lieu of repairs. I have been in contact with various manufacturers to collect information on available demo/stock pumpers, along with pricing. I shall forward this information once I have received it.

Please contact me if you have any questions.

References

National Fire Protection Association (2009). *Standard for automotive fire apparatus.* Quincy, MA: NFPA.

National Fire Protection Association (2012). *Standard for inspection, maintenance, testing, and retirement of in-service automotive fire apparatus.* Quincy, MA: NFPA.

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IAFC. (2004, July 15). *Refurbish or replace? NFPA 1901 Annex D explained.* Retrieved from International Association of Fire Chiefs: http://www.iafc.org/Operations/LegacyArticleDetail.cfm?ItemNumber=2332

Legal Dictionary. (2005). *Standard of care*. Retrieved from Legal Dictionary: http://legal-dictionary.thefreedictionary.com/standard+of+care

Piechura, J. (2009, May). Report on application of new technology to modern fire apparatus. *Fire Engineering*, pp. 114-120.

Memorandum

TO: City of Menasha Common Council
Mayor Don Merkes
City of Neenah Common Council
Mayor Dean Kaufert

FROM: Al Auxier, Chief

DATE: July 30, 2015

RE: Pumper 35 Replacement

In 2014, during the discussion of replacing Quint 32, Ald. Taylor asked about the possibility of having alternative response vehicles for EMS calls. At that time, AC Sipin put together information regarding the impact this would have on our response capability for our two communities.

While the committee was discussing the issues with Pumper 35, Ald. Taylor brought it back up for discussion. While the members didn't have AC Sipin's *Use of Alternative Response Vehicles* memo, dated June 23, 2014 in front of them, they did review the topic and the impact it would have for our two communities. Our committee members asked me to include this information for you to review prior to the discussion of replacing Pumper 35.

If you have any questions, please give me a call.

Enclosure

AA/tt

Neenah-Menasha Fire Rescue

Memorandum

TO: **Chief Al Auxier**

FROM: **A/C Mike Sipin**

DATE: **June 23, 2014**

RE: **Use of Alternative Response Vehicles**

This memo provides information on the use of alternative response vehicles (ARV's) within the response structure of Neenah-Menasha Fire Rescue. I have conducted research on the use of ARV's. The cumulative research was taken from Internet sources, National Fire Academy Executive Fire Officer applied research projects, Wisconsin Fire Chief's Association email surveys, email and phone conversations with out of state fire departments, and internally obtained information (maintenance records, operating costs, fuel reports, Firehouse run data, etc).

2013 Emergency Medical Responses account for approximately 69% of Neenah-Menasha Fire Rescue's (NMFR) call volume, according to the Firehouse Database. Very similar statistics are represented for fire departments involved in EMS delivery across the nation. The ARV concept was originally introduced to allow fire departments an option to provide the EMS care, while at the same time helping to reduce the maintenance costs associated with operating a larger, more traditional engine or ladder company.

Engine 32 was selected as the example on the use of an ARV. Engine 32 operates from Station 32 on Columbian Avenue in Neenah. Engine 32 is a 2008 Pierce Velocity, and is the newest apparatus in the NMFR fleet. Engine 32 responded to a total of 1006 calls for service in 2013, or an average of 2.82 calls for service per day. Of these total runs, 646 were EMS related, or 64% of their total calls. Engine

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32 accumulated 1400 miles for the 646 EMS calls it was assigned to. This number is only an estimate. No documentation exists that will provide the exact location from where Engine 32 was at when any call for service was received. The Neenah Information Technology Department used GIS data to determine Engine 32's estimated mileage for EMS calls. The starting point for each of the 646 calls was from Station 32, and the mileage then computed as a round trip number. Engine 32 had an approximate total mileage count of 4,584 for 2013.

