



Fire Apparatus Assessment Committee

Recommendations to the Select Board

July 22, 2025

Tecton SB Presentation – April 8 2025

Work to Date



Tecton
ARCHITECTS

Carlisle, MA
Space Needs Summary

Fire Headquarters

New Programmed Area Name		Program Area
1. Public		
1.01	Vestibule	80 s.f.
1.02	Lobby	200 s.f.
1.03	Male Restroom	200 s.f.
1.04	Female Restroom	200 s.f.
Subtotal:		680 s.f.
2. Training		
2.01	Training/Community Room	1260 s.f.
2.02	Training Room Storage	80 s.f.
Subtotal:		1,340 s.f.
3. Administration		
3.01	Office #1 - Chief's Office	240 s.f.
3.02	Office #2 - Chief's Office	111 s.f.
Subtotal:		351 s.f.



Summation

Facility net area:	23,822 s.f.
Net to gross adjustment (22%)	5,240 s.f.
Facility gross area total:	29,062 s.f.
Facility net area:	17,574 s.f.
Net to gross adjustment (22%)	3,870 s.f.
Facility gross area total:	21,444 s.f.
Facility net area:	12,318 s.f.
Net to gross adjustment (22%)	2,710 s.f.
Facility gross area total:	15,028 s.f.

1 Created draft Space Needs Assessment

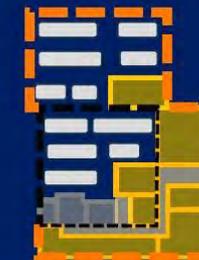
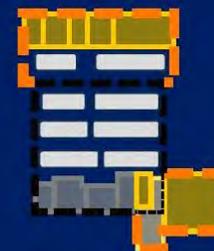
2 Evaluated the existing site & building

3 Created (3) draft Space Needs

4 Developed site test fits based on Space Needs



5 Developed Block Diagrams



Tecton SB Presentation – April 8 2025

Town Goals from RFQ



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OPTION	DESIGN	TOTAL SF	EST. COST	LIFESPAN	PRIORITY LIST ITEMS RESOLVED:
1		23,500 NEW 5,580 RENO TOTAL SF: 29,080	\$27-30M	30-50 YRS <i>Meets Need, Allows Growth</i>	6/7 <ul style="list-style-type: none"> Promote Workforce Attraction & Retention by Providing temp. living/workspace Meet Current and Anticipated Health and Safety Standards Accommodate Gender Equity Maximize Existing Space Cost Effective Materials Climate Leader Community \$10M budget
2		7,202 NEW 5,580 RENO 2,400 OUTBUILDING TOTAL SF: 15,182	\$10-12M	5 YRS <i>Still Need, Will Outgrow</i>	3/7 <ul style="list-style-type: none"> Promote Workforce Attraction & Retention by Providing temp. living/workspace Meet Current and Anticipated Health and Safety Standards Accommodate Gender Equity Maximize Existing Space Cost Effective Materials Climate Leader Community \$10M budget
3		10,500 NEW 5,580 RENO 2,400 OUTBUILDING TOTAL SF: 18,480	\$14-16M	15-25 YRS <i>Still Need, Time to Plan</i>	6/7 <ul style="list-style-type: none"> Promote Workforce Attraction & Retention by Providing temp. living/workspace Meet Current and Anticipated Health and Safety Standards Accommodate Gender Equity Maximize Existing Space Cost Effective Materials Climate Leader Community \$10M budget

● New Construction ● Existing Station

Your feedback informs the **options studied** and drives the **ultimate solution.**

Tecton SB Presentation – April 8 2025

Exploring Options | Comparison



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Space Name	Option 1	Option 2	Option 3	Existing SF
Public / Training	2,020	1,319	1,518	402
Administrative Spaces (Offices, Storage, etc.)	1,762	835	1,008	270
Firefighters' Living Spaces (Bunks, Dayroom, Fitness, etc.)	3,690	1,100	1,691	451
Apparatus Bays	11,080	5,728	7,970	3,800
Firematic Support (Gear, Decon, Storage, etc.)	3,370	1,400	2,189	0
Miscellaneous (Mechanical, Walls, Chases, etc.)	7,140	2,400	1,704	1,439
TOTAL SF	29,062	12,782	16,080	6,362

Anticipated Project Cost

\$27-30M

\$10-12M

\$14-16M

FAAC Process

11 Meetings in 8 Weeks

- 5 committee members (Select Board (2), FinCom, MFC, ESC)
- Chief Sorrows, Deputy Chief Svatek
- Tecton Architects
- Municipal Resources, Inc.

**Minutes, presentations reports, reference materials, etc.
posted on project site:**

<https://drive.google.com/drive/folders/1ZiPZq5e2JeDfzl8ZM-YC5oeChc2kqMCG>



Key Project Dates

July 22

FAAC presents recommendations to Select Board for approval

August 12

Tecton to present revised Fire Station program summary and option(s) to Select Board

September 9

Final approval for revised option needed from Select Board to meet Special Town Meeting date. Information will be sent to cost estimator and community outreach program will begin.

**Special Town Meeting
Nov 2, 2025**

Warrant Article to fund schematic design and full construction documents

**Annual Town Meeting
2026**

Warrant Article to fund Fire Station project

Minimal Requirements for Fire Response

Carlisle ISO (Insurance Services Office) Rating: 8B

Minimum Criteria for Class 8B

Class 8B is a Public Protection Classification (PPC®) for communities that provide superior fire protection services and fire alarm facilities but lack the water supply required for a PPC of Class 8 or better.

To compensate for limited water supplies, many communities have improved their firefighting equipment, training, and management techniques, as well as their fire alarm systems. Class 8B will recognize those improvements.

How it works

To be eligible for Class 8B, a community must meet the fundamental requirements for a classification better than Class 9. The community must have:

- an adequate number of well-organized and properly trained firefighters
- reliable emergency communications
- adequate fire station facilities
- operational records
- the capability to deliver an uninterrupted flow of 200 gpm for 20 minutes beginning within 5 minutes of the first arriving engine

The fire department must have one suitably equipped engine that responds to all first alarm structural fires. The pump capacity must be at least 750 gpm at 150 psi. The engine must have a water tank in accordance with the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus, "Pumper Fire Apparatus."*

The community does not need to meet the water supply requirement of 250 gpm for 2 hours necessary for PPC Class 8 or better.

