



2016

Glendale Fire Department

Community Risk Assessment

Standards of Cover

CRA-SOC



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## EXECUTIVE SUMMARY

The Community Risk Assessment – Standards of Cover presents a comprehensive review of risks and resources to evaluate the effectiveness of the response plan in each square mile Planning Zone.

### **Area Characteristics**

This section describes the community in detail, its geographic location and features, transportation infrastructure, demographics and distribution of assets in each Zone.

### **Community Risk Assessment**

The risk assessment narrows the focus, concentrating on the specific risks and hazards contained in each Zone. Occupancies recorded in the department's Occupancy database are classified according to the International Building Code. They are quantified and reviewed, and are geolocated on corresponding maps in the Map section to provide a visual representation of risk distribution. New development projects provided by the City Planning Department are identified by Zone and assessed for coverage and potential impact on service demand. A five-year incident and response time history is provided in map format, for each type of incident (ALS, BLS, Fire, Hazmat, TRT) in each Zone. The risk assessment includes the overall risk score for each Zone, based on population, socio-economics, hazards, and call volume.

### **Programs and Services**

This section states the department's goals and objectives; lists the department's programs; and lists the financial and physical resources available to deliver services.

### **Response Strategies**

Included in the response strategies are the operational definitions of risk, the Volume II Standard Operating Procedures, incident critical tasking, incident outcome objectives and response time objectives for each incident type. Distribution and Concentration are evaluated, including a map of the local and automatic aid resources that provide coverage.

### **Performance Evaluation**

The department's response time benchmarks and baselines are defined, and performance is measured against a five year response time history of each incident type.

### **Response Capabilities Maintenance/Improvement Plan**

This section lists the department's strategies to maintain and improve service delivery

### **Maps**

This section contains maps that support the information provided in the document.

### **Appendix**

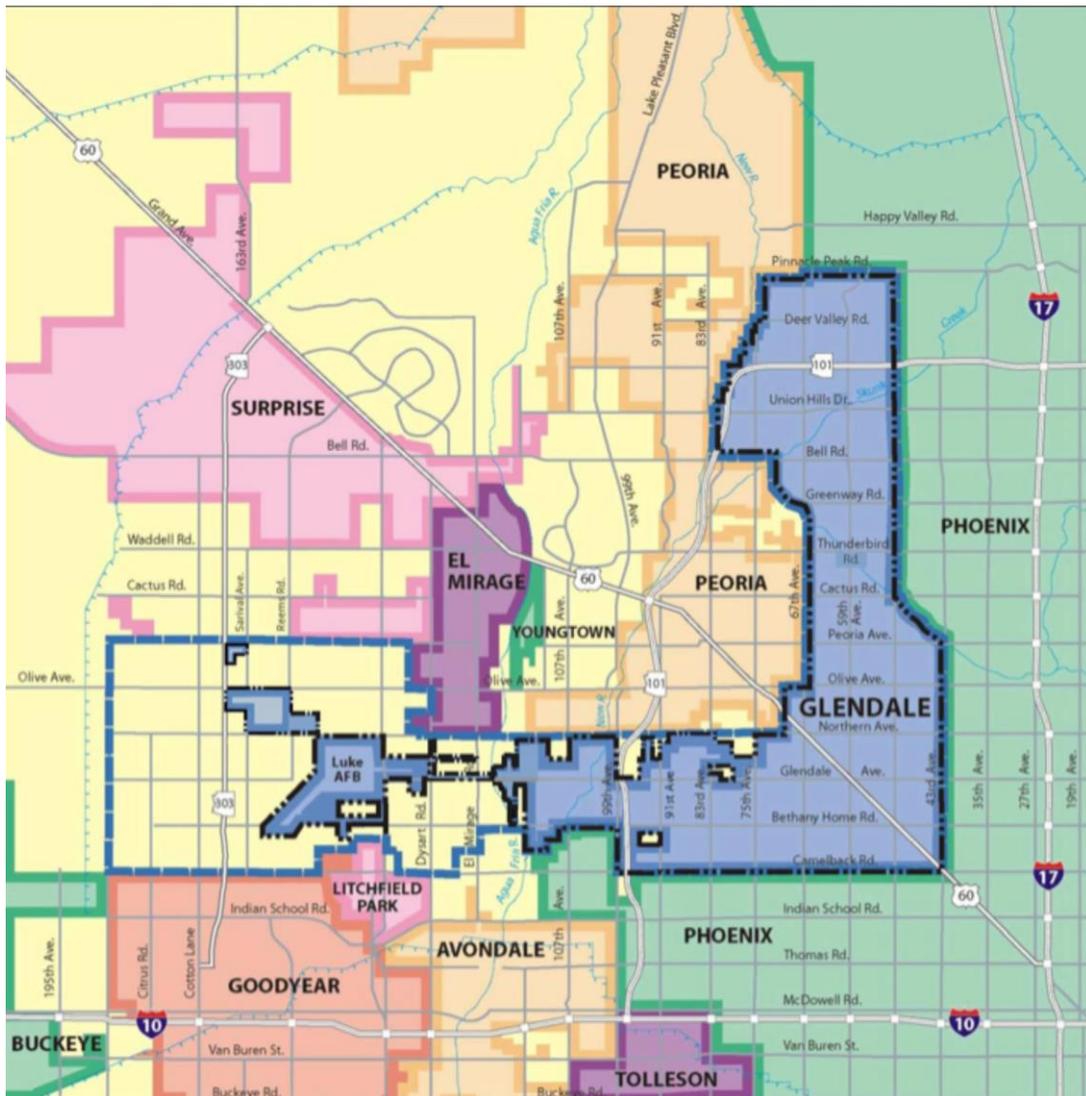
The appendix contains additional documentation for the risk assessment.

**SECTION I: AREA CHARACTERISTICS**

*Area Characteristics*

The City of Glendale, located between the cities of Phoenix and Peoria, is a 60 square mile community of over 230,000 people. The Town of Glendale was first incorporated in 1910, and its first volunteer fire department was established 1912.

The form of government provided by the City Charter is a Council-Manager government. Chapter 16 of the City Code, which was first adopted in 1985, provides for the creation of a fire department and defines the role of the fire chief. City Council adopted the 2009 International Fire Code as the Glendale Fire Code in 2010, and adopted the 2002 International Building Code (IBC) in 2006. Chapter 9, Article II of the Glendale City Code was amended by Council ordinance in 2012, adopting the 2012 IBC as the Building Code of the City of Glendale.



***Climate***

Glendale's desert location, with an average of 294 days of sunshine each year, eliminates most weather-related service concerns. Summer heat is the single greatest weather consideration. Daytime high temperatures in May to September range consistently between 100 to 115 degrees Fahrenheit. Winter highs are more temperate, averaging in the 60 to 70 degree range, with occasional nighttime frost. The average annual rainfall is a meager 8.4 inches. Damaging windstorms, summer dust storms and heavy rainfall do occur, but such extreme weather is infrequent.

***Topography***

Glendale is topographically flat except for the Hedgepeth Hills forming Thunderbird Conservation Park in the northeastern corner of the city. Its picnic areas and hiking and riding trails attract a high volume of recreational users. Vehicle access inside the park is limited to one service road extending from 59<sup>th</sup> Avenue to 67<sup>th</sup> Avenue. The park is equipped with eight fire hydrants, though the primary service demand at this location is medical or rescue in nature.

***Major Transportation Features***

Major transportation corridors that connect Glendale to the entire metropolitan region include Grand Avenue (State Highway 60), Loop 303 in the far west, the Loop 101 in the western and northern parts of the city, and the Northern Parkway, which is currently in phase two of construction, connecting several West Valley cities. There are approximately 710 miles of paved surface streets in Glendale, and 190 signaled intersections. There is no functioning pre-emption system at this time.

Approximately 4.2 miles of Grand Avenue pass diagonally through downtown Glendale, parallel to the BNSF railway. Intersections with major arterial streets (Camelback, Bethany Home, Glendale, Northern and Olive) are bridged with overpasses or underpasses to improve traffic flow. Secondary streets have limited connectivity with Grand Ave., particularly from the south where flow is blocked by the railroad bed.

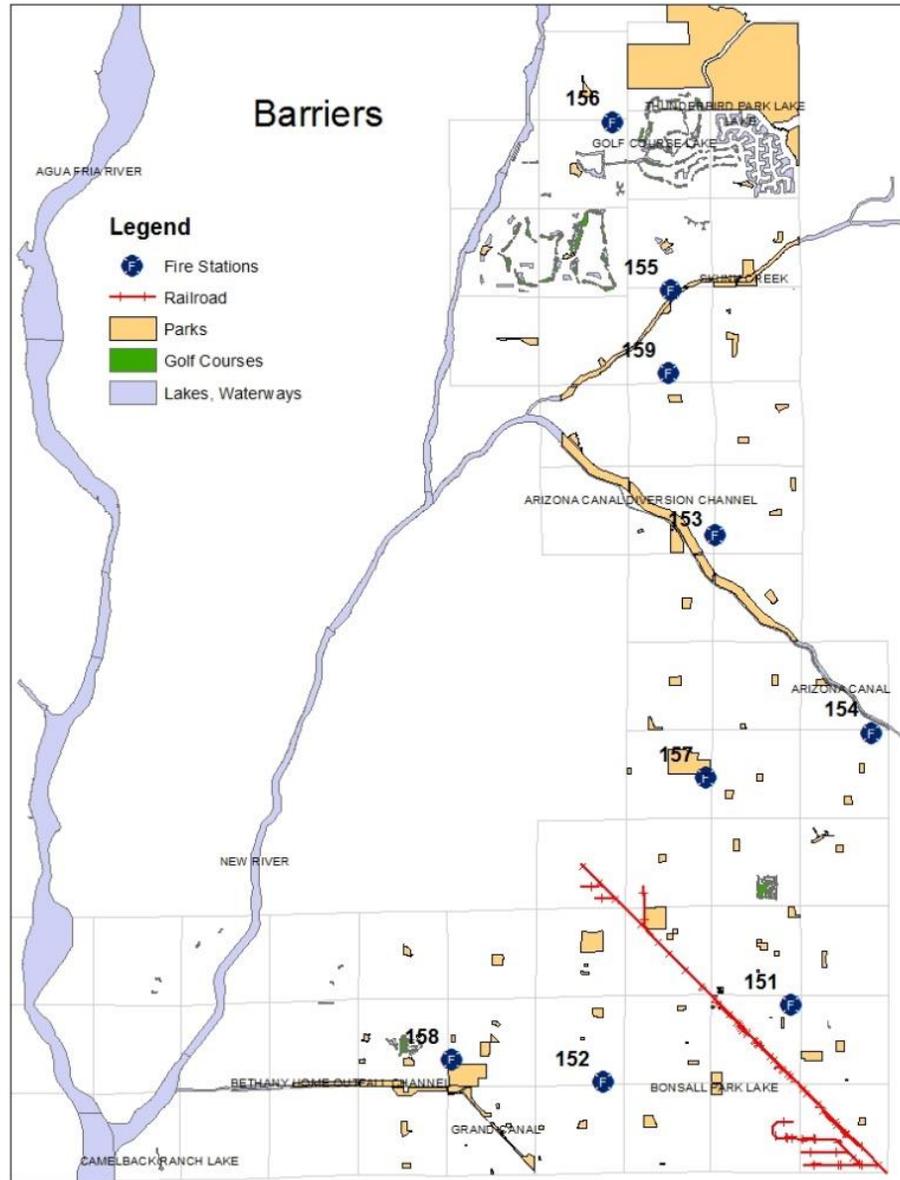
Loop 101 (Agua Fria Freeway) passes through Glendale in two areas: aligning with Beardsley Road in the north, from 51<sup>st</sup> Avenue to 83<sup>rd</sup> Avenue, and then curves south and aligns with 99<sup>th</sup> Avenue, intersecting the city from Northern Avenue to Camelback Road. All major arterial streets that intersect the freeway have entrance and exit access.

***Barriers***

Glendale's Arrowhead Ranch and Arrowhead Lakes subdivisions, located in the northeastern corner of the City, contain upscale residential cul de sac properties surrounding a golf course, and a circuit of private canals. Street access through these areas is somewhat limited due to the barriers created by the golf and water amenities,

and by the Hedgepeth Hills, an urban interface that forms the northern boundary of both areas.

