Tempe
Internal Audit

Memorandum

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THRU:	Bill Greene, City Auditor (X8982)
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	Maryam Coskun, Data & Research Analyst
DATE:	June 17, 2025
SUBJECT:	FINAL REPORT: GENERAL FIRE INSPECTIONS AUDIT

Attached is our final report on the subject audit. Copies of this report will be distributed to the mayor and council and posted to the Internal Audit Office website.

Thank you and your staff for your cooperation during this project.

General Fire Inspections Audit

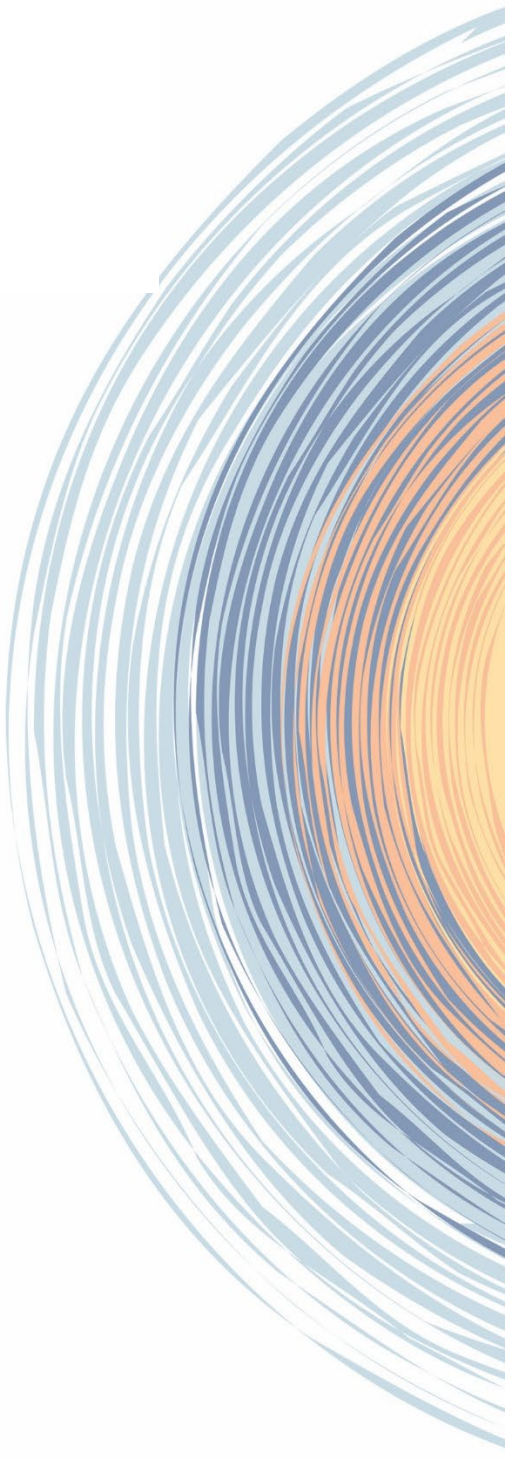
June 17, 2025

Project Team:

Bill Greene, City Auditor
Jaqueline Gerald, Senior Auditor

Mission Statement

To enhance and protect organizational value by providing high-quality, objective, risk-based audit and consulting services to assist the City in accomplishing strategic priorities, goals, and objectives.



Tempe
Internal Audit

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Executive Summary

Purpose

We audited Tempe Fire Medical Rescue Department's (TFMRD) Fire Prevention Inspection and Code Enforcement Program (Fire Prevention Program) to determine if general occupancy inspections are being conducted in accordance with City of Tempe (City) requirements and to identify potential improvements to the effectiveness or efficiency of the Fire Prevention Program.

Background

General fire inspections of existing occupancies are a vital service provided by TFMRD. These inspections are crucial for ensuring the safety of residents, protecting firefighters, and enabling effective emergency operations when needed.

Fire Inspectors assigned to TFMRD's Fire Prevention Division (Fire Prevention) conduct inspections to identify and eliminate fire and life safety hazards in compliance with the City Fire Code. These inspections also aim to promote safe practices and raise awareness about fire risks and their potential occurrence. TFMRD's goal is to inspect commercial occupancies based on community risk assessment guidelines, with a focus on high-hazard and moderate-hazard occupancies. The City has over 9,000 commercial occupancies subject to general fire inspections.

Results in Brief

The FY 23/24 TFMRD staffing study, prepared by the Fire Marshal, concluded that an optimal staffing level of 10 Fire Inspectors—an increase of three—is necessary to effectively meet the projected demands of the Fire Prevention Program. Opportunities also exist to implement fees that would generate revenue to support general inspections in the Fire Prevention Program, aligning with practices adopted by other jurisdictions in Arizona.

Our review of TFMRD's staffing analysis found it to be aligned with the National Fire Protection Association's (NFPA) guidance, with activity estimates that closely matched source data and accurately calculated figures. The analysis concluded that additional staffing is needed to meet projected Fire Prevention activity levels.

A survey of nine other Arizona cities showed:

- Five cities impose dedicated fees on commercial property owners for general occupancy fire inspections.
- Two cities do not charge directly for inspections but generate revenue for fire prevention programs through fees collected by a third-party vendor.

- One jurisdiction provides the initial inspection at no cost but recently implemented a fee schedule for re-inspections when violations are not corrected within the required timeframe.

Controls are in place to help ensure that general occupancy inspections are conducted in accordance with the City Fire Code, Community Risk Assessment (CRA) guidelines, and NFPA's Standard 1730. However, enhancing ImageTrend's functionality could further strengthen the control environment and improve overall operational efficiency.