Minimal Requirements for Fire Response

National Fire Protection Association – Guidelines only (not requirements)

NFPA 1720: Standards for Volunteer Fire Departments

Table 4.3.2 Staffing and Response Time

Demand Zone ^a	Demographics	Minimum Staff to Respond ^b	Response Time (minutes) ^c	Meets Objective (%)
Urban area	>1000 people/mi ² (2.6 km ²)	15	9	90
Suburban area	500–1000 people/mi ² (2.6 km ²)	10	10	80
Rural area	<500 people/mi ² (2.6 km ²)	6	14	80
Remote area	Travel distance ≥ 8 mi (12.87 km)	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

Per NFPA standards, minimum staffing is **6 personnel**.

As of 2020 Census, Carlisle population density is 340 people / square mile.

^aA jurisdiction can have more than one demand zone.

^bMinimum staffing includes members responding from the AHJ's department and automatic aid

^cResponse time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

Carlisle Fire Department

Mission Statement:

- To protect the lives and property of the citizens of Carlisle from fires and disasters and to save lives by providing emergency medical services.
- To prevent fires and other emergencies through public education, fire prevention, planning, and code enforcement.
- To maintain the highest possible level of training for the safety of personnel and the public.
- To provide a safe workplace that encourages the professional development of all members.

Carlisle Fire Department

No Municipal Water

- Apparatus needs to transport and access water supply
 - Cisterns, ponds, streams, etc.
- Firefighters needs to create the water supply at the scene
 - Up to 6000' of hose
 - Every location is unique
 - Requires careful planning and coordination

Fighting fires with no municipal water requires additional customized apparatus and more firefighters

Carlisle Fire Department

On-Call Department

- ~45 part-time firefighters/EMTs
- Full-time Fire Chief
- Minimum staffing of six firefighters (including 2 EMTs and 1 Officer)

CARLISLE FIRE DEPARTMENT				
SUMMARY PROCEDURES FOR TONING OUT EMERGENCY CALLS				
TYPE OF CALL AND ANNOUNCEMENT	DISPATCH THE FOLLOWING	STRIKE BOX	RESPONSE	COMMENTS
BRUSH / GRASS / WOODS FIRE	4 FF - OFFICER ALL CALL	YES	E6, C10, E7	DOES CALLER SEE FLAMES? COULD BE..??
CHIMNEY / WOODSTOVE FIRE OR PROBLEM	5 FF - OFFICER ALL CALL	YES	E3, L9, C10, E6	COULD BECOME BOX ALARM
ELECT / WIRE FIRE /PROBLEM IN HOUSE	4 FF - OFFICER ALL CALL	YES IF FIRE	E3, INSIDE	INSIDE HOUSES ONLY!
FUEL SPILL	4 FF - OFFICER ALL CALL	NO	E4, C10, Spill Trailer	HOW MUCH OF IT?- ESTIMATE
GAS LEAK-NATURAL OR PROPANE	3 FF - OFFICES ALL CALL	NO	E3, C10	ALSO GAS GRILLS
MEDICAL EMERGENCY	2 EMTS - OFFICER ALL CALL	NO	A1, Car2	
MOTOR VEHICLE ACCIDENT	3 EMTS 3 FF - OFFICER ALL CALL	NO	A1, E4, C10	POSS. EXTRACTION SEND LADDER
MOTOR VEHICLE FIRE- CAR/TRUCK	4 FF - OFFICER ALL CALL	YES	E4, A1, C10	IS IT IN A BUILDING OR NEAR
MULTIPLE FIRE CALLS WITHIN MINUTES	FIRE ALL CALL	NO	VARIABLE	GIVE INFO TO COMMAND OFFICER
SEARCH/MISSING PERSON	ALL CALL	NO	VARIABLE, UTV	MISSING PERSON FROM POLICE
SMALL OUTSIDE FIRE OR TRASH FIRE	2 FF OFFICER ALL CALL	NO	E6, C10	COULD BE SMOKE INVESTIGATION
STRUCTURE FIRE / REPORTED BUILDING FIRE	ALL CALL	YES	E3, L9, E5, E4, E7, E6, C10	PREPARE FOR 2ND ALARM
WIRES DOWN / PROBLEM / BURNING OUTSIDE	3 FF - OFFICES ALL CALL	NO	E4, C10 IF OUTSIDE	OVERHEAD WIRES/ TRANSFORMERS

On-Call Versus Career Operating Budget

On-Call Department

~45 On-Call FF
1 Full-time Chief

Annual FY26 On-Call
Staffing Cost* = ~**\$300k**

Total FY26 FD Operating
Budget = **\$637k**

**Excludes Chief salary*

Combination Department

Add 8 Full-time FF positions
2 Full-time FF On Duty

Estimated Full-time FF
Staffing Cost = **\$1.05M**

Total Estimated Annual FD
Operating Budget >**\$1.5M***

*Source: MRI Draft Carlisle Fire
Department Letter, July 15 2025*

Fully Career Department

Add 16 Full-time FF positions
4 Full-time FF On Duty

Estimated Career FF Staffing
Cost ~**\$2M***

Total Estimated Annual FD
Operating Budget >**\$2.5M**

*Source: MRI Draft Carlisle Fire
Department Letter, July 15 2025*

** FAAC estimate based on MRI Draft Letter*

On-Call Versus Career Operating Budget

Hiring	\$	1,075.00	Hiring Costs MV Check	\$	25.00
Salary	\$	65,097.00	Background Check	\$	250.00
Benefits	\$	37,824.00	Physical	\$	800.00
Retirement	\$	9,764.00			
Clothing	\$	600.00			
PPE	\$	4,000.00	Total	\$	1,075.00
Overtime	\$	8,798.40			
Training/certifications	\$	1,500.00			
Life Insurance	\$	90.00			
Short Term Disability	\$	390.00			
Long Term Disability	\$	345.00			
Dental	\$	1,597.00			
Total	\$	131,080.40	Overtime	15% of base to cover sick vacation	
Adding 8 Positions	\$	1,048,643.20			

Figure 3 – Career Staffing Rough Cost Projection – Combination Department Two Firefighters On Duty.