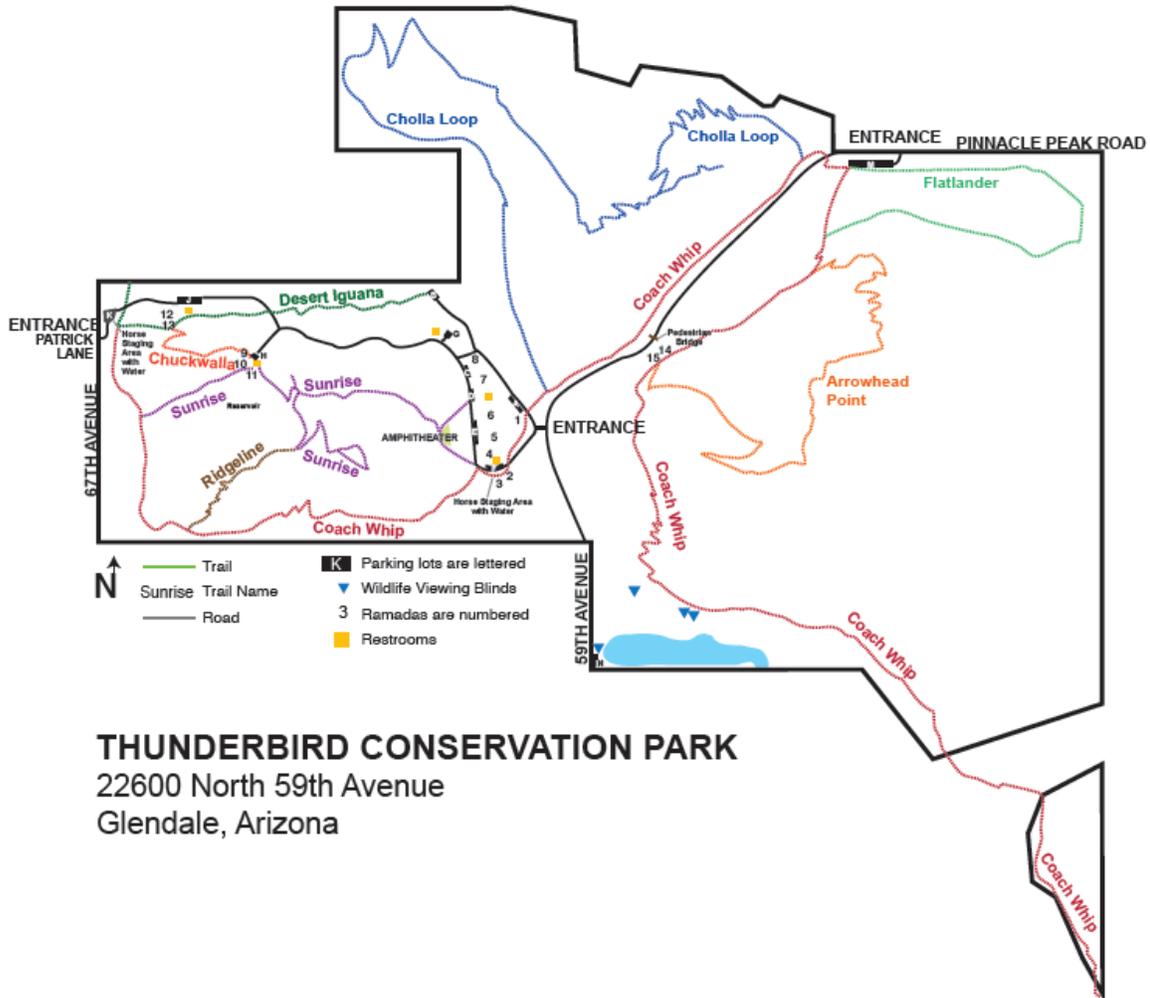
Other response barriers include the Thunderbird Paseo storm water diversion channel and Arizona Canal, which are only bridged at major intersections. Other storm water diverters are Skunk Creek, the Agua Fria River and New River Wash. These are bridged on major arterial streets and on some secondary routes to prevent travel disruption during heavy rainfall runoff. They are dry riverbeds most of the year.



The Burlington Northern Santa Fe Railroad runs diagonally through downtown Glendale, with crossings limited to major intersections and a few secondary streets. Train traffic, which is commercial and industrial in nature, is known to contribute to

occasional response delays in the affected areas. However, supplemental coverage provided by automatic aid helps to minimize delays to on-scene arrivals. The hazard potential posed by rail cargo is included in the risk assessment.

*Urban Interface*

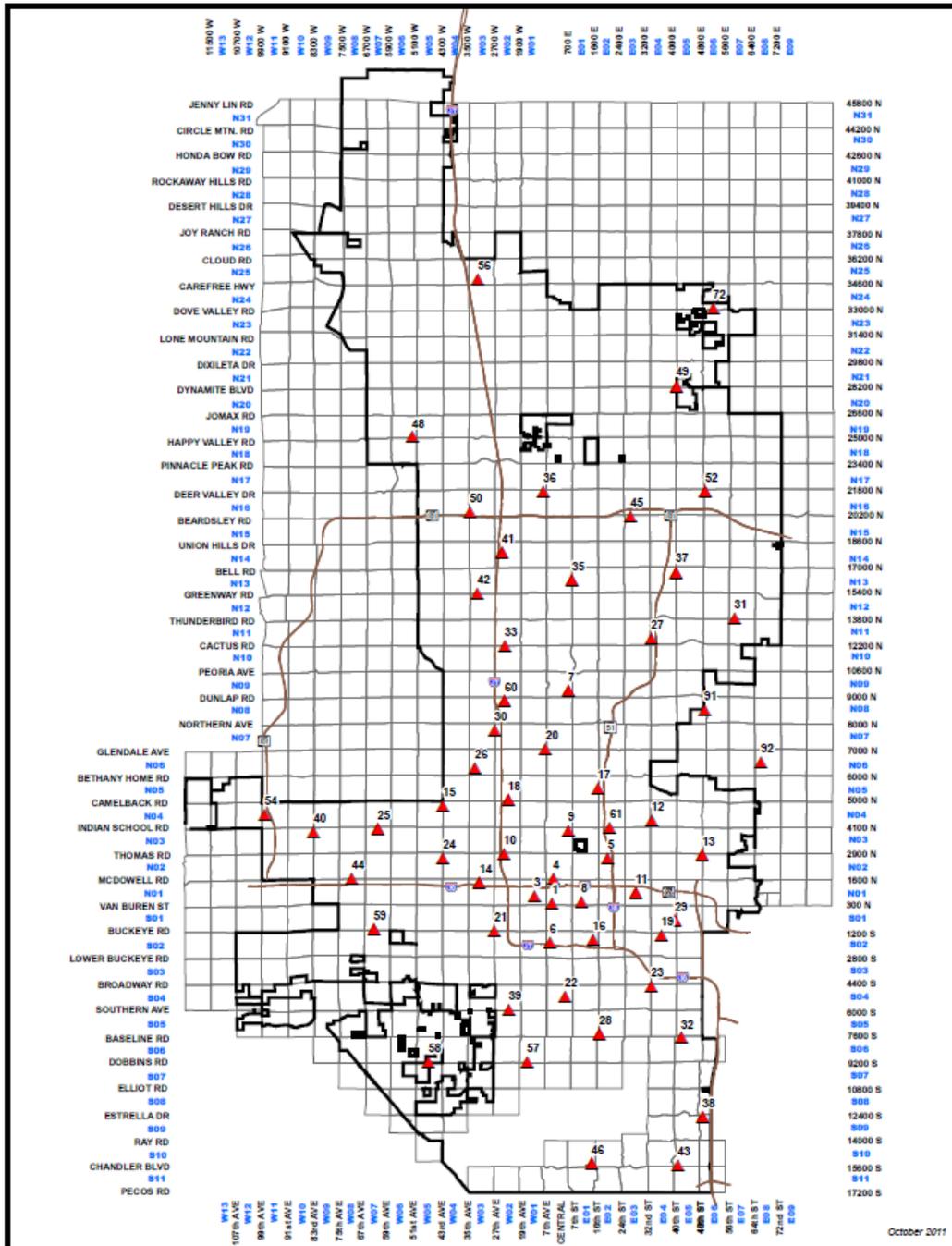


This 1,185 acre regional wildland park is located in the city's far northeast corner. It occupies planning zones NW1706 and NW1707. Roadway access to the park is off of 67<sup>th</sup> Avenue, which borders the park on the west side, and 59<sup>th</sup> Avenue, which passes through the middle of the park.

There are eight fire hydrants in the park, accessible along the service road that connects the parking and picnic areas between 59<sup>th</sup> and 67<sup>th</sup> Avenues. Hiking, jogging and equestrian trails attract a high volume of visitors each year. Most of the calls to this area are medical in nature or involve technical rescues helping injured hikers off the trails.

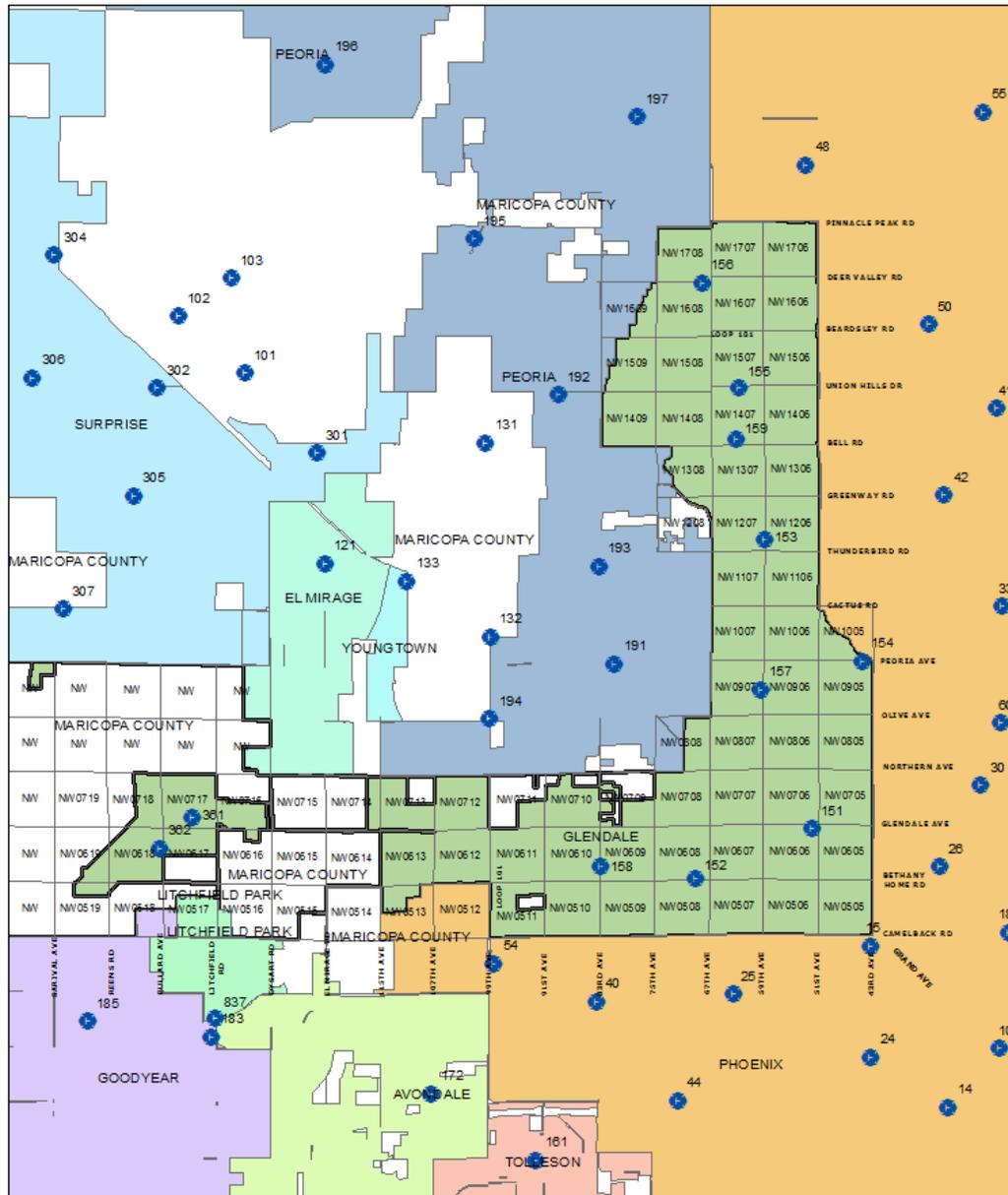
### Fire Planning Zone Methodology

The City of Glendale is organized into square mile, geographic fire planning zones using a valley-wide street map that identifies each square mile as an individual fire management area. Phoenix's regional dispatch system uses this same numbered mapping grid in the dispatch process.



Using this mapping grid for fire planning zone identification enables the GIS mapping of census demographics, risk factors, socio-economic distribution, and service demand. It also allows the measurement of resource deployment and response capability, to determine if the speed and weight of coverage is appropriate for the population size, risk factors and service demand in each zone.

### Regional Jurisdictions and Fire Stations



***Glendale Demographic Profile***

<b>American FactFinder Data</b>	<b>2014</b>	<b>2010</b>	<b>2000</b>
Estimated Glendale Population	231,978	226,721	218,812
Median Age	32.9 years	32.5 years	30.8 years
Children Under Age 5	7.4%	7.6%	8.5%
Children Ages 5 to 19 years	23%	23.8%	24.9%
Persons Age 60 and Over	14.8%	13.8%	10.3%
Families in Poverty	17%	13.1%	8.8%
Civilian Labor Force Unemployed	7.0%	6.3%	3.4%
Median Household Income	\$46,855	\$51,103	\$45,015
Health Insurance Coverage/ Assistance	81.2%	Unavailable	Unavailable
No Health Insurance Coverage	18.8%	Unavailable	Unavailable
Employment Sectors:			
Education, Health Care, Soc. Svc.	21.4%	19.7%	17.2%
Retail Trade	14.5%	13.5%	12.3%
Professional, Scientific, Mgmt.	10.8%	10.6%	9.7%
Finance, Insurance, Real Estate	9.3%	9.6%	9.3%
Entertainment, Recreation, Food	9.0%	8.2%	7.1%
Construction	7.8%	10.0%	9.4%
Manufacturing	6.9%	8.2%	10.7%
Transportation, Warehousing, Util.	6.1%	5.5%	5.5%
Public Administration	4.6%	4.8%	6.1%
Other Services	5.0%	4.9%	4.8%
Wholesale	2.7%	2.8%	4.2%
Information	1.5%	1.7%	3.1%

Since 2000, Glendale’s population has increased by 6%, adding an estimated 13,000 new residents. While the number of children age 19 and younger has declined by 3%, the number of adults age 60 and older has increased by 4.5%, raising the median age by 2.1 years. The aging population is reflected in the increased service demand for age-related conditions and injuries, and the growing number of elder care facilities in the city. The 2014 median household income has increased slightly after losing ground in the recession. Most residents report some form of health insurance coverage or assistance. This statistic was not available for 2010 or 2000.