ImageTrend (a comprehensive data management, reporting, and analytics software used by TFMRD for emergency medical services, incident reporting, inspection records and other fire functions) provides a good foundation for inspections, offering features aligned with the 2018 International Fire Code (IFC) and local City codes, including checklists and violation references, and inspector time-tracking. However, to maintain alignment with the latest best practices outlined in the 2021 and 2024 IFC revisions and to fully support adherence to NFPA Standard 1730 and CRA guidelines, updates to ImageTrend and related training are needed. Additionally, providing Information Technology Department (ITD) support for the application could further strengthen its reliability. Streamlining data entry processes through integration and enhanced validation features, along with offering improved data visibility, could also contribute to greater operational efficiency and data integrity.

Although our analysis of ImageTrend data identified some errors and inconsistencies in the inspection records, we did not find any major issues that would suggest the data is unreliable. However, due to limitations in source data capture and the lack of system reconciliation, we could not conclusively confirm that ImageTrend contains a complete inventory of all occupancies in Tempe.

While Accela is the system that serves as the primary source of occupancy data for ImageTrend, it only captures new construction projects or tenant improvements at locations where proper City permits have been obtained. As a result, businesses that are remodeled and opened without the appropriate permits may not be reflected in ImageTrend. Furthermore, the absence of a common key field, standardized address format, or consistent naming convention for occupant names in either system prevented efforts to perform a comprehensive system reconciliation.

Fire Prevention has implemented a CRA process as the foundation for its Fire Prevention Program. However, due to staffing and resource limitations, TFMRD is unable to fully meet NFPA standards and CRA guidelines for the timely completion of general inspections as outlined in its current CRA plan.

According to NFPA Standard 1730, Chapter 6, the CRA serves as the foundation for developing a Fire Prevention Program. The standard specifies minimum inspection frequencies for existing occupancies based on their risk classification. For instance, high-risk occupancies are recommended to be inspected more frequently than low-risk ones.

Results taken from TFRMD's FY23/24 staffing study shows inspection rates below guidelines established in the current CRA plan (see Table below).

TFRMD Inspection Rates

	High-Risk	Moderate-Risk	Low-Risk
# of Inspections Performed Last Year	1,051	358	411
# of Occupancies due for Inspection*	1,311	889	1,979
Percent Inspected	**80%**	**40%**	**21%**
NFPA / Community Guidelines	100%	100%	100%

*Assuming annual, bi-annual, and tri-annual inspections respectively.

Performance measures recommended by the NFPA and used by other jurisdictions should be evaluated for potential implementation.

Program performance measurements are essential for evaluating effectiveness, ensuring accountability, and identifying areas for improvement. By tracking key metrics, organizations can assess progress toward goals, allocate resources efficiently, and make data-driven decisions. Common performance metrics for general fire inspections typically address the following areas:

- Inspection Coverage
- Inspection Frequency Compliance
- Reinspection Rates
- Violation Resolution Time
- Occupancy Compliance Rate
- Workload Metrics
- Risk Reduction Impact
- Customer Satisfaction
- Program Efficiency
- Code Violation Trends
- Training and Certification Metrics

Recommendations

Our detailed report contains recommendations to further improve controls and efficiency.

Department Responses to Recommendations

Rec. #1.1: TFMRD research the feasibility of implementing a fee to enhance fire prevention resources and further support general occupancy fire inspections.	
***Response*: Complete** - Management is currently in the process of implementing a fee to enhance fire prevention resources and further support general occupancy fire inspections.	***Target Date*:** 7/1/2025
Rec. #2.1: Develop a plan for TFMRD to install ImageTrend software upgrades and provide inspector training that align with IFC 2024 requirements (with modifications) once approved by City Council.	
***Response*: Complete** - The 2024 IFC is uploaded in Image Trend and is ready for use once formally adopted by City Council.	***Target Date*:** 1/1/2026
Rec. #2.2: Develop staff information technology training strategy, including at a minimum, training on ImageTrend functionality to maximize the use of this software tool.	
***Response*:** One member of the division has attended the Annual Image Trend *Connect* conference the last two years. Management will explore additional training options/technical support available to maximize functionality.	***Target Date*:** 7/1/2026
Rec. #3.1: Consider implementing a quarterly review of occupancies with inconsistent data fields in ImageTrend.	
***Response*:** Management will explore the feasibility of an automated quarterly report from Image Trend to identify data entry errors.	***Target Date*:** 7/1/2025
Rec. #3.2: Fire Marshal provide training to Fire Inspectors on assigning NFPA risk rankings to ensure accuracy and consistency.	
***Response*:** Quarterly Risk Assessment training for Fire Inspectors has been implemented.	***Target Date*:** 3/1/2025
Rec. #3.3: Consider updating TFMRD's current CRA, taking into consideration factors unique to occupancies within the City, including demographics, fire experience, hazards and economic profiles.	
***Response*:** Management will collaborate with other city departments to obtain the necessary data needed to update the CRA.	***Target Date*:** 7/1/2027
Rec. #3.4: Consider updating TFMRD's current CRA, taking into consideration factors unique to occupancies within the City, including demographics, fire experience, hazards and economic profiles.	