If a career department was required four personnel would be required to be on duty for a compliant rapid response and off duty personnel would be required for recall. We estimate the annual cost for fully career force to be more than 2.5 million per year.



Current Fire Apparatus



Engine 3
(First due for structure fires, alarm investigations)
2000 Emergency One
1500 GPM. pump
1270 gallon tank
2000 feet of 4" LDH



Engine 6
(Brush fires, Off road water supply, Secondary structural engine)
2011 Four Wheel Drive Brush Truck
1250 GPM pump
500 gallon tank
1200 feet of 4" LDH



Engine 4
(Water supply, Motor vehicle collisions, Wire problems, Mutual aid engine)
2007 Emergency One
1500 GPM pump
740 gal. tank
Extrication tools (Jaws)
4000 feet of 5" LDH



Engine 7
(Secondary Tanker/Tender, Seasonal use)
1990 Emergency One Tanker, Hurricane Chassis)
1250 GPM pump
3500 gallon tank
3500 gallon dump tank



Engine 5
(Primary Tanker/Tender)
2017 Emergency One
1500 GPM
3500 gallon tank
3500 gallon dump tank



Ladder 9
2001 Emergency One Quint, Cyclone Chassis
100' aerial ladder
1500 G.P.M. pump
490 gallon tank
Extrication tools (Jaws)

Current Fire Apparatus



Carlisle 10 (Fire Command Vehicle)
2012 Ford F 350 4X4
Command Vehicle / service truck
Defibrillator-equipped



Boat (water rescue)
1996 Alliance Inflatable Fiberglass Rib Boat



Car 1 (Chief's car)
2016 Ford Expedition



Car 3 (Utility vehicle and Fire Inspection)
2016 Ford Explorer

Current Fire Apparatus



Carlisle A1 (ambulance)

Primary ambulance

- 2019 Ford F 550 - Horton
- Type A, Class I / B.L.S- licensed ambulance
- Defibrillator-equipped



Car 2 (Medical command vehicle)

2018 Ford Explorer
Medically equipped



Carlisle A2 (ambulance)

Secondary ambulance

- 2009 Ford F 450 - Horton
- Type A, Class I / B.L.S- licensed ambulance
- Defibrillator-equipped

Current Fire Apparatus



Engine 1 (Utility)
1931 Chevrolet



Engine 2
1947 Ford/LaFrance
500 GPM Pump
Exhaust primer

Current Fire Apparatus



Engine 3



Engine 4



Engine 1
1931
Chevrolet



Engine 2
1947
Ford/LaFrance



UTV 1



UTV 2



Engine 5
Primary Tanker



Engine 7
Secondary Tanker



Hazmat Trailer



Small Engine Trailer



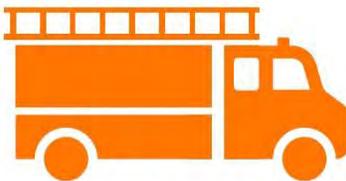
Light Plant



Boat & Trailer



Engine 6
4WD Brush Truck



Ladder 9



Car 10
Fire
Command
Vehicle



Car 1
Chief's Car



Car 2
Medical
Command
Vehicle



Car 3
Utility Vehicle
& Fire
Inspection



Ambulance 1



Ambulance 2

Vehicle Response



Engine 3

1st due - can lay a supply line up to 2000' up a driveway or private way.



Engine 4

Hooks to E3 and lays up to 4000' of supply line to water source.



Engine 5

2nd due - carries 2nd crew & supplies water until a water source is established.



Engine 6

Responds if it is snowing (4WD).



Engine 7

Responds if needed to extend water supply.



Ladder 9

Responds for rescues, ventilation, ladder pipe operation, or a chimney fire.



Ambulance 1



Ambulance 2

Responds if needed.



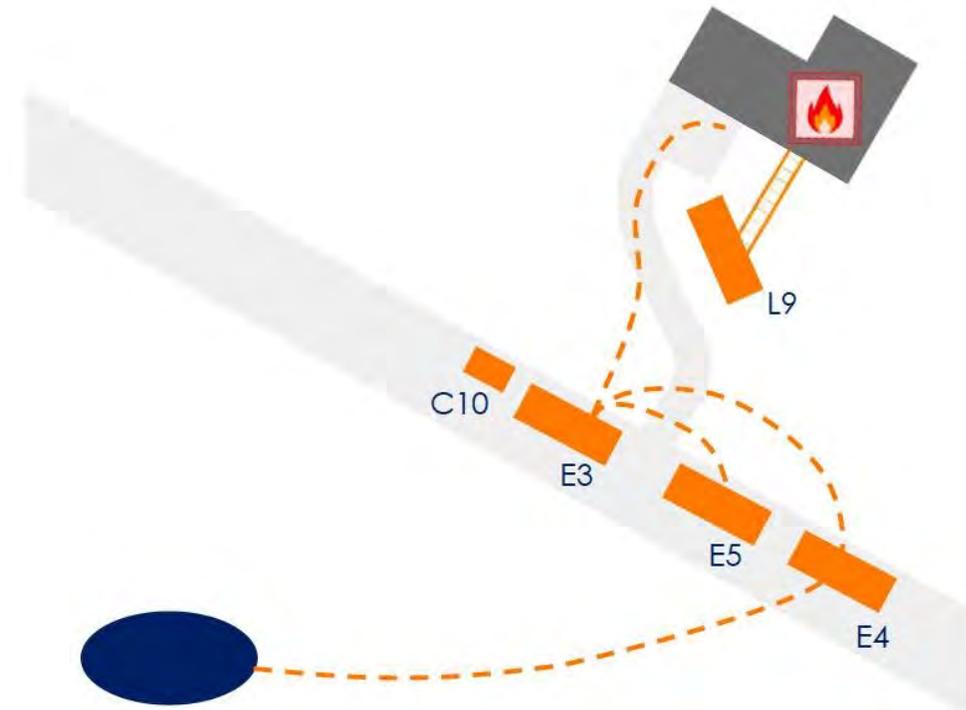
Car 1



Car 10

Car 10 responds as command vehicle. (Car 1 responds if needed.)

