

# Fire Station Design

Final Programming and Design



CITY OF  
URBANA

# Fire Station Design

## Presentation Outline

- 1) Timeline & Process Overview
- 2) Station Design Presentation

## Project Team

City of Urbana: *Interdepartmental Team*

FGM Architects: *Architectural and Engineering Services*

P.J. Hoerr Inc. *Construction Management*

# Goals for Today's Presentation (1/16)

1. Preview Design
2. Identify any feedback that can be incorporated
3. Transition to Implementation
  1. Budget -> Bid -> Build

# Decision Making Framework

## Triple Constraint

### 1) **Scope:** Programming dictates design

- Meets operational minimum standards
- Incorporates Council direction & public feedback

### 2) **Time:** Delays will increase costs

- ~\$2.5M in DCEO funds that need to be spent by 6/30/2024
- Delay in bid date typically results in higher bids
- Existing Station degrading conditions
- Internal project management capacity & sequencing

### 3) **Cost:** Value added philosophy

- Weigh operational gains, future needs & CIP allocation as design considerations come up
- Any increase to cost must have clear long-term financial benefit to City
  - Life-cycle cost
  - Future expansion oriented
  - Opportunity cost
- Fire Operations , living quarter or design/aesthetic upgrades:
  - “Wants” (Value engineered out)

# Project Timeline

## 2019 – Facility Master Plan Development

- Fire Station 2 & 3 Identified as needing replacement (no programming analysis)

## 06/2021 – Facility Master Plan Concepts first incorporated into CIP

- \$4.3M Non-programmed replacement figure construction costs (BOE)

## 01/2022 – Station 2 new site purchased

## 05/2022 – FGM Architects Retained

- Programming analysis begins

## 01/2023 – Space Programming Analysis Complete

- \$9.9M Construction Cost Estimate (Program Space Estimate of SF 17,455)
- Incorporated Council direction and public engagement feedback
- “Base” Program w/ Bid Alternates for additions to be developed

## 05/2023 – Station 3 new site purchased

## 07/2023 – FY 24 Budget Development

- \$9.5M Construction Cost Allocated in CIP

## 08/2023 – Schematic Design

- \$10.7M Construction Cost (+\$750k) “Base” Program sized appropriately for future additions

## 10/2023 – 10% Design / Development Drawings

- \$15.1M Construction Cost (+\$4.4M total, inclusive of sitework).

## 01/2024 – 50% Design / Development Drawings

- **\$14.4M Construction Cost (\$-700k Net Reductions)**

# Drivers of Cost Increase

## **\$14.4M Construction Cost. ~\$4.4M more than initial programming assessment**

- Construction Cost per SF increase from \$570 to \$675. \$1.8M Total increase
  - \$650k Unanticipated Sitework
  - \$550k Geothermal inclusion
  - \$400k Electrical service upgrade (We are trying to eliminate this, but wont know until Construction Drawings)
  - \$200k General (~10/SF)

## **21,340 Square Feet. 3,885 more than initial programming assessment**

- Right Sizing for future \$1.0M
  - 1,300 SF Adjustment to interior rooms to accommodate future expansion.
  - 800 SF Adjustment to bays to accommodate all types of apparatus.
- +2 Bunk package bid package. \$600K
  - 800 SF Adjustment for 2-bed bid alternate
- 5.9% Increase in overall SF \$700K
  - 950 SF from Excel to Design; circulation, configuration, site layout, grossing factor

## **Value Engineering From 10% D/D State**

- -\$1.3M in gross reductions

# Change to Program

Geothermal included as part of the Base bid

- Bid alternate approach would require designing separate system
- Expect 30% rebate post construction
- In line with past and anticipates inclusion in future Mayor/Council Goals

# Change to Program

## Original Base Program was 2 Bay 6 Bunk (2/6)

- Bid Alternate 1 for 3<sup>rd</sup> bay (3/6)
- Bid Alternate 2 for 2 bunk addition (2/8)
- Original Base Program increased to accommodate any future expansion
- In response to 10% D/D, 2 Bunk Addition was incorporated into Base Program (2/8). 3<sup>rd</sup> bay alternate was eliminated.
  - Bid Alternate options become too complicated to design as discrete add-ons. Would require additional sets of drawings
    - Design Cost (*up to \$100k*)
    - Time Costs
      - Bids delayed (likely increasing bid costs) (*up to 5% or \$500k*)
      - Grant forfeiture risk increased (*up to \$2.5M*)

