Response Time and Staffing Analysis Model for the Houston Fire Department

Fire Prevention

The HFD has a Fire Prevention and Life Safety Bureau (Bureau) that includes approximately 126 uniformed staff and 22 support staff. The Bureau provides fire code compliance inspections and permit inspections services to the City of Houston. . The Bureau also has staff housed in the Building Department for some limited plans review activity.

The HFD Fire Prevention and Life Safety Bureau (Bureau) has been the subject of a number of reports in the Houston media in the recent past. These media reports, as is often the case, portray only part of the story. We found that HFD Bureau staff and leadership have a profound concern for the safety of the people of Houston, visitors to Houston, and for the safety of Houston firefighters.

While Bureau personal were passionate about their work, the Bureau is limited by two significant barriers. The first is a lack of support resources that cannot be fully ascribed to Bureau management. The second is a lack of an overall management approach to their work that is risk-based and includes input from the people that do the work. Neither of these barriers was created overnight and a comprehensive solution to these issues will take time.

The Bureau is limited by the lack of appropriate hardware and software to complete the basic tasks of the Bureau. This includes basic tools such as vehicles for inspectors and a functional digital inspection data management system. A functional inspection management system is a force multiplier that can dramatically improve efficiency, promote standardization of inspections, and allow management to monitor inspector performance, track recurring violations, and focus fire prevention efforts on risk.

The Bureau is also limited by a lack of management direction for Bureau operations. This lack of direction is not attributable to any failing on the part of the current Fire Marshal; it has developed over time. Many Bureau operations are the result of tradition or a reflex reaction to the way things have always been done. The Bureau is fragmented in its mission and individual staff members are sometimes forced to or allowed to develop their own work rules and approaches. This can be frustrating to the Bureau's customers as they expect consistency in the application of the Houston Fire Code.

We found that the Bureau is in need of some basic management tools – a mission statement and a strategic plan. It is important that these management tools be developed as a collaborative effort between the Bureau's customers, the Mayor's Office, other Houston departments with a stake in the development process, HFD executive staff, and – very importantly – the rank and file people in the Bureau that do the work.

The observations and recommendations in this report are intended to allow the HFD and the City of Houston to assess the current situation in the Bureau, make the changes necessary to improve the level of service provided, and make organizational changes needed to succeed.

While only a part of this larger study, the assessment and development of a path forward for the Bureau could be the subject of a more focused and thorough study.

The Bureau is divided into the following functional areas:

- Permit Inspections
- Night and Weekend Inspections (Bars and Assembly Inspections)

- Special Operations Inspections (events at the Convention Center, 3 airports)
- Institutional Inspections (hospitals, schools, foster homes)
- Plan Review (hazardous materials, high pile storage, and tank farms only)
- Hazardous Materials and High-Pile Storage Inspections
- Apartment (Multi-Family) Inspections
- High-Rise Inspections
- Inspections Resulting from Complaints (of code violations)
- District Inspections (general occupancies such as day care, strip malls, hot work)
- General Problem and Code Interpretation Resolution

The FACETS fire prevention study team included two (2) fire prevention subject matter experts who spent 2½ days interviewing the fire prevention staff. During this time, they interviewed about thirty (30) members of the Bureau including the Fire Marshal and most supervisors. Some interviews included multiple Bureau staff members and some were one on one. No support staff members were interviewed.

It was very evident to the consultants that the Bureau staff that we had contact with were very passionate about their work. The personal commitment to their work was apparent. The positive attitude about their work is to be commended.

The FACETS fire prevention assessment team reviewed no reports, data or documents generated by the Bureau. These common documents to reflect the generated work and the outcomes of that work are not available. The fact that these do not exist demonstrates the lack of information collected and used to manage the Bureau.

Many inspectors spoke of the responsibility they have in fire prevention for keeping Houston firefighters safe. Many inspectors have been innovative in getting information needed to accomplish their job responsibilities such as using an open records request to get a list of high-rise buildings from Harris County and working with the Houston Apartment Association.

One supervising inspector requires the staff to scan all records and reports to ensure an electronic back up copy is available. This is a best practice that will benefit the Bureau if implemented by all work groups. It demonstrates the personal initiative observed of inspectors to achieve even when restrained by too few resources and a cumbersome information management system (ILMS) used by the Houston Building Department.