***Response*:** Management will continue to strive to meet the inspection intervals outlined in NFPA1730.	***Target Date*:** 7/1/2027
Rec. #4.1: Review and correct as necessary the data errors in ImageTrend noted in this audit.	
***Response*:** Management will explore the feasibility of an automated quarterly report from Image Trend to identify data entry errors.	***Target Date*:** 7/1/2026
Rec. #4.2: Request the Information Technology Department to develop an application programming interface (API) between Accela and ImageTrend to ensure data completeness and facilitate the transfer of additional data to support data-driven management decisions.	
***Response*:** Management will confer with ITD to identify or develop a programming interface between Acela and Image Trend.	***Target Date*:** 7/1/2027
Rec. #4.3: Work with the ImageTrend consultant to identify and activate additional data input controls (e.g., required fields) within the application to enhance data accuracy.	
***Response*:** One member of the division has attended the Annual Image Trend Connect conference the last two years. Management will look continue this practice and explore additional training/ technical support options available to enhance data input controls.	***Target Date*:** 7/1/2027
Rec. #5.1: Consider implementing additional performance metrics to assist in evaluating the Fire Prevention Program.	
***Response*:** Management will explore additional Performance metrics to assist in evaluation fire prevention efforts.	***Target Date*:** 7/1/2027

1 – Fire Inspection Resources

Background

In addition to other responsibilities, TFMRD's Fire Prevention Division (Fire Prevention) is responsible for managing general fire inspections. During the audit process, Fire Prevention staff expressed several operational challenges that impact their ability to successfully complete general occupancy fire inspections:

- Limited Fire Prevention staff who also have many other competing priorities.
- A lack of job positions assigned to TFMRD with specialized information technology requirements. Out of necessity, IT support is often done by TFMRD staff positions, such as Fire Inspectors or Management Assistants.
- The amount of manual input required to populate and manage occupancy and inspection data.
- Insufficient time for training, especially on software tools used to support fire inspections.

Approach

We conducted the following steps to identify staffing and financial resources assigned to general occupancy fire inspections:

- Interviewed staff to gather insights into operational challenges and effectiveness.
- Identified the allocation of staff and budget resources to the Fire Prevention Program and more specifically general occupancy inspections.
- Reviewed the staffing level analysis completed by the TFMRD Fire Marshal for overall accuracy and consistency with the NFPA approved model.
- Determined if other jurisdictions charge user fees for general occupancy fire inspections.

Results

Based on Fire Prevention time data, we estimated about 18% of the Fire Prevention budget is allocated to general inspections. This translates into about 2 FTE of the 11 FTE in Fire Prevention and $212,000 of the total Fire Prevention budget.

According to the FY 2024/25 City of Tempe (City) budget, there are 11 full-time positions allocated to the TFMRD Fire Prevention Division identified as follows:

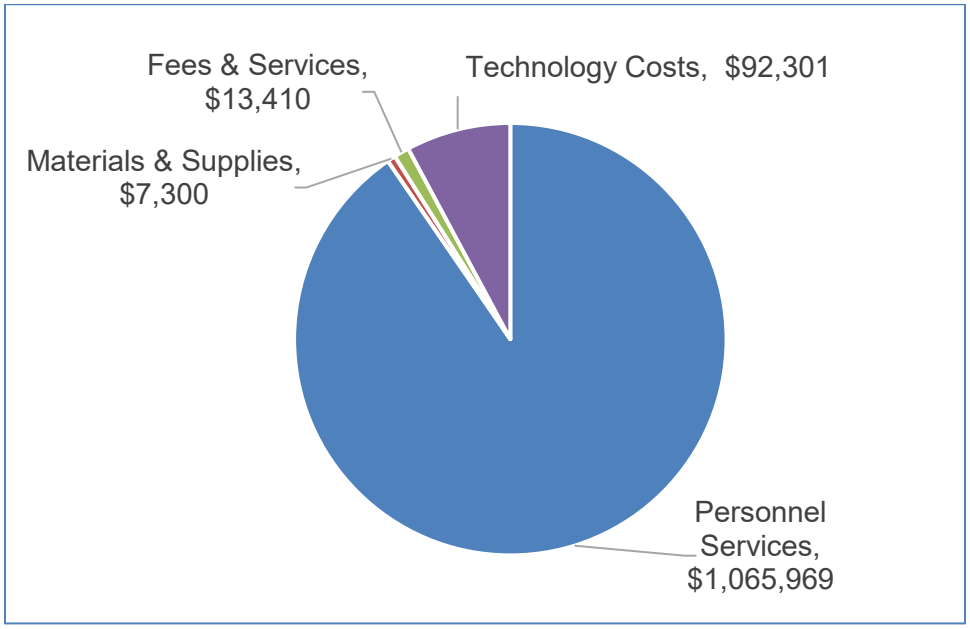
- Fire Marshal (1)
- ~~Assistant Fire Marshal (1)~~ [1]

[1] One Fire Inspector II is currently classified as the Assistant Fire Marshal in a special temporary detail.

- Fire Inspector II+ (7)
- Fire Education Specialist (1)
- Administrative Assistant II+ (1)

The total Fire Prevention budget is $1,178,980. Primary categories are shown in the chart below.

FY24/25 Fire Prevention Budget



According to Fire Prevention staff, only a portion of their time is allocated to general occupancy fire inspections. Primary activities conducted by Fire Prevention staff include the following, with general occupancy Fire inspections often taking lower priority:

- Building Plan Reviews - Construction Permits are required for the installation and modification of fire/or life-safety systems/equipment and for a broad range of operations and systems involving hazardous materials. Fire Prevention staff conduct reviews of building plans to ensure compliance with City code requirements.
- Building Site Inspections – A construction permit site inspection must be completed and passed before a certificate of occupancy is issued for newly constructed or modified structures.
- Fire Investigations - Fire Inspectors respond to fires, explosions, hazardous material releases and fire protection system activations to determine the cause, how to better mitigate, control and prevent similar incidents from re-occurrence.
- Special Event Consultations – Fire Inspectors review special event permit applications to identify and eliminate fire and life safety hazards. Operational permits are then issued if needed and inspected.

- General Occupancy Fire Inspections - Fire Inspectors conduct inspections of existing occupancies to identify and eliminate fire and life safety hazards in accordance with the City's Fire Code and to promote safe practices and awareness of fire and its potential for occurrence.
- Community Outreach – Fire Prevention staff provide the community with life safety education by teaching prevention to reduce life and property loss. The Fire Education Specialist makes presentations to schools, organizations, or businesses.
- Complaints - Fire Inspectors follow up on all complaints from the public regarding potential fire code issues and investigate their concerns.

