

# Southborough Fire Department



## AERIAL LADDER STUDY COMMITTEE FINAL REPORT

(Recommend this report be printed in color)

November 2008

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## **EXECUTIVE SUMMARY**

The Town of Southborough Fire Department is currently without an aerial ladder truck due to fact that the existing aerial ladder truck was taken out of service in November of 2007. The reason for this action was that the existing aerial ladder truck could not be repaired and certified as required by today's firefighting standards. The existing aerial ladder truck is 24 years old and has reached the end of its useful life. The town has relied entirely on mutual aid aerial ladder trucks from other towns, when available.

In light of the situation, the Fire Chief invited all members of the fire department to submit resumes to him in order to form an Aerial Ladder Study Committee, to investigate all aspects of an aerial ladder for the Town. Several people volunteered and a committee was formed. Invitations were also extended to the Board of Selectmen, Advisory Committee, as well as Capital Budget Committee to have members sit as liaisons to this Committee. All members of the Committee have volunteered their time and have attended numerous meetings, equipment demonstrations and engaged in fact finding, all at no cost to the Town.

The Committee was charged with reviewing and evaluating all possible options for replacing the existing aerial ladder truck to include contracting with another municipality for ladder services, rental of an aerial ladder truck, leasing of a new or used aerial ladder truck and purchase of a new or used aerial ladder truck. Each option was reviewed for whether or not it would fit the needs of the Town of Southborough.

Southborough is a mix of residential and commercial buildings, each which provide for unique challenges to the Fire Department. Buildings with different access restrictions (roads, driveways and obstructions) exist as well as buildings with various heights, layouts and construction methods (wood, concrete, brick, stone, etc).

Building occupancies in Southborough include residential, commercial, municipal, academic and religious use. The largest fire life hazards are residential properties as well as the two private boarding schools in town (St. Mark's and Fay School) and multi-tenant housing areas such as Colonial Gardens, Carriage Hill Estates and Vickery Hill Estates. It should be noted that as of the writing of this report, a four story, 40 unit affordable housing (40B) plan is before the Zoning Board of Appeals for the Town of Southborough.

The Town of Southborough Fire Department responds to an average of 1,230 emergency calls per year. These calls include everything from medical emergencies, car fires, building fires, brush fires, building alarms, hazardous materials emergencies, rescues, and other emergencies. Of 1,966 fire incidents during a four year period of 2004-2007; 869 incidents (44%) required an aerial ladder response. Of these calls, there were 89 fires in buildings of which 62 (70%) were two stories tall or higher.

The Town of Southborough needs an aerial ladder truck to conduct rescues of victims and firefighters trapped (timing is essential); for life safety of firefighters conducting dangerous fire operations (ie: working on roofs); to ventilate buildings of heat, smoke and toxic gases and for increasing department efficiency.

As a result of testing various fire apparatus, research and evaluation, it was determined that Southborough has specific needs based upon the challenges listed below:

- An aerial ladder with at least 85-100ft in length for reach
- A vehicle with a short wheelbase which will allow for maneuverability on tight, curvy driveways, and public and private ways and streets
- A vehicle equipped with an aerial ladder, ground ladders, a water pump and tank, and class “A” firefighting foam, which enhances firefighting ability. This type of vehicle is known as a Quint in the fire service.

After extensive research, discussion and analysis; the Aerial Ladder Committee has made the following recommendations for the Town of Southborough:

- Acquire a new aerial ladder truck for the Town of Southborough. This apparatus would be a 100 foot +/- mid mount Quint Aerial Ladder Truck. This vehicle will give Southborough the best possible options for proper rescue, ventilation and firefighting operations.
- Reuse existing tools and equipment from the old ladder truck and other apparatus to keep costs of required peripheral items to a minimum.
- Sell an existing fire engine to offset costs. The acquisition of the Quint Aerial Ladder Truck will replace the need for this stand alone engine.
- Sell the existing out-of-service ladder truck for scrap. The current ladder has no street value and is a possible liability to the Town.
- Fund a new aerial ladder truck through a mix of donations, fundraising and municipal funds. The goal would be to raise as much of the funds needed to acquire this apparatus through donations and fundraisers.

The Aerial Ladder Committee has conducted a thorough, methodical process and analysis to determine the requirements to fit the needs of the Town of Southborough. This process and report clearly demonstrates that the Town of Southborough is in need of acquiring a new aerial ladder truck. The current ladder truck cannot be repaired or certified.

All information was compiled and organized into the following Aerial Ladder Study Committee Report.

## **INTRODUCTION AND HISTORY**

Throughout its history, the Southborough Fire Department has relied on various types of hand carried ground ladders. Most were carried on the various engines that have been used by the department since it was established.

In 1947, the department purchased a “City Service” ladder truck from Maxim Motors. This apparatus carried several ground ladders of varying heights. It also had a water pump and small capacity water tank. It remained in service to the town until 1976.

In 1966, a very damaging fire occurred at St. Mark’s School. Following this fire it was finally realized that the department did not have the proper means of laddering a building of any substantial height, which endangered firefighters as well as occupants of the buildings due to very limited access via ground ladders.

Through private donations, in 1967, a used aerial ladder truck was purchased from Great Neck, Long Island, NY. It was a 1940 American LaFrance-Foamite 85 foot aerial ladder equipped with a compliment of ground ladders. This vehicle served the town until the early 1980’s. At the request of then Chief Edward Brock, the department began looking for a more modern aerial ladder as the 1940 unit was well beyond its useful service life.

