



# Fire/EMS System Capacity & Service Delivery

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PUBLIC SAFETY & COURT COMMITTEE

APRIL 8, 2025

# Presentation Objectives

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The Fire/EMS system requires additional resources to meet current demand and maintain response performance.

## **Demand are Outpacing the System**

- EMS and total call volume growing well above projections
- Increasing strain on units, staffing, and response reliability

## **Current Resources Are near Capacity**

- Limited ability to consistently meet:
  - EMS performance targets (UHU)
  - Fire assembly standards (NFPA 1710)
  - Increasing strain on personnel, with impacts to morale and retention

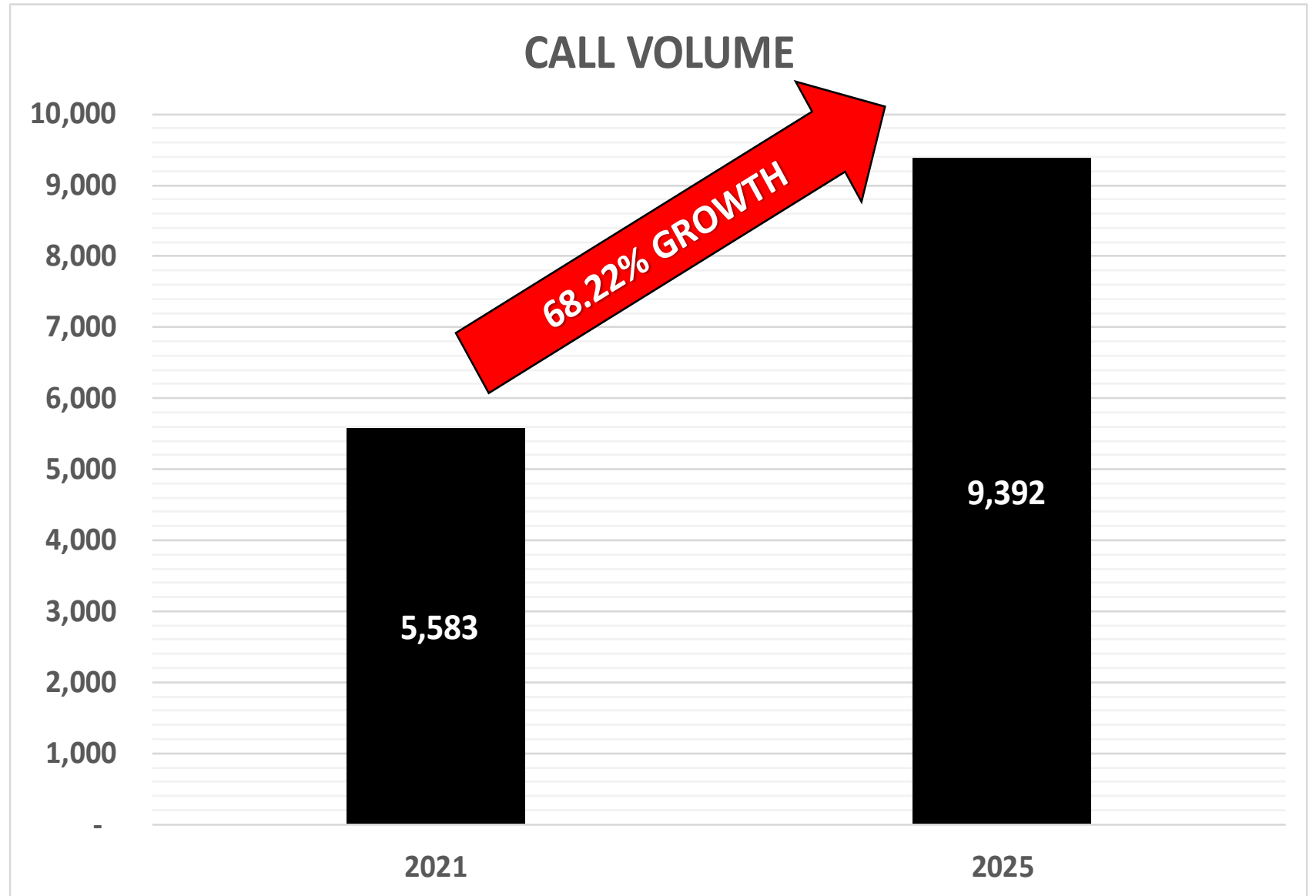
## **Required Expansion of System Capacity**

- Peak ambulance to 24-hour ambulance needed to manage EMS demand
- Additional fire company required to support response and assembly
- Timing and delivery require Council direction