We obtained calendar year 2024 timesheet data for Fire Prevention staff to determine what percentage of their time was spent on general occupancy fire inspection related activities. We calculated that about 18% of time was charged to general inspections, which translates into about 2 FTE of the 11 FTE in Fire Prevention and $212,000 of the total Fire Prevention budget.

The FY23/24 TFMRD staffing study, prepared by Fire Prevention staff, followed a methodology consistent with National Fire Protection Association (NFPA) guidance, was supported by ImageTrend data, and was mathematically accurate. The study concluded that an optimal staffing level of 10 Fire Inspectors—an increase of 3—would be necessary to effectively address Fire Prevention's projected FY24/25 activity levels.

TFMRD completed a staffing analysis based on a methodology recommended by the NFPA and data captured in the ImageTrend system (a comprehensive data management, reporting, and analytics software used by TFMRD for emergency medical services, incident reporting, inspection records and other fire functions).

The staffing analysis identified projected activities performed by Fire Prevention staff (e.g., number of inspections, plan reviews, construction inspections, investigations, etc.), and compared it to time demands and available personnel. Primary conclusions included:

- ***16,194*** *Hours to complete projected tasks and related activities*
- ***12,040*** *Total Available hours* (7 FTE's)
- ***1,720*** *Total available hours (Per year per FTE)*
- ***10*** *total Fire Inspectors required (vs 7 current)*
- ***2*** *Assistant Fire Marshals required*
- ***1*** *Fire Marshal required*

We compared the methodology used in the staffing analysis to the recommendations in NFPA Standard 1730, verified activity and time data against ImageTrend, confirmed mathematical accuracy of calculations, and evaluated estimates of available hours for inspections used. The staffing analysis aligned with NFPA guidance, the data materially matched ImageTrend, and the calculations were accurate.

Opportunities exist to implement fees that generate revenue to financially support Fire Prevention's general inspections, aligning with practices in other Arizona jurisdictions.

We surveyed nine other Arizona cities to assess whether they charge fees for general occupancy fire inspections. Of the jurisdictions reviewed, five impose dedicated fees on commercial property owners subject to these inspections. Two jurisdictions do not charge directly for inspections but generate revenue for fire prevention programs through fees incorporated into Brycer's Compliance Engine, a third-party software. One jurisdiction offers the initial inspection free of charge but recently adopted a fee schedule for re-inspections when violations are not corrected in a timely manner (see table below).

Fire Inspection Fee Survey

City	Fees?	Comments
City of Tempe	**No**	
City of Chandler	No[2]	No inspection fee – but charge for reinspection if violations not corrected.
City of Gilbert	Yes	$50 Annual Hi-Risk/$15 Low Risk
City of Glendale	No[1]	Attached a $25 fee to the Brycer fee (total fee of $50)
City of Goodyear	No	
City of Mesa	Yes	Annual fee assessed based on adopted schedule.
City of Peoria	Yes	Annual fee assessed based on adopted schedule.
City of Phoenix	Yes	Annual fee assessed based on adopted schedule.
City of Scottsdale	No[1]	Attached a $25 fee to the Brycer fee (total fee of $50)
City of Tucson	Yes	Inspection Fee Charged on an hourly basis plus a filing fee.

Footnotes:

1. Although direct general inspection fees are charged by the City, they have worked with Brycer to add a surcharge to the Compliance Engine fee for 3rd party inspections. Revenue from that fee is submitted to the City.

2. Chandler recently adopted the following reinspection fee schedule:
   - Initial Inspection; $0.00
   - Reinspection #1; $100.00 or $0.00 if violations are corrected
   - Reinspection #2; $150.00 or $0.00 if violations are corrected
   - Reinspection #3; $200.00 or $0.00 if violations are corrected
   - Reinspection #4+; $200.00 or $0.00 if violations are corrected

Recommendations

1.1 TFMRD research the feasibility of implementing a fee to enhance fire prevention resources and further support general occupancy fire inspections.

2 – Fire Inspection Controls

Background

The City adopted the 2018 International Fire Code (IFC) effective October 1, 2018. TFMRD has created amendments to the IFC, which have been incorporated into the City's Fire Code.

TFMRD Fire Inspectors are responsible for conducting general occupancy fire inspections under the direction of the Fire Marshal. These inspections are designed to ensure that occupancies adhere to the City's Fire Code, Annually, the TFMRD conducts over 4,000 general inspections (including re-inspections) of approximately 9,000 commercial occupancies within the City.

Approach

To verify if procedures and controls are in place to ensure general occupancy fire inspections are conducted as required, we conducted the following tests:

- Interviewed key staff responsible for managing and conducting general occupancy fire inspections.
- Gained an understanding of the general fire inspection process.
- Completed a Risk/Control Matrix to identify if controls are in place to address program risks and potential errors.
- Identified policies, procedures, tools, and templates used to support general occupancy inspections.
- Observed inspection processes in the field.
- Assessed the adequacy of documentation record-keeping practices.

Results

Controls are in place to help ensure that general occupancy inspections are conducted in accordance with the IFC, CRA guidelines, and NFPA Standard 1730. However, enhancing ImageTrend's functionality could further strengthen the control environment and improve overall operational efficiency.