Deemed to be the most financially cost effective option while preserving maximum future flexibility



# Demand for Fire Service

**Calls for Service Analysis shows that from 2017 to 2023 UFD has seen a dramatic increase in calls for service**

- 38% Increase in Incidents
- Engine 251 (Station 1) and Engine 252 (Station 2) already the busiest stations, have seen the largest increase
- All types of calls increasing, but especially rescue/EMS
- # of Apparatus unchanged

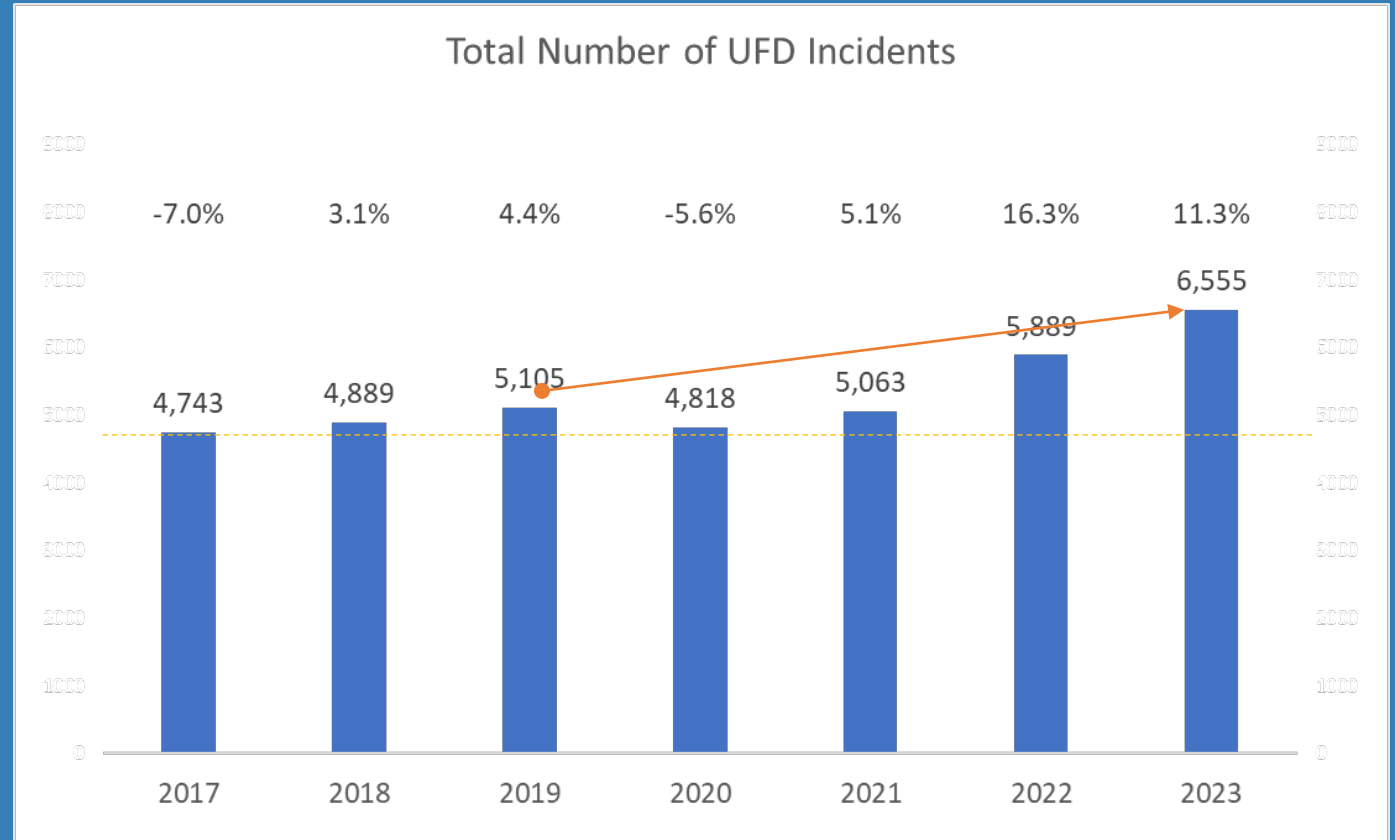
**Fire Construction Design Team doesn't speculate how future services will be provide and there are several ongoing/forthcoming analysis that will inform those decisions**