STRUCTURE FIRE

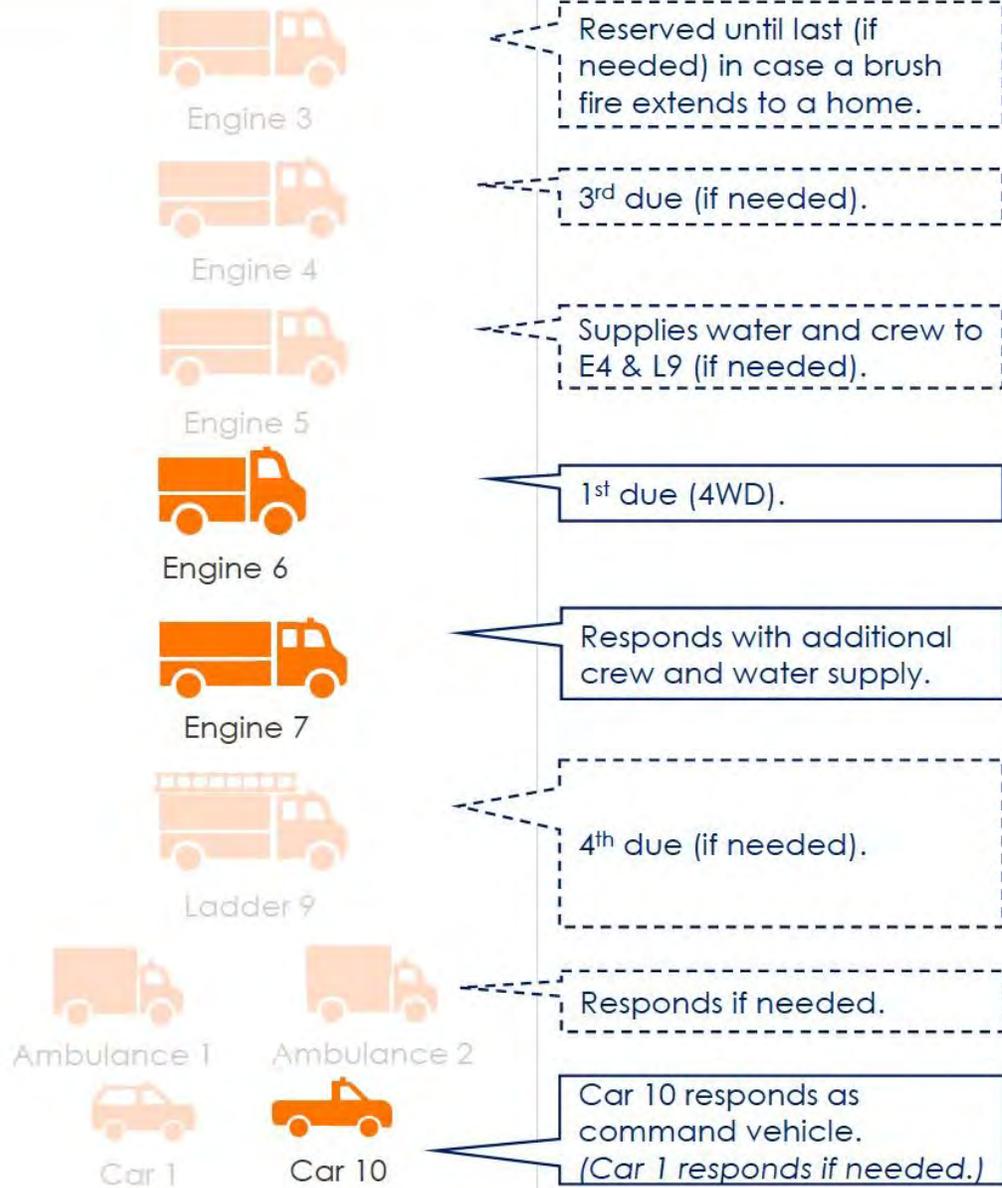


Personnel:
(Per NFPA 1710)