An estimated cost per mile figure was then computed, using a formula found on the eHow website at www.ehow.com/how_8301653_calculate-cost-per-miles.html. This formula uses several steps to determine the approximate per mile cost to operate a vehicle. Items included are fuel costs, operating costs (maintenance and repairs), and annual ownership costs (annual insurance and depreciation). Running the formula shows Engine 32 costs $6.35/mile to operate. This number can vary from year to year based primarily on operating costs of maintenance and repairs. Multiplying the cost per mile by the mileage placed on Engine 32, the estimated cost to operate Engine 32 for EMS calls in 2013 is approximately $8,890. As newer apparatus purchases are made in the future, fuel efficiency will increase due to changes in technology and components.

Some departments around the nation have opted to operate smaller SUV or pick-up type vehicles for EMS calls rather than the larger apparatus due to the higher operating costs. The following information is based on the use of a pick-up type vehicle should the ARV concept be applied at NMFR for EMS calls in place of Engine 32. The example cited is a 2008 Chevy Silverado currently in use with the department. The cost per mile to operate is approximately $1.00. This takes into account an average of 5270 miles of use during 2013, fuel costs, operating costs of approximately $300, and ownership costs (insurance and depreciation).

Research conducted from departments using the ARV concept indicates they have placed into service "appropriate" vehicles ranging from SUV's or pick-ups to light rescue trucks. The most common vehicle being used is a pick-up truck. NMFR recently took delivery of a 2014 Ford F-250 Quad-Cab pick-up truck from the State bid list. The final price for the truck was approximately $30,000, plus additional (approximate) amounts for emergency lighting and siren ($5,000), graphics ($2500), mobile

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data computer ($6000), and truck cap ($1000) in addition to fuel, operating, and ownership costs (which are not available yet). Each of the four stations would need an "ARV" in order to apply the saving across the board, and potentially extend the life of all apparatus.

Several fire departments nationwide have had successful programs using ARV's. One example is the Central Jackson County Fire Protection District (CJCFPD) in Missouri. In 2012, the CJCFPD began trial periods to reduce the number of calls/runs that were being placed on apparatus from their busiest station. Ladder 1 from Station 1 averages 15-20 runs per day, according to email conversations with Deputy Chief Todd Farley. This has placed a tremendous strain on this vehicle, which is a large tandem (two) axle ladder truck. When daily staffing levels permit, above 26, the CJCFPS will place two extra personnel in a smaller "squad" vehicle. They are tasked with responding to EMS calls along with a department ambulance. When non-EMS calls are received, this two-person squad is then assigned to the ladder company, and increases that crews staffing to five. Once they fall below the daily minimum staffing level of 24, the squad or ARV concept is not used, as CJCFPD will not break up individual crews in order to maintain the integrity and safety of the crews.

The La Crosse Fire Department uses the ARV concept as well. The LCFD maintains two staffed "light" rescues with four-door Ford F-550 chassis and a rescue body. Both are staffed with a driver and officer, and assigned to their north and south side stations. They handle the majority of EMS calls in La Crosse, and also are assigned to the 75'Quint in their respective stations as a six-person crew for fire related calls. LCFD has staffing levels that allow the use of these vehicles. The LCFD does not have a fire department based ambulance. They rely on a private provider.

The Janesville, WI Fire Department also uses the ARV concept in one of their five stations. Janesville operates four engine companies, and one quint company from their five stations. The ARV is assigned to the 3-person quint station. When an EMS call is dispatched, the quint is removed from service, and the crew responds to the EMS call in the ARV, a four-door pick-up. The crew leaves their gear on the quint. Janesville has had structure fires occur at the same time the ARV is out on a call on two occasions. In these cases, critical ladder company resources were delayed as the crew had to respond

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back to the station, and then put their gear on and respond with the quint. The Janesville Fire Department does have a fire department based ambulance.