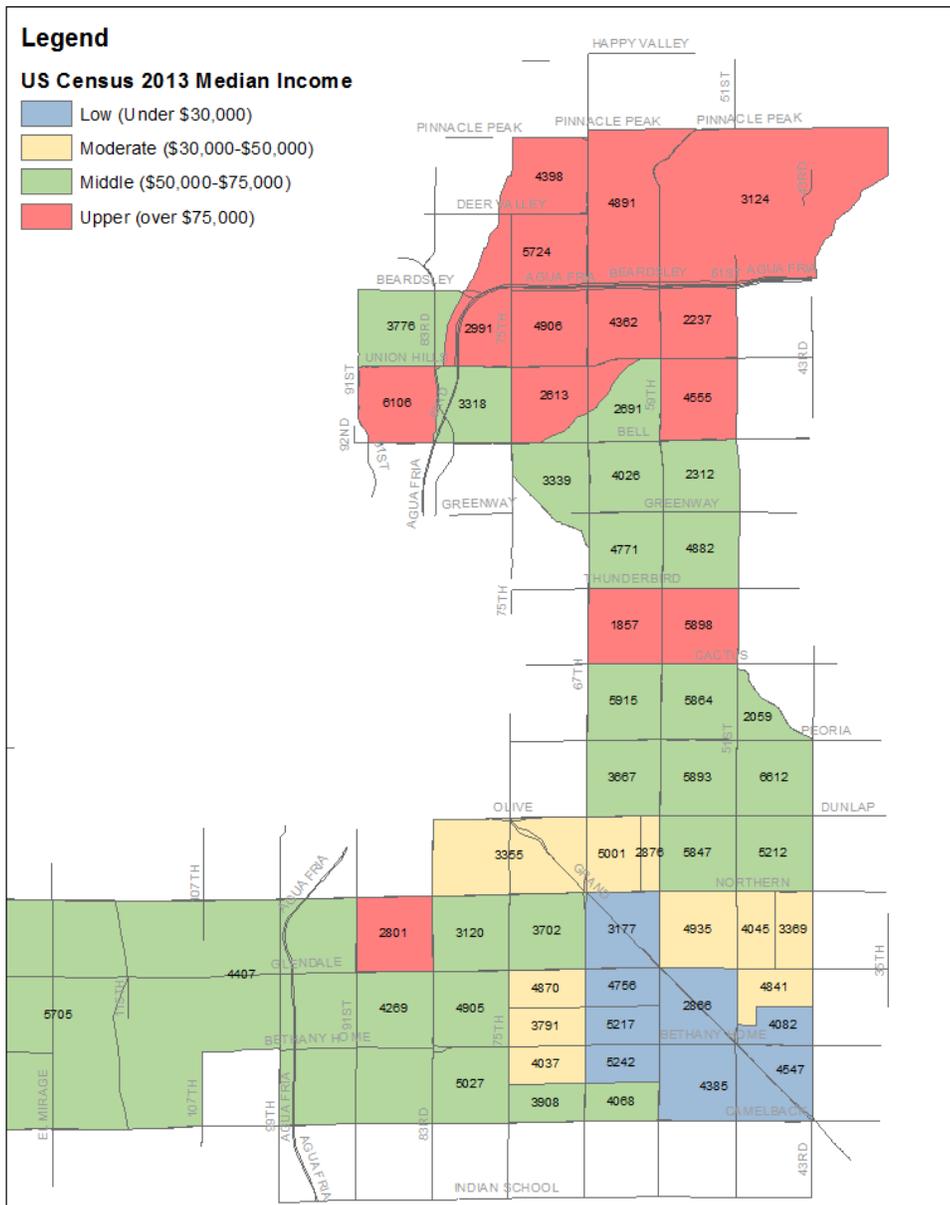
<b>Additional 2016 Characteristics (Spirlings)</b>	<b>Glendale</b>	<b>U.S. Average</b>
Unemployment rate	5.2%	6.3%
High School Education Only	26.49%	28.24%
High School with Some College	26.62%	21.29%
Bachelors/Undergraduate Degree	14.2%	17.88%
Masters, Professional, Doctorate Degree	7.4%	10.61%
Violent Crime (scale of 1 to 100)	55.4	41.4
Property Crime (scale of 1 to 100)	66.9	43.5

**SECTION I, Area Characteristics**

The U.S. Census Bureau provides the following 2010 population and 2013 socio-economic details by census tract. As it happens, most Glendale census tracts align with the fire planning zone grid, which enables an easy comparison of population to service demand.

The southeast corner of the City, which contains the original urban core, has the highest concentration of low income households. Most middle to upper income households are located north of Northern Avenue. The greatest concentration of upper income households lies north of Bell Road.

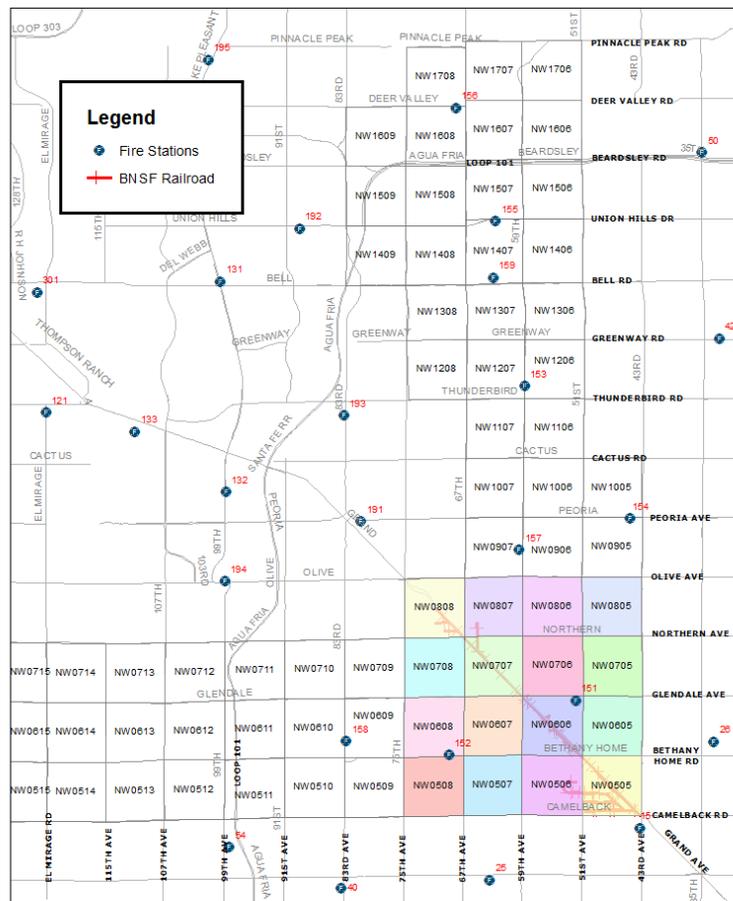
**Census Population and Socio-Economic Distribution**



**Planning Zone Characteristics**

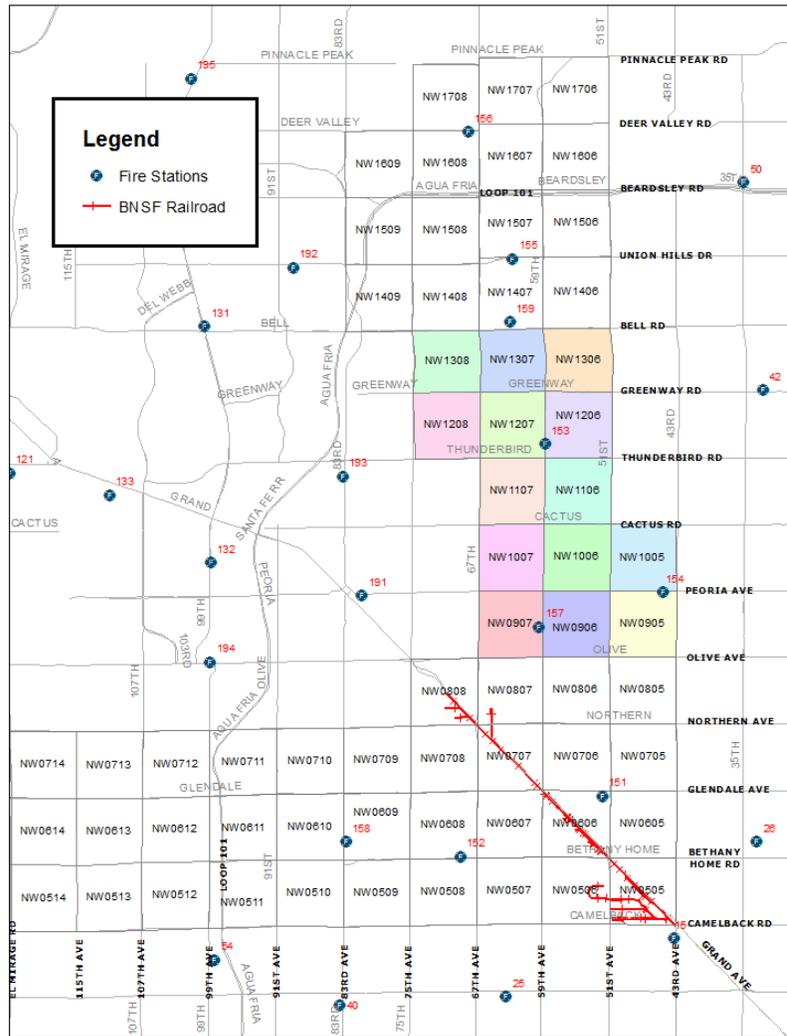
The planning zones with the highest populations and service demands are located in the 16 square mile corner of southeast Glendale, bounded by Camelback Road to Olive Avenue, between 43<sup>rd</sup> and 75<sup>th</sup> Avenues. The area contains numerous manufacturing, industrial, warehouse and trucking enterprises mostly located along Grand Avenue and the Burlington Northern Santa Fe Railroad. The area contains 13 major employers (those with over 200 employees). Planning zone NW0706 contains the City's center of government, its urban core, and most of its structures listed in the National Register of Historic Places (appendix). Approximately 52% of the city's total population resides in this 16 square mile response area which generates 49% of all incidents. Most of the population in this area has a median household income in the Low range (under \$30,000), with some infill development in the Moderate range (\$30,000 to \$50,000). Five ALS engine companies, the hazmat unit, two ladder companies, two command units, and one low acuity service vehicle provide coverage in this area, supplemented by automatic aid from at least three nearby Phoenix stations. The speed and weight of coverage is proportionate to risk.

Fire Planning Zone Characteristics



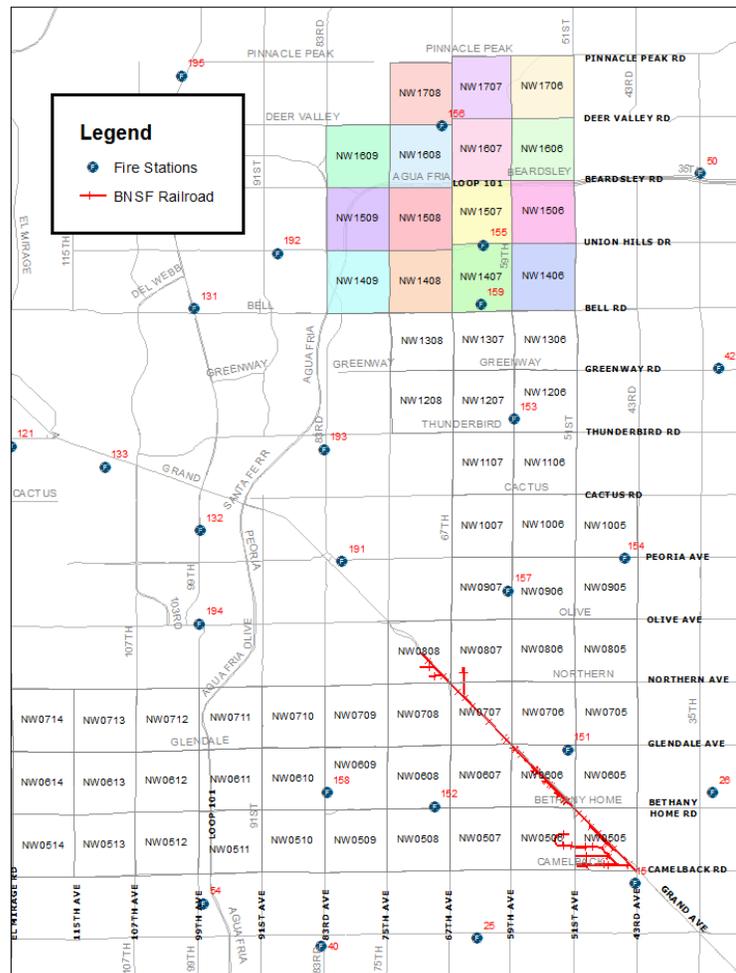
Planning zones covering the 14 square miles between Olive Avenue and Bell Road, from 43<sup>rd</sup> to 75<sup>th</sup> Avenues, contain 24% of the city's total population and generate 24% of the total incidents. The median household income in this area ranges mostly in the Middle range (\$50,000 to \$75,000) with some Upper range (over \$75,000). This area is mostly residential but also contains two large college campuses, Glendale Community College in NW0907, and ASU Thunderbird School of Global Management in NW1206. A significant number of medical office and treatment facilities, including Banner Thunderbird Medical Center, are located along Thunderbird Road in NW1106, NW1107, NW1206 and NW1207. There are also four large retirement homes and skilled nursing facilities in this area. This area contains 9 major employers (those with over 200 employees). Four ALS engine companies, the low acuity unit, a hazmat unit, the squad, and one ladder truck serve this area, supplemented occasionally by automatic aid received from Phoenix and Peoria. The weight and speed of coverage is proportionate to risk.