The department acquired a used 1964 American LaFrance aerial ladder. The vehicle history was that it had belonged to a city in New York State as a “snorkel” aerial truck. This apparatus overturned, destroying the snorkel. It was rebuilt using a 100 foot mid-ship mounted straight aerial ladder and was then put up for sale. Southborough purchased the vehicle and operated it until 1994. Again, it was well beyond its useful service life and had several severe mechanical issues. As testing and certification by reliable firms had come about, this device was tested and found to have numerous flaws that could endanger firefighters or anyone else climbing over the ladder.

In 1994, then Chief Peter Phaneuf sought a replacement for the ladder truck. With the assistance of a company that was in the apparatus sales and repair business, he located a 1984 Hahn Fire Spire aerial ladder truck in Tenafly, NJ. The truck was purchased used and brought to Massachusetts.

It went into service and has served the town for many years. Over the course of this vehicle’s life in Southborough, numerous repairs have been made to keep the vehicle serviceable for firefighting and rescue. During the most recent inspection in the autumn of 2007, several dangerous flaws, which had been building over the life of the truck, presented themselves to the inspectors. All of the failures were compiled into a list and sent out to two repair centers for estimates. One center, the largest fire apparatus repair center in New England stated that yes, it was possible to make all of the repairs needed, but declined due to the fact that it really would not be feasible and certification would not be possible. The second repair center response was virtually the same. The aerial ladder was taken out of service at this time and has remained out of service since. The town has relied entirely on mutual aid from other towns, when available, for aerial ladders.

The Board of Selectmen were notified via a letter on January 18, 2008 that the aerial ladder was out of service. A full report was forwarded to the Board, as well as to the Capital Budget Planning and Advisory Committees on March 4, 2008.

In light of the situation, Fire Chief John Mauro invited all members of the department to submit resumes to him in order to form an Aerial Ladder Study Committee, to investigate all aspects of an aerial ladder for the Town. Several people volunteered and a committee was formed. Invitations were also extended to the Board of Selectmen, Advisory Committee, as well as Capital Budget Committee to have members sit as liaisons to this Committee. All members of the Committee have volunteered their time and have attended numerous meetings, equipment demonstrations and engaged in fact finding, all at no cost to the Town.

The Committee has been charged with determining the department's need for an aerial device and what options to consider and recommend. Several ideas were discussed and investigated including the following:

- Entirely eliminate the aerial ladder from the department's fleet
- Enter into contractual agreements with other communities to provide aerial ladder service to Southborough for a fee.
- Purchase of a used aerial ladder
- Purchase of a new aerial ladder
- Specific type of apparatus that would meet the requirements of the Town

### **CHARGE OF THE COMMITTEE**

The following was the charge to the Committee issued by the Fire Chief:

- Conduct research into, and collect data of Southborough's needs for an aerial ladder truck,
- Conduct research into, and collect data of the specific hazards presented to the Town of Southborough with respect to fire truck requirements,
  - Formulate a list of hazards for all potential apparatus to access
  - Formulate a list of specific data for each truck for fair and equal comparison
- Explore which equipment best suits the needs of the community based upon specific hazards including, but not limited to collaboration with neighboring communities, purchase, and/or lease,
- Contact manufacturers to actually test products currently available to determine if they meet the needs of the Town of Southborough,
- Attend trade shows to view a wide variety of fire apparatus,

- Complete a comparison of fire trucks viewed, including aerial ladders of surrounding communities,
- Explore various funding requirements and options for aerial ladder,
- Prepare a final, detailed report on the Committee's recommendations, for distribution,
- Meet with various Southborough boards, committees, and citizens groups regarding the findings of the Committee.

### **AERIAL LADDER COMMITTEE**

Seven members of the Southborough Fire Department volunteered for the committee as follows:

- James J. Colleary, Call Fire Lieutenant. Lieutenant Colleary has been a member of the Southborough Fire Department for over 40 years. Lt. Colleary has worked for New England Power Service/National Grid and holds an Associates Degree in Electronics and Applied Sciences from Wentworth Institute of Technology. Lieutenant Colleary serves as Chair of the Committee.
- James P. Peltier, Full-time Fire Lieutenant. Lieutenant Peltier has 22 years of fire service training and experience. Lt. Peltier has experience in Emergency Medical Services, as an instructor and training support staff member with the Massachusetts Department of Fire Services, Massachusetts Firefighting Academy, as well as a consultant for The Fire Tech Group conducting fire investigations as well as reviewing specifications for new vehicles for various municipal agencies. Lt. Peltier serves as the vice chair of the committee.
- Thomas J. Hogan, Call Firefighter. Firefighter Hogan has three years training and experience with the Southborough Fire Department. Firefighter Hogan has experience as a Central Office Supervisor, Inter-Office Facilities Engineer, as well as Senior Network Planner, all with Verizon Communications. Responsibilities include studying future technology, developing specifications, and choosing vendors based on quality and cost. Firefighter Hogan holds a B.S. in Electrical Engineering Technology, and an M.S. in Telecommunications Management. Tom is the recorder of the committee.
- John P. Peltier, Call Safety Officer. Safety Officer Peltier brings 52 years of fire service training and experience to the committee. S.O. Peltier held positions from Auxiliary Firefighter to Assistant Fire Chief. S.O. Peltier has also held a wide variety of positions for the Massachusetts Department of Fire Services, Massachusetts Firefighting Academy from Senior Fire Instructor to Assistant Coordinator of Research and Development. S.O. Peltier has both written and reviewed dozens fire service apparatus specifications, as well as conducted numerous fire department apparatus needs studies in

his capacity in the fire service as well as president of FireTech Group and Special Projects Coordinator for Harry R. Carter, PhD., AlFireE.