- BerryDunn Study Impacts
- Potential Ambulance Service Model Changes
- UIUC Fire Services Consultation Project
- Time to evaluate trendlines and operational response

# UFD Incident Totals

Pre-Covid Average ~5,000

2023 vs 2017: +38.2%



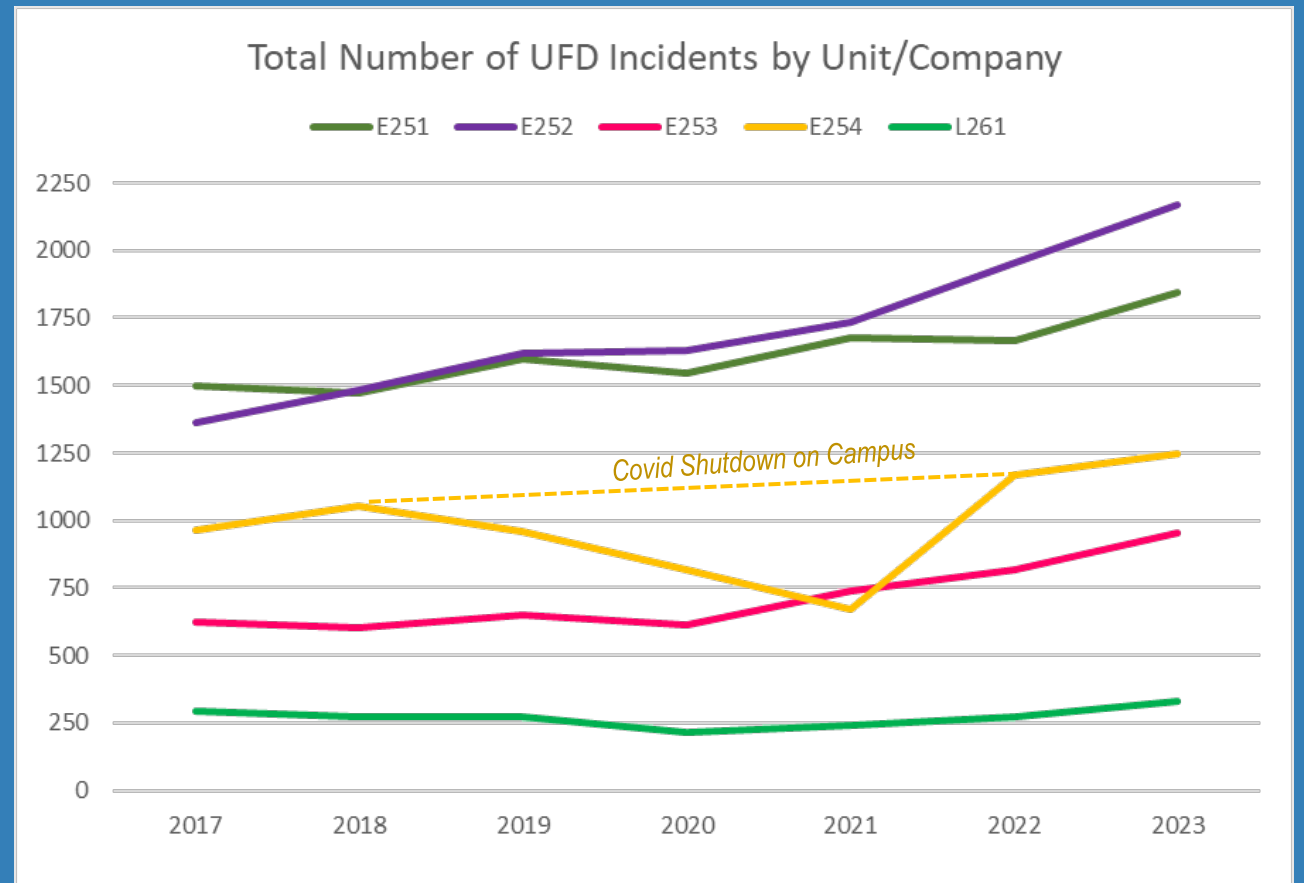
# UFD Incidents – By Unit

E252 is the busiest Engine

- 2,121 calls/year

Increase in Calls