Fire Planning Zone Characteristics



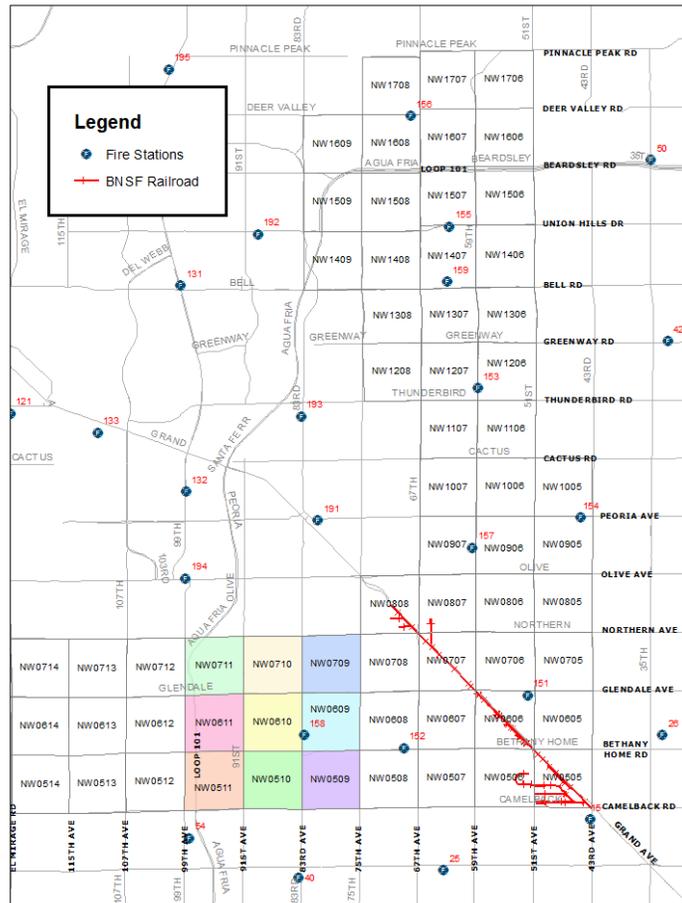
The 15 square mile planning zones covering Bell Road to Pinnacle Peak Road, from 59<sup>th</sup> and 67<sup>th</sup> Avenues, contain 20% of the city's total population, and generate 18% of all incidents. This is the newest and most affluent area in the City, with most median household incomes in the Upper range (over \$75,000). It contains 9 major employers (those with over 200 employees), a significant number of revenue centers along Bell Road, including Arrowhead Towne Center mall in NW1408 and NW1409. It also contains a hospital and large medical office complex in NW1508, and a medical university campus in NW1506. A four mile stretch of the Loop 101 Agua Fria Freeway passes along Beardsley Road, with bridged crossings at major intersections. High-end residential development in this area features golf course lots and private canals that tend to lengthen response times. Three engine companies, the squad and one ladder/quint provide coverage to this area, supplemented by automatic aid from various Phoenix and Peoria stations. Recent accelerated development of residential and commercial structures in NW1609 is likely to significantly increase call volume in this zone. Concentration and risk will be monitored closely to ensure appropriate coverage.

Fire Planning Zone Characteristics



The 9 square mile patchwork of incorporated areas located between Camelback Road and Northern Avenue, from 75<sup>th</sup> to 99<sup>th</sup> Avenues contains approximately 8% of the city's total population and generates 6% of all incidents. The median household income range in this area is almost entirely Middle (\$50,000 to \$75,000). This area includes Westgate Entertainment District, a large revenue center in NW0611, which includes two large, national sports venues, Tanger Outlet Mall, and an 11-story hotel and conference center. Zanjero retail center lies north of Glendale Avenue in NW0711. The area contains 4 major employers (those with over 200 employees). A three mile stretch of Loop 101 Agua Fria Freeway passes along the western edges of NW0511, NW0611 and NW0711. These features account for most of the call volume in this response area. Due to low resident population in these planning zones, only one Glendale ALS engine company is deployed to this area. Sports and entertainment events at Westgate receive on-site public safety coverage so as not to interrupt service to the local community. However continued growth and development in this area and along Glendale Avenue will eventually obligate Glendale to add resources as the call volume increases. Currently, coverage is supplemented by automatic aid received from nearby Phoenix and Peoria stations.

Fire Planning Zone Characteristics





**Housing**

<b>Households and Housing</b>	<b>2014</b>	<b>2010</b>	<b>2000</b>
Median Home Value	\$141,500	\$207,400	N/A
Occupied Households	78,496	80,235	75,700
Vacant Units	10,996	9,696	3,967
Total Residential Units	89,492	89,931	79,667
1-Unit detached structure	60.2%	60.1%	Unavailable
1-Unit attached structure	4.5%	5.4%	Unavailable
2-Units	0.8%	0.8%	Unavailable
3 or 4 Units	4.1%	2.9%	Unavailable
5 to 9 Units	6.0%	6.4%	Unavailable
10 to 19 Units	8.6%	9.4%	Unavailable
20 or more Units	10.1%	9.4%	Unavailable

Housing construction was most active from 1970 through 1999 when approximately 76% of the City’s housing units were built. Due to annexation and infill housing developments, most of the established residential areas contain pockets of older and newer construction. Only 13.5% of Glendale’s residential construction occurred since the development of the International Building Code in 2000.

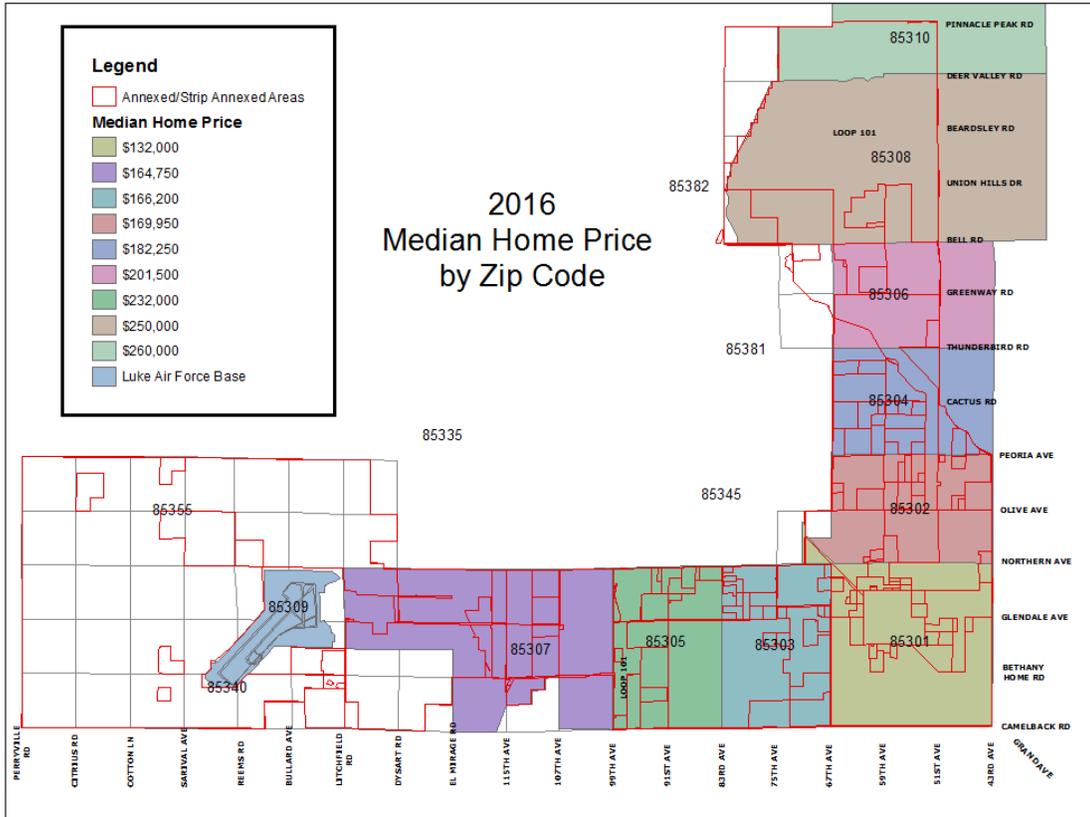
<b>Subject – Housing Construction</b>	<b># of Units</b>	<b>% of Units</b>
Built 2010 and later	318	0.4%
Built 2000 to 2009	11,696	13.1%
Built 1990 to 1999	21,950	24.5%
Built 1980 to 1989	21,652	24.2%
Built 1970 to 1979	23,785	26.6%
Built 1960 to 1969	5,438	6.1%
Built 1950 to 1959	3,127	3.5%
Built 1940 to 1949	907	1.0%
Built 1939 or earlier	619	0.7%

The City Council adopted the 2012 International Building Code (Building Code of the City of Glendale) in October 2012. A sprinkler ordinance was adopted in 2010, requiring automatic fire sprinklers be installed in all new, expanded, and remodeled structures, excluding single and two-family dwellings.

The Code requires an approved water supply capable of delivering the required fire flow to provide fire protection for buildings and facilities. The base fire flow (BFF) design for commercial and industrial occupancies (pressure zones one and two) is 3,500 gallons per minute (GPM) and for residential structures (pressure zones three and four) the requirement is 1,500 GPM.

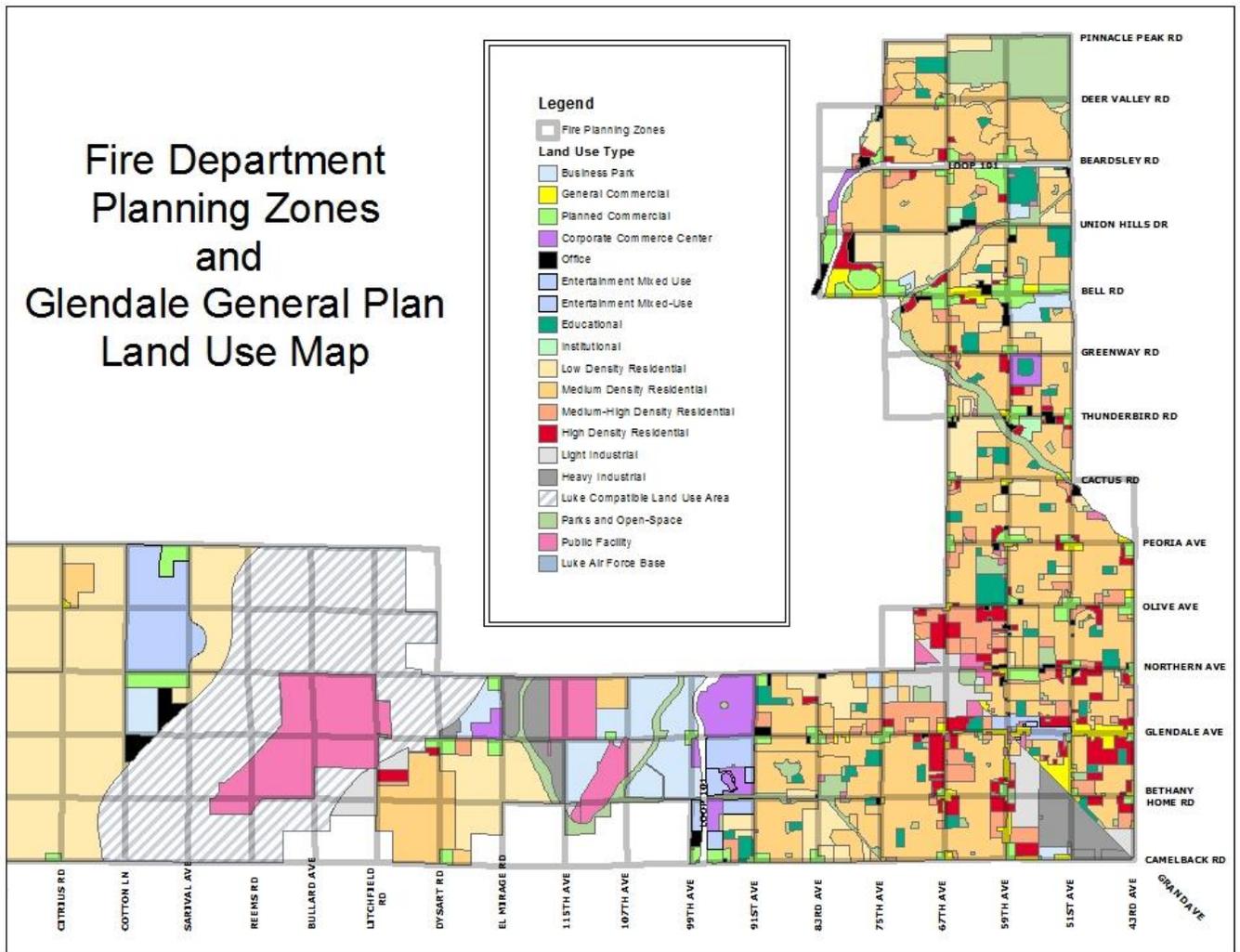
**SECTION I, Area Characteristics**

The housing boom that occurred prior to the recession, followed by the abrupt market collapse and property devaluation had a dramatic effect on median home values. A recent 2016 housing market analysis revealed median home prices have increased in all Glendale zip codes.



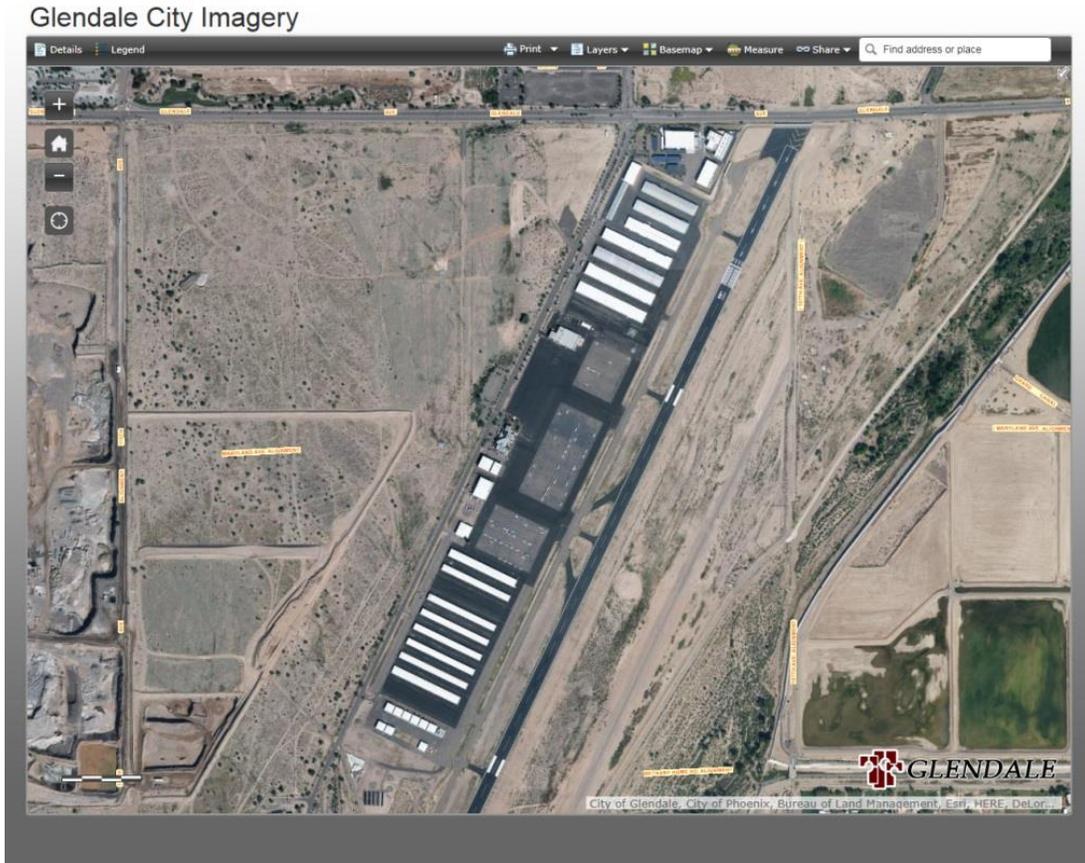
*Area and Land Use*

Currently, the incorporated boundaries of the City of Glendale cover approximately 60 square miles. The City's 2009 general plan (*Glendale 2025: The Next Step*) projects future employment-driven expansion and infill, and provides a Land Use Map to illustrate the types and locations of planned land usage. Fire planning zones have been added to the map below, to indicate the approximate distribution of risk per square mile. This Plan is in the process of being updated to 2035, and will incorporate changes that occurred since the recession, or because of it.



