Morrisville Fire / Rescue Department

Deployment Analysis

Nate Lozinsky, Fire Chief

Town Council

March 12, 2024

Overview

- Apply an objective, data-driven view of the needed resources to respond to emergencies for the next 20 years
- Points of Emphasis
  - Call Volume
  - C.A.M. Relationship
  - Built Environment
  - Apparatus Procurement
  - Staffing Levels
  - Service Improvement

(C.A.M. – Cary, Apex, and Morrisville)

Morrisville

Strategic Plan Alignment

Town Strategic Plan

Goals	
Goal 4: Public Safety Readiness	Provide a safe and secure community through prevention, education, readiness, and response
Goal 5: Operational Excellence	Deliver exceptional service with an engaged workforce that effectively manages public assets and promotes transparency

Fire Department Strategic Plan

Goals	
Goal 3: Apparatus Effectiveness and Sustainability	Ensure the apparatus purchased are meeting the needs of all the Town's stakeholders
Goal 4: Deployment Analysis	Deliver the needed resources and capabilities to all emergencies in our dynamic and diverse ISO district

(Note: Fire Department Strategic Plan is currently being updated)

2019 ISO Summary

FSRS Feature	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	3.00	3
422. Credit for Telecommunicators	4.00	4
432. Credit for Dispatch Circuits	3.00	3
440. Credit for Emergency Communications	10.00	10
Fire Department		
513. Credit for Engine Companies	6.00	6
523. Credit for Reserve Pumpers	0.50	0.50
532. Credit for Pump Capacity	3.00	3
549. Credit for Ladder Service	4.00	4
553. Credit for Reserve Ladder and Service Trucks	0.25	0.50
561. Credit for Deployment Analysis	4.18	10
571. Credit for Company Personnel	12.20	15
581. Credit for Training	8.24	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	40.37	50
Water Supply		
616. Credit for Supply System	30.00	30
621. Credit for Hydrants	3.00	3
631. Credit for Inspection and Flow Testing	7.00	7
640. Credit for Water Supply	40.00	40
Divergence	-3.85	--
1050. Community Risk Reduction	4.21	5.50
Total Credit	90.73	105.50

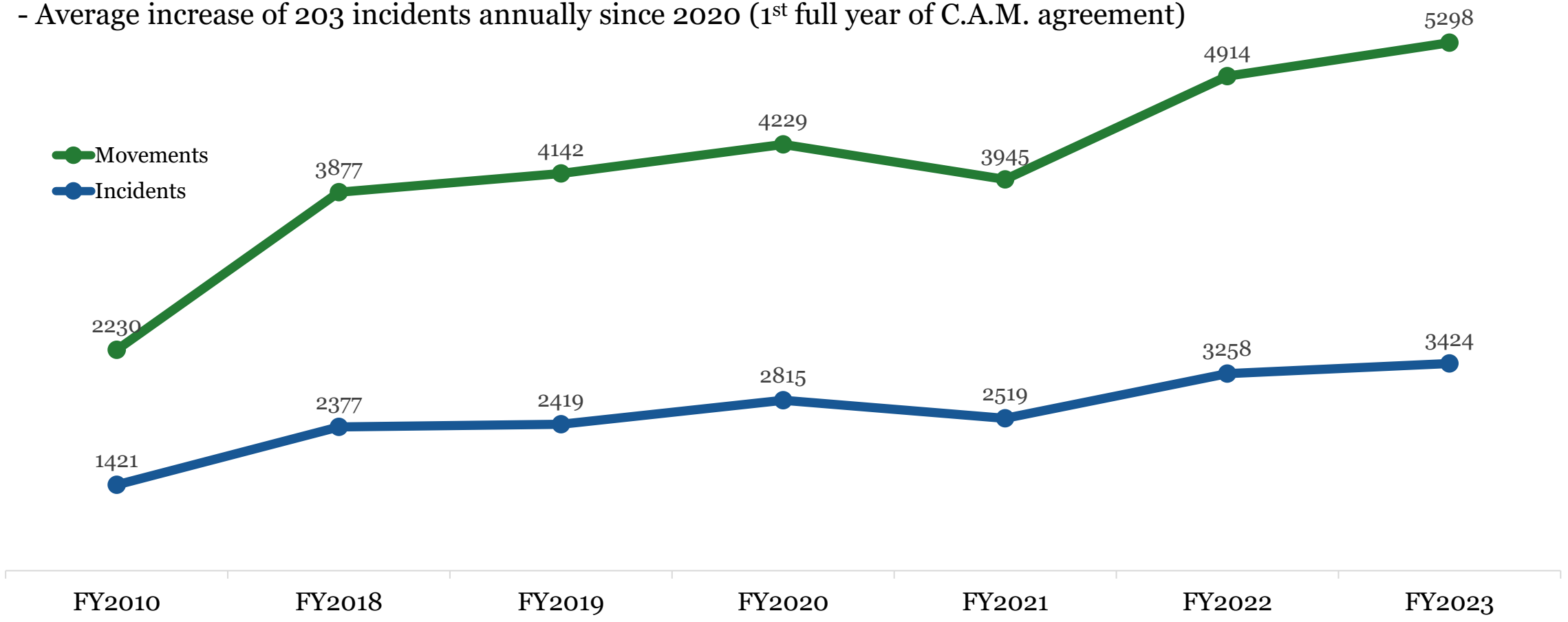
- The (re)evaluation deployment model/analysis is in part driven by the 4.18/10 score that was received in the last ISO rating. While this will likely improve with C.A.M., it is an opportunity to see if we are experiencing the benefit of the quint concept that was envisioned.
- Many advantages to continuing to improve ISO rating (i.e., economic development)