Chapter 5 of the NFPA Standard 1730 establishes a process to identify and analyze community risks and requires Fire Prevention to categorize the risks based on their probability and impact. Fire Prevention has followed this process and provided the following guidelines:

TFMRD Community Risk Assessment Guidelines

Risk	Definition	Inspection Frequency
High	Higher probability of fires, high potential for loss of life or economic loss, also low or moderate probability of fires or loss of life but the occupants have a high dependency on the fire protection features or staff to evacuate. (Bars, Nightclubs, Hospitals, Apartments, Hotels, All High-Rise Buildings, Arenas)	Annually
Moderate	Moderate probability of fires or a moderate potential for loss of life or economic loss. (Restaurants, Retail Stores, Gas Stations, Warehouses)	Bi-Annually
Low	Low probability of fires and minimal potential for loss of life or economic loss. (Doctor's Offices, Strip Malls, Grocery Stores)	Tri-Annually
Critical	Assets, systems, and networks, physical or virtual, that are vital to the community and their damage or destruction would have a debilitating effect. (Telecommunications, Public Health, Energy, Transportation)	As Determined by Fire Chief

Inspecting high-risk occupancies more frequently is a good control because it focuses resources where they can have the greatest impact. The actual inspection process is the same regardless of risk ranking.

Inspections are designed with several administrative and physical controls to ensure thoroughness, accuracy, and compliance with fire safety regulations.

TFMRD Fire Prevention Inspections Process

Process Controls:	Ensures:
Inspectors are assigned occupancies by geographical area	Time is not wasted in transit and allows inspector to be more familiar with businesses moving in and out of the area.
Inspectors generally arrive unannounced	Occupants are not masking violations or unsafe conditions.
Inspectors are assigned tablets with standardized checklists available for use	Thoroughness, accuracy, and compliance with fire safety regulations.
Inspectors review accessibility	Fire lanes are clear and hydrants are accessible to fire crews.
Inspectors review the means of egress	Exits are clear, properly marked and functional.
Inspectors review suppression systems	Supression systems are being serviced, inspected regularly, and are properly located throughout the occupancy.
Inspectors review fire detection systems	Detection systems are: - being serviced and inspected regularly. - installed correctly. - the proper type for the potential hazards.
Inspectors assess on site storage	Hazardous materials are properly stored and with adequate ventilation.
Inspectors assess electrical safety	Circuits are not overloaded, extension cords are properly used, wiring is not exposed, and electrical panels have adequate clearance.

These controls work together to create a systematic and effective fire inspection process aimed at preventing fires and minimizing their potential impact.

TFMRD's ImageTrend system provides a foundational platform for Fire Prevention, facilitating key processes such as managing occupancy information, inspections and violation tracking, and field data collection. However, its current capabilities do not fully address opportunities for enhanced efficiency and more advanced functionalities. For example:

- Its controls are designed to comply with 2018 IFC standards and approved City Code modifications. Examples of these controls include standard inspection checklists, an IFC violation look-up table, and a timekeeping system for inspectors. However, since 2018, the IFC has been revised twice - once in 2021 and the most recent in 2024. City Council has not yet adopted the latest IFC's and ImageTrend has not been upgraded to reflect either of the updates. Inspectors have not been trained in the updated requirements and are not looking for violations of these standards. City Council is expected to adopt the 2024 IFC in July 2025.

IFC Key Changes Since 2018

2021 IFC	2024 IFC
• Provisions for 3D printing operations. • Requirements for permanently installed artificial vegetation. • Clarifications on sprinkler requirements for upholstered furniture and mattresses. • New requirement for automatic sprinkler systems in certain open parking garages. • Refined requirements for energy storage systems.	• A new section for storage of lithium-ion and lithium metal batteries. • A new section for hazards of charging micromobility devices. • Expanded requirements for Carbon Monoxide detection - all occupancies. • Provisions for safety of flammable refrigerants. • Refined requirements for spirits and wine storage. • New chapter for temporary heating and cooking operations.

- ITD does not provide support for ImageTrend (other than backing up the server it resides on) and TFMRD does not have an IT Specialist or Administrator to oversee the application. Various TFMRD staff handle vendor upgrades, new user profiles, and incidents as they arise but none of the staff are fully trained to provide full administrative support, including user account management, role-based access controls, password management, incident management, and restoration testing.

- The system requires all data to be manually entered. There are no interfaces with other systems and data entry controls are lacking. ImageTrend allows most

fields to be left blank (including risk level and inspector area assigned) and accepts invalid data in several fields, has limited use of drop-down menus, radio buttons, and date pickers to help ensure data input is correct. There are limited soft warnings and hard stops to identify errors in data entry.

- Because ImageTrend does not offer a user dashboard, management decisions are primarily report-driven. One Data Analyst generates reports and fulfills all information requests – despite not having formal training on the application's full capabilities.

- Due to time and staff constraints, legacy data from ImageTrend's predecessor (Firehouse) was not cleaned prior to being imported into ImageTrend. Legacy data often contains errors and inconsistencies that can affect quality of decision making.

Fire Prevention has implemented several controls to document and track violations resulting from general inspections, notify responsible occupants timely, and to re-inspect regularly to ensure violations are corrected.

We identified the following controls in place to ensure violations are identified and corrected:

- Fire Inspectors carry mobile tablets to each inspection allowing them to document every violation as soon as they identify it. The look-up table helps the Fire Inspector quickly identify the correct section of the code being violated and brings the code's standard wording into the inspection documentation.
- ImageTrend tracks and displays the original number of violations identified in each inspection alongside the number that remain outstanding after each re-inspection. This reduces the risk that Fire Inspectors will lose track of outstanding violations.
- Fire Inspectors can create Notifications of Violation (NOV) from within ImageTrend. Violations will auto-populate to ensure no violations are omitted, code is referenced, and language agrees with the City's Fire Code.
- Fire Inspectors send NOV's via email from within the system to ensure no errors in email address and to facilitate follow-up.
- An un-editable audit log in ImageTrend tracks all activity and updates to each inspection and includes the date and name of the inspector making the updates. Reinspection dates are tracked by each Fire Inspector in their Outlook calendar to help ensure tracking and timely follow-up.

The Brycer Compliance Engine (Brycer) is an important control process for ensuring fire detection, notification and suppression systems are inspected timely, especially for medium and low risk occupancies not currently being inspected by TFMRD.