### *Glendale Harbor Airport*

Glendale Harbor, Glendale's municipal airport, is located south of Glendale Avenue, about one mile west of Loop 101. Glendale Harbor is a General Aviation / Reliever Airport, not a commercial airport. It is rated B-2, and is not certified under 14 CFR part 139. It has no FAA requirement for specialized, on-site Airport Rescue and Firefighting (ARFF) services.



The airport's 278 hangars are privately owned; 174 of them are sprinklered. In 2014 there were 306 aircraft based at the airport, ranging from non-flyable to small business jets and helicopters. The estimated value of the aircraft ranged from a few thousand dollars to over a million for the jets and helicopters. A total of over 65,000 takeoffs and landings were logged in 2014.

The fire department provides firefighting and emergency medical services to the airport with automatic aid assistance provided by neighboring fire departments. Incidents occurring at the airport are few and most are medical in nature, not aircraft emergencies. At this time the level of coverage is proportionate to the demonstrated service demand.

## SECTION II: COMMUNITY RISK ASSESSMENT

### *Risk Categories Defined*

#### **Maximum Risk**

Areas classified as maximum risk should be of substantial size and contain properties presenting a high risk of life loss, loss of economic value to the community, or the risk of irreparable or long term damage to the environment. Such areas would ordinarily be the highest fire flow areas and have a high probability of events. The structures within them may lack built in fire protection features and may contain occupants not capable of self-preservation. Maximum risk areas may include the following:

- Major shopping and business centers, large department stores, shopping malls, multi-story hotels, and office properties
- Concentrations of high-risk industrial and commercial properties including hazardous materials facilities
- Concentrations of theaters, cinemas, clubs, dance halls, bars and other areas with potential for large life loss
- Buildings over three stories high, with or without built-in fire protection
- Occupancies with occupants that may require assistance such as non-ambulatory or restrained persons (i.e., nursing homes and hospitals)
- Build-up of residential properties adjacent to maximum and high-risk areas
- Any occupancy over 10,000 square feet without built-in fire protection
- Emergency medical, rescue, special operations incidents requiring multiple alarms

Maximum risks frequently impact a fire agency's needs for multiple alarm capability and an adequate assessment of its ability to concentrate resources. Failure to identify these risks often results in the inability to effectively control these incidents. Proper risk identification is also fundamental to the assessment of an individual agency's mutual and automatic aid resources.

#### **High/Special Risk**

A high-risk area is defined as one that contains properties or hazards presenting a substantial risk of life loss, a severe financial impact on the community, or unusual potential damage to property if there is a fire and has a low probability of events. Examples of such areas include the following:

- Strip shopping centers and business centers not exceeding two stories
- Concentrated areas of revenue generating properties or high job loss to the community if business is lost
- Infrastructure facilities such as schools, city, state, and federal facilities
- Properties deemed to be of historical value to the community
- Any building with life safety and fire load beyond the reach of pre-connected hose lines (200 feet)

- Concentrated areas of single or two story multi-family dwellings
- Any occupancy over 10,000 square feet with built-in fire protection not classified as a maximum risk

Special risk premises are single buildings, complexes or other risks unique to a planning zone that require a first due response greater than what is appropriate to the predominant risk of the surrounding area. Examples include the following:

- Isolated maximum or high-risk structures located in other risk areas
- Railroad lines
- Interstate highways

### **Moderate Risk**

An area is classified as a moderate fire risk when it contains built-up areas of average size and the risk of life loss or damage to property if there is a fire in a single occupancy is usually limited to the occupants. In certain areas such as small apartment complexes, the risk of death or injury may be relatively high. Concentrations of property may vary, but generally will be of limited extent. Probabilities of fire events are high along with frequent, routine non-fire risks resulting in a service demand other than fire. Examples of moderate risk areas include the following:

- Developments of generally detached single-family housing
- Apartments with pre-connected hose line access (200 feet)
- Industrial or commercial buildings under 5,000 square feet without built in fire protection
- Emergency medical, rescue, special operations incidents requiring three units or less

These risks are often the greatest factor in the distribution of fire stations to ensure fair and equitable access to initial attack capability.

### **Remote Risk**

Areas may be classified as remote rural risks if they are isolated from any centers of population and contain few buildings. There is a low probability of events and low consequences. Examples include the following:

- Rural land with minimal occupied structures
- Recreational areas

### ***Risks by IBC Class***

Entries in the occupancy database are categorized by International Building Code Occupancy Classifications and mapped in the CRA-SOC to create a visual analysis of the locations and concentrations of risk. (see Section VII, Maps).

#### Assembly (IBC Class A-1, A-2, A-3, A-4, A-5) Map, page #80

The level of risk for A-2 and A-3 occupancy types is determined by a variety of factors unique to the occupancy. The majority are considered low risk. Of the others:

- 2 of 2 maximum risk (A-1, theaters)
- 42 of 283 high/special risk (A-2, restaurants, bars)
- 12 of 138 high/special risk (A-3, recreation, meeting venues)
- 3 of 4 maximum risk (A-4, arenas, rinks)
- 1 of 2 maximum risk (A-5, stadiums)

#### Factory occupancies (IBC Class F-1, F-2, F-3) Map page #82

- 90 low risk (F-2)
- 43 moderate risk (F-1)
- 72 high risk (F-3)

Most Class F occupancies are centered in the industrial area along Grand Avenue and the BNSF railroad in downtown Glendale. Most of the F-3 occupancies are located in zones NW0505 and NW0708. The concentration of response resources in this area are sufficient to provide coverage using local and automatic aid responders.

#### High-Hazard occupancies (IBC Class H-1, H-2, H-3, H-4) Map page #83

There are 31 maximum risk occupancies identified in the occupancy database. Seventeen of them are clustered in planning zones NW0505, NW0506 and NW0606. This area contains the manufacturing, industrial, warehouse and trucking enterprises located along Grand Avenue, and the Burlington Northern Santa Fe Railroad.

- 1 maximum risk (H-1, detonation hazard)
- 8 maximum risk (H-2, accelerated burning risk)
- 4 high risk (H-3, combustible materials)
- 2 high risk (H-4, health hazard)

Other isolated high hazard occupancies are scattered in other locations, and not in the concentration seen downtown. Coverage is appropriate to the level of risk using local and automatic aid resources.

#### Institutional occupancies (IBC Class I-1, I-2, I-3, I-4) Map page #84

- 23 maximum risk (I-2, non-ambulatory 24-hour medical care)
- 1 high risk (I-3, detention facility)
- 5 moderate risk (I-1, ambulatory rehab and assisted living)
- 20 low risk (I-4, adult and child day care)

Most maximum risk *Institutional* occupancies are concentrated in planning zones NW1106 and NW0807 which contain several large, assisted living and non-ambulatory skilled nursing facilities.

The Thunderbird medical corridor, Banner Thunderbird Medical Center (a 513 bed trauma hospital), Lifecare Center of North Glendale (a 223 bed skilled nursing facility) and Thunderbird Road itself, generate a high demand for ALS services in NW1106 and NW1107). Glendale Fire Station 153 provides primary coverage to NW1106, supplemented by coverage from neighboring Glendale stations 159, 157 and 154. NW0807 is covered by Glendale station 157, supplemented by Stations 151 and 153, and Peoria Station 191.

All elevated risk Institutional occupancies are well covered by local ALS resources. However, Glendale's new St. Joseph's Hospital at Westgate, located just west of Loop 101 in NW0712, is three miles west of the nearest Glendale station. The fire stations closest to this facility are Peoria station 194 and Phoenix station 54.

Mercantile (Class M-1, M-2) Map page #85

Small, low risk mercantile occupancies (M-4) change hands frequently, making them impossible to track. The larger, long-term merchants classified as M-1 and M-2 are assessed here. Risk levels are determined by occupancy size, content, fire protection, economic impact, historic value, or a combination.

- 142 (M-1 and M-2, large retail)
- 5 are maximum risk
- 43 are high/special risk.

Zones containing highest concentrations of Mercantile occupancies (revenue centers):

- NW1408 and NW1409, the location of Arrowhead Towne Center
- NW1306 and NW1406, the area of Bell Road from 51st to 59th Avenues
- NW0706, the location of Northern Crossing Mall, historic Catlin Court shops
- NW0606, other shops of cultural and historic value in downtown Glendale
- NW0611, the location of Westgate and the Tanger Outlet Mall

Residential - Hotels (IBC Class R-1) Map, page #86

- 15 hotels are equipped with automatic extinguishment systems
  - 8 are less than 4-stories above grade,
  - 6 are 4-stories above grade
  - 1 is 11 stories above gradeAll but 1 are equipped with extinguishment systems.

Residential - Multi-unit (IBC Class R-2, R-3, R-4) Map page 86, 87

- 181 multi-unit residential structures (R-2)
  - 125 have no identified extinguishment systems
  - 120 are two to three stories above grade
- 202 residential care facilities (R-3)
  - 113 have no extinguishment systems
  - 12 are two stories above grade
- 79 retirement/group home facilities (R-4)
  - 12 have no extinguishment system;
  - 7 are two to three stories above grade

Storage (IBC Class S-1, S-2) Map page #88

Most high hazard storage is located in downtown Glendale, centered along Grand Avenue and the BNSF railroad, and along Glendale Avenue.

- 287 high/maximum risk (S-3, combustible petroleum, automotive)
- 100 moderate risk (S-1, other combustible materials)
- 76 low risk (S-2, non-flammable materials, fresh produce)

Utility (U) Glen Harbor Airport, page #18

Zone NW0613 contains the municipal airport, and the single highest concentration of maximum and high/special risk occupancies. The annual call volume to this location is very small and typically non-emergent. Peoria Station 194 and Phoenix Station 54 are closest to this location. The closest Glendale station is Station 158, four miles away. However, this coverage is sufficient given the low incident history.

***Fire Protection Systems in the Planning Process***

Automatic fire protection and detection system requirements are identified in the city's building and fire codes and communicated to developers during the planning phase of each project. To receive their certificate of occupancy, developers of large facilities are required to provide the fire department with an electronic copy of the site plan, floor plan, utility shut-offs, etc., which can be used in site pre-planning. Fire prevention features, such as fire suppression and detection systems, are determined based on the type of occupancy.

Glendale City Council adopted the 2012 International Building Code in October 2012, and adopted a fire sprinkler ordinance in 2010, requiring automatic fire sprinklers be installed in all new, expanded, and remodeled structures, excluding single and two-family dwellings. The Code requires an approved water supply capable of delivering the required fire flow to provide fire protection for buildings and facilities. The base fire flow (BFF) design for commercial and industrial occupancies (pressure zones one and two) is 3,500 gallons per minute (GPM) and for residential structures (pressure zones three and four) the requirement is 1,500 GPM.

Glendale's fire code and ordinances require fire sprinkler systems in all newly constructed or renovated commercial structures. Similarly, the building codes, as well as the fire codes and ordinances, require fire detection systems be provided where special hazards exist or occupant notification is required. These systems significantly reduce fire risk within the community and are an important consideration in the planning processes.

Through occupancy pre-planning, engine companies identify occupancies with fire protection systems within their assigned fire management areas. These occupancy pre-plans are submitted to Phoenix Fire Department Regional Dispatch Center to enter into CAD, prompting a "flag" to alert units dispatched to emergency incidents at these occupancies.

**Public Protection Classification (ISO Rating)**

A 2014 Public Protection Classification (PPC) survey conducted by the Insurance Services Office rated Glendale a PPC of “2.”

- The City’s water supply scored 37.38 out of 40 points, with the highest scores going to the Supply System and Hydrants.
- Emergency Reporting rated 8.46 out of 10 points
- Fire Department resources rated 40.18 out of 50 points.
- Community Risk Reduction scored 3.7 out of 5.5 points.

**Structure Fire Values Lost/Saved**

Fire investigators base value and loss estimates on ? The 2015 structure fire *value-to-loss* comparison shows 84% of the structures’ values were saved. This statistic has been below 90% since 2011.

Year	Investigated Struc. Fires	Value	Loss	Saved	% Saved
2011	80	\$23,273,500	\$1,710,010	\$21,563,490	93%
2012	87	\$22,645,000	\$2,498,600	\$20,146,400	89%
2013	74	\$13,907,500	\$1,850,050	\$12,057,450	87%
2014	72	\$18,266,600	\$1,823,400	\$16,443,200	89%
2015	65	\$14,197,000	\$2,240,650	\$11,956,350	84%

The number of arson fires increased in 2015 after dipping significantly last year. Fire investigators determined that 26% of investigated structure fires were caused by arson in 2015. Fire loss due to arson was estimated at \$91,650, or 4.1% of the total fire loss. There were no fire deaths.