- Dana Amendola, Full-time Firefighter. Firefighter Amendola brings eight years of fire service training and experience to the Committee. He is a certified Paramedic and holds a Certificate in Paramedic Technology from Northeastern University.
- John Tommaney, Call Firefighter. Firefighter Tommaney has 22 years of experience in the Fire Service in Massachusetts and New Jersey. Firefighter Tommaney has 15 years experience in state government serving in several upper-management positions at the Massachusetts Emergency Management Agency. He is currently the Director of Emergency Management and Planning for Boston College. Firefighter Tommaney holds a B.A. in Criminal Justice from St. Anselm College.
- John L. Kendall, Jr., Retired Fire Lieutenant. Retired Lieutenant Kendall has over 30 years experience in the Fire Service. Lieutenant Kendall conducted research and composed vehicle specifications and requests for proposals on several Southborough fire engines and ambulances.

Representatives of the Community including the Board of Selectmen, Advisory Committee and Capital Budget Planning Committee were also invited to attend and provide input into the committee. The following members regularly attended the Aerial Committee meetings:

- Board of Selectmen, Salvatore Giorlandino
- Advisory Committee, Claire C. Reynolds
- Resident, Rebecca Waterfall, former Chair of Southborough Kindergroup

## **WHY DOES SOUTHBOROUGH NEED AN AERIAL LADDER?**

1. **RESCUE** – To conduct rescue(s) of people (victims and firefighters) trapped at fires, construction sites and other emergency scenes. Timing is critical to the effective rescue of disaster victims.
2. **LIFE SAFETY**
  - a. Enables firefighters to safely access roofs, chimneys and other elevated areas of all homes and businesses.
  - b. Enables rapid ventilation for search, rescue and fire extinguishment as well as emergency access and exit from the fire building. An aerial ladder provides a safe working platform.
  - c. Reduces injuries by providing quick and rapid ventilation.
  - d. Most newer roof construction is of “truss” type, which is lightweight and fails early in a fire. Aerial devices allow for safer roof ventilation operations.
3. **VENTILATE BUILDINGS OF HEAT, SMOKE, & TOXIC FIRE GASES**
  - a. Firefighters cannot enter a building to conduct rescues, searches, or extinguish a fire until the heat (in excess of 1,000° F) is released.
  - b. Due to the amount of plastics and synthetics in homes, fires double in intensity every 10 - 30 seconds. Ventilation of a building as soon as possible reduces the risk of firefighters being caught in flashovers<sup>1</sup> and backdrafts<sup>2</sup>. This risk increases in newer, better insulated buildings.
  - c. One firefighter can raise an aerial ladder to a window or roof to open up the building to allow smoke, heat, and gases to escape. Ground and roof ladders take two to six firefighters to accomplish the same task safely. Each ladder requires a Firefighter to 'foot' the ladder which uses extra manpower. Generally, in the Town of Southborough, four firefighters respond initially to a fire call.
4. **FIRE SUPPRESSION** – The aerial ladder can be used for extinguishing fire and for limiting fire spread, as the water supply is integrated with the ladder.
5. **LIMITED MANPOWER**
  - a. Fire Service ground ladders have to carry a number of firefighters in full gear, hose, rescue equipment, and civilians being rescued. They are much bigger and heavier than commercial ladders and require two to six firefighters to carry and raise, depending on their length.
  - b. An aerial ladder can be raised to a window or roof by one firefighter much faster than two to six firefighters can raise ground and roof ladders.

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<sup>1</sup> A transitional phase in the development of a compartment fire in which surfaces exposed to thermal radiation (heat) reach ignition temperature more or less simultaneously and fire spreads rapidly throughout the space resulting in full room involvement or total involvement of the compartment or enclosed area. Firefighters' turnout gear will not protect members caught in a room which flashes over.

<sup>2</sup> One of the most dangerous situations firefighters can face is a powerful effect called a *backdraft*. Although definitions of a *backdraft* vary somewhat, in general it is a sudden explosion of hot gases as fresh oxygen enters a smoldering air-tight room.

- c. Four firefighters respond initially to building fire calls. If upon arrival immediate rescues or ventilation is needed, one firefighter can accomplish this with an aerial ladder while the other firefighters assist in rescue and provide water to begin holding the fire back. Without an aerial ladder, all four firefighters are tied up raising and footing<sup>3</sup> ground ladders.
- d. Without an aerial ladder, all four on-duty firefighters are tied up with raising and footing ladders. Because an aerial ladder can quickly be moved, it takes the place of multiple ground ladders.

## **6. CAN BE USED ON ALL TYPES AND SIZES OF BUILDINGS**

- a. An aerial ladder can be used on all types and heights of buildings. It provides a safe working platform for all buildings.

## **7. IMPROVE DEPARTMENT EFFICIENCY**

- a. Combine one engine and ladder truck into a “Quint”<sup>4</sup>. This will allow the Town to sell an engine and dispose of the existing ladder truck.
- b. Only one truck can access some driveways, common driveways or private roads. Once a Large Diameter Hose (LDH) line<sup>5</sup> is laid in the driveway or road for water supply, no vehicle, including a fire truck, can run over the hose. Placing a Quint in a driveway first greatly enhances firefighting and rescue efficiency.
- c. Allows the Incident Commander (IC)<sup>6</sup> the ability to make a rapid, multi-layered fire attack consisting of proper ventilation prior to fire attack. Such an approach reduces fire death and injury potential as well as damage to a structure.