# Call Volume

All Types



## 2025 UHU

M1	25%
M16	19%
M3	17%
E1	9%
T16	8%
E3	5%

# Unit Hour Utilization Goals

## EMS (Ambulance UHU)

- ☐ ≤ 25% — Reliable
- ☐ 25–30% — Action Threshold
- > 30% — System Strain

## Fire (Engine/Truck UHU)

- ☐ ≤ 8% — Reliable
- ☐ 8–10% — Action Threshold
- > 10% — Increased Risk

# Resource Growth vs. Operational Demand

## Strategic Improvements

- Added Battalion Chief in operations to strengthen incident command and fireground safety
- Expanded ambulance resources staffed with firefighters to support system demand and response assembly for fires

## Current Status and Plan

- Last frontline fire apparatus added: 2009 (Engine 3)
- Next planned addition: ~2030 (Station 4)
- 21+ years between adding frontline fire units

## Current Operational Reality

- Current best case assembly response force (ERF) capability:
  - Minimum Daily Staffing 17 – 19 /Peak Ambulance
  - Structure Fire Response 15 personnel available vs. 17 needed within 8 minutes (NFPA 1710 benchmark)
- 1 Medic is held back to address the next incoming call
- Reliance is on mutual aid for assembly but we are unable to meet assembly time frame

# Burleson Minimum On-Duty Fire Response

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**If all units are available for initial structure fire response:**

Battalion 1: 1

Engine 1: 3

Truck 16: 4

Engine 3: 3

Medic 1: 2

Medic 16: 2

Peak Ambulance : 2

Total: 15 – 17 Assembly if all crews are available

Medic 3: 2 - Remains available for next call



# Cost Containment & Revenue Optimization Efforts

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## **EMS Revenue Optimization**