Year	Accidental	Arson	Unknown	% Arson	AES Save	Injury	Death
2011	36	20	24	25%	6	5	2
2012	46	22	19	25%	1	5	2
2013	43	20	11	27%	4	10	1
2014	39	9	16	15%	3	8	3
2015	41	17	7	26%	1	9	0

***New Development***

Areas slated for development and/or potential annexation in the coming years are located in the area surrounding Westgate, from Camelback Road to Glendale Avenue, between 91<sup>st</sup> to 99<sup>th</sup> Avenues. Future annexation for commercial development along Loop 303 (currently Estrella Parkway) is planned from Northern Avenue to Camelback Road.



The Phase II expansion of Tanger Outlet Mall at Westgate City Center has stimulated additional growth and attracts more people into this area, and onto surrounding roadways, including the Loop 101 freeway. Increased service demand will dictate the type, level and location of additional fire facilities/resources as this region continues to develop.

Currently, Station 158, located off 83<sup>rd</sup> Avenue south of Missouri, is the westernmost Glendale fire station. The planning zones west of 99<sup>th</sup> Avenue are first due to Phoenix and Peoria stations providing automatic aid coverage to Glendale. However, as Westgate expands and Loop 303 development occurs, Glendale will need to address the increased service demand and risk this development creates. Continued reliance on automatic aid to protect these areas will tax the system and place other communities at risk.

**NW0510**

AZ General Hospital                      8310 W Camelback      8,275 sqft, Type B ambulatory, \$3.2M val.  
This is a former shopping center. Glendale Station 158 is closest to this location with additional coverage available from Phoenix Station 40.

**NW0511**

Copper Cove Subdivision              9251 W Missouri Av      56.7 acre, 181 lots, single family  
This subdivision completes the medium density Copper Cove planned residential development initiated in 2013/14. This is in census tract 927.20, which is a middle income area with a 2010 population of 4407. Call volume has historically been low in this planning zone. Phoenix Station 54 is the closest to this location. The closest Glendale station is 158.

**NW0606**

Glendale Mfg. Warehouse              6112 N 56<sup>th</sup> Av              119,397sqft, Types B,F-1 facility, \$2.7M val.  
Desert Rose Rest./Pub/Catering      6713 N 57<sup>th</sup> Dr              2 acres, 17,800 sqft A-2 restaurant/brewery  
Desert Rose Banquet/Concert        6742 N 57<sup>th</sup> Av              Type A-2 occupancy  
These occupancies are in census tract 929. This planning zone is low income, with a resident population of 2865. A large portion of this zone contains industrial and warehouse occupancies along Grand Avenue and the BNSF railroad. Call volume in this planning zone has historically been very high. Glendale Station 151 is the closest to this location, with additional coverage available from Station 152 and Phoenix Station 26.

**NW0609**

Maryland Heights Subdivision        7900 W Maryland Av      9.9 acre, 34 lot subdivision, single family  
This is in census tract 927.12, a middle income area with an estimated 2010 resident population of 4900. It is first due to Station 158. Call volume in this area has historically been moderate.

**NW0610**

Catania Subdivision                    8645 W Glendale Av      no details  
This subdivision is located in census tract 927.10 which has a 2010 resident population of 4269. This is a middle income zone with a moderate call volume. Phoenix Station 40 is the closest to this location.

**NW0611**

Home 2 Suites by Hilton              6620 N 95<sup>th</sup> Av              74,628sqft, Type R-2 occupancy, \$10.1M val.  
These developments are located in census tract 927.20, near the Westgate shopping and entertainment area. Call volume in this area has been moderate to high, due to Westgate, Glendale Avenue, and the Loop 101 freeway that borders this zone on the west side. This is deemed a middle income area. The addition of residential developments will likely increase the call volume in this area. Peoria Station 194, Phoenix Station 25 and Glendale Station 158 provide coverage to this area.

**NW0613**

Lauridsen Aviation Museum          6801 N Glen Harbor      68,500 sqft museum, shop, offices, Type A-3  
This location is adjacent to the municipal airport, which historically has had a very low call volume. This is not a populated area. Peoria Station 194 is the closest station to this location. Station 158 is the closest Glendale station.

**NW0709**

Parkside Subdivision                  7225 N 77<sup>th</sup> Ln              No details available  
This subdivision is located in census tract 927.11. It has a 2010 resident population of 3120 and is a middle income area. Call volume in this zone has historically been moderate to low. Station 158 is the closest Glendale station to this location.

**NW0710**

Orangewood Ranch Subdivision      7606 N 83rd Av      42 lot subdivision  
This new subdivision is located in census tract 927.21, an area identified as high income with a 2010 resident population of 2801. Call volume in this area has historically been low. Station 158 is the closest Glendale station to this location.

**NW0711**

Zanjero Apartments      9300 W Glendale Av      340 unit apartment complex  
Westgate Health Care Campus      9980 W Glendale      126,477sqft, Type B-ambulatory, \$1.6M val.  
This zone is located north of Glendale Avenue, across from the Westgate shopping and entertainment area. Significant development in this zone that stalled during the recession is starting to recover. The call volume in this zone has historically been low but is expected to rise with the increased population. The northeast corner of this zone contains a swath of Tohono O'odham Nation land that is being developed into a resort hotel and casino. Its effect on call volume will be monitored. Station 158 is the closest Glendale station to this location. Peoria Station 194 and Phoenix Station 54 provide additional coverage.

**NW0712**

St. Joseph's Westgate      10011 W Desert River      addition to hospital campus, \$7.9M val.

**NW0807**

Glendale 36      8485 N 63<sup>rd</sup> Av      187 to 231 lot subdivision, 36 acres  
Landmark Senior Living      8232 N 59<sup>th</sup> Av      Type R-4, \$6.5M val.  
This zone contains census tracts 923.11 and 923.12. They have a combined 2010 resident count of 7877. This zone of moderate income households has a high concentration of assisted living and nursing home facilities. Call volume in this area has historically been very high, particularly for EMS services. Station 157 is first due to this area.

**NW0808**

Westpoint Village      71<sup>st</sup> Ave and Olive      89 home subdivision  
This zone, which borders the City of Peoria, covers the ½ square mile from Northern to Olive, 67<sup>th</sup> Ave to 71<sup>st</sup> Ave. The area is only sparsely developed north of Butler Ave, and has limited street access using Olive, 67<sup>th</sup> and Grand Avenues. Call volume in this area has historically been moderate to low. Station 157 will be the likely first due.

**NW1005**

Artisan/ Casitas at Cholla      Cholla at 51<sup>st</sup> Ave      No details available  
This zone covers the triangular area south of the Arizona Canal Diversion Channel, which flows diagonally to the north, from 43<sup>rd</sup> to 51<sup>st</sup> Avenues, between Peoria and Cactus. The north side of the Channel is in the City of Phoenix. This zone is census tract 1042.27, which had a 2010 population of 2059, living in middle income households. The call volume in this zone has historically been low to moderate. Station 154 will be the likely first due.

**NW1207**

Legacy Traditional School      13901 N 67<sup>th</sup> Av      77,686sqft, Type E facility, \$10.7M val.  
This zone is census tract 1042.16, which had a 2010 resident population of 4771, living in middle income households. Call volume in this area has historically been low to moderate. The Diversion Channel also bifurcates this square mile but both sides are City of Glendale. Access to this development is from the west, off of 67<sup>th</sup> Avenue. The first due station will likely be FS153 with backup coverage by FS159.

**NW1408**

Arrowhead Skilled Nursing Facil. 7201 W Camino San Xavier 76,000 sqft, 96 rooms, short term care, I-2  
Orchard Point At Arrowhead 17200 N 67th Av 100 unit R-4 assisted living, \$20.6M val.  
This zone is census tract 6178, and has a 2010 census population of 2613. Households here fall into the high income range. Call volume has historically been moderate. Closest Stations are 159 and 155.

**NW1506**

Midwestern Univ., Veterinary 19220 N 57<sup>th</sup> Av 59,000sqft, large animal facility (H-3/U ?)  
Carmel Estates Subdivision 19268 N 54th Dr 9.8 acre, 39 lots, single family  
Terra Point Campus of Care 5330 W Union Hills 107 bed assisted living, R-4  
This zone is census tract 6160. It has a 2010 census population of 2237 in a high income area. The western half of this tract is occupied by non-residential occupancies and major employers. There is some student housing on the Midwestern University campus. Call volume for this zone has historically been moderate and is covered by Glendale Station 155.

**NW1609**

Apartments at Aspera 7700 W Aspera Blvd 792,792 sqft, 22 bld, 286 unit, \$37.6M val.  
Aspera, Comm. Church of Joy 20250 N 75th Av 127 acre, 780,000 sqft mixed use  
Aspera Mountain Side Fitness 20250 N 75th Av 40,000 sqft fitness center  
Aspera Banner Health Center 20250 N 75th Av 17.6 acre, 164,000 sqft outpt; 16,000 sqft surg  
Kneader's Bakery 20630 N 75th Av 4,050 sqft bakery coffee shop  
Morning Star Senior Living 21432 N 75th Av 16,626 sqft 1-story; 48,974 sqft 2-story bld  
Treasure House at Aspera 20500 N 75th Av 24 unit, 2-story IDD apartments, multifamily  
Monolith Self Storage 7910 W Beardsley 127,534 sqft, \$9.3M val.

This development will add considerable risk to this zone, which covers the narrow swath southeast of the New River Wash. The area has historically had a very low call volume when the only development was the Community Church of Joy. Glendale Station 156 and Peoria 192, both single-unit stations, are located closest to this development. The nearest ladder (quint) is located at Station 155, another single unit station. This area will be closely monitored to determine adequate coverage.

***Risk Assessment by Planning Zone***

Call volume is measured for each incident type in each planning zone to reveal areas of greatest demand, and increased risk. The response times for Advanced Life Support and Structure/Working Fires, are measured from Notification to Arrival on-scene, the governing body’s preferred metric. However, the department acknowledges the significance of measuring the total response time. To enable the estimation of total response times in each zone, the 90% call handling time is noted on the response time maps for each incident type.

The demand for non-emergency, Code-2, Basic Life Support service is measured for each planning zone to indicate where most of these incidents occur. This determines the deployment of Low Acuity units.

The heavily populated southeast corner of the city generates the greatest demand for all incident types except Technical Rescue. Thunderbird Park and the Hedgepeth Hills in the far northeast corner of the city generate the most Technical Rescue incidents. The greatest demand for Hazmat services has been in NW0607, primarily for gas leaks.

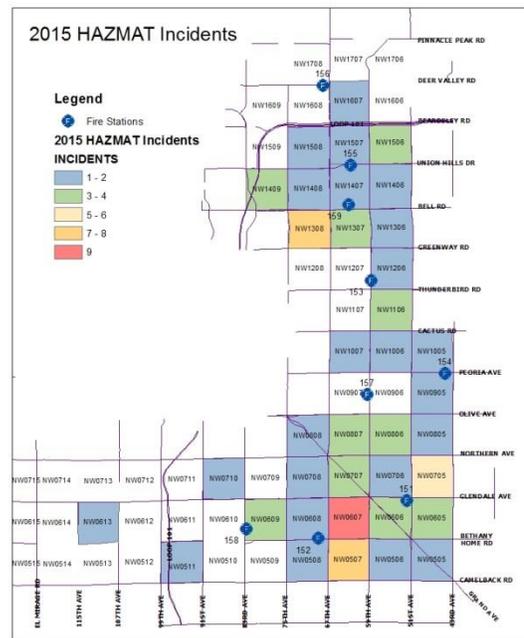
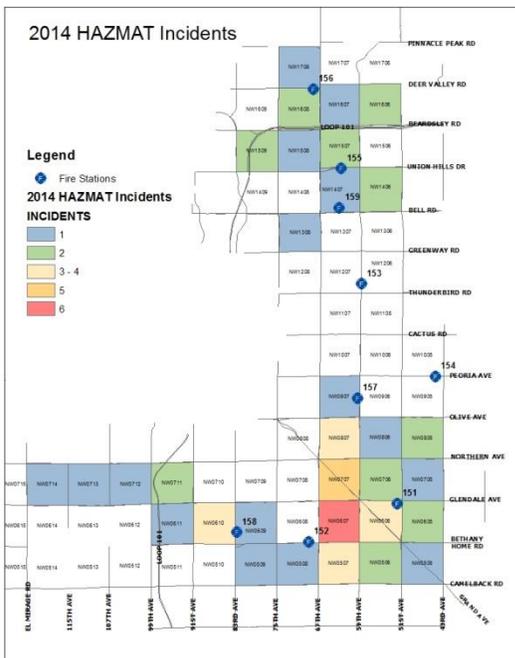
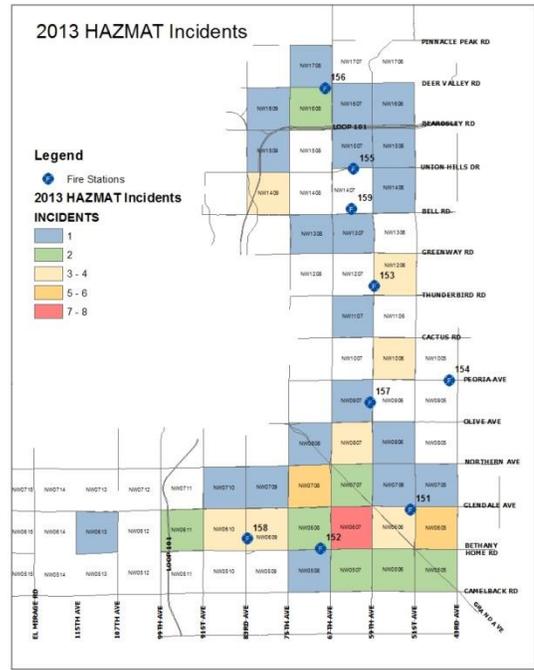
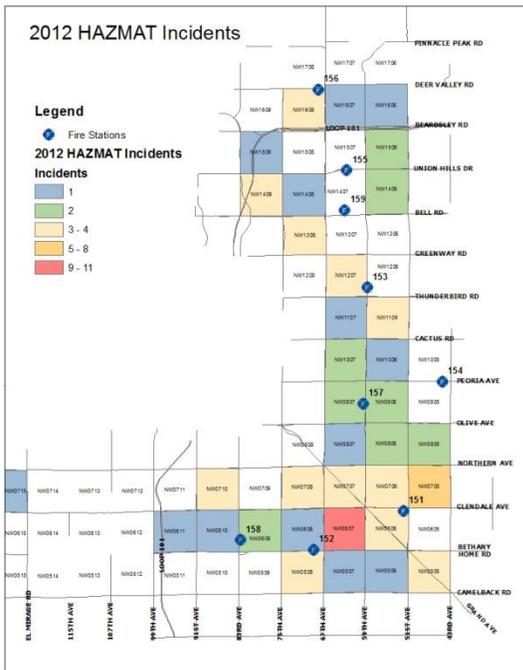
<b>Glendale Incidents by Type</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
ALS	13,510	14,310	14,522	15,226	16,007
BLS	9,125	9,510	9,115	9,209	10,047
FIRE - Structure/Working Fire	232	246	239	255	288
FIRE - Non-structure Fire	1,042	1,088	1,041	899	812
FIRE - Alarm Sounding	863	924	1,046	1,022	1,059
HAZMAT	126	148	188	147	199
TECH RESCUE	23	22	14	23	26
MISC	1,508	1,462	1,293	1,246	1,299
EVENT	204	189	186	212	235
<i>TLO (discontinued in 2015)</i>	45	65	55	70	55
	<b>26,678</b>	<b>27,964</b>	<b>27,699</b>	<b>28,309</b>	<b>30,027</b>