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<sup>3</sup> Footing a ladder is the act of a firefighter holding the base of a ladder so it will not slip and/or fall.

<sup>4</sup> A **Quint** is a fire truck that serves the dual purpose of a pumper and a ladder truck. Quint refers to the five functions that it provides: pump, water tank, fire hose, aerial device, and ground ladders.

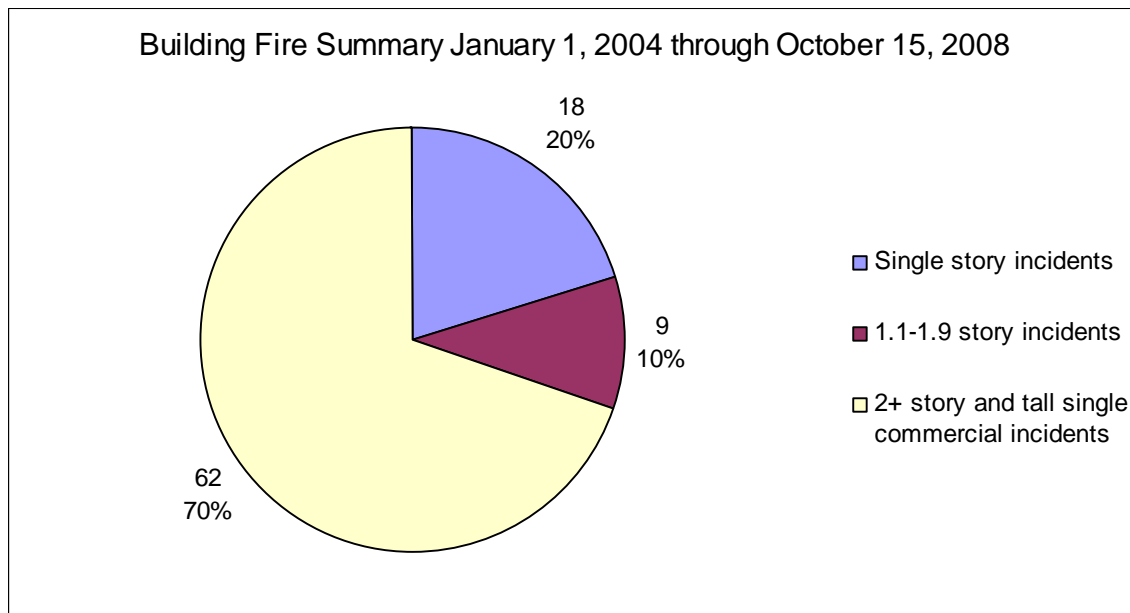
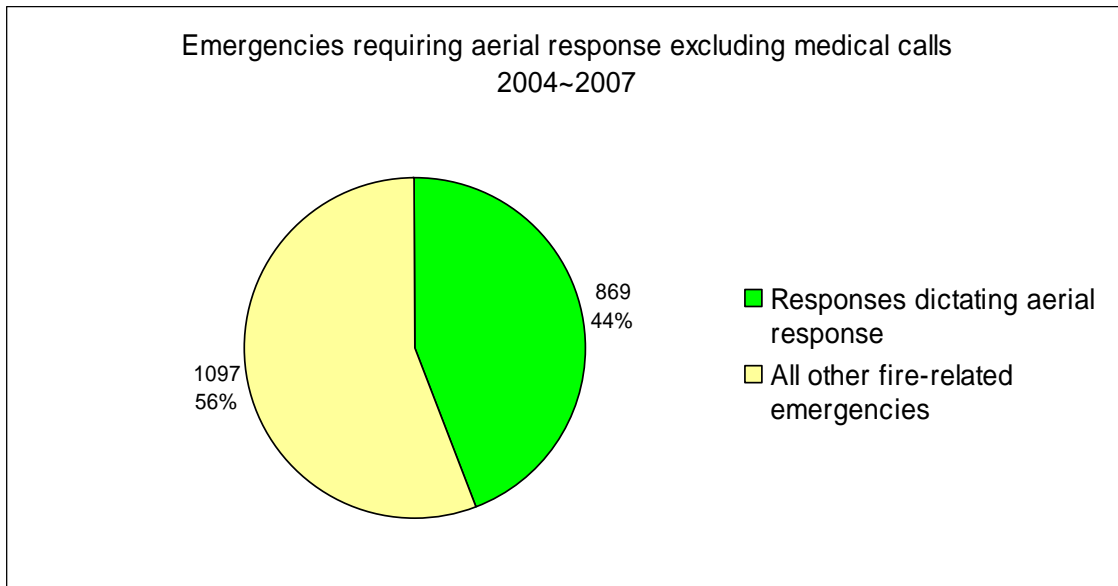
<sup>5</sup> LDH is a water main placed on top of the ground.

<sup>6</sup> IC is the senior fire official in charge.

## CALL HISTORY

The Town of Southborough Fire Department responds to an average of 1,230 emergency calls per year. These calls include everything from medical emergencies, car fires, building fires, brush fires, building alarms, hazardous materials emergencies, rescues, and other emergencies.

Of 1,966 fire incidents during a four year period of 2004-2007; 869 incidents (44%) require an aerial ladder response. Of these calls there were 89 fires in buildings of which 62 (70%) were two stories tall or higher.