- Updated fee schedule

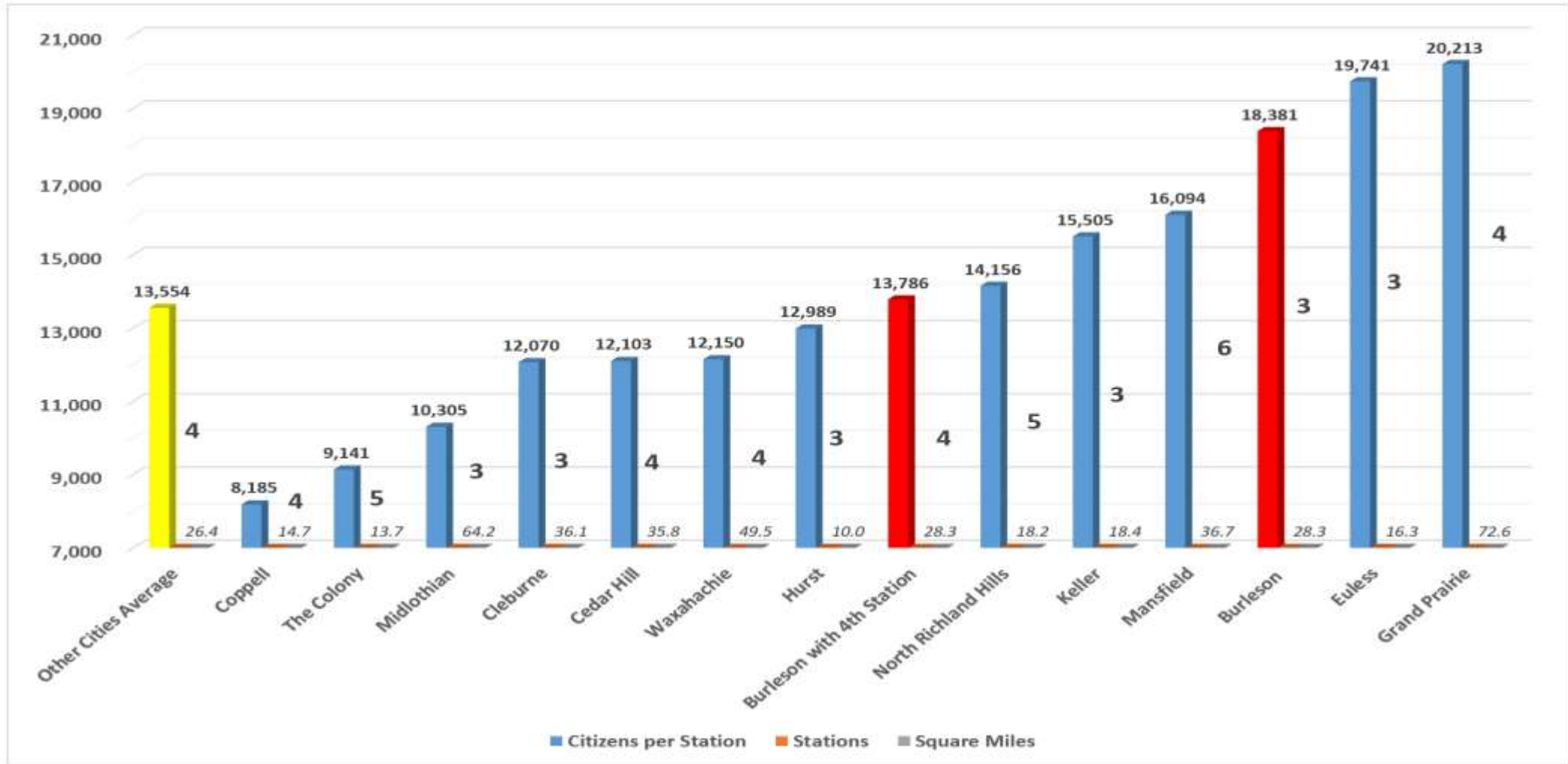
## **Fire Incident Cost Recovery**

- Implemented EmergiFire for incident-based cost recovery
- Captures eligible revenue from billable fire-related responses
- Offsets operational costs without impacting residents directly

## **Annual Fire Inspections Program**

- Strengthened inspection program and fee collection
- Supports community risk reduction
- Generates cost recovery for prevention services

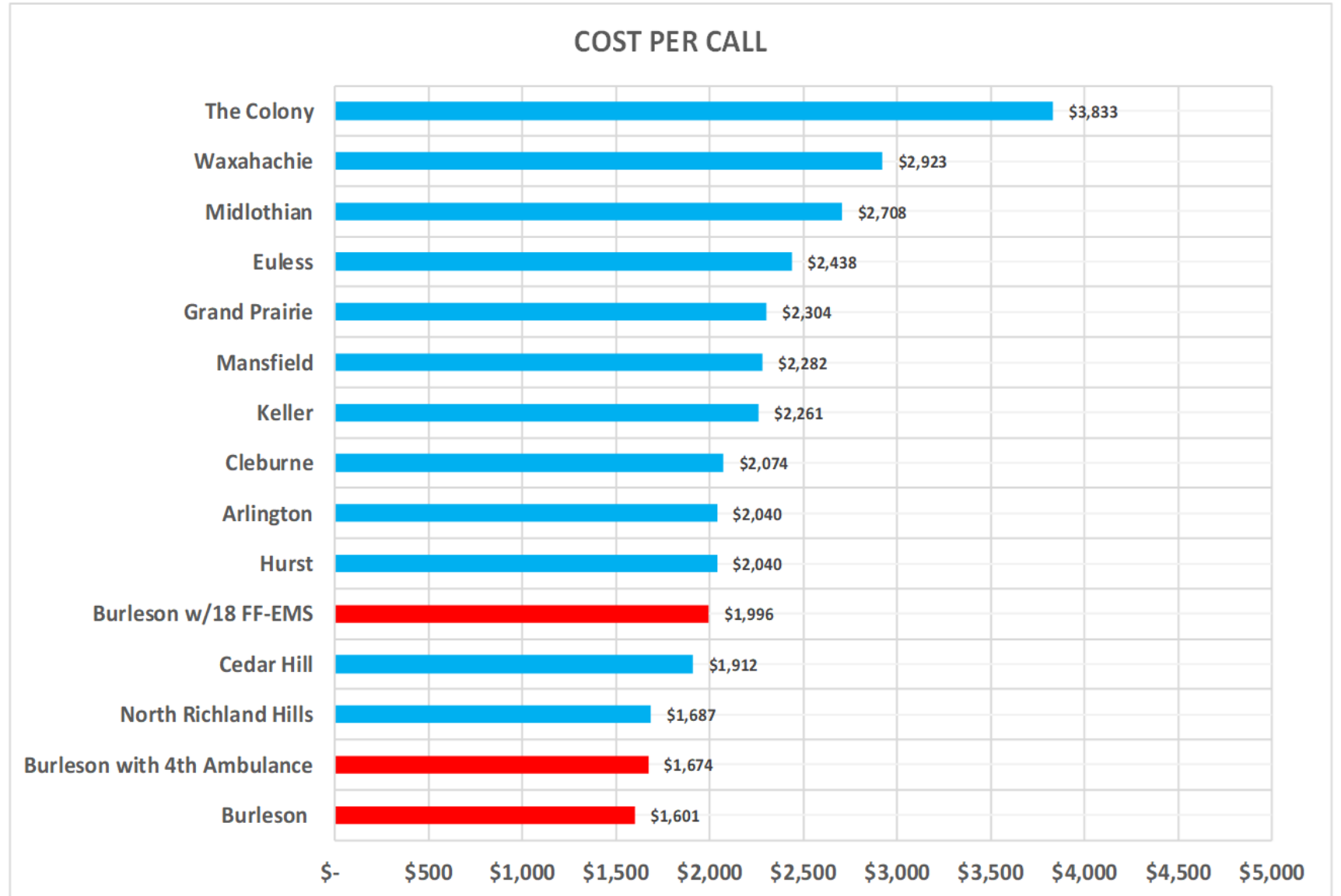
# Comparative Cities – Citizens per Station