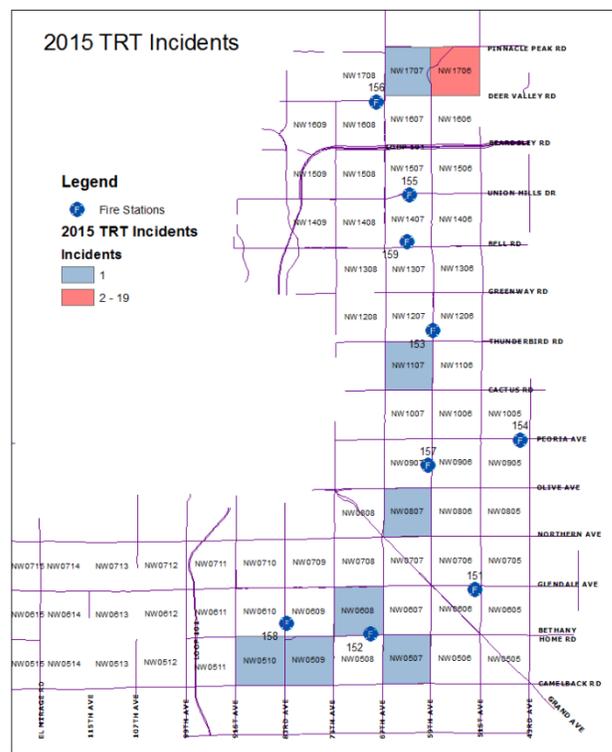
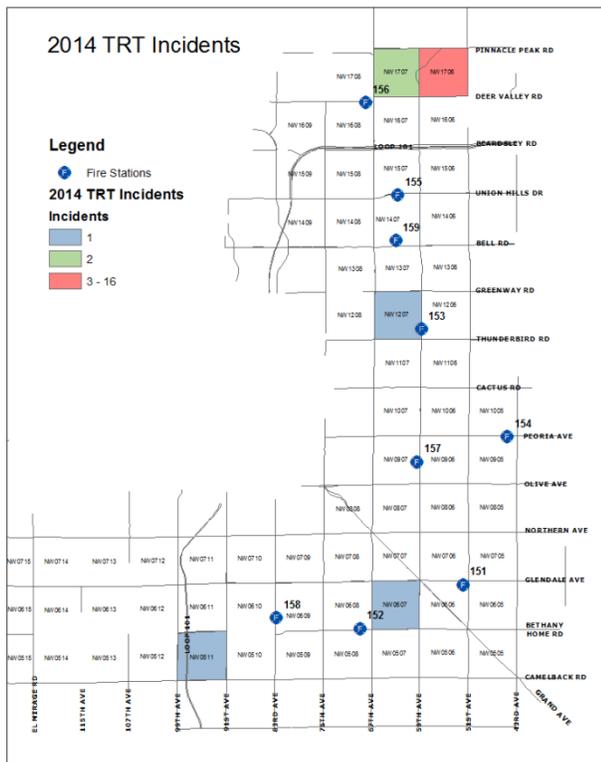
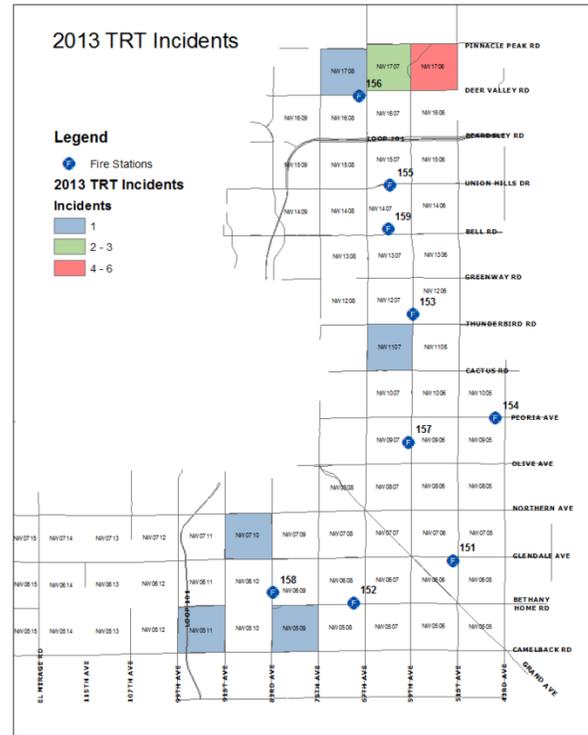
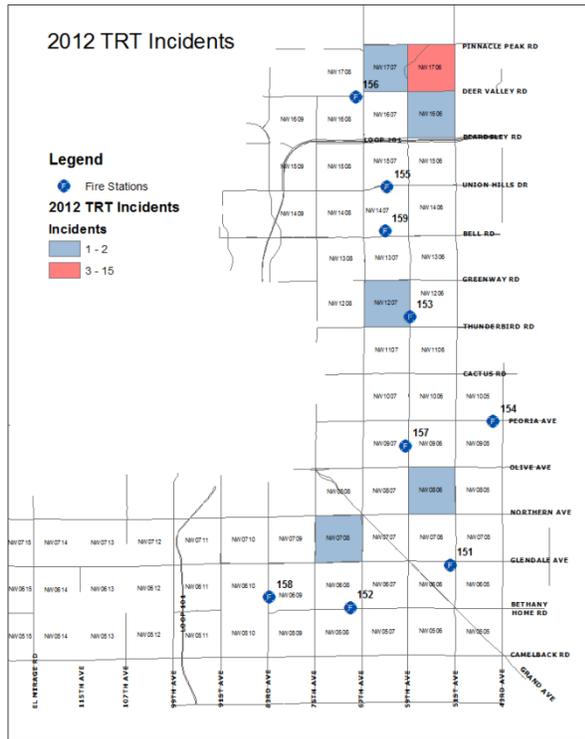




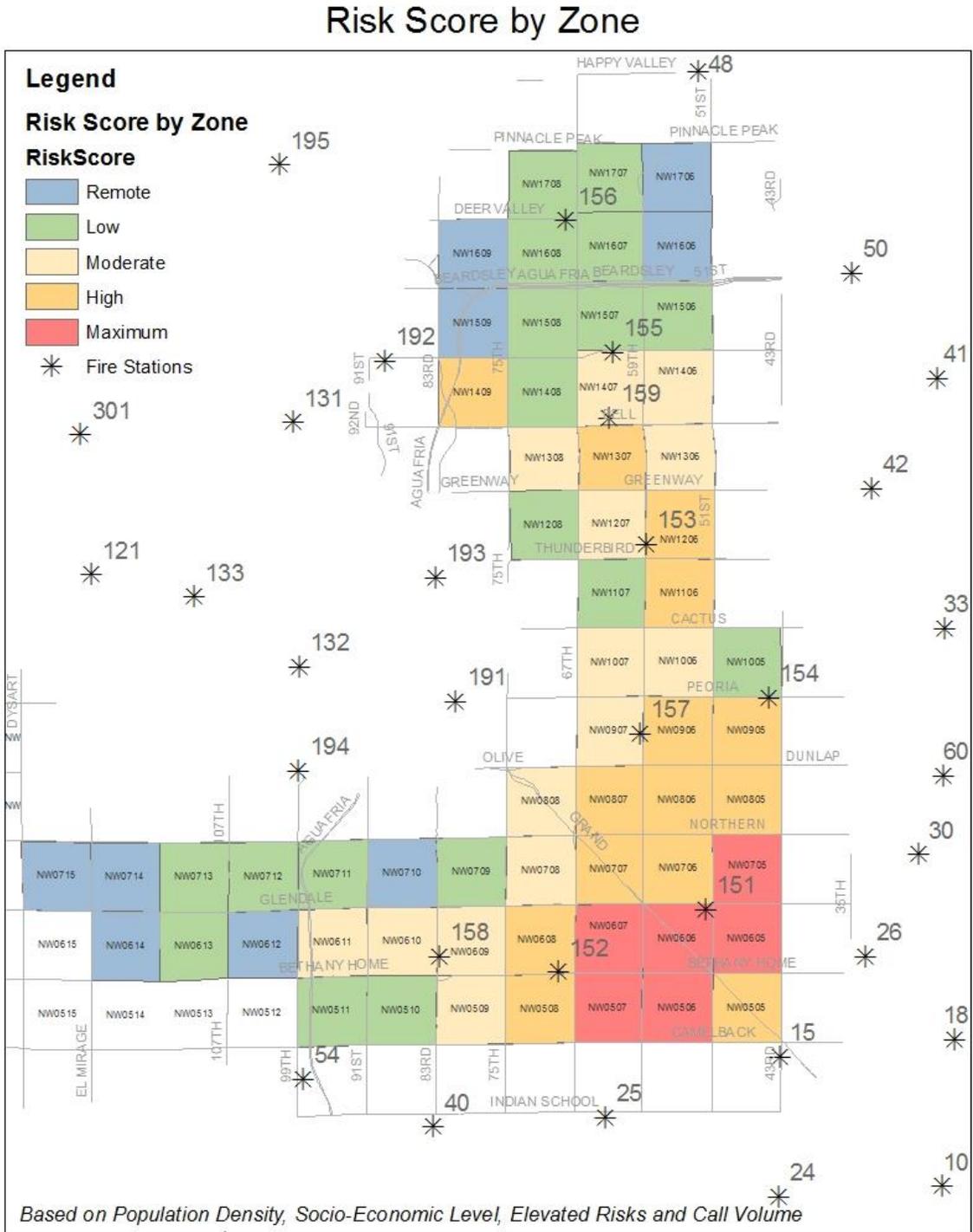
*Special Operations Incidents, 2012 – 2015*

Special Operations incidents in Glendale produce very small and incomplete datasets from which to evaluate response times. By nature, these incidents also require extensive handling time to determine the precise nature, scope and level of response. Given the low demand, the regional concentration of Special Ops teams is sufficient.





*Risk Scores by Planning Zone*



SECTION II, Risk Assessment

Risk Scores by Planning Zone									
Zone	Pop.	Income	Risks	Fire	ALS	BLS	Haz	TRT	Score
NW0505	4	4	4	4	3	4	1	1	25
NW0506	4	4	5	4	4	4	1	1	27
NW0507	6	3	2	5	5	5	4	2	32
NW0508	6	2.5	2	3	3	4	1	1	23
NW0509	5	2	1	3	2	2	1	2	18
NW0510	1	2	1	2	1	2	1	2	12
NW0511	1	2	2	2	1	2	1	1	12
NW0605	4	3.5	4	5	4	4	2	1	28
NW0606	2	4	5	4	4	4	2	1	26
NW0607	6	4	3	4	5	5	5	1	33
NW0608	6	3	2	4	4	4	1	2	26
NW0609	4	2	2	2	3	3	2	1	19
NW0610	4	2	1	3	2	2	1	1	16
NW0611	1	2	3	2	2	3	1	1	15
NW0612	1	2	1	1	1	1	1	1	9
NW0613	1	2	5	2	1	1	1	1	14
NW0614	1	2	1	1	1	1	1	1	9
NW0705	6	3	3	4	4	4	3	1	28
NW0706	4	3	5	4	4	4	1	1	26
NW0707	3	4	4	4	3	4	2	1	25
NW0708	3	2	3	3	3	3	1	1	19
NW0709	3	2	1	2	2	2	1	1	14
NW0710	2	1	1	2	1	1	1	1	10
NW0711	1	2	1	2	1	1	1	1	10
NW0712	1	2	2	2	1	1	1	1	11
NW0713	1	2	2	2	1	1	1	1	11
NW0714	1	2	1	1	1	1	1	1	9
NW0715	1	2	1	1	1	1	1	1	9
NW0805	5	2	2	3	4	4	1	1	22
NW0806	5	2	1	3	4	4	2	1	22
NW0807	2	3	3	4	5	5	2	2	26

Risk Scoring Matrices		
Pop. Risk	Score	Range
Remote	1	500-1000
Low	2	1001-3000
Moderate	3	3001-4000
High	4	4001-5000
Very High	5	5001-6000
Maximum	6	>6000

Income Risk	Score	Range
Low	1	>\$75K
Moderate	2	\$51-\$75K
High	3	\$30-\$50K
Maximum	4	<\$30K

Hazard Risk	Score	Range
Remote	1	0-10
Low	2	11-20
Moderate	3	21-50
High	4	51-100
Maximum	5	>100