- **E252: +807**
- E251: +342
- E254: +283
- E243: +330
- L261: + 40



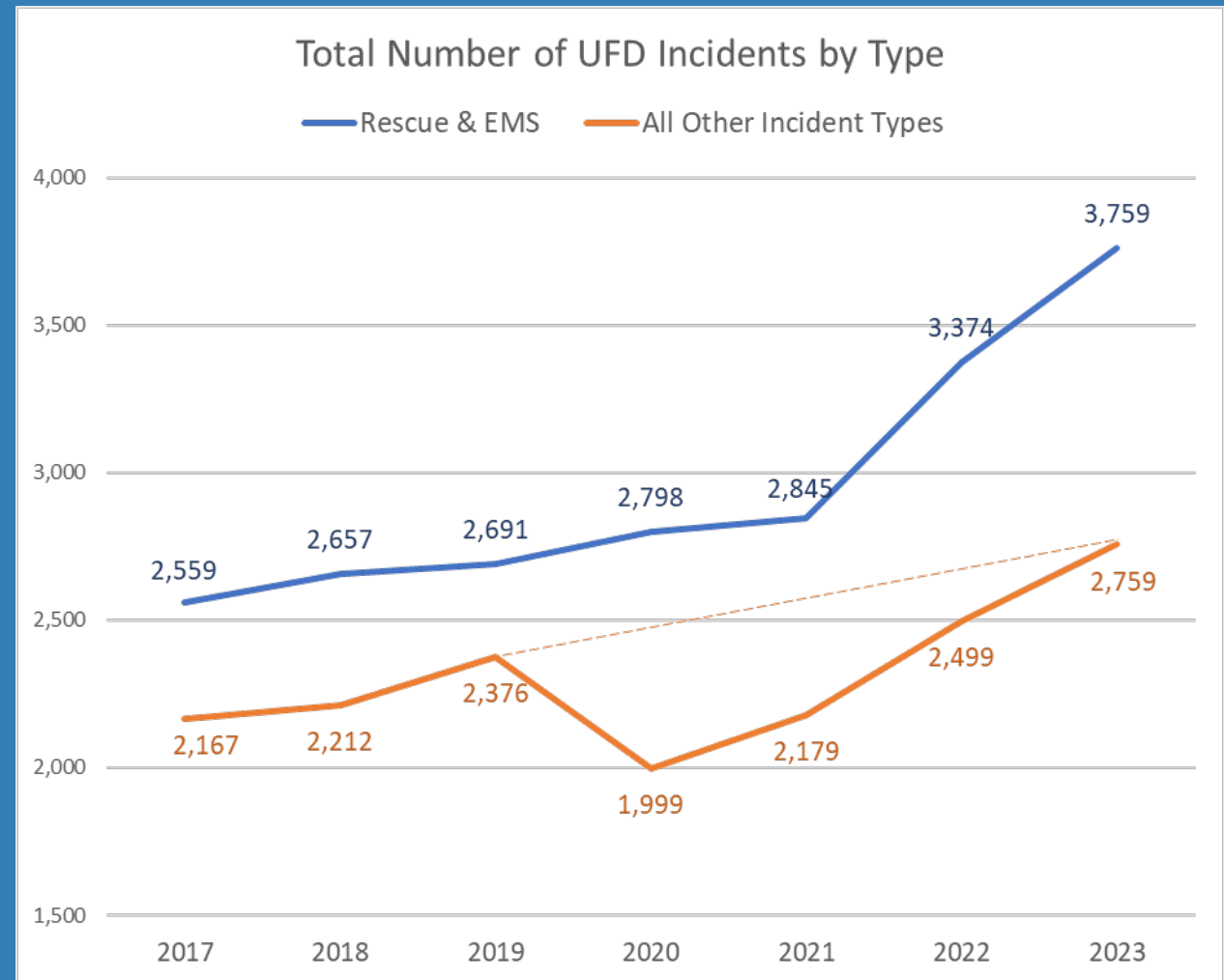
# UFD Incidents – By Type

## Rescue/EMS Call Increase

- +1,220 or 47%

## All Other Call Increase

- +592 or 27%



# UFD Incidents – Future Growth Uncertainty

Future growth uncertain

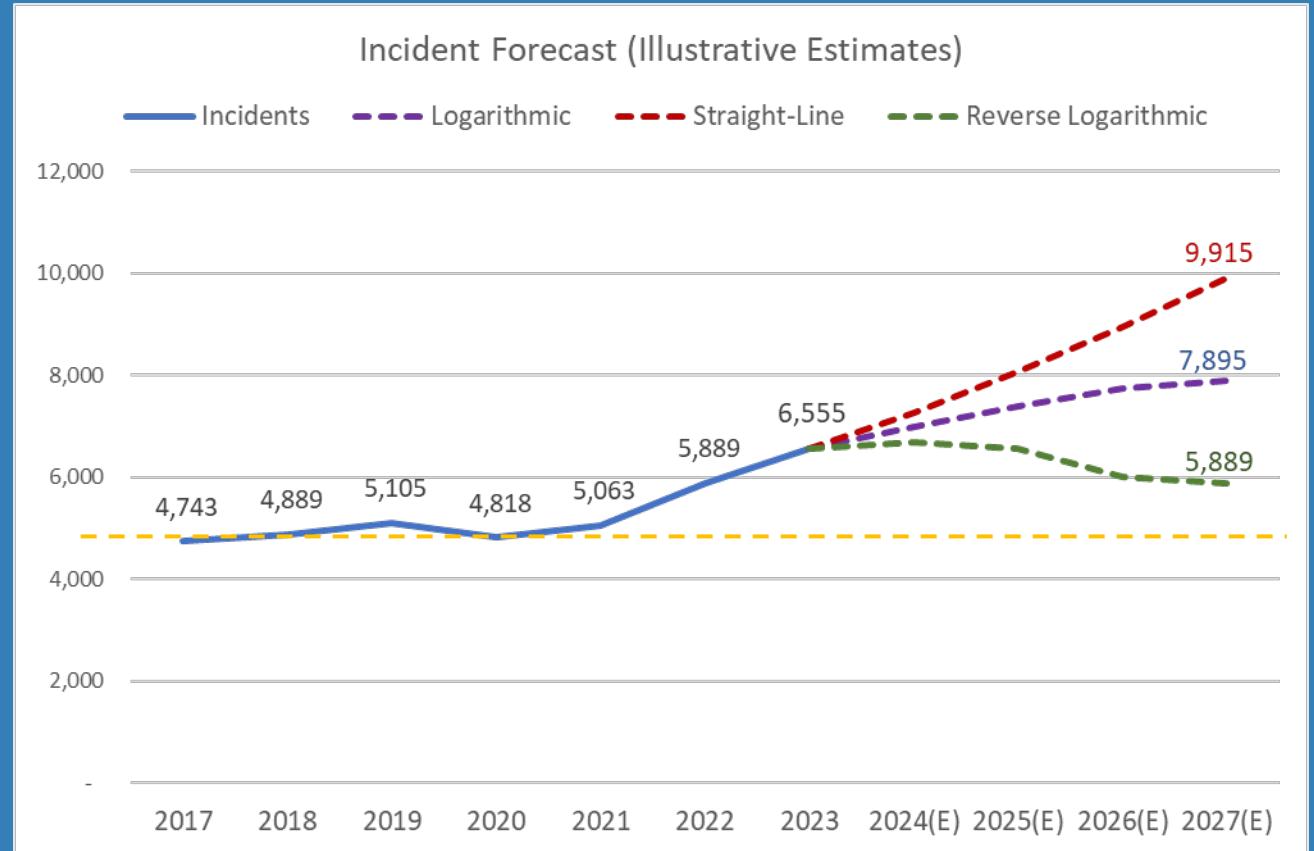
- Exogenous factors (population, per capita usage)
- Endogenous factors (public safety model(s) )

Illustrative Future Scenarios

**Growth Rate Continues**

**Growth Rate Stabilizes**

**Past Growth Dissipates**



# Next Steps

- Budget Amendment (2/5)
- Bid Date (3/12)
- Accept Bid
- Construction Begins (5/13)
- Deadline to Spend Grant Funds (06/30)
- Construction Complete (May 2025)