The inspectors interviewed reflected excellent customer service in their interaction with building owner/occupants in conducting their inspections. “We sell fire prevention first and we enforce the code second” was one memorable statement. This customer service includes staff spending much time learning about the code of record to ensure the code requirements at the time the building was constructed are applied to inspections.

The city is to be commended for the life safety provided to the people of Houston through the retroactive high-rise building fire sprinkler ordinance requiring all high-rise buildings to be protected.

Inspections

The Bureau staff is organized and work assigned based on inspecting different type/classification of occupancies. This includes high-rise inspectors, hazardous materials inspectors, school inspectors and others. The work assignments of some inspectors is based on geography. This division of labor has merit, with staff specializing in the specific fire codes and hazards associated with those occupancies.

Staff working in a finite geographical area is also efficient.

Some inspections are also prompted by complaints of fire code violations/hazards, with some of these coming to the Bureau from Houston firefighters. There is no uniform or consistent method for fire department emergency responders to report fire code violations (called complaints) they observe to the appropriate Bureau staff for follow-up.

The Bureau needs to know the number of inspections required, the number of inspections completed, the number of code violations corrected, the number of permits issued, the number of citations, the number of re-inspections, and other measurements of the Bureau workloads and effectiveness. This will provide a basis to assess appropriate staffing for the Bureau.

Each of these inspection units operates independently. There is no standard inspection form or methods in the Bureau. Individual inspectors have developed their own forms within some units. Efficiency and effectiveness are hindered by these practices.

The actual number of high-rises, hazardous material, and other types of occupancies in Houston was stated to the team as unknown. It appears that the Building Department may have an inventory of that data, but it was not readily available for this assessment from the Bureau staff. It was reported that there are 6,800 apartments in Houston, but other staff says the number is unknown to the Bureau. This is another example of the isolation of inspection units.

Other assessment about some of the specific inspection categories is below

Institution Inspections

Within the Bureau there are a number of assigned inspectors who target special locations/occupancies. These occupancies include hospitals, jails, nursing homes, assisted living facilities, and schools. These can be important inspections, but are also locations that can be specifically managed utilizing a risk assessment and mitigation process. Indications are that most inspectors have high, but manageable, inspection numbers per individual. However, school inspectors seemed to report a lower than normal load of 60 to 70 schools (or locations) per inspector. These could likely be increased if managed appropriately.

Apartment Inspections

There are an exceptionally large number of apartments in Houston. As throughout the United States, these are high risk occupancies based on the type of construction, concentration of life hazard and frequently unmonitored activities that occur within each apartment unit. A unique program that was rolled out as the 360 Inspection program is a good attempt to address the issues related to this overwhelming number of inspections. It seemed that buy-in from the entire staff was limited, but the approach had merit for consideration.

District Inspections

Bureau staff inspects general business occupancies for fire and life safety hazards and code compliance. These types of inspections are typically the bulk of a Bureau's workload and include all types of businesses such as stores, restaurants, and offices. Staff reports that less than 20% of the inventories of existing businesses are being inspected regularly. This is principally due to limited staff and large geographical areas to cover. Each district inspector conducts about 1,100 inspections each year. This number is anecdotal. This is on par with typical workloads for other similar sized departments. This staff also is responsible for inspections for certificate of occupancy to insure the owner/occupant has required permits.

High-Rise Inspections

There were reported to be six (6) high-rise inspectors assigned to this unit. The total inventory of high rises in the City of Houston was reported to be around 600 to 700 structures. This group utilizes Google Maps to mark the assigned high rise locations and cover around 115 inspections per inspector per year. Some comments seemed to indicate that standard operating procedures for inspections of these occupancies were inconsistent, if available at all. This could be an area for more focus and improvement.

The bureau needs an inventory/census to know exactly how many high rise buildings are in Houston. This exact count can be used as the basis to manage the unit. When this and other essential data is in hand then the 360 Degree Program will have the elements to be successful.

Fire Prevention Resources

The level of support resources provided to the Bureau is minimal and it impacts the Bureau's ability to work efficiently. For example, there are currently more Bureau staff members assigned to work in the field than there are vehicles available for them to use.

Computer hardware failure is a reality that constrains the capability of the staff to perform basic tasks. Mobile devices may be part of the information technology solution for the Bureau.