(ISO – Insurance Services Office, assigns fire protection ratings that can lead to lower building insurance premiums)

Morrisville

Call Volume Demands

- Average increase of 154 incidents annually since 2010 (1st full year of quint deployment)
- Average increase of 203 incidents annually since 2020 (1st full year of C.A.M. agreement)



Note: An incident is a single call, where a unit movement refers to the number of fire trucks that respond to support the incident.

Morrisville

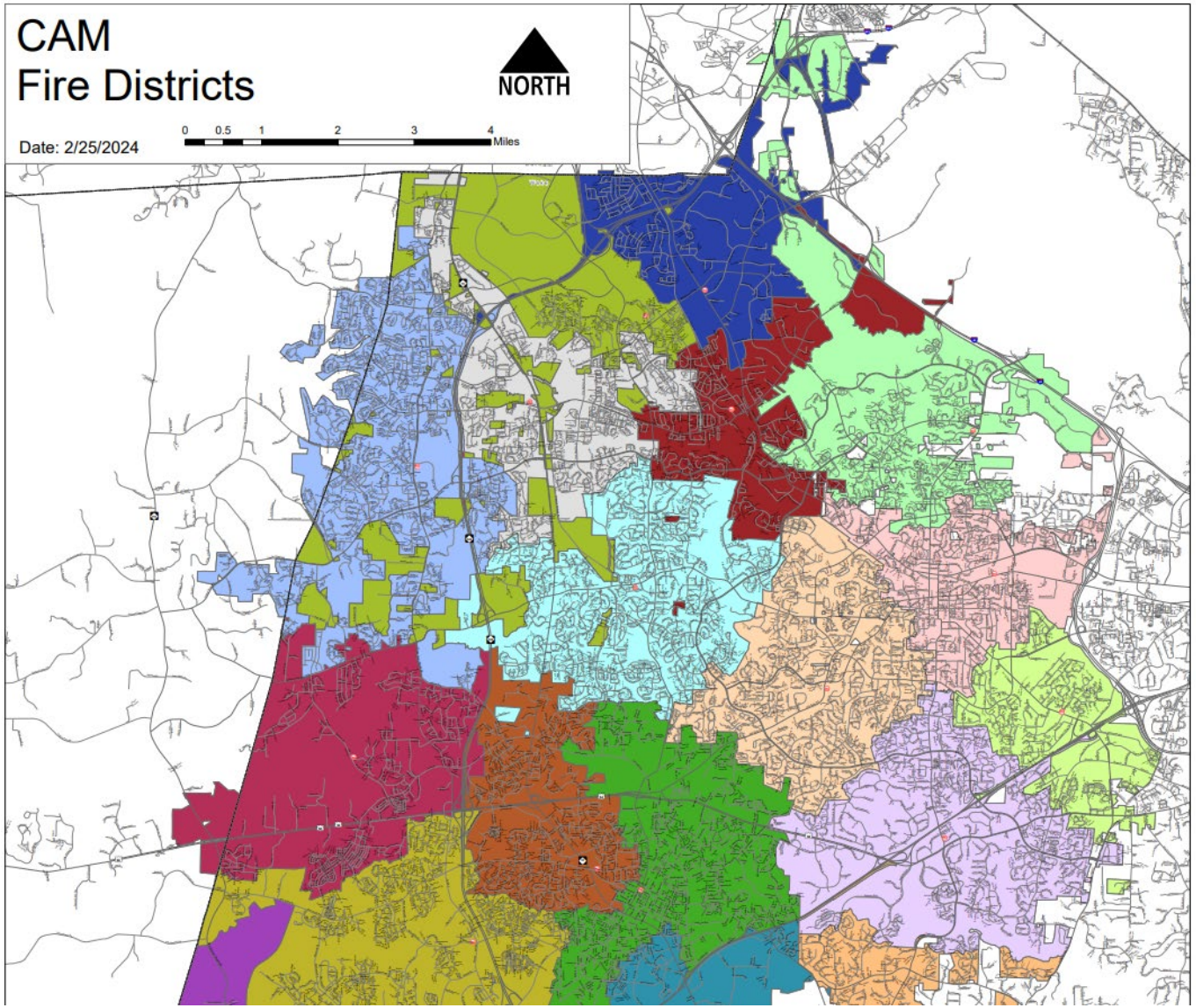
Benefit of C.A.M.

Pre-C.A.M.	Distance to FS1
Western Wake Fire Department	9.3 miles/15 mins
Durham High Fire Department	12.9 miles/17 mins
Apex Fire Station 1	7.7 miles/15 mins

C.A.M.	Distance to FS1
Cary Station 1	4.4 miles/9 mins
Cary Station 5	3.9 miles/9 mins
Cary Station 7	3.1 miles/7 mins

(FS1 – Fire Station 1)

C.A.M. Map



Cary Fire Districts
001
002
003
004
005
006
007
008
009

Morrisville Fire District
021
022
023

Apex Fire District
031
032
033
034
035
036

- Robust system capacity
- Distribution of fire stations
- Concentration of fire units in fire stations

Morrisville

C.A.M. Relationship

- Morrisville is the only fire department operating in a unique deployment model
- Creates difficulty and a lack of continuity with:
  - Policy/procedure/practice development on the fire ground
  - Dispatching of apparatus to all emergency types
  - Efficiency/effectiveness of firefighters
- ISO has not embraced grading the concept with quint style deployment models
- This also creates difficulty in developing guiding documents and self-assessment manual

Built Environment Challenges

Morrisville

Requirements for Predicted Built Environment

- Modern Apartment Designs
  - Brier Point
  - Pointe at Lake Crabtree
  - Broadstone Trail Apartments
  - Aviation Crossing (Bainbridge)
  - Bristol Creek
  - Shiloh Crossing
  - Crescent Community
  - Alta Wren
  - Kit Creek alleyways
- Taller buildings that require significant resources
- Denser development
- More complicated corporate and residential campuses with large fire flows
- Migration from garden-style apartments to ones with large center atriums

