

# Hughsonville Fire District

Aerial Device Committee Presentation

January 13, 2016

# Aerial Device Committee

- The chief staff came to the Board with the recommendation of replacing our existing tower ladder
- Various reasons were presented and the Board gave their blessing to start the investigative process
- The Committee provided a wide variety of ideas and recommendations with a combined 130+years of experience:
  - Chief Laffin (*35 Years*)
  - 1<sup>st</sup> Assistant Chief D'Anna (*10 Years*)
  - 2<sup>nd</sup> Assistant Chief Pettit (*10 Years*)
  - Captain Jerrick (*10 Years*)
  - Safety Officer Flower (*28 Years*)
  - Safety Officer Valentino Sr. (*37 Years*)
- These selections gave diverse and objective points of view to best suit the needs of the District
- Fiscal responsibility is our foremost consideration while still being able to provide adequate fire & life safety protection to the community

# Why We Need An Aerial Apparatus

- NFPA
  - High-hazard occupancies (schools, hospitals, nursing homes, high-rise buildings): at least four pumpers, two ladder trucks, and other specialized apparatus as may be identified or available for the hazard.
  - Medium-hazard occupancies (apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or firefighting capabilities): at least three pumpers, one ladder truck, and other specialized apparatus as may be identified or available.
  - Low-hazard occupancies (one-, two-, or three-family dwellings and scattered businesses and industrial occupancies): at least two pumpers, one ladder truck, and other specialized apparatus as may be identified or available.
- ISO
  - Either, or a combination of:
    - 5 Buildings with 3+ stories or 35'+ in height
    - 5 Buildings with needed fire flow of 3500+ GPM
  - Highest points awarded when ladder unit reaches the roof of tallest building or 100', whichever is less
- ***This directly affects each homeowner and commercial owner's insurance rates***

# Why We Need An Aerial Apparatus

- Increased size of residential homes
  - Residential homes are not the single story, 1200-1500 ft<sup>2</sup> they used to be
  - Many homes are now being built 2000+ ft<sup>2</sup> and being set back off the roadway
  - New homes are 29% larger in size than what was being built in previous years
  - The **Fire Service** needs to **Grow** with the **Community**
- Multiple dwellings & townhouses
  - Berry Lane
  - Doe Trail
  - White Gate
  - Pavilion
  - Montclair Townhouses
- Growth of commercial district
  - Fishkill & Poughkeepsie are building up
    - Matter of time before the expansion hits our area
  - Town's desire to expand the water system capabilities, thus leading to larger buildings

# Why We Need An Aerial Apparatus

- Large commercial buildings / Schools
  - Hannafords
  - Goodwill strip mall
  - AC Moore / Stop & Shop
  - BJ's Wholesale Club
  - Toyota
  - Cablevision
  - Executive Square
  - Nissan
  - Certified Used Car Outlet
  - Hark Plaza
  - Mercedez-Benz
- WJHS
- Evans Elementary School
- Lawrence Farms
- Stage Door Rd (4 Large Buildings)
- N&S Supply
- Extra Innings
- Adam's Fairacre Farms
- Mini Cooper
- Viscount Liquors
- OTB/Plant Depot

# Personnel Considerations

- Depending on the length of a ground ladder it takes anywhere from two to six firefighters to set up
- These are not the same ladders you use to clean out your gutters. The ladders we use are industrial strength and very heavy
- Aerial apparatus can be put into operation by 1 or 2 people,; Safer, more efficient, and faster than setting up ground ladders
- Day dependent
- Weather dependent
- Time dependent
- Mutual aid requires additional time
- Nationwide issue and is not Volunteer or Career specific
- The first 10-20 minutes of EVERY emergency is the most important
- The need for specific apparatus and personnel is paramount

# Operational Considerations

- 4 Firefighters to set a ground ladder, vent a roof
- 4 Firefighters to make entry for RESCUE or Fire Suppression ( 2 IN 2 OUT NFPA requirement)
- Several other Firefighters to provide first aid to victims, get water, get tools, etc.
- In contrast, it only takes one firefighter to operate an aerial ladder truck, meaning the rest of the responders can work on things such as rescue and fire suppression

# Operational Considerations

- Aerial apparatus must be first or second on scene
- Placement is critical to the operation
- COLLAPSE zones must be considered (leading to correct aerial size)
- Rural driveways and some townhouse/apartment complexes are not suited for multiple apparatus
- LARGE Water supply lines are near impossible to move once in use



# Problems to Consider

- There is an inability of mutual aid department ladder trucks to reach some homes in town
- Our mutual aid aerials were not built for the roads in Hughsonville
- There's also no guarantee a ladder truck will be available when we need it to be!
- Neighboring Towns are growing like we are
- Neighboring Towns have their own incidents
- Neighboring Towns have personnel shortages
- We are all constantly being tasked to do more with less..... This compromises SAFETY!