Internal and external decision makers will benefit from regular financial reports about the city revenue generated by fire permit fees. It is important that the impact of these fees be considered a revenue offset for necessary Bureau resources as the Bureau budget is determined. Additional resources for the Bureau will improve fire prevention productivity and increase revenue from the fire permit fees.

The Bureau is constrained by the use of a city data management system, Integrated Land Management System (ILMS), used principally by the Planning and Building (P&D) departments. This system is available to and used by the Bureau staff but the functionality for fire inspections appear limited. We were told that any requests for modifications or upgrades, including ad hoc reports are costly. Building stock and occupancy classifications, as well as land use data is critical for determining risk information and conducting risk analysis. Providing access to necessary components of ILMS or procuring other enterprise software that allows this data collection and analysis is essential for efficient and cost effective fire prevention program management. It is evident that the lack of an information management system that meets the needs of the Bureau is a major hindrance to their work. The work of the Bureau is made more difficult by the necessity to develop a work-around to make ILMS "work" for their applications. The time and effort to use this system is a detriment on a daily basis to the work of the Bureau.

Recommendation 36:

Provide basic resources for the Fire Prevention and Life Safety Bureau commensurate with the organization's mission. This includes a reliable vehicle for each inspector and a working computer or appropriate mobile device with IT/help desk support.

This solution will impact the entire scope of the Bureau. It will include transitioning from paper inspection forms to electronic and to standardizing the many different inspection forms used throughout the Bureau. When this recommendation is fully implemented, Bureau staff will complete an inspection, receive the owner/occupant signature (electronically on a tablet, for example), and print or email the report for the owner/occupant on site, removing the necessity to travel to Bureau offices and then return to the location to provide a report to the owner/

Recommendation 37:

Provide an information technology (enterprise software) solution for fire inspection forms, reports, notifications, and other basic and advanced inspection tasks.

occupant. This solution should also provide reporting on inspection activities and common problems found during inspections to enhance Bureau management and analysis of information.

The inspection staff operates with a high level of inefficiency using various paper forms for actual inspections and then entering the same data a second time electronically, printing the report, preparing the notice of violations for the owner/occupant. The inspectors then return to the property to deliver the notice for signature. These functions are managed with high efficiency in fire departments across America using common information technology (computers, mobile devices and software). This is a priority for the Bureau.

The HFD currently uses the commercial fire department management software, FIREHOUSE, but it is not available to the Bureau. This software should be considered to meet the records management needs of the Bureau. It also could be used for communication between the Bureau and emergency responders in fire stations when inspectors identify hazards. The city P&D Department also has GIS available to all departments that may have capabilities to support some needs of the Bureau. The Bureau does not utilize these capabilities. This is information directly from the City of Houston web site:

GIS is a computer system capable of capturing, storing, analyzing, and displaying geographically referenced information or data. The P&D Department has developed an enterprise level GIS to serve the entire City of Houston. The goal of the GIS division is to serve the geographic information system and geospatial needs of the City of Houston across departments and among all staff and the people of Houston. (http://www.houstontx.gov/planning/GIS/GIS.html)

In mid-2016, the Bureau began to roll out tablet computers to Bureau inspection staff. These tablets incorporate software that allows inspectors to record the results of their inspections and FAX or email reports directly to the building's responsible party. The tablets interface with the ILMS system.

The distribution of this technology began with high rise inspectors and will proceed through inspectors in other occupancy types. The Bureau has 120 of the ruggedized tablets in hand, enough to provide this tool to all field inspections staff. There are also plans to use the same technology for Arson Investigations staff in the future.

Organizational Management

During the interviews FACETS staff conducted with Bureau personnel, it was immediately apparent that there are some significant organizational obstacles within the Bureau. Many organizations have some disconnect between lower level staff and upper management. There appears to be significant communication gaps and philosophical issues that are barriers to accomplishing the prevention and life safety mission within the Bureau. Communication is most often the root of many organizational issues and it appears that a lack of good communication practices is endemic within the Fire Prevention and Life Safety Bureau. As an example, Bureau staff commented that they were unfamiliar with the current organizational structure and personnel assignments due to changes that occurred in April of 2015. In December 2015, when we referred to organizational charts provided to the FACETS Team, staff asked for copies saying they had not seen the new Bureau organization charts.