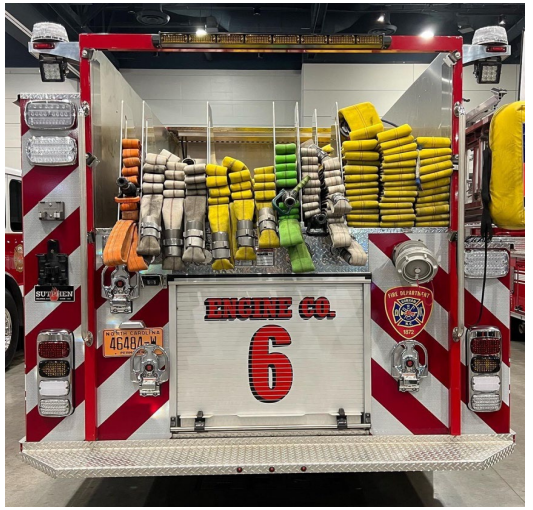
Deployment Model Opportunities

Transitioning to a Traditional Deployment Model Offers:

- Engine bulk hose beds necessary to deploy the needed hose lengths to access all areas efficiently
- More fire attack package options (hose & nozzles) to adapt to our current and growing environment
- Allows ladder trucks to carry more ground ladders for building and victim access

Cary Engine-3

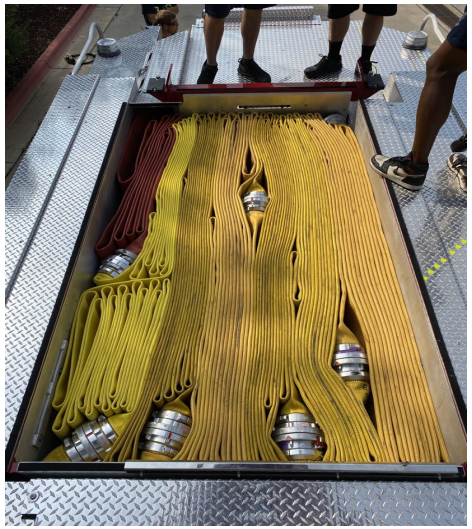

Winston-Salem Ladder-1



Durham Engine-6

Morrisville

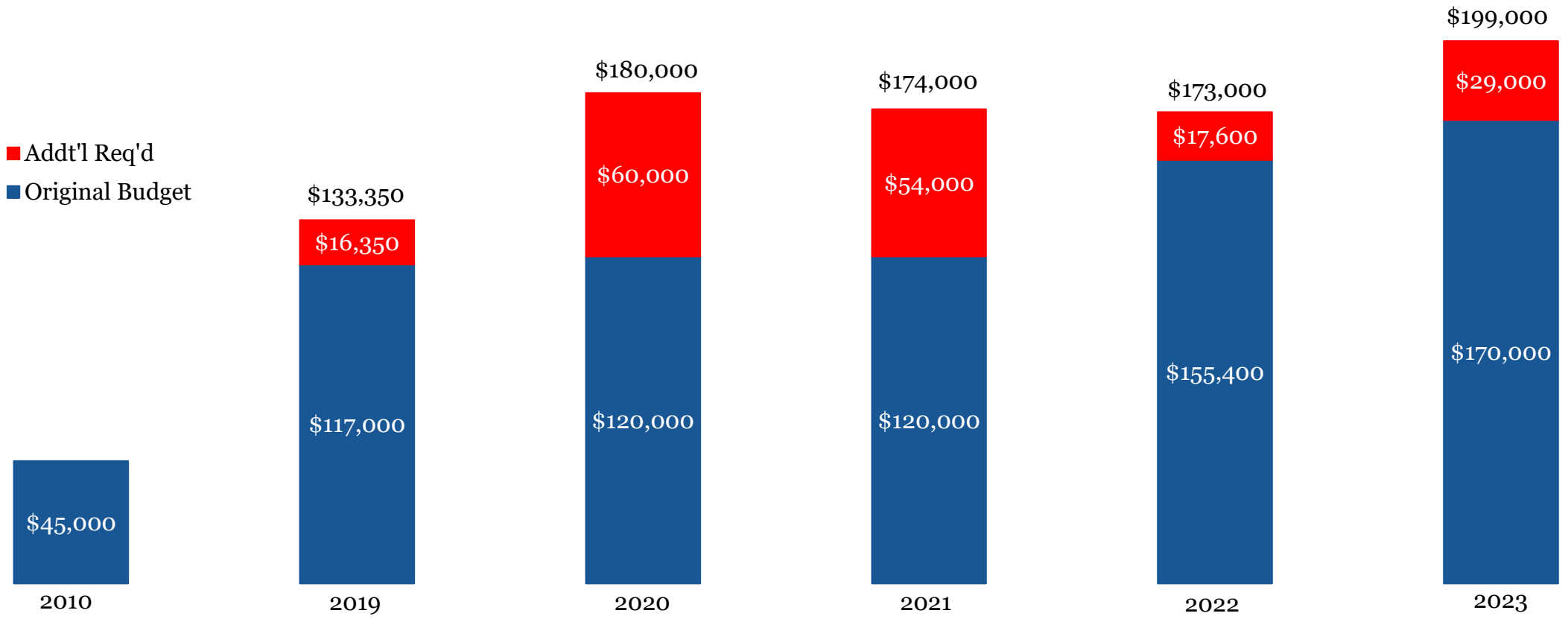
Quint Deployment Model - Challenges



- Quint has limited storage for hose. Limiting our hose deployment of fire attach lines
- Modern apartments and buildings require longer hose lays to reach all occupied units.
- To meet the requirements for both engine and ladder company (Quint), we also limit the number of ground ladders we can carry (L22 picture)
  - The ground ladders are more important than ever, with modern atrium/courtyard style apartment buildings with limited access to interior apartments.