# Comparative Cities

## Cost per Call



# Fireground Assembly

**It's not just about the first unit arriving unit it's about assembling enough personnel to perform critical tasks at the same time.**

## Fireground Reality

- A structure fire requires multiple critical objectives to occur simultaneously:
- Incident command and accountability
- Water Supply (securing a hydrant)
- Forcible entry and access
- Fire attack (getting water on the fire)
- Search and rescue (locating and removing victims)
- Laddering and egress
- Ventilation (improving interior conditions)

## What the Research Shows

- National Institute of Standards and Technology (NIST):
  - Larger, properly staffed crews complete tasks faster and simultaneously
  - Smaller crews are forced into sequential operations, creating delays

# EMS Response

Every firefighter in our system is EMS-certified and capable of delivering care. Paramedics provide advanced interventions, while EMTs are essential to delivering high-quality patient care. Fire apparatus response to EMS incidents ensures sufficient personnel are on scene to perform multiple life-saving tasks at the same time—especially during critical events like cardiac arrest.

## **Cardiac Arrest Reality**

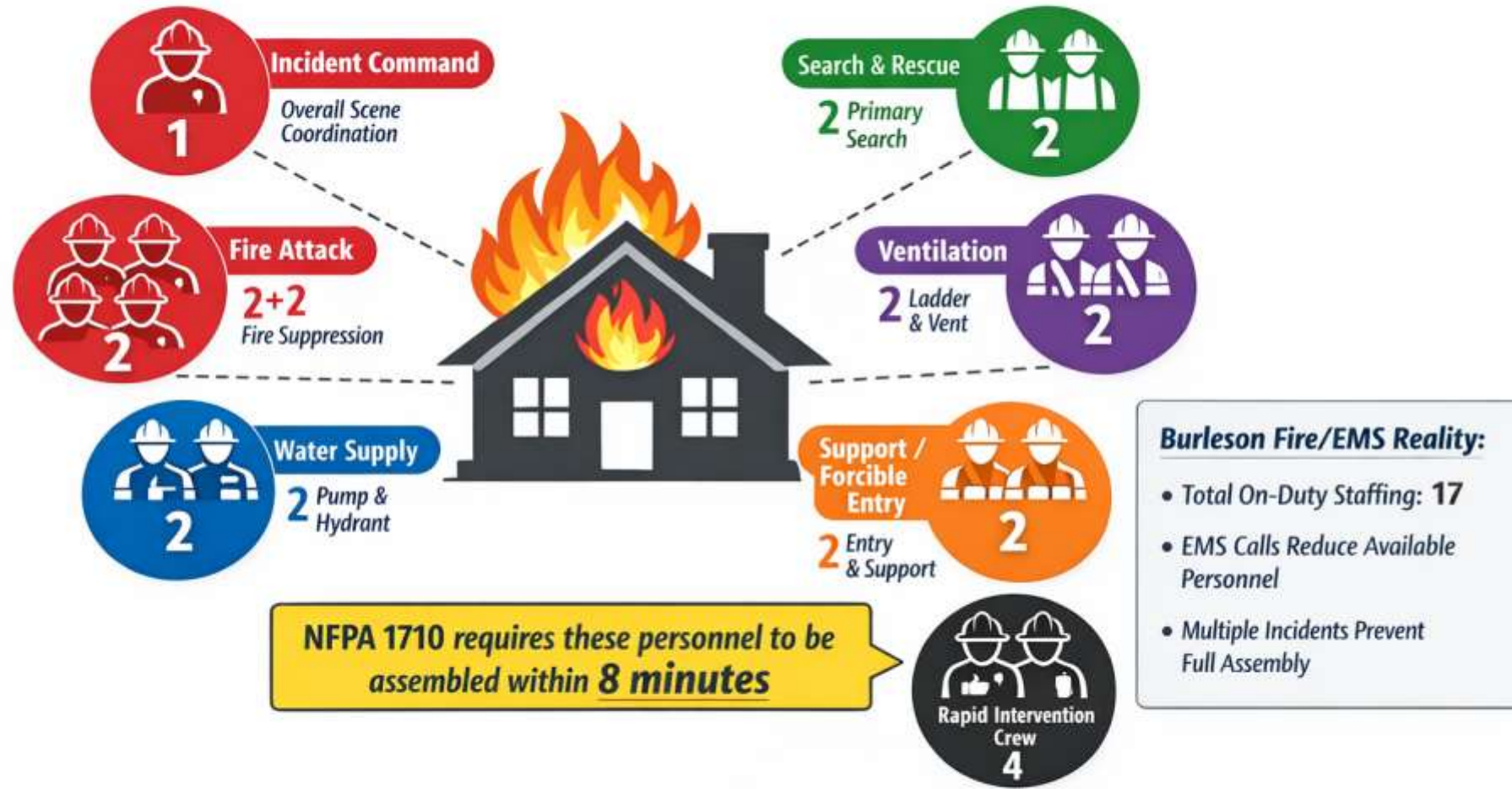
A cardiac arrest requires multiple critical interventions simultaneously:

- Incident command and accountability
- High-quality chest compressions
- Airway management and ventilations
- Defibrillation (AED/monitor)
- Medication administration (ALS care)
- Rhythm analysis and decision-making
- Scene coordination and transport preparation

## **What the Research Shows**

- American Heart Association (AHA) guidelines emphasize:
  - Minimizing interruptions in compressions
  - Early defibrillation and coordinated team-based care
- High-performing resuscitations rely on:
  - Team-based, simultaneous interventions
  - Not sequential, one-person task completion

# NFPA 1710 – What It Takes to Fight a Structure Fire



**Minimum: 16–17 Firefighters (Single Family Residential Fire)**

# NFPA 1710: Response Time Objectives



# NIST Study

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## 4-Person Crews Complete Critical Tasks Faster

**25–30% faster** overall task completion vs. 3-person crews

### Key tasks completed significantly faster:

- Fire attack
- Search and rescue
- Ventilation
- Laddering

### Time = Life Safety

### Faster task completion leads to:

- Earlier water on the fire
- Faster victim search
- Improved survival outcomes

# The Critical 10-Minute Life or Death Window

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## Structure Fire Growth (Time vs. Fire Spread)

- 🔥 A room igniting and fully engulfed over 10 minutes.
- **0-2 minutes:** A fire starts, small and controllable.
- **3-4 minutes:** Flashover potential begins.
- **5-7 minutes:** Fire spreads rapidly, escape becomes difficult.
- **8-10 minutes:** Flashover occurs, entire room is engulfed, survivability is **near zero**.
- 💡 **Fact: After 10 minutes, survivability in a structure fire is almost nonexistent due to heat, smoke, and oxygen depletion.**

## Cardiac Arrest (Time vs. Survival Rate)

- 📊 A timeline showing survival rates decreasing over time.
- **0-4 minutes: 50-70% survival** with CPR & defibrillation.
- **5-6 minutes: 25-30% survival** if no CPR is started.
- **7-10 minutes: Less than 10% survival** without immediate medical intervention.
- 💡 **Fact: After 10 minutes without defibrillation, survival is nearly zero**

# ISO Class 1 vs. NFPA 1710 Compliance

## ISO Class 1 Rating (< 1% of Fire Departments in the Nation are ISO Class 1)

- **Purpose:** Evaluates a community's overall fire protection capability for insurance purposes.
- **Scoring System:** 1 (best) to 10 (worst)
- **Issued By:** Insurance Services Office (ISO) via the Public Protection Classification (PPC) program
- **Key Components:**
  - **Emergency Communications (10%)**
  - **Fire Department (50%)**
  - **Water Supply (40%)**
  - **Community Risk Reduction (extra credit)**
- **Focus:** Infrastructure, equipment, staffing, training, water supply, and dispatch system
- **Outcome:** May impact homeowners' and businesses' insurance premiums

**Note:** Our ISO Class 1 rating has been sustained through ongoing pursuit toward NFPA 1710 compliance. While we have not fully achieved all levels of 1710 compliance, our continued pursuit has supported our top rating. However, as call volume continues to rise—especially with the projected growth in District 4—our ISO Class 1 status is at risk in future evaluations if additional resources are not assigned to address the increased demand.

# West Side Burleson – Projected Growth

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## Projected Growth & Timeline

### Chisholm Summit Development:

- 3,000 new homes planned
- Construction is set to begin in 2026
- Approx. 200 homes added per year there after.

### Impact on Emergency Services:

- Rising Fire/EMS Demand: Call volume increases by 94+ calls per year per 200 homes added. This **does not include** year-over-year percentage growth calculation.
- Longer response times if resources are not expanded.
- More strain on existing stations and resources.
- Increased Unit Hour Utilization (UHU) for both ambulance and fire responses due to the lack of dedicated services in this area.