Brycer is a free third-party web-based service that aggregates inspections, testing, and maintenance reports from independent fire systems equipment inspectors into a

centralized platform, streamlining compliance tracking for safety systems, such as smoke detection systems, sprinkler systems, and fire alarms. Benefits of this service include:

- Providing a single source for managing and monitoring safety systems and enhances safety by helping ensure regular fire system maintenance for occupancies of all risk-levels – especially medium and low risk occupancies that have not been inspected by TFMRD.
- Fire Inspectors are notified by Brycer of any inspections at new locations, allowing them to research the location and add them to ImageTrend if necessary.
- An interface between ImageTrend and the Bryer is expected by the end of the year, increasing efficiency and accuracy further by eliminating manual data entry between the two systems.

While Brycer provides valuable insights into the status of fire systems in many of the moderate and low risk occupancies, the follow-up required by Fire Inspectors to review reports from Brycer is time consuming and requires prioritizing of Fire Inspectors' time. General inspections performed by TFMRD's Fire Inspectors are not tracked in Brycer.

Recommendations

2.1 Develop a plan for TFMRD to install ImageTrend software upgrades and provide inspector training that align with IFC 2024 requirements (with modifications) once approved by City Council.

2.2 Develop staff information technology training strategy, including at a minimum, training on ImageTrend functionality to maximize the use of this software tool.

3 – Compliance Testing

Background

The NFPA identifies high-risk general occupancies as buildings or facilities that present an elevated risk to life safety, property, and emergency responders due to factors such as occupant load, fire load, hazardous materials, or the potential for rapid fire spread. These high-risk occupancies generally include:

1. **Assembly Occupancies** – Large gathering places such as theaters, stadiums, nightclubs, and banquet halls, where a high number of people may be unfamiliar with exits and evacuation procedures.
2. **Institutional Occupancies** – Hospitals, nursing homes, correctional facilities, and assisted living centers where occupants may have mobility limitations or require assistance during evacuation.
3. **Educational Occupancies** – Schools, daycare centers, and universities where a large number of children or young adults require structured evacuation plans.
4. **High-Hazard Industrial Occupancies** – Facilities handling flammable, combustible, or toxic materials, such as chemical plants, refineries, and manufacturing facilities.
5. **Residential High-Rise Buildings** – Apartments, hotels, and dormitories where multiple floors and a high occupant density can complicate evacuation.

Conducting annual inspections of these occupancies is critical to ensure code compliance, enhance life safety, identify fire hazards, reduce fire risk, and improve emergency response.

Approach

We conducted the following tests to verify if general inspections were conducted in compliance with key requirements.

- Sampled tested the accuracy and consistency of NFPA risk rankings assigned to City occupancies.
- Used audit software to test if high-risk properties were inspected on schedule. Specifically, we obtained download of all inspections and re-inspections for high-risk locations with pass/fail status and dates of inspections to verify the following:
    - All high-risk locations were inspected at least annually.
    - All high-risk inspections with resulting violations had re-inspections performed within 30 days until violations were cleared.
- Determined if follow-up actions were taken on identified violations. Using audit software, we identified a sample of outstanding violations and determined how long they have been outstanding and why.

Results

While most occupancies in ImageTrend appear to have the proper level of risk assigned, we identified several areas including institutions, factories, assembly halls, education centers and hazardous locations that need review.

We selected a sample of building class descriptions generally considered high-risk based on the NPFA and CRA guidelines and summarized them by risk level assigned in ImageTrend.

Building Class Description vs. Assigned Risk Level – Audit Sample Summary

High-Risk Building Class	Assigned Risk Level in ImageTrend			
	High	Moderate	Low	Other
Institutional	35	1	2	1
Factories	185	24	6	10
Assembly	41	5	0	1
Hazard	0	0	1	5
Nursing Homes	21	1	1	1
Preschool	25	3	6	0
Bars	20	17	5	3
Daycare	11	3	6	0

We reviewed the results with Fire Prevention staff noting some reasons for moderate, low or other risk ratings including:

- Inaccurate building class description, maximum occupancy or other information causing the occupancy to have been mislabeled, possibly from legacy system and not correctly updated.
- Unclear distinction between classifications, for example, bars and restaurants are often very similar in atmosphere and service. Training could help improve understanding between classifications and agreement among inspectors, but judgement may still differ.
- Unclear ownership of occupancy as some occupancies may reside in the City but fall under another agency's jurisdiction (i.e.. State, ASU)

A review of occupancies with high-risk characteristics assigned as moderate and low-risk would identify any occupancies that are not correctly classified and ensure they are inspected annually. Clarification from the Fire Marshal may be needed so Fire Inspectors are clear where there is some level of judgement.

Due to staffing and resource limitations as documented in the FY23/24 Staffing Study, TFMRD is unable to fully meet NFPA standards and CRA guidelines for the timely completion of general inspections as outlined in the current CRA.

The following information was taken from the FY23/24 staffing study:

	High-Risk	Moderate-Risk	Low-Risk
No. of Inspections Performed Last Year	1,051	358	411
No. of Occupancies due for Inspection*	1,311	889	1,979
Percent Inspected	**80%**	**40%**	**21%**
NFPA / Community Guidelines	100%	100%	100%

*assuming annual, bi-annual, and tri-annual inspections respectively.

TFRMD's community assessment guidelines follow the NFPA national standards. However, NFPA does allow for the guidelines to be adjusted based on the Fire Marshal's analysis of the profile data and the unique risks facing the community.

All occupancies that failed the annual general inspection last year were re-inspected during the same year and approximately 70% were re-inspected within 40 days.