Depending on how it is applied, staffing levels, and call volume, the ARV concept can present many disadvantages. The first disadvantage is removing the resource capabilities of a large apparatus from service, in order to have the crew respond to calls in an ARV. Although structure fires only account for less than 10% of NMFR's total call volume, it is extremely important to have full resources readily available at all times. Fire dynamics and behavior has changed greatly over the last twenty years. Several fire service books on tactics and fire behavior/dynamics have shown that fire growth has been increasing at alarming rates. This is primarily due to the use of newer synthetic materials in construction, furnishings, and decorations. These materials can quickly cause a small fire to grow exponentially. A rule of thumb in the Fire Service is that for every 30 seconds a fire is allowed to be uncontrolled, it doubles in energy output. This dynamic leads directly to quicker flashover rates. A flashover is a deadly phenomenon in which all combustibles in a room become heated to their ignition temperature, and suddenly ignite. The heavy use of synthetic materials can commonly cause flashovers to occur in as little as four minutes from the time a fire is in the "free burning" stage, or when it no longer needs a continued ignition source, to continue to develop. Not having the apparatus and its full capabilities and resources places fire crews in danger as they are more likely to encounter a flashover. In short, the quicker crews can get water on a fire, the less damage that is going to occur, and the safer fire crews and any occupants will be.

A second disadvantage lies in the costs associated with enacting an ARV program. Compared to the communities that use the AVR process, NMFR has a lower call volume compared to the previously mentioned departments and less staffing that allow us to effectively apply resources, without creating gaps in the delivery of other vital service components. Nor should the practice be started where crews are split up, allowing two members to respond with an ARV, and a single driver being responsible to bring an engine company to another call. This creates numerous safety issues including a "second set of eyes' to assist the driver during a response, important communications, development of an initial plan, etc. It ***will*** create critical delays in getting water onto the fire, thus increasing the hazards to both

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firefighters and occupants. Given current staffing levels, too much risk would be created by splitting crews to respond on EMS calls. More risks would be created rather than properly managing current ones.

Third, the costs associated with purchasing the appropriate vehicle is not warranted, based solely on the call volume. From the figures provided, in order to place this procedure into standard practice, it would require upfront costs of approximately $160,000 in order to do it properly. The costs presented are only best estimates. The actual costs will vary depending on any number of variables. If legitimate concerns exist over the maintenance costs of responding with larger apparatus, the department should look at the number and types of EMS calls we are responding to. In other words, are there low-priority or simple "assist" calls that can be eliminated from NMFR response protocols? In 2013, Engine 32 responded on 146 Type "A" and "B" calls. These calls are non-emergency in nature. Many of them are to assist our private provider in lifting and moving a patient.

A fourth disadvantage comes in the space to store the additional vehicles. All NMFR stations are very tight with current apparatus and vehicles. It will be a difficult challenge to add additional vehicles to each of the apparatus bays without causing unwanted impacts, such as the inability to use a drive through bay for apparatus, or mechanics having to move vehicles around in order to conduct maintenance duties.

Conclusion/Recommendation:

Based on the above information, it is my recommendation that NMFR does not adapt the ARV model for responses to EMS calls. There are other means to reduce maintenance costs on apparatus and extend the life of this equipment. The research has shown the impact to the overall safety and well being of firefighters can be affected due to the quick development of fires from modern synthetics. The importance of having the right resources available at all times makes NMFR a full service provider. The projected cost savings will not be a benefit based on the call volume. The ARV concept has been successful in communities that have a higher call volume and/or staffing levels (Central Jackson County Fire Protection District, MO and La Crosse Fire Department), while creating gaps and delays in critical responses due to how a department elects to staff and respond with an ARV on EMS calls (Janesville, WI

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Fire Department). The costs associated with the purchase of the correct vehicle outweigh any benefits due to the limited number of times this equipment will be used. Lastly, NMFR lacks sufficient space to house this number of vehicles along with our current inventory of apparatus and vehicles.

Should you have any questions, please feel free to contact me. Thank you.

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