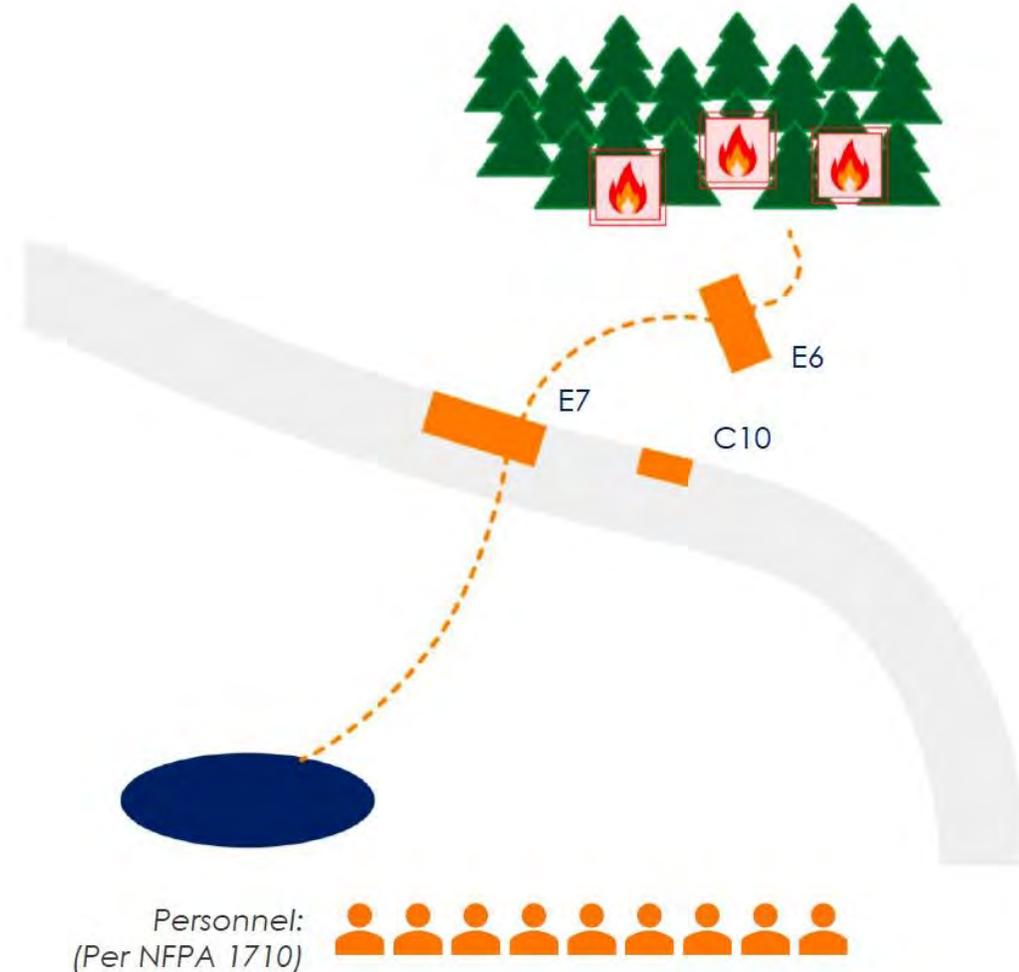




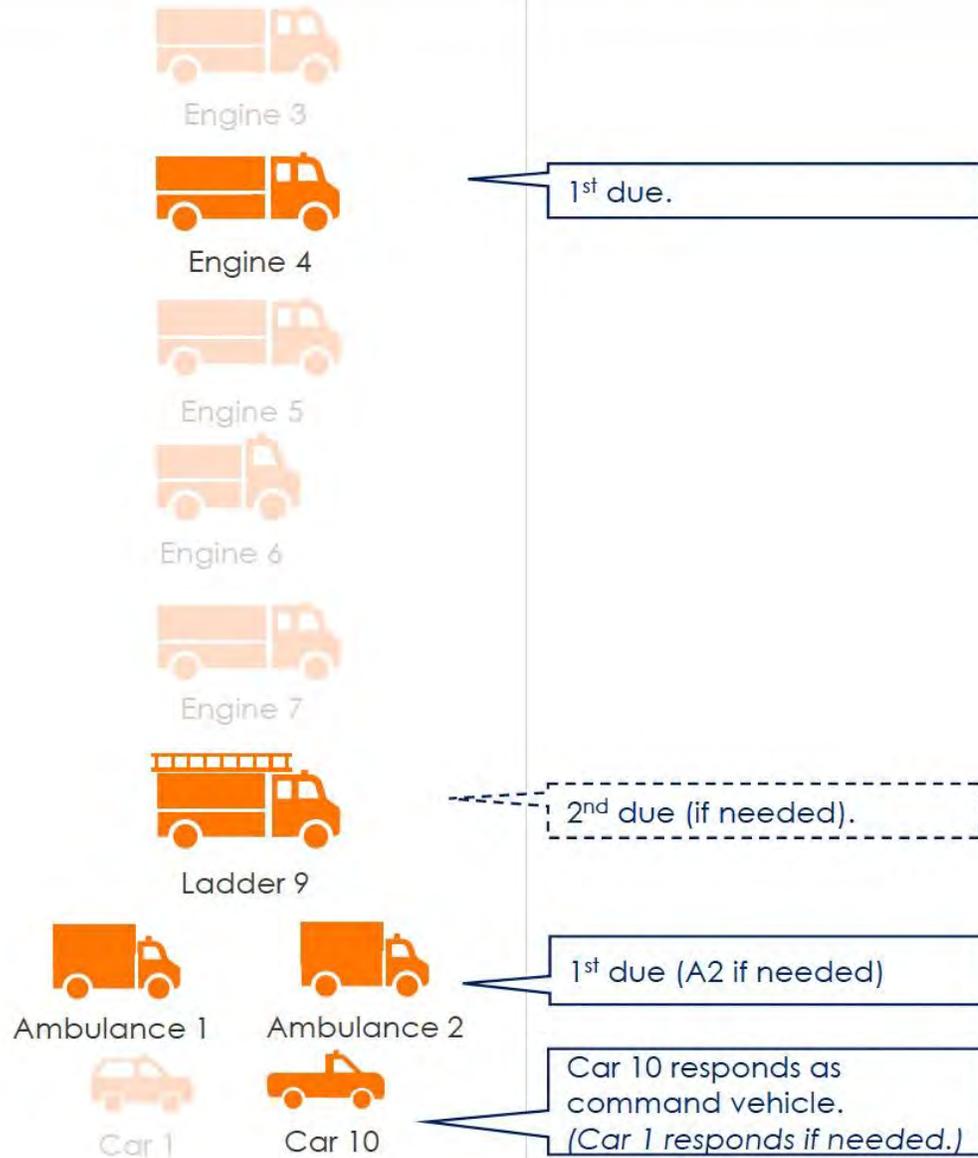
Vehicle Response



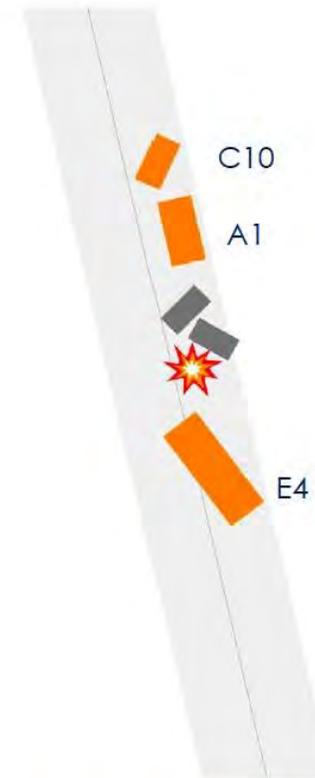
BRUSH FIRE



Vehicle Response



CAR ACCIDENT



Personnel:
(Per NFPA 1710)