While neither the NFPA nor the City Fire Code dictate how much time an occupant should be allowed prior to re-inspection, TFMRD assigns a 30-day reinspection date with each NOV. However, other factors need to be taken into consideration when evaluating the timeliness of re-inspections such as:

- Fire Inspector schedules and competing priorities
- Length of time needed for a violation to be reasonably corrected
- Occupant willingness and ability to cooperate

Recommendations

3.1 Consider implementing a quarterly review of occupancies with inconsistent data fields in ImageTrend.

3.2 Fire Marshal provide training to Fire Inspectors on assigning NFPA risk rankings to ensure accuracy and consistency.

3.3 Consider updating TFMRD's current CRA, taking into consideration factors unique to occupancies within the City, including demographics, fire experience, hazards and economic profiles.

3.4 Following the development of an updated CRA, create an occupancy inspection plan that aligns with the revised inspection intervals determined by the assigned risk levels.

4 – Data Integrity

Background

Fire Prevention relies on three primary applications as the main sources of data for general occupancy fire inspections:

ImageTrend - A comprehensive data management, reporting, and analytics software used by TFMRD for emergency medical services, incident reporting, inspection records, and other fire functions. Specifically for Fire Prevention, ImageTrend serves as the repository for all general occupancies in the City, facilitates the inspection process with inspection templates, documents fire inspection results and follow-ups, and tracks Fire Prevention staff time.

Accela - A permitting, licensing, and land management software used by the City's Community Development Department for processes such as permit management, plan review and approval, inspection scheduling and tracking, and code enforcement. Occupancies in Accela that have been issued certificates of occupancy serve as the "source data" for occupancies in the City (and ImageTrend) that require general fire inspections.

Brycer Compliance Engine – A third-party web-based software platform used to track and manage fire protection system inspections, testing, and maintenance (ITM) compliance conducted by independent inspection contractors. It helps fire departments and code enforcement agencies ensure that businesses and property owners maintain their fire protection systems in accordance with national and local fire codes. Brycer shares inspection results with TFMRD, and some of this data is manually entered into ImageTrend by Fire Prevention staff.

Approach

To verify the accuracy and completeness of data supporting the general fire inspections process, we:

- Attempted to verify that all commercial properties in the City subject to general fire inspections were entered into ImageTrend by reconciling Accela data with an external source and comparing Accela data to ImageTrend.
- Attempted to verify whether new property data from the Brycer Compliance Engine was included in ImageTrend by comparing addresses in both systems to identify any addresses in Brycer missing from ImageTrend and reviewing a sample of Brycer reports for completeness in ImageTrend.
- Used audit software (ACL) to identify for data anomalies and omissions in ImageTrend.

Results

While our ImageTrend data analysis revealed some errors and inconsistencies, we found no major issues that would indicate the inspections data is unreliable.

Out of approximately 4,400 inspections last year for over 9,000 occupancies, we identified potential errors as follows:

- 147 Inspections with no date
- 11 Occupancies with no risk level assigned
- 23 Occupancies with no Fire Inspector assigned

These errors are due largely to the lack of data input controls in ImageTrend.

Due to limitations in Accela's ability to capture all occupancy changes, as well as the lack of standardized address and naming conventions, a comprehensive reconciliation between Accela, ImageTrend, and Brycer was not feasible. As a result, we could not conclusively determine whether ImageTrend contains a complete inventory of all occupancies in Tempe.

Occupancy names and addresses are manually entered into ImageTrend by Fire Inspectors once plan reviews are completed, and Certificates of Occupancy are issued in Accela (i.e. Accela is the primary source of ImageTrend occupancies). However, Accela only captures new builds or tenant improvements at locations where occupants sought proper City permits. Locations that change occupancy, are remodeled, and opened for business without proper permits may not be captured in ImageTrend.

A reconciliation between Accela and ImageTrend was not possible due to the lack of a key identifier in Accela that could be used to identify only current occupants that were subject to general inspections. Additionally, there was no address standardization or naming convention applied to addresses and occupant names in either system. This is due, in part, to the fact that several buildings with different purposes, risk levels, occupancy names can exist within the same address. Each building can be identified separately or grouped together depending on the manual entry in each system.

Likewise, no reconciliation between Brycer and ImageTrend could be performed due to a lack of naming conventions and address standardization. However, out of a sample of 150 addresses in Brycer, 9 (6%) could not be matched with manual research.

Fire Inspectors review and enter Brycer's deficiency reports into ImageTrend timely.

Below is a summary of our testing of deficient reports in Brycer:

Sample Testing:
Deficient Reports - Brycer vs ImageTrend as of January 31, 2025

	Deficient Reports in Brycer	Entered into ImageTrend	Dated within Last 90 Days	%
Reviewed	846	843		99.6%
Unreviewed	26		25	96%

Recommendations

4.1 Review and correct as necessary the data errors in ImageTrend noted in this audit.

4.2 Request the Information Technology Department to develop an application programming interface (API) between Accela and ImageTrend to ensure data completeness and facilitate the transfer of additional data to support data-driven management decisions.

4.3 Work with the ImageTrend consultant to identify and activate additional data input controls (e.g., required fields) within the application to enhance data accuracy.

5 – Performance Measurement

Background

Program performance measurements are essential for evaluating effectiveness, ensuring accountability, and identifying areas for improvement. By tracking key metrics, organizations can assess progress toward goals, allocate resources efficiently, and make data-driven decisions. Regular performance evaluation also enhances transparency and helps demonstrate the program's value to stakeholders.

Approach

To review TFMRD's performance measures and other recommended measures used to evaluate the performance of a general fire inspections withing the Fire Prevention Program, we:

- Identified performance measures used by the TFMRD Fire Prevention Program and reviewed key measures for accuracy.
- Identified performance measures used by other jurisdictions or recommended by recognized industry experts.

Results

Fire Prevention implemented a CRA process as the foundation for developing a fire prevention inspection and code enforcement program. Additionally, they track performance for a key general occupancy fire inspection metric: the percentage of high-risk facilities inspected.