# Hughsonville's Future

- We cannot predict what will be built in the next 5-10-20 years, We need to be prepared ahead of time.
- The apparatus in Hughsonville is aging
- Apparatus is built to last 20-25 years
- This replacement will assist with the further development of our district

# What We Currently Have

## 1988 Sutphen 95' Tower Ladder

- No longer meets standard for front line apparatus
- 28 Years Old
- Bought used from the Hicksville Fire District in Long Island
- Lacks safety features of current apparatus
- Cost of preventative maintenance & repairs will add up due to aging parts
- Cab is lacking in room for the safe and efficient accommodation of firefighters and equipment

# Why We Need To Replace Ours

- Safety
  - Aerial Safeties
  - Cab construction, safety, & room for accommodating firefighters/equipment
  - Seat and mirror adjustments
  - Lack of drivers due to size and tail swing
  - Not a climbable ladder, only for emergency egress
  - Auxiliary braking – “Jake brake”
- Functionality
- Versatility
- Extend life of other apparatus
  - Splitting alarm assignments (i.e. FAST, Commercial, etc.)
- Costs & Liabilities associated with and aging apparatus
- Maneuverability

# Why Purchase a New Apparatus?

- Useful life is projected to be 25+ years
- Full manufacturer warranty packages
- Properly specified aerial device will fully meet our needs
- First due apparatus provide life & safety roles
- More reliable & efficient
- Most current standards, safety, and technology

# What is NFPA?

- National Fire Protection Association
  - Agency that develops codes and standards for usage and adoption by various agencies
- NFPA should be considered in almost every decision a fire department makes today
  - Fire prevention, apparatus, SCBA, PPE, ground ladders, fire hose, testing requirements, staffing, suppression, organization, etc.
- “Well it is just a standard, so we don’t have to follow it.”
  - WRONG
  - NFPA provides generally accepted industry standards, not regulations
  - However, NFPA has been cited in criminal case law most notably the Lairdsville training incident in 2001

# NFPA 1901 – Standard for Automotive Fire Apparatus

*Standards are written to maximize firefighter safety and minimize risk of liability, injury, or possibly death.*

- Any apparatus built before 1991 that exceeds 25 years of age should be replaced for safety and liability reasons
- 1991 was an important year for improved safety features in apparatus and has continues to develop since then
- Operating with front line apparatus that does not meet the safety recommendations by NFPA places risk and liability on firefighters, the public, and the community

# NFPA 1901 – Standard for Automotive Fire Apparatus

- Standards help to reduce the possibility of injury or death to members of the fire department and general public with improvements in the following areas:
  - Warning light & audible device requirements
  - Reflective stripe requirements
  - Maximum speed reduced to 60 mph for vehicles at or exceeding 50,000 GVWR
  - Primary and secondary braking requirements
  - Equipment storage and securement
  - Engineering, pre-construction, and construction requirements



# Committee Meetings

- Numerous committee meetings were held
- Extensive research and evaluation of the district and department
- Considered neighboring mutual aid resources available
- Considered various options available to pursue
- Met with various manufacturers of aerial devices
- Looked at various demo units
- Established objective goals and requirements based on all data and information gathered
- Consulted with the officers and members of the department as well
- Decision to pursue the Quint concept was made

# What is a Quint?

- A quintuple combination pumper or quint is a fire service apparatus that serves the dual purpose of an engine and/or a ladder truck.
  - Supply fires streams (pump and hoses)
  - Provide initial and continuing water supply (pump, water tank, and hoses)
  - Provide personnel with **SAFE** access to elevated areas (ground ladder complement and aerial device)
  - Provide elevated master fire stream (pump, hose, and aerial device)
  - Provide access to areas that ground ladders cannot
  - High point anchor for technical rescue operations
  - Various other functions for rescue
    - Water Rescue
    - Below Grade Rescue
    - Tree Rescues

# What is a Quint?

- NFPA outlines the recommended equipment to be considered a Quint
  - Fire pump with a minimum capacity of 1,000 gallons per minute
  - Water tank with a minimum capacity of 300 gallons
  - Aerial ladder or elevating platform with a permanently installed waterway
  - Hose storage area with a minimum of 30 cubic feet of storage area capable of accommodating 2.5 inch or larger fire hose; two hose storage areas, each with a minimum of 3.5 cubic feet or 1.5 inch or pre-connected hose lines.
  - Enclosed compartments with a minimum of 40 cubic feet for equipment storage
  - Complement of ground ladders containing a minimum of 85 feet of ground ladders, including at least: two extension ladders, one roof ladder and one attic ladder
  - Suction hose of a minimum of 15 feet of soft suction hose or 20 feet of hard suction hose for drafting water.