# West Side Burleson

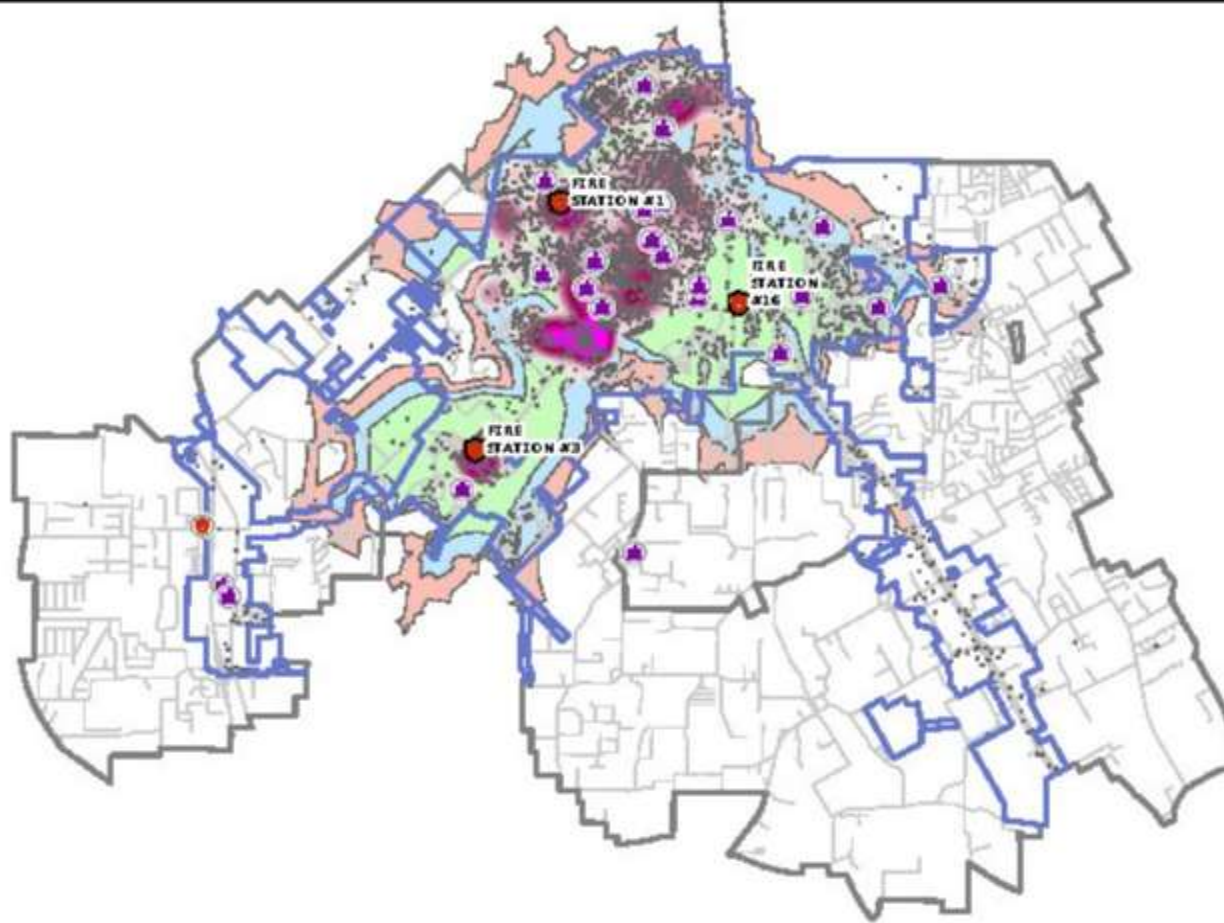
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## Why We Must Plan Now for a Fire Station on the West Side

### Current Target Hazards in the West Side

- **Joshua ISD Schools:**
  - RC Loflin Middle School
  - Caddo Grove Elementary
- **Established Residential & Traffic Risks:**
  - Blue Bird Meadows Neighborhood
  - Chisholm Trail Parkway
  - CR 1902