Vehicle Response



Tecton
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MEDICAL EMERGENCY



Ambulance 1



Car 2

SECOND EMERGENCY



Ambulance 2



Car 3

SEARCH/MISSING PERSON

Varies



UTV 1



UTV 2



Light Plant

CULTURE/ COMMUNITY



Engine 1



Engine 2

WATER/ICE RESCUE



Ambulance 1



Engine 4



Car 10



Boat & Trailer

FUEL SPILL



Engine 4



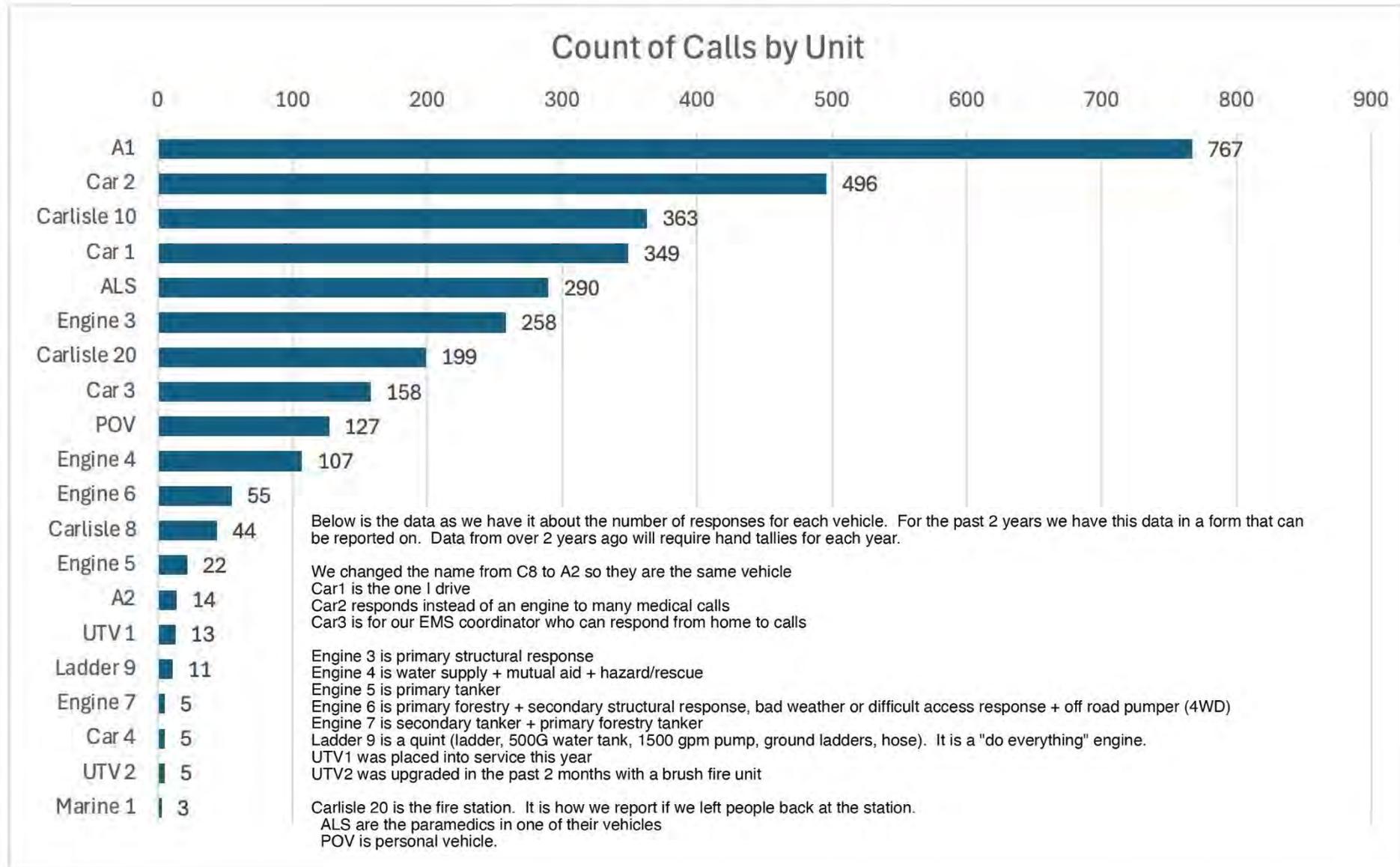
Car 10



Hazmat Trailer

Total Count of Calls by Unit – 2 Years

Unit Name	Count of Incident
A1	767
Car 2	496
Carlisle 10	363
Car 1	349
ALS	290
Engine 3	258
Carlisle 20	199
Car 3	158
POV	127
Engine 4	107
Engine 6	55
Carlisle 8	44
Engine 5	22
A2	14
UTV 1	13
Ladder 9	11
Engine 7	5
Car 4	5
UTV 2	5
Marine 1	3