According to NFPA Standard 1730, Chapter 6, the Community Risk Assessment (CRA) serves as the foundation for developing a fire prevention inspection and code enforcement program. The standard specifies minimum inspection frequencies for existing occupancies based on their risk classification. For instance, high-risk occupancies are recommended to be inspected more frequently than low-risk ones.

TFMRD's primary performance measure for general occupancy fire inspections is: **1.14 Percent of High-Risk Facilities Inspected**. This performance measure is associated with the City Council Strategic Priority of Safe and Secure Communities and is scheduled to be updated annually.

Refining the calculation method for percentage of high-risk occupancies inspected annually would likely yield a more accurate and potentially higher percentage than the current 80% estimate.

Per the FY23/24 Staffing Study, there were approximately 1,311 high-risk / critical occupancies as of October 1, 2024, and Fire Inspectors conducted 1,051 high-risk inspections, meaning Fire Prevention inspected approximately 80% of high-risk and critical occupancies last year. Our independent calculation of 78% of high-risk

occupancies inspected in the last year using our downloads obtained from ImageTrend on November 13, 2024, support the Fire Staffing Study. However, we researched a sample of high-risk occupancies that were not inspected last year to determine the reason they were not inspected. We found valid reasons for approximately 30%. For example:

- To minimize commute time, Fire Inspectors move through their assigned sections of the City, inspecting all high-risk occupancies in each area before moving to the next, meaning if a high-risk occupancy did not receive certificate of occupancy until later in the year, after the assigned Fire Inspector had already been through the area, they would not be inspected until the following year.

- When high-risk occupancies close, Fire Inspectors enter an occupant end-date into ImageTrend. However, if no end-date has been entered or occupancies with end-dates have not been filtered out of the total number of high-risk occupancies, the occupancies would count as not having been inspected.

While our sample was nonstatistical and cannot be extrapolated to the whole population, we can conclude that taking into consideration these types of issues when calculating the percentage of High-risk occupancies would likely provide a more accurate and potentially higher estimate of high-risk occupancies inspected annually.

Other performance measures recommended by the NFPA and used by other jurisdictions should be evaluated for potential implementation.

Our research showed other performance measures recommended by NFPA and/or used by other jurisdictions. Some of the common measures include:

1. **Inspection Coverage**:
    - Percentage of required inspections completed within a specified time frame (e.g., annually or per occupancy risk level).
    - Tracks adherence to inspection schedules based on occupancy type and community risk.
2. **Inspection Frequency Compliance**:
    - Measures how well the program adheres to the required frequency of inspections for various occupancy types as determined by the Community Risk Assessment (CRA).
3. **Reinspection Rates**:
    - Tracks the number of follow-up inspections required due to violations or non-compliance found during initial inspections.
    - High rates might indicate issues with initial inspections or challenges in achieving compliance.
4. **Violation Resolution Time**:

- Measures the average time it takes to resolve identified violations after an inspection.
- Indicates the efficiency of enforcement and the cooperation of property owners.

5. **Occupancy Compliance Rate**:
   - Percentage of inspected occupancies found to be in compliance with applicable codes during the initial inspection.
   - Helps assess the effectiveness of fire safety education and code awareness among property owners.
6. **Workload Metrics**:
   - Number of inspections conducted per inspector per day, week, or year.
   - Assists in balancing inspector workloads and identifying staffing needs.
7. **Risk Reduction Impact**:
   - Tracks reductions in risks associated with specific hazards (e.g., fire protection system deficiencies, blocked exits).
   - Links inspection activities to tangible improvements in community safety.
8. **Customer Satisfaction**:
   - Surveys or feedback from property owners and managers regarding the inspection process.
   - Helps gauge the professionalism and effectiveness of the fire prevention team.
9. **Program Efficiency**:
   - Ratio of completed inspections to available staffing hours or costs.
   - Measures the cost-effectiveness of the fire inspection program.
10. **Code Violation Trends**:
    - Monitors trends in recurring violations by type, location, or occupancy.
    - Provides insight into areas where targeted education or enforcement is needed.
11. **Training and Certification Metrics**:
    - Percentage of inspectors meeting required certifications and continuing education benchmarks.
    - Ensures that the inspection team maintains high competency levels.

The NFPA recommends performance metrics be tied to the goals identified in the CRA and aligned with the organization's overall objectives for fire prevention. Regular evaluation of these metrics enables fire prevention programs to demonstrate accountability, improve performance, and adapt to changing community needs.

Recommendations

5.1 Consider implementing additional performance metrics to assist in evaluating the Fire Prevention Program.

Scope, Methods, and Standards

Scope

Our audit focused on current general fire inspection policies, procedures, tools, and controls in place at the time of our review. System data (ImageTrend and Accela) reviewed and tested ranged from FY 23/24 data supporting a staffing analysis through available "to date" data pulled to support specific testing (e.g., review of inspection data pulled in November 2024).

Methods

We used the following methods to complete this audit:

- Interviewed Fire Prevention staff.
- Researched industry standard criteria such as NFPA 1730.
- Reviewed program budget documents and staffing analyses.
- Identified policies, procedures, tools, and templates used to support general occupancy inspections.
- Surveyed other jurisdictions regarding fire inspection fees.
- Gained an understanding of the general fire inspection process.
- Completed a Risk/Control Matrix to identify if controls are in place to address program risks and potential errors.
- Observed inspection processes in the field and assessed the adequacy of documentation record-keeping practices.
- Used ACL to identify for data analysis and testing.

Unless otherwise stated in the report, all sampling in this audit was conducted using a judgmental methodology to maximize efficiency based on auditor knowledge of the population being tested. As such, sample results cannot be extrapolated to the entire population and are limited to a discussion of only those items reviewed.