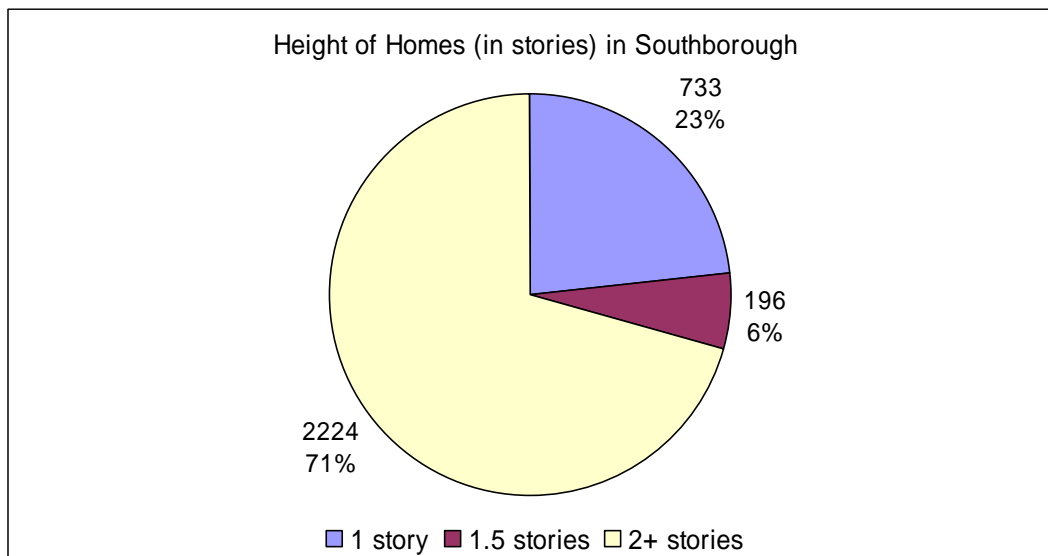
## SPECIFIC TARGET HAZARDS IN SOUTHBOROUGH

Southborough is a mix of residential and commercial buildings, each which provide for unique challenges to the Fire Department. Buildings with different access restrictions (roads, driveways and obstructions) exist, as well as buildings with various heights, layouts and construction methods (wood, concrete, brick, stone, etc).

Building occupancies in Southborough include residential, commercial, municipal, academic and religious use. The largest fire life hazards are residential properties as well as the two private boarding schools in town (St. Mark's and Fay School) and multi-tenant housing areas such as Colonial Gardens, Carriage Hill Estates and Vickery Hill Estates. It should be noted that as of the writing of this report, a four story, 40 unit affordable housing (40B) plan is before the Zoning Board of Appeals for the Town of Southborough.

### **Residential:**

There are a total of 3,326 homes in Southborough. A vast majority of the homes; 2,224 (71%) are two stories or higher as demonstrated in the graph below:

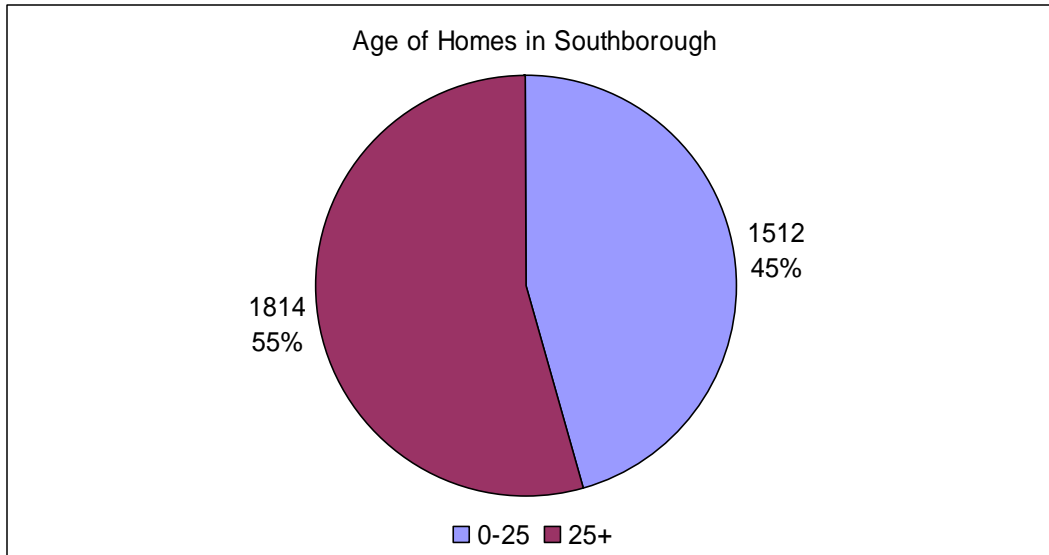


Approximately 45% (1,512) of the homes in Town have been constructed in the past 25 years. This is important because of several reasons:

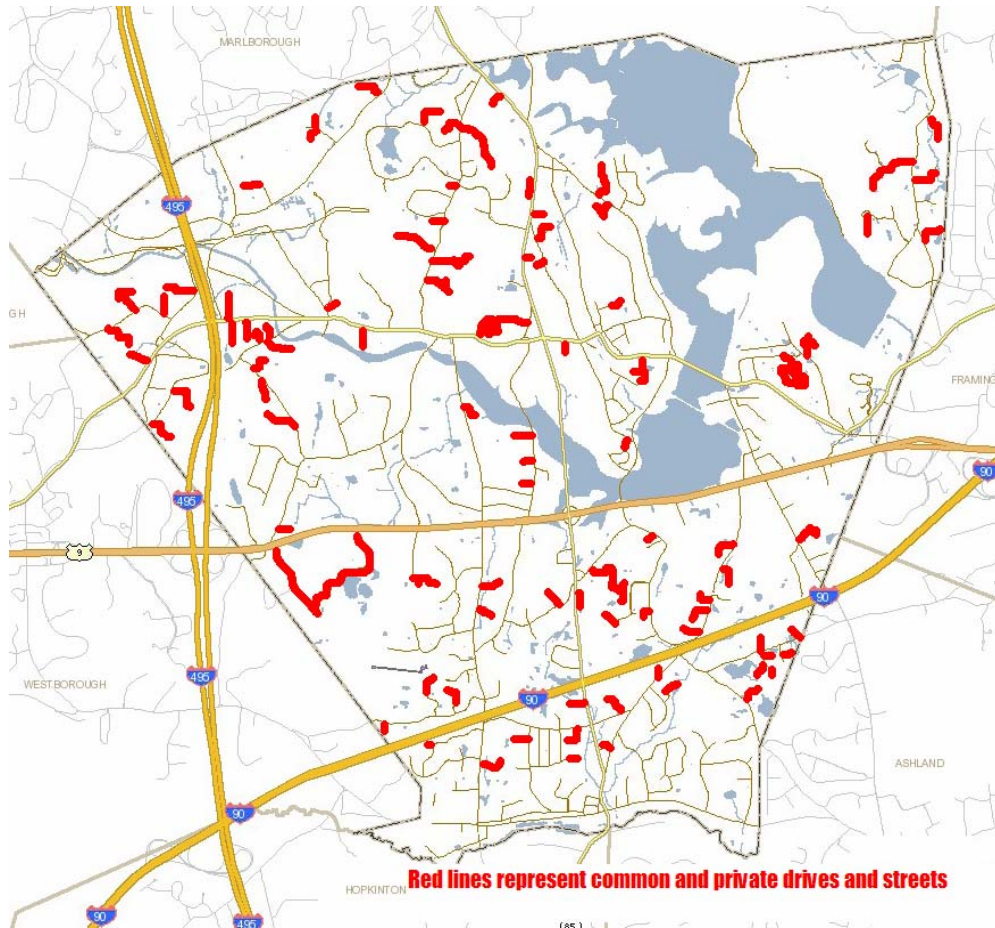
- Most of the new homes have been constructed in areas with more difficult access versus homes near the street. Access can be difficult due to private streets, common driveways, narrow access often with poor turning radii, etc. There are currently 456 homes in Southborough that are on common driveways or private roads.
- The newer homes are more energy efficient, which hold heat and smoke in much better than older homes. All buildings with smoke and fire require immediate ventilation for search and rescue and fire extinguishment as heat from a fire can exceed 1,000° F in a

matter of minutes. Additionally, flashover and backdraft conditions occur more frequently in “tighter” homes.

- Newer homes employ light-weight truss construction. Such construction when exposed to fire collapses much faster than traditional wood joist construction. This problem poses a hazard to firefighters opening ventilation holes on roofs, and operating in a building on fire.

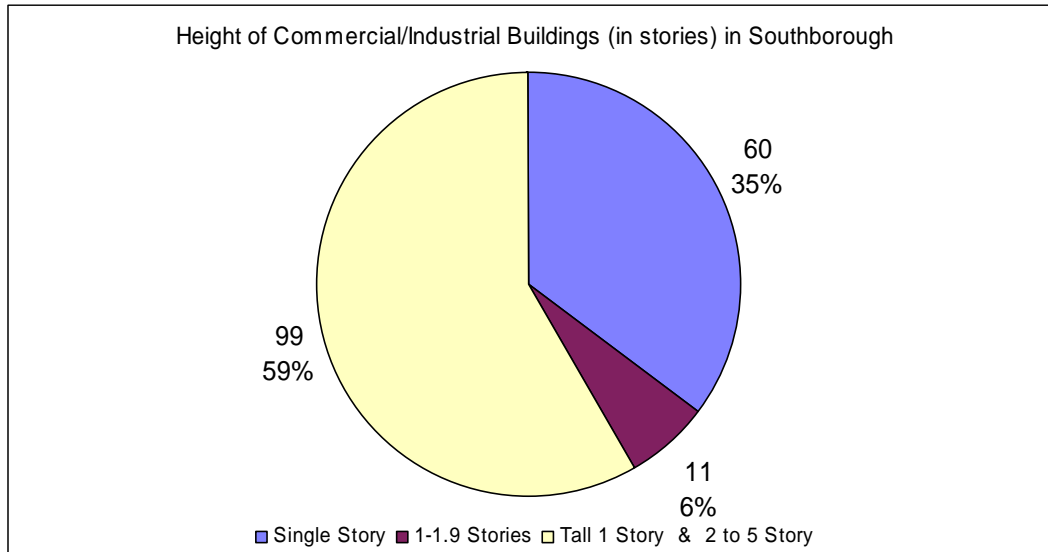


### Map of Southborough with Common Driveways and Private Roads in Red



### Commercial

Board of Assessors and Fire Department records indicate 170 Commercial/Industrial properties in Southborough. Of these properties, 59% are buildings that are 2 stories high or taller. It is important to point out that even though a building may be listed on property cards as one story, it may be a church or warehouse where heights can reach 30 feet or greater – these buildings are indicated on the chart below as “tall 1 story” buildings.