# Why a Quint?

- Improved aerial placement on scene for fire ground tactics and strategy
- Reduces vehicle maintenance and fuel costs
- "More truck for the buck"
- Operational versatility in the future
  - Ensures a timely response of a ladder and a pumper to an incident
  - Reduces the number of responding apparatus
  - Provides for more efficient staffing on trucks
- Cost of a new aerial and engine significantly exceeds cost of a new quint

# The Next Question....

- Platform or Ladder????

# Platform

## Pros

- Safety
  - No need to carry equipment up
  - Larger platform to work off
- Higher water flow capabilities
  - Possibility of two master streams
- Easier rescue capabilities
- Hose, tools, breathing air at bucket
- Dip to  $-12^{\circ}$  below grade for rescue
- More stable due to less fly sections
- Can reposition with FF's in platform

## Cons

- Cost
  - Can range from \$100k-\$200k more on average
- Apparatus length
  - Upwards of 4'-5' longer than same size ladder
- Apparatus weight
  - 10,000-20,000 LBS heavier than a ladder

# Ladder

## Pros

- Cost
  - Can range from \$100k-\$200k less than a platform
- Speed of operation
- Tighter working area
- Easier to spot the tip of the ladder
- Continuous access to roof
- Shorter and more maneuverable than platform
- Smaller ladder can go into windows

## Cons

- Should not be repositioned with firefighters on ladder
- Firefighter fatigue carrying tools up ladder
- Rescuing unconscious victims can be more difficult
- Not as safe as operating off of a platform

# Key Items To Consider

- Quint (Aerial ladder, Ground ladders, Hose, Pump, Tank)
  - 100'+ Heavy Duty Steel Ladder (750 Tip Load preferred)
  - Ground ladders (35', 2-24', 20', 18', 16', 14')
  - 600' – 5" LDH, 1-200' 2.5" Crosslay, 2-200' 1.75" Crosslays
  - 1500+ GPM pump
  - 500 Gallon Tank
- Increased drivability and maneuverability
  - Angle of approach & departure
  - Turning radius
  - Tail swing
- Single Source Manufacturer
- Proximity & Quality of service locations
- Station space available
- Mutual aid resources available
- Personnel capabilities
- Provide adequate protection while remaining fiscally responsible



# Demos

- Various demos were brought in over the past few months
- Various capabilities and configurations were considered
- Kept various options open as to not defer any particular manufacturer
- Manufacturers who provided apparatus
  - E-One
  - Seagrave
  - Pierce
  - Spartan
- All single source, steel ladder manufacturers

# E-ONE

## Pros

- Narrow jack spread
- Gave out calendars
- Track record getting better

## Cons

- New to the steel ladder business
- Not able to short jack
- Salesman unprepared
- Questionable history
- Quality not quite to par with others

# Seagrave

## Pros

- Excellent quality & track record
- Safety features
- “You get what you pay for”

## Cons

- Salesman was arrogant & unprofessional
- Expensive

# Pierce

## Pros

- Pinless or Pinned outriggers
- Excellent quality
- Have relationship with pierce already
- Tech rescue tip
- Service close

## Cons

- Ladder instability
- Less headroom in cab due to cutout (Cornwall & Beacon have reduced height)
- Appears to have less compartment space than Spartan

# Spartan

## Pros

- Compartment space
- Widest fly section and highest handrails for climbing
- Safety features
- Tech rescue tip
- Pinless setup
- Service close
- Similar to 45-55 chassis
- Stokes transverse over pump panel

## Cons

- No LDH storage under aerial
- Multiple build locations
- Turntable on Schuyler Heights seemed a little flimsy
- Ground ladder and LDH storage concerns
  - Possibly lose compartment space

# Feature Comparison

	E-ONE	Seagrave	Pierce	Spartan
Length	42' 6"		39'-42'	39'-42'
Height	11' 6"	11' 4"	11' 9"	11' 8"
Wheelbase	240"-250"	219.5"-248.5"	225"-250"	248"
Tip Load	500 LBS	500 LBS	750 LBS	750 LBS
Vertical Reach	105'	100'	105'	103'
Horizontal Reach	94'6"	91' 8"	100'	96' 0"
Degree Operation		-5° to 80°	-5° to +75°	-10° to +75°
Grade Correction				10°
Jack Spread	13' 8"		16' 0"	16' 0"
Fly Width		21"	21.5"	23"
Fly Height		15"	17.5"	19"
LDH Capacity			1000'	1000'
Water Capacity	300-500 Gallon	300-500 Gallon	300-750 Gallon	300-500 Gallon
Aerial Flow	1000 GPM	1000 GPM	1000 GPM	1000 GPM
Motor HP	500-600 HP	500-600 HP	500-600 HP	500-600 HP