Existing Station – 6 Bays

3800 SF

Engine 3

Engine 4

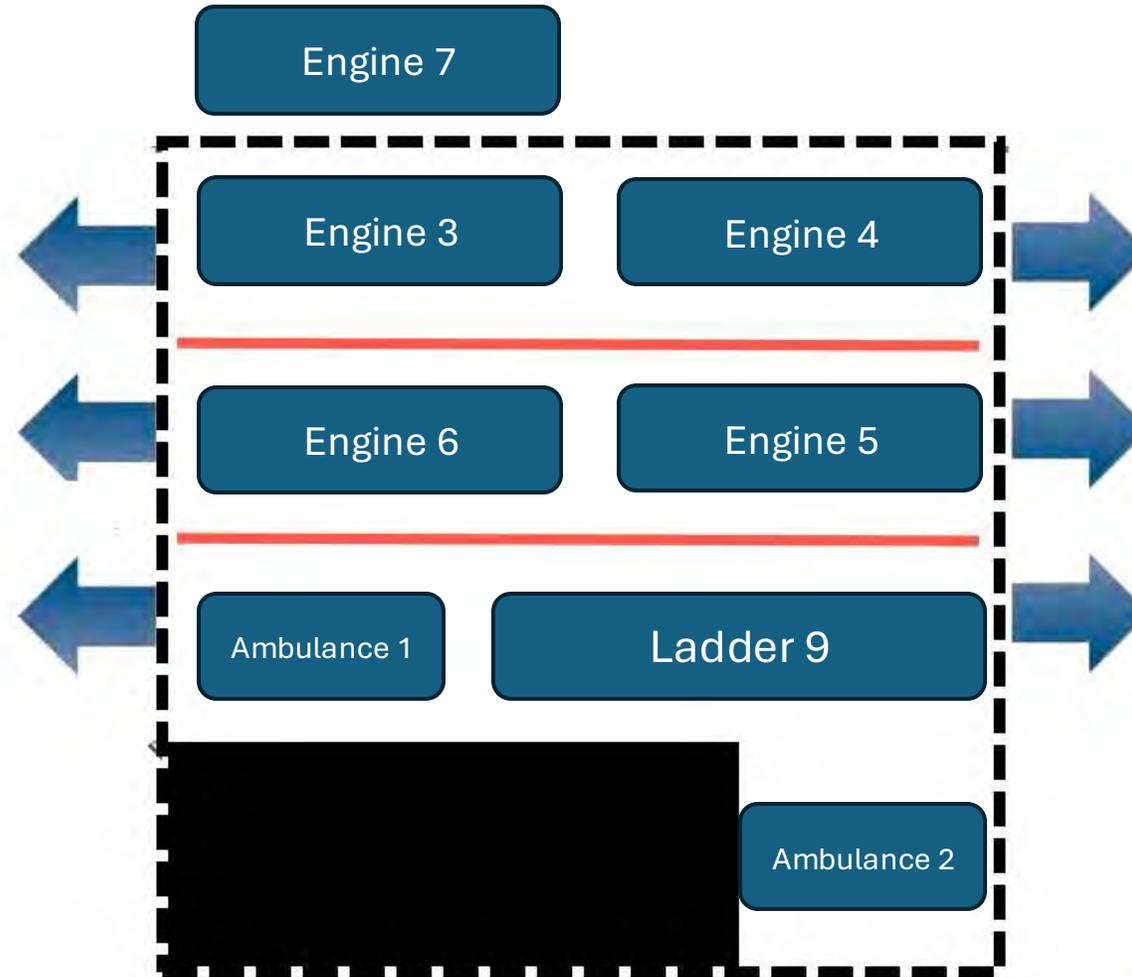
Engine 5

Engine 6

Ladder 9

Ambulance 1

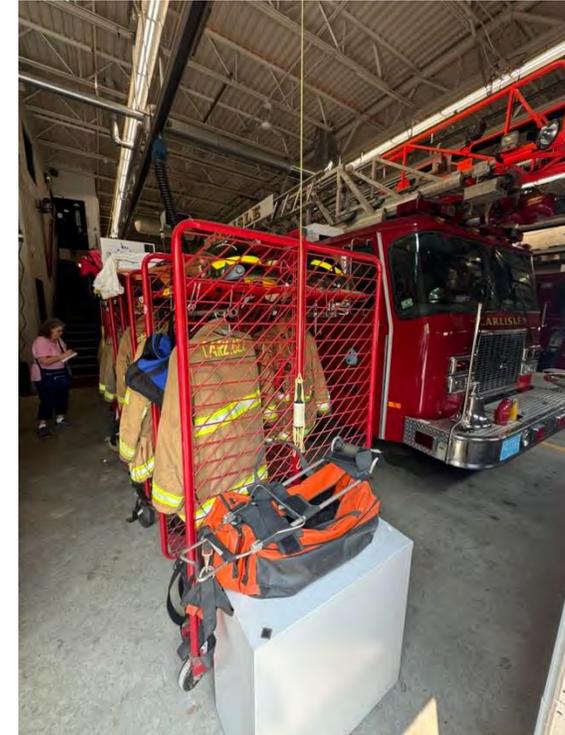
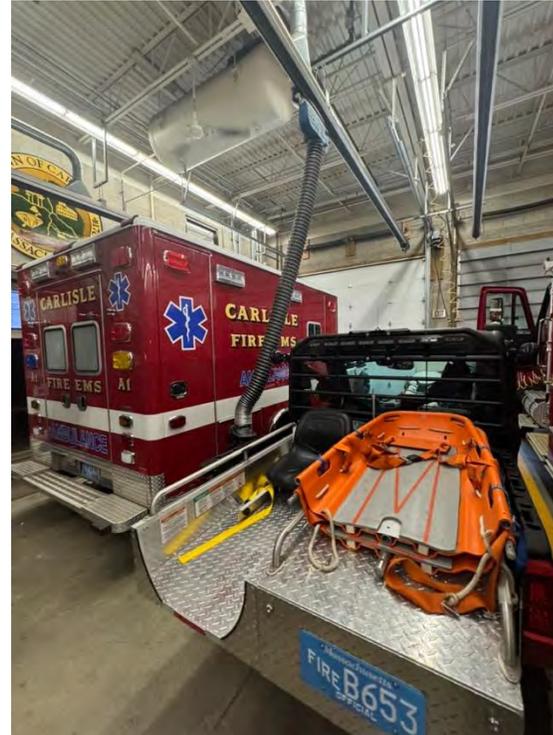
Ambulance 2



Existing Station – 6 Bays



Existing Station – 6 Bays



FAAC Key Takeaways

Highest priority for both cost and service level is to maintain on-call staffing as long as possible

- Enables current high level of service/response
- Career department would require an additional \$1-\$2M in annual operating expense for reduced service
- Need to invest in Fire Station now to better support on-call staffing recruiting and retention

MRI Draft Letter: “Our team universally believes that the station needs either replacement or an extensive renovation to accommodate the apparatus set required to provide the Town of Carlisle with the expected level of service.”

“It is true that having a station for members to be proud of and want to work out of has a tremendous positive impact on responders.”

Fire Department leadership has been effective in managing the on-call department at the current service level

- Cooperative with FAAC; answered questions candidly and thoughtfully

MRI Draft Letter: “it was clear that the Town has a core group of committed and active firefighters and EMS providers protecting the community. It is extremely difficult to retain and strengthen a modern on-call fire department in communities like Carlisle. This accomplishment should be recognized, celebrated and supported.”