# Current Situation



- Existing Fire Stations
- Schools
- Johnson County ESD
- City Limit

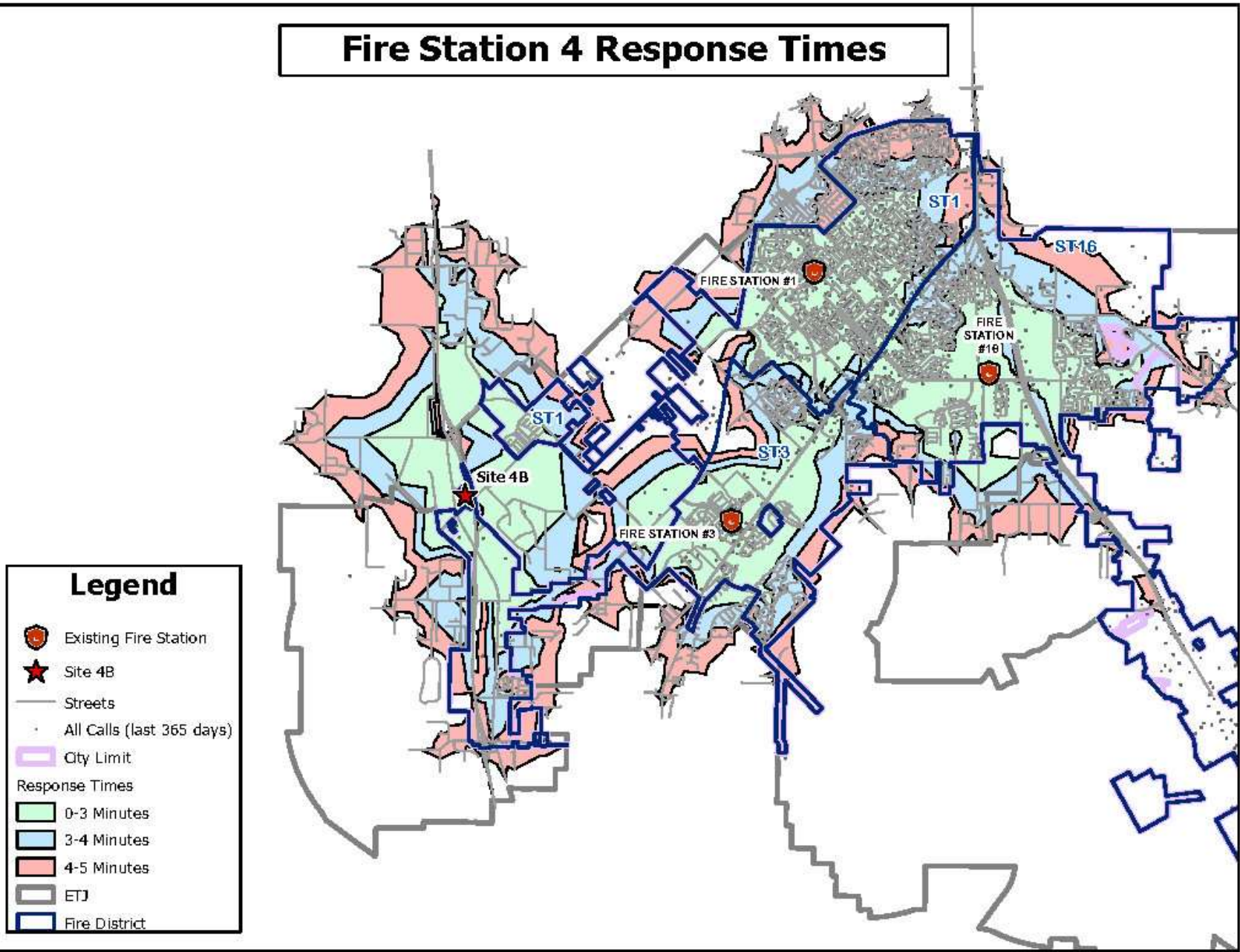
- ETJ
- Street Centerline
- All Calls (last 365 days)

- Fire Incidents Heat Map (All calls last 365 days)
- Sparse
  - Dense

- Current Response Times
- 0-3 Minutes
  - 3-4 Minutes
  - 4-5 Minutes



# Fire Station 4 Response Times



# Why Station 4 is Critical for Burleson

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## Key Challenges Without Station 4:

### Delayed Response Times:

- Current drive time: 11-15 minutes to west-side emergencies.

### Call Volume & Dependence on Mutual Aid:

- 102 calls per year in 2025 for district 4 area.
- ESD automatic aid for structure fires but only mutual aid for EMS and all other call types.
- ESD does not desire to respond to Priority 3 EMS calls, leaving gaps in coverage.
- ESD current limit is around 400 calls for automatic/mutual aid a year.
- The ESD would consider a contract for services if annual call volume approaches 400 calls, but further discussions would be required to assess capacity and associated costs.

## How Station 4 Solves These Issues:

- Adding **Station 4** not only enhances **west-side coverage** but also strengthens **NFPA 1710 assembly compliance citywide**, ensuring faster and more effective emergency response across all districts.
- **Cuts drive time significantly**, improving response time for life-threatening emergencies.
- **Increases local coverage**, reducing reliance on mutual aid.
- **Provides full EMS & fire services** on the **west side of the city**.
- **Ensures faster response** to both **high-priority EMS & fire incidents**.