Morrisville

Apparatus Maintenance Challenges

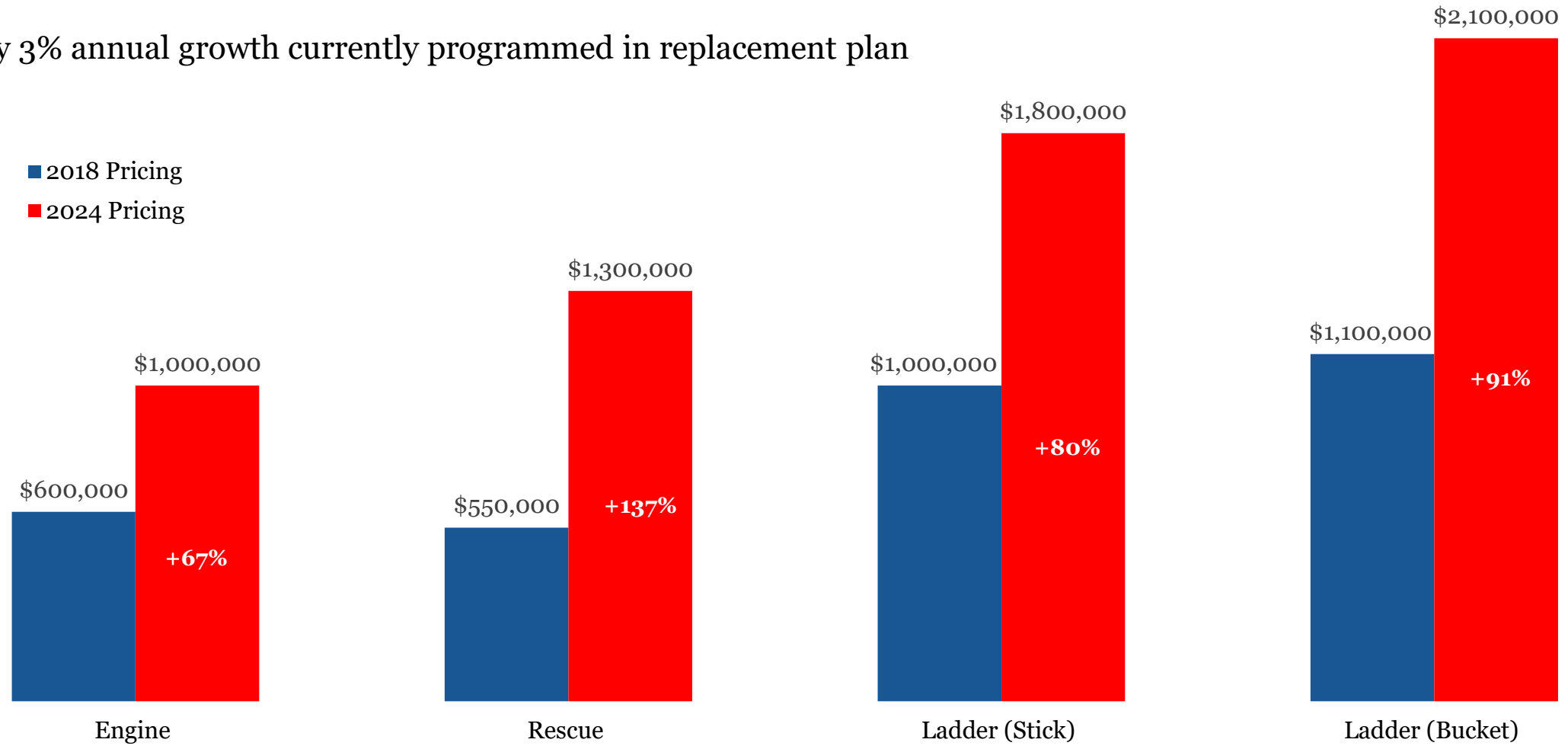


(NFPA – National Fire Protection Agency)

Morrisville

Apparatus Replacement Challenges

- Only 3% annual growth currently programmed in replacement plan



Morrisville

Staffing

- Industry Standards
  - NFPA 1710
    - Engine 4 minimum
    - Ladder 4 minimum
- C.A.M. Partners
  - Minimum staffing to place a truck into service
    - System-wide policy
    - Individual department policy
- Recruitment/Retention
  - Area departments use traditional fire response model as a recruiting tool
  - We average 16% turnover annually since 2016, approximately half of those personnel losses are to other agencies

(NFPA – National Fire Protection Agency)

Morrisville

How Personnel Impact a Fire Scene (Example)

Moderate Risk Single Family Home

Task	Number of Firefighters
Attack line	2
Pump operator	1
Water supply	1
Back up line	2
RIT	2
Command/safety	1
Search/rescue	2
Ventilation	2
Overhaul/salvage	2
Total	**15**

High-Risk Commercial Building

Task	Number of Firefighters
Assessment team	2
Attack line	2
RIT	5
Search and rescue	2
Ventilation/Ground Ladders/Utilities	3
Back up line	2
Safety	1
Command	1
Pump operator	1
Aerial operator	1
Water supply	1
Accountability officer	1
Exposure protection	2
Overhaul/salvage	2
Total	**26**

High Life Hazard

Task	Number of Firefighters
Assessment team	2
Attack line	2
R.I.T.	5
Search and rescue	4
Ventilation/Ground Ladders/Utilities	4
Back up line	3
Safety	1
Command	2
Pump operator	2
Aerial operator	2
Water supply	2
Accountability officer	1
Exposure protection	2
Overhaul/salvage	2
Operations officer	1
Total	**35**

(Charts are from our Standards of Cover, dated Jan 2021 and approved by Resolution 2021-218-0)

Community Benefits and Success

- More continuity with CAM partners leading to more effective outcomes through innovation and adaption
- Higher level of efficiency with town resources, including financial/budget
- Allowing for resiliency in long-range planning
- Higher level of employee pride and ownership, leading to more productive staff
- Aligning the Town with industry best practices, including ISO/accreditation

Next Steps

- Fall CY2024 - Finalize the deployment model analysis
  - Develop a plan for a deployment model based on data, industry standards/best practices, ISO, accreditation, objective analysis
  - Sustainable budget development and execution with a long-range, proactive mindset
- Present a sustainable plan to stakeholders (PSAC), managers, and Town Council
- FY26 - start implementation of the new plan
- Beyond – continue to implement and analyze the effectiveness of the plan based on outcomes

Questions?