Based upon a review of all areas of Southborough; a cross section of various properties were selected for testing aerial ladder trucks. This selection represents buildings with height, reach and access challenges:

- St. Mark's School
- Trottier Middle School
- Woodward School
- 144 Turnpike Road (commercial)
- Pilgrim Church
- Town Hall
- 33 Carriage Hill Circle (residential)
- Southborough Arts Center
- Jacobs Lane (residential)
- 72 Charles Court (residential)
- 7 Hubley Lane (residential)

## **REASONS FOR REPLACING LADDER TRUCK**

### **Maintenance and Repair:**

It is not feasible to repair the existing Ladder Truck. Vendors will not conduct repair work as no vendor is certified to make repairs to ensure the safety of the existing ladder.

### **Age:**

The current Ladder Truck is 24 years old. It was purchased used with significant wear and tear and has reached the end of its useful life.

### **Operation:**

A new combined ladder truck known as a Quint<sup>7</sup> would provide enhanced efficiency relative to response. A Quint would immediately be on scene for rescue, ventilation and fire suppression.

### **Staffing:**

A Quint Ladder Truck allows the 4-5 personnel on duty in the early stages of a fire to rapidly conduct rescues, establish a water supply, ventilate smoke and heat and begin a fire attack.

### **Mutual Aid Challenges:**

Neighboring fire departments are not always available when needed and can have delayed response times due to distances and other calls. In addition, another town's fire equipment is not always compatible with Southborough's needs (accessibility to target hazards).

## **PROCESS STEPS FOR COMMITTEE**

The Aerial Ladder Study Committee developed a very methodical process for evaluating the needs and direction for recommending the best solution for the Town of Southborough. Below is an outline of the process undertaken by the Committee:

- Conducted Target Hazard Analysis
- Researched Apparatus & Options
- Analyzed Emergency Call Volume & Type
- Contacted Fire Apparatus Manufacturers
- Attended Trade Shows
- Conducted Detailed Apparatus Comparison
- Developed Selection Criteria Based on Southborough's Needs
- Developed Fire Apparatus Requirements
- No pre-determined solutions!

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<sup>7</sup> A **Quint** is a fire truck that serves the dual purpose of a pumper and a ladder truck. Quint refers to the five functions that it provides: pump, water tank, fire hose, aerial device, and ground ladders.

## **OPTIONS RESEARCHED FOR REPLACEMENT AERIAL LADDER**

The Committee was charged with reviewing and evaluating all possible options for replacing the existing aerial ladder truck to include contracting with another municipality for ladder services, rental of an aerial ladder truck, leasing of a new or used aerial ladder truck and purchase of a new or used aerial ladder truck. Each option was reviewed for whether or not it would fit the needs of the Town of Southborough. Below is a brief summary of each option including pros, cons and Committee recommendations:

**Contract with Another Municipality to Provide Ladder Services.** The advantages of this option would be no or lower capital investments because there would be no direct purchasing of a fire apparatus. This option is very difficult to implement due to many variables such as the appropriate rate for service, what would be the frequency of use, duration of use, personnel costs, maintenance costs and consumable costs (ie: fuel). The greatest challenge is that no municipality could guarantee under this type of an arrangement that their equipment would be available when needed by the Town of Southborough. Also, one community's ladder may be closer to an incident than the 'contracted' community. In addition, there would be significant time delays in getting a contracted mutual aid ladder to the scene of an emergency in Southborough based upon availability, distances, traffic conditions, road conditions and driver familiarity with the Town of Southborough. Finally after a thorough analysis of all surrounding towns' aerial ladder trucks; none would be the appropriate piece of equipment nor able to access many of our streets and structures in Southborough. **After extensive research and discussion, this option was considered a non-viable solution.**

**Rental of an Aerial Ladder Truck.** There are aerial ladder trucks available for rent, however finding one that meets the unique needs of the Town of Southborough has proven to be very difficult. In addition the costs to rent an aerial ladder truck are very expensive ranging between \$8,000-12,000 per month, not including delivery costs and ongoing consumables (ie: fuel) and maintenance. **This option is not considered a viable long term solution. However, rental might provide a stop gap measure until a permanent solution is obtained.**

**Purchase or Lease of a Used Aerial Ladder Truck.** This option would be less expensive from an initial capital outlay perspective, however as stated previously the Town of Southborough has had a history of buying used aerial ladder trucks and inheriting substantial repair and maintenance costs. The greatest challenge with any used aerial ladder truck would be finding one that meets the needs of the Town of Southborough and which meets the aerial fire apparatus requirements of the National Fire Protection Association (NFPA). Recent changes to NFPA requirements have made many older aerial ladder trucks out of compliance and obsolete. Finally, the current economic situation nationwide will likely make suitable used fire apparatus options less available. **Although this option could be feasible; extensive research has indicated that this is a non-viable solution due to lack of equipment which meet the Town's and NFPA requirements.**

**Purchase or Lease of a New Aerial Ladder Truck.** This option is the most expensive of all options (approximately \$900,000), but would allow the Town of Southborough to specify exactly what the Town needs to serve the community. This would include meeting modern standards, full maintenance and warranty protection and an expected life of 20+ years with proper maintenance. Most fire apparatus manufacturers offer the option to purchase the apparatus outright or to lease with the purchase to buy. The lease with the purchase to buy option still gives the benefits of a new apparatus, but spreads the cost over a longer period of time. It is important to note that delivery times for new aerial ladder trucks are approximately one year from the date of order. **This option is considered the only viable option as it gives the Town of Southborough the ability to acquire exactly what the Town needs and ensures the best longevity for rescue and fire protection.**