# Priority 3 EMS

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A Priority 3 EMS call is a non-life-threatening medical emergency that requires an EMS response but does not involve immediate danger to life or serious injury. These calls typically include:

- Minor injuries (e.g., sprains, minor cuts, or abrasions)
- Illnesses without severe symptoms (e.g., mild fever, nausea, or minor allergic reactions)
- Welfare checks for non-critical patients
- Assist requests (e.g., lift assists for non-injured individuals)

**Priority 3 calls are lower-acuity and do not require lights-and-sirens transport or immediate advanced life support (ALS) intervention.**

# Minimum Daily Staffing

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## Current Staffing & Coverage

- Minimum daily staffing 17 - 19 with peak ambulance
- Structure fire assembly is challenging
- Response coverage gap on the west side of the city
- Longer response times to incidents in growing areas

## Deploying a 4th Ambulance

- Minimum Daily Staffing 19 personnel
- Rising EMS call volume and UHU will strain resources and impact response times before

## Deploying a 4th Fire Apparatus

- Minimum daily staffing 23 personnel
- Balanced coverage across the city, including the west side
- Faster response times for Fire & EMS
- Better resource allocation for simultaneous incidents
- 💡 Solution: Station 4 ensures equal emergency services across all areas, improving safety and reducing response times.

# System Changes & Needs

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## Ladder Tower Purchase & Placement

- A new Tower Ladder truck will be purchased to enhance aerial firefighting and rescue capabilities.
- Since Station 4 is located in the county area, the Tower Ladder will be stationed at Station 1 to better serve the city core.
- This restores bucket capabilities previously lost in recent years.

## Engine & Ambulance Deployment Adjustments

- An engine will be relocated to Station 4 to ensure fire/EMS coverage in the expanding west side.
- The 4th ambulance will be double-company at Station 1, reducing excessive back-and-forth movement across the city and improving EMS efficiency.

## Minimum Staffing at Station 4

- Engine 4 will be staffed with a guaranteed 4-person crew, including one dedicated position as a firefighter/paramedic to maintain advanced EMS response capabilities.

# Station 4 Deployment Plan

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## Initial Station Opening:

- Engine Company – Minimum 4-person staffing
- Brush Truck – Cross-staffed with available personnel
- Reserve Engine
- The fourth bay provides housing capacity for the MCI trailer and Heavy Rescue unit, improves long-term apparatus space planning across all stations, and replaces the lost bay at Station 1.

## Full Station Build-Out Plan:

- Engine Company – Minimum 4-person staffing
- Ladder Company – Minimum 4-person staffing
- Ambulance – Minimum 2-person staffing
- Battalion 2 – Minimum 1-person staffing
- Brush Truck – Cross-staffed with existing crews
- Reserve Engine

**The phased approach ensures operational readiness at opening, with strategic growth planned to enhance emergency response capabilities.**

### Current CIP Timeline for Station 4 & Equipment

Fiscal Year	Projects
2028	<ul style="list-style-type: none"><li>Station 4 Design Budget - \$2,500,000</li></ul>
2029	<ul style="list-style-type: none"><li>Ladder Tower - 30 – 36 Month Lead Time / Budget - \$2,438,197</li></ul>
2029	<ul style="list-style-type: none"><li>Brush Truck - 24 Month Lead Time / Budget - \$367,332</li></ul>
2030	<ul style="list-style-type: none"><li>Construction of Fire Station 4 /18 Month Build Time / Budget \$13,443,000</li></ul>

# Additional Concurrent Needs

## **Captain for Training**

- The training office is overwhelmed with no dedicated support. A Training Captain is essential to deliver training to crews, maintain operational readiness, and ensure compliance with evolving fire and EMS standards.

## **Captain for Admin Logistics**

- We are currently managing permanent, mission-critical responsibilities with temporary staffing solutions. When administrative functions like hiring, equipment deployment, and compliance are not properly staffed, it creates operational risk. A dedicated Administrative Captain is necessary to reduce that risk, ensure system reliability, and sustain accountability.

## **Deputy Emergency Manager**

- The Emergency Management Office lacks redundancy and additional staff to handle increasing workload demands.
- A Deputy Emergency Manager is needed to support disaster preparedness, emergency response coordination, and continuity of operations as the city's risk profile grows.

# Staff Recommendations & Considerations

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## EMS System Capacity (Peak → 24-Hour)

- Transition peak ambulance to 24-hour service
- Supports:
  - Managing UHU within target range ( $\leq 25\text{--}30\%$ )
  - Reducing system strain and overtime
- Staffing Impact: +4 FTE (\$632,431)

## Fire Company Deployment (Priority)

- Need: Additional frontline fire company to support response and assembly
- Required regardless of Station 4 construction timeline
- Supports:
  - Fireground staffing (NFPA 1710 assembly)
  - Staffing Impact: +14 FTE (\$2,213,510)
  - CIP – Ladder Tower and Brush Truck Purchase

## Station 4 – Preferred Delivery Model

- Staff recommendation: Maintain current Station 4 timeline
- Provides:
  - Permanent west-side coverage
  - Long-term system alignment with growth
  - Deployment of the additional fire company in its intended location

## Questions & Comment

### **Requested Council Feedback**

- 24- Ambulance Staffing
- Timing of additional fire company deployment
- Station 4 construction timeline
- Phased hiring approach (18 total positions)
- CIP timing (Ladder Tower & Brush Truck)