FAAC Key Takeaways

Minimal requirements exist to guide apparatus needs. Community-dependent based on desired service level and local characteristics (e.g. municipal water, on-call vs. career staff). Changes to existing operations need to be carefully considered.

- Carlisle community has shown support for current level of service (e.g. Town Meeting funding approvals)

MRI Draft Letter: “Currently the department is meeting the needs and response levels the community expects to have. The MRI team encourages the Command Staff and elected officials to bi-annually review the staffing response to allow the Town to make proper decisions in a proactive manner. The MRI team wants to point out that there is no absolute perfect staffing level or model that fits every community, and careful consideration needs to be taken before any changes are made.”

The Fire Department will need to continue to evolve to meet changing community needs for Fire and EMS response.

- Retaining some apparatus space flexibility is important in the Fire Station design

MRI Draft Letter: “A good fire department needs to adapt to the needs of its community and be prepared for what the future sends for them and be able to modify to meet the need. The town currently has the services they need with the appropriate trained staff. The availability of these dedicated people needs to be monitored, and the department and community prepared to make operational changes as appropriate.”

FAAC Key Takeaways

The Carlisle Fire Department should pursue more flexible, lower cost and/or more accessible apparatus (i.e. less training required) to support on-call force and reduce future capital expense

- Commercial tanker (significantly less expensive than Engine 7 [secondary tanker] replacement)
- Mini-pumper is versatile, easier to operate for on-call fire fighters

MRI Draft Letter: “The use of the smaller support vehicles and trailers is an appropriate use and keeps the larger more expensive vehicles from having to be used.”

“As the current apparatus set is robust when compared to that in place in peer communities and far exceeds the fleets maintained within the realm of our experience, the opportunity to reduce two units exists.”

Commercial Tanker



Mini-Pumper



FAAC Key Takeaways

Transition in apparatus will take time and must be carefully considered. Large apparatus decisions are 10 or more years away if engines continue to be well-maintained.

- New Engine 3 (First Due – Structure Fires) funding approved and on order. 20-year lifespan
- Engine 7 (Secondary Tanker) to be removed from fleet; Purchase commercial tanker for additional water supply
- Engine 4 (Water Supply – Motor Vehicle Collisions) and Engine 6 (Brush Fires) expected to be in operation until 2035+
- Ladder 9 can remain in operation another 10+ years
- Engine 5 (Primary Tanker) expected to be in operation for 15+ years

MRI Draft Letter: “The (ladder) truck will last the community for many years to come and consideration on its operational use in the future needs to be considered. The Department has a need for water to be carried to the scene of a fire and only has one tanker that can be utilized in the winter. The next purchase of a truck should be a commercial tanker with a minimum of a 1250 GPM pump and at least two preconnected handlines.

“Engine 6 is a very large off-road engine that requires a solid road and area to work. Typically, smaller trucks are used in the area that are sized like a ¾ or 1 ton truck.”

FAAC Apparatus Recommendations

Maintain Current Service Level, Operations and Culture

- On-call is best strategy from both budget and service perspective. FD Leadership has managed and maintained committed on-call department.
- Maintain existing apparatus as long as feasible – maximize lifespan
 - Apparatus capital funds will be constrained going forward
 - Outside apparatus storage is not recommended; increases maintenance costs and reduces lifespan

Replace existing apparatus with less expensive, more versatile equipment - over time

- MRI recommends fleet consolidation (2 engines)
- Develop and update long-term fleet plan
- Utilize mutual/automatic aid whenever possible (regularly review and update response plans)
- Transition in apparatus will take time (Ladder 9 & Engines 3, 4, 5 & 6 expected to be replaced in ~2035 or later)

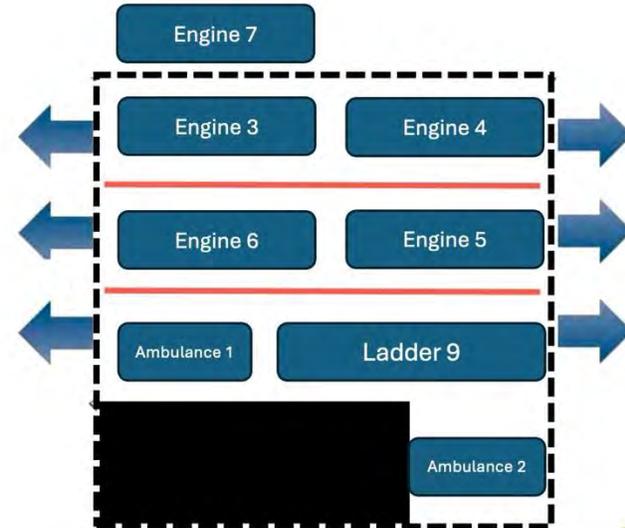
Provide reasonable additional Fire Station capacity for EMS growth

- Potential for 3rd Ambulance within ~10 years

FAAC Apparatus Recommendations

FAAC Approved Space Requirements July 18 (Vote: 5-0)

Engine 1	None
Engine 2	None
Engine 3	Apparatus Bay
Engine 4 - Future Apparatus	Apparatus Bay
Engine 5	Apparatus Bay
Engine 6	Apparatus Bay
Engine 7	None
Ladder 9	Apparatus Bay
Ambulance 1	Apparatus Bay
Ambulance 2	Apparatus Bay**
Car 1	Outside
Car 2	Outside
Car 3	Outside
Utility Bay	Main Building or Outbuilding
Car 10 (Future Mini-Pump?)	Apparatus Bay*
Hazmat Trailer	Outside
Small Engine Trailer	Outbuilding
UTV 1	Outbuilding
UTV 2 - Extra Capacity	Outbuilding
Light Plant	Outside
Boat & Trailer	Outbuilding



Existing Bay Space
3800 SF – 6 Bays

Additional Apparatus Bay Space Requirements

- Ambulance 2 ~200 SF
- Commercial Tanker +800 SF
- Car10 +620 SF
- EMS +620 SF
- Utility Bay +620 SF (TBD)

Up to 4 Additional Bays
(10 Total)

Future Fleet

Commercial Tanker	Apparatus Bay*
EMS – Ambulance or equiv.	Apparatus Bay*

*No existing apparatus bay space

**Insufficient existing apparatus bay space