### **REQUIREMENT AND EVALUATION OF AERIAL LADDER TRUCKS**

Specifications for aerial truck evaluation were developed and used for each vehicle tested. National Fire Protection Association (NFPA) fire apparatus requirements were included. Numerous fire apparatus from the majority of fire apparatus manufacturers as well as surrounding towns' apparatus were evaluated. Specifications were as follows:

1. Drive in – can the vehicle drive into the hazard?
2. Multiple Turns – did the vehicle require multiple turns to reach the target area (this slows response in an emergency)?
3. Back in – did the truck have to back-in to allow enough reach for the target?
4. Turning radius – was the turning radius such that it would not reach the target areas?
5. Angle of approach and departure – was the angle of approach or departure such that the truck would bottom out?
6. Vehicle height
7. Blind spots
8. Outriggers – were they able to be deployed at the target (was the space required for the outriggers to stabilize the truck available)?
9. Type of outriggers
10. Outrigger pad construction
11. Outrigger pins
12. Type of aerial device (ladder or tower)
13. Material of construction
14. Aerial device set-up time
15. Tip load (maximum weight) at end of ladder/tower
16. Type of construction
17. Height of fly sections (side rails)
18. Aerial device stability at full extension
19. Access to aerial controls
20. Ease of operation
21. Angle above horizontal
22. Angle below horizontal
23. Ground ladder storage
24. Cabinet layout

25. Cabinet size
26. Pump panel location
27. Pump panel layout
28. Hose storage (quantity)
29. Maintenance access
30. Ease of maintenance
31. Interior cab design

### **SOUTHBOROUGH'S SPECIFIC AERIAL LADDER TRUCK NEEDS**

As a result of testing various fire apparatus, research and evaluation, it was determined that Southborough has specific needs based upon the challenges listed below

- At least 85-100ft in length for reach
- A vehicle with a short wheelbase which will allow for maneuverability on tight, curvy driveways, and public and private ways and streets
- A vehicle equipped with an aerial ladder, ground ladders, a water pump and tank, and class "A" firefighting foam, which enhances firefighting ability.

### **OPTIONS FOR FUNDING AN AERIAL LADDER**

There are a number of options available for funding the Aerial Ladder Truck including:

- Taxes
- Bonds
- Fundraisers
- Corporate & Citizen Donations
- Non-Profit Donations
- Sale of one existing engine and disposal of out-of-service aerial ladder

### **LADDER COMMITTEE RECOMMENDATIONS**

After extensive research, discussion and analysis; the Aerial Ladder Committee has made the following recommendations for the Town of Southborough:

- Acquiring a new Aerial Ladder Truck for the Town of Southborough. This apparatus would be a 100 foot +/- mid mount Quint Aerial Ladder Truck. This vehicle will give Southborough the best possible options for proper rescue, ventilation and firefighting operations.
- Reusing existing tools and equipment from the old ladder truck and other apparatus to keep costs of required peripheral items to a minimum.
- Selling an existing fire engine to offset costs. The acquisition of the Quint Aerial Ladder Truck will replace the need for this stand alone engine.
- Selling the existing out-of-service ladder truck for scrap. The current ladder has no street value and is a possible liability to the Town.

- Funding a new Aerial Ladder Truck through a mix of donations, fundraising and municipal funds. The goal would be to raise as much of the funds needed to acquire this apparatus.

## **SUMMARY**

The Aerial Ladder Committee conducted a thorough, methodical process and analysis to determine the requirements to fit the needs of the Town of Southborough. This process and report clearly demonstrates that the Town of Southborough is in need of acquiring a new aerial ladder truck. The current ladder truck cannot be repaired or certified.

## **FREQUENTLY ASKED QUESTIONS AND ANSWERS**

1. **Will Southborough be requested to provide more out of town response if we have a new ladder truck?** – No more than what has been traditionally provided in the past – Mutual aid is based upon neighboring communities helping each other when they can.
2. **Is it feasible to rely on other towns to provide a ladder truck for every call which may require its use?** – No. Based upon other town's call volume, availability and extended response time.
3. **Will the purchase of a ladder truck change staffing needs?** Purchase of an aerial ladder truck will not change staffing needs. Two of the four personnel on duty will be assigned to the ladder truck for calls.
4. **Will the new ladder truck fit into the fire station?** Yes. The Committee has researched available apparatus and developed specifications which include size of apparatus relative to height, length, width and length for housing the vehicle and access.
5. **How many multi story buildings do we have in town?** Approximately 2,323.
6. **How many towns our size have ladder trucks?** 39 of 43 communities (91%) in the 8,000 to 12,000 population range in Massachusetts have ladder trucks. The average reach for these aerials is 97.3 feet.
7. **How many times per year will this equipment be used in the Town of Southborough?** Approximately 250 times a year.
8. **Have we exhausted the opportunity to cooperate with Marlborough, Framingham, Ashland, etc?** Yes. See question below.
9. **Have we considered making an explicit financial agreement for "ladder truck services" with a neighboring community and paying them each time we call their equipment out?** Yes, but no other community can guarantee their ladder truck is available when needed.

**REQUESTS FOR FURTHER INFORMATION, DETAILS OR QUESTIONS CAN BE DIRECTED TO:**

Lieutenant James Colleary  
Chairman, Aerial Ladder Replacement Committee

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-or-

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