Call Vol.	Score	Fires	ALS	BLS	HAZ	TRT
Remote	1	1	1-100	1-50	2	1
Low	2	10	101-200	51-100	4	2
Moderate	3	20	201-400	101-300	6	
High	4	40	401-600	301-400	8	>2
Maximum	5	45	>600	>400	>8	

SECTION II, Risk Assessment

Risk Scores by Planning Zone										Risk Scoring Matrices						
Zone	Pop.	Income	Risks	Fire	ALS	BLS	Haz	TRT	Score	Pop. Risk	Score	Range				
NW0808	5	3	2	3	2	2	1	1	19	Remote	1	500-1000				
NW0905	6	2	2	4	4	4	1	1	24	Low	2	1001-3000				
NW0906	5	2	2	4	3	4	1	1	22	Moderate	3	3001-4000				
NW0907	3	2	2	3	3	4	1	1	19	High	4	4001-5000				
NW1005	2	2	1	2	2	2	1	1	13	Very High	5	5001-6000				
NW1006	5	2	1	3	3	3	1	1	19	Maximum	6	>6000				
NW1007	5	2	1	3	3	3	1	1	19							
NW1106	5	1	3	3	4	4	2	1	23							
NW1107	2	1	1	2	2	2	1	2	13							
NW1206	4	2	3	2	4	4	1	1	21							
NW1207	4	2	2	2	2	2	1	1	16							
NW1208	1	2	1	2	1	1	1	1	10							
NW1306	2	2	2	3	3	3	1	1	17							
NW1307	4	2	3	3	3	3	2	1	21							
NW1308	3	2	1	1	2	2	4	1	16							
NW1406	4	1	2	3	3	3	1	1	18							
NW1407	2	2	2	2	2	3	1	1	15							
NW1408	2	1	2	2	2	2	1	1	13							
NW1409	3	2	3	3	3	3	2	1	20							
NW1506	2	1	3	2	1	1	2	1	13							
NW1507	4	1	2	2	2	2	1	1	15							
NW1508	4	1	1	3	2	2	1	1	15							
NW1509	2	1	1	2	1	1	1	1	10							
NW1606	2	1	1	2	1	1	1	1	10							
NW1607	3	1	1	2	1	2	1	1	12							
NW1608	5	1	1	2	2	2	1	1	15							
NW1609	1	1	1	2	1	1	1	1	9							
NW1706	1	1	1	1	1	1	1	4	11							
NW1707	2	1	1	2	1	1	1	2	11							
NW1708	4	1	1	2	2	1	1	1	13							
										Income Risk	Score	Range				
										Low	1	>\$75K				
										Moderate	2	\$51-\$75K				
										High	3	\$30-\$50K				
										Maximum	4	<\$30K				
										Hazard Risk	Score	Range				
										Remote	1	0-10				
										Low	2	11-20				
										Moderate	3	21-50				
										High	4	51-100				
										Maximum	5	>100				
										Call Vol.	Score	Fires	ALS	BLS	HAZ	TRT
										Remote	1	1	1-100	1-50	2	1
										Low	2	10	101-200	51-100	4	2
										Moderate	3	20	201-400	101-300	6	
										High	4	40	401-600	301-400	8	>2
										Maximum	5	45	>600	>400	>8	

## SECTION III: PROGRAMS AND SERVICES

### *Department Goals and Objectives*

The department's service goals are reviewed at least annually during the department's quarterly reports. City council reviews and approves department programs, staffing and organizational structure through the annual budget process, which includes a performance measurement component published in the budget book. Current goals:

1. Prevent and reduce the loss of life and property within our community through fair and consistent fire code management
2. Reduce the loss of life and property within our community through pro-active public education programs
3. Provide fast, effective emergency response to our community through proper support and deployment of staffing, apparatus and equipment
4. Prepare for catastrophic events and minimize risk to our community
5. Reduce impact of pain and suffering within our community through crisis intervention and response
6. Improve our internal and external customer service through continuous assessment, progressive management, and quality personnel practices

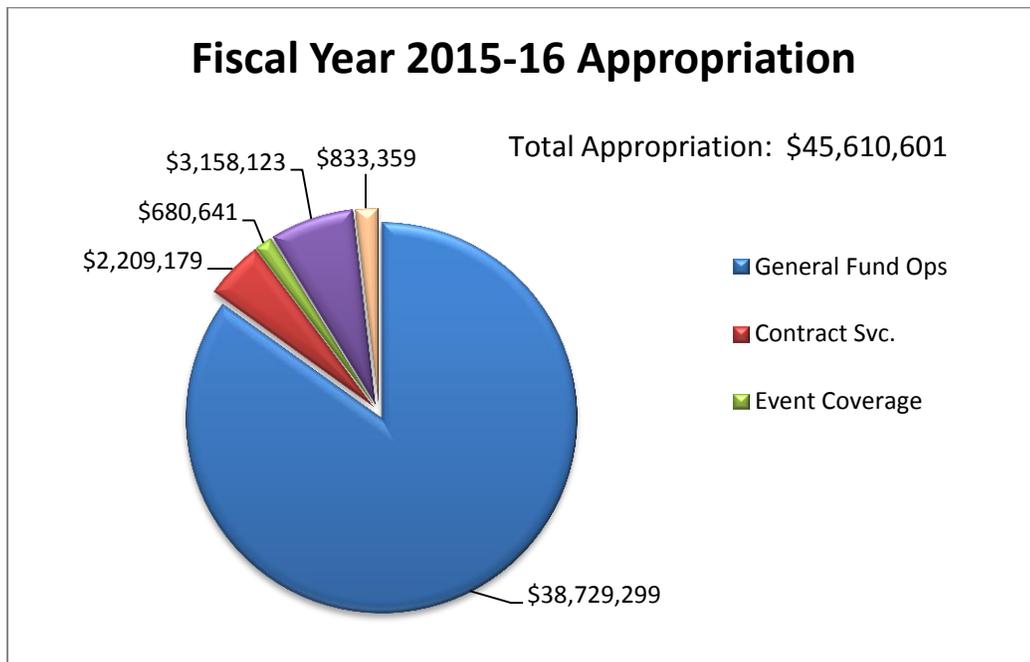
### *Programs and Services*

- **Fire Suppression**
  - Search and Rescue
  - Suppression
  - Rehab
  - Wildland (State Program)
- **Emergency Medical Service**
  - Advanced Life Support
  - Basic Life Support – Low Acuity
  - Contract Ambulance Transport
- **Special Operations - Hazmat**
  - Hazardous Materials Response
  - Hazardous Materials Mitigation
- **Special Oper. – Technical Rescue**
  - Trench
  - Swift Water
  - Confined Space
  - High/Steep Angle
- **Crisis Response**
- **Emergency Management**
- **Fire Prevention**
  - Code Development
  - Fire Inspection
  - Fire Investigation
  - Public Education
  - Youth Firesetter Intervention

**Funding Sources and Budget**

Funding is derived from a combination of sales and property taxes, fees, state shared revenue and revenue from contractual services. The department’s total Fiscal Year 2016 budget appropriation is \$45,610,601, which includes \$3,158,123 in grant appropriation for homeland security and SAFER grants, and \$2,935,948 for a variety of seasonal and contractual functions. The operating portion of the budget, \$39,562,658, represents approximately 10% of the City’s total operating budget of \$383 million.

<b>Operating Budget by Roll-up</b>	<b>Appropriation</b>	<b>% of Budget</b>
Compensation and Benefits (incl. all MOU pays)	\$34,566,758	87%
Non-Salary Operating Budget	\$4,009,373	10%
Internal Premiums/Controlled Budget	\$986,527	3%
<b>Total Appropriation (includes HALO)</b>	<b>\$39,562,658</b>	<b>100%</b>



<b>Operating Budget by Program</b>	<b>Appropriation</b>	<b>% of Budget</b>
Administration	\$2,225,123	6%
Emergency Operations	\$31,188,534	79%
Logistics/Resource Management	\$3,807,585	10%
Emergency Management and EOC	\$502,357	1%
Fire Prevention and Community Services	\$1,005,700	3%
Training and Health	\$833,359	2%
<b>Total Appropriation (includes HALO)</b>	<b>\$39,562,658</b>	<b>100%</b>

***Personnel Resources***

<b>Staffing Grouped by Program</b>	<b>Sworn</b>	<b>Civilian</b>
Administration	19	9
Fire Prevention, Investigation, Pub. Ed.	0	12
Operations: Sworn; Crisis Response Civilian	215	2
Emergency Management	1	2
Emergency Medical Services	3	1
HALO	3	1
Health Center, Infectious Control	1	0
Logistics/Resource Management	2	5
Training Center	3	2
<b>Total FTE:</b>	<b>247</b>	<b>34</b>

***Physical Resources - Fire Stations***

<b>Station</b>	<b>Address</b>	<b>Crews</b>	<b>Built</b>	<b>Units</b>	<b>Staffing/Unit</b>
Station 151	6851 N 52 <sup>nd</sup> Ave.	2	2009	E151 E150 BC151	4 seated positions 4 seated positions 2 seated positions
Station 152	6850 W Bethany Home Rd.	2	1979	E152 L152 LT152	4 seated positions 4 seated positions 4 seated positions
Station 153	14061 N 59 <sup>th</sup> Ave.	1	1974	E153	4 seated positions
Station 154	4439 W Peoria Ave.	1	1982	E154	4 seated positions
Station 155	6255 W Union Hills Dr.	1	1988	L(Q)1555	4 seated positions
Station 156	6801 W Deer Valley Rd.	1	1995	E156 BR156	4 seated positions 2 seated positions
Station 157	9658 N 59 <sup>th</sup> Ave.	2	1997	E157 L157 LT157 HM157	4 seated positions 4 seated positions 4 seated positions 4 seated positions
Station 158	6261 N 83 <sup>rd</sup> Ave.	1	2003	E158 LA151 CR158 WDC	4 seated positions 2 seated positions 2 seated positions 2 seated positions
Station 159	17159 N 63 <sup>rd</sup> Ave.	1	2005	E159 SQ159 U159 BC152	4 seated positions 5 seated positions 2 seated positions 2 seated positions

***Proposed Future Station Locations***

Station locations are planned based upon anticipated growth and service demand. The City’s 2013 Development Impact Fee study estimates capital expenditures for new, growth-driven fire infrastructure will be approximately \$11.3 million over the next ten years (to 2023). One station is proposed within the next five years, to serve the area of Glendale and 107<sup>th</sup> Avenues, contingent on growth and service demand in that area. The coverage area would include Westgate, Loop 101, Glen Harbor Airport, Glen Harbor Business Park, the city’s landfill and recycling center, and the public safety training center. Increased commercial and residential expansion has already begun in the Westgate area. Additional stations are recommended for the far west area of Glendale, at locations such as:

- Olive Avenue and Reems Road
- Olive Avenue and Loop 303
- Olive and 143rd Avenues
- Maryland Road and Cotton Lane
- Bethany Home and Dysart Roads
- Reems Road and Orangewood

Specific locations have not been identified. Anticipated development along Loop 303 will drive much of this decision.

***Physical Resources - Support Facilities***

<b>Facility</b>	<b>Location</b>	<b>Function</b>
<b>Fire Department HQ</b>	<b>6829 N 58th Dr.</b>	<b>Administration</b>
Fire Administration, Fire Prevention, Community Services and Labor functions are consolidated in a headquarters building located in downtown Glendale.		
<b>Training/Health Center</b>	<b>11550 W Glendale Ave.</b>	<b>Firefighter training/health</b>
The Glendale Regional Public Safety Training Center is jointly-owned and funded by the partner agencies who participated in its construction. Operating costs are shared proportionately among the partners based upon their initial capital investment. The facility includes classrooms, a computer lab and lecture hall, a burn tower, a fire station, a driver training track and a variety of fire and extrication training props. The Glendale Health Center is also located at this facility, providing annual health screenings and NFPA-compliant physicals to public safety personnel.		
<b>Midwestern University</b>	<b>19389 N. 59th Ave.</b>	<b>Base for 1 CR or 1 MR</b>
A contract with Midwestern University enables the department to deploy Crisis Response or ALS vehicles from base quarters located on campus, in exchange for providing students with triage time on these units.		

<b>Support Services</b>	<b>7505 N 55th Ave.</b>	<b>Equipment and Inventory</b>
<p>The Support Services facility and staff provides equipment maintenance, repair and testing, supplies inventory and delivery, etc. Repairs and testing are conducted by trained and qualified personnel. Supplies, equipment and materials are inventoried, tracked and allocated as needed.</p>		
<b>City Field Operations</b>	<b>63rd Ave and Myrtle Ave.</b>	<b>Fleet Repair and Maint.</b>
<p>The City's Field Operations Equipment Management department maintains the fire department's fleet of vehicles. Two specially certified mechanics repair and maintain fire apparatus.</p>		

**SECTION IV: RESPONSE STRATEGIES**

***Standard Operating Procedures***

Comprehensive, all hazard standard operating procedures are provided in Phoenix Fire Department’s Volume II SOPs, which are used by all automatic aid fire departments in the Valley to achieve a coordinated, uniform response. Procedures are maintained by the Regional Operations Consistency Committee (ROCC), with representation from all participating departments.

The SOPs are reviewed on 2, 3 and 5 year cycles based on their impact to 1) firefighter safety, 2) critical operational function, 3) regional consistency and 4) correlation to laws and professional standards. Volume II is published and available on the City of Phoenix fire department website.

<https://www.phoenix.gov/fire/publications/standard-operating-procedures>

**Procedure Sections:**

Command Procedures	Section 201.00 – 201.04
Basic Sector	Section 201.05A – 201.08
Fire Operations	Section 202.01 – 202.18B
Medical Operations	Section 203.01 – 203.06A
Special Operations – Hazmat	Section 204.01 – 204.07
Special Operations – TRT	Section 204.08 – 204.13
Communications	Section 205.01 – 205.21
Special Considerations	Section 206.01 – 206.21
Weapons of Mass Destruction	Section 207.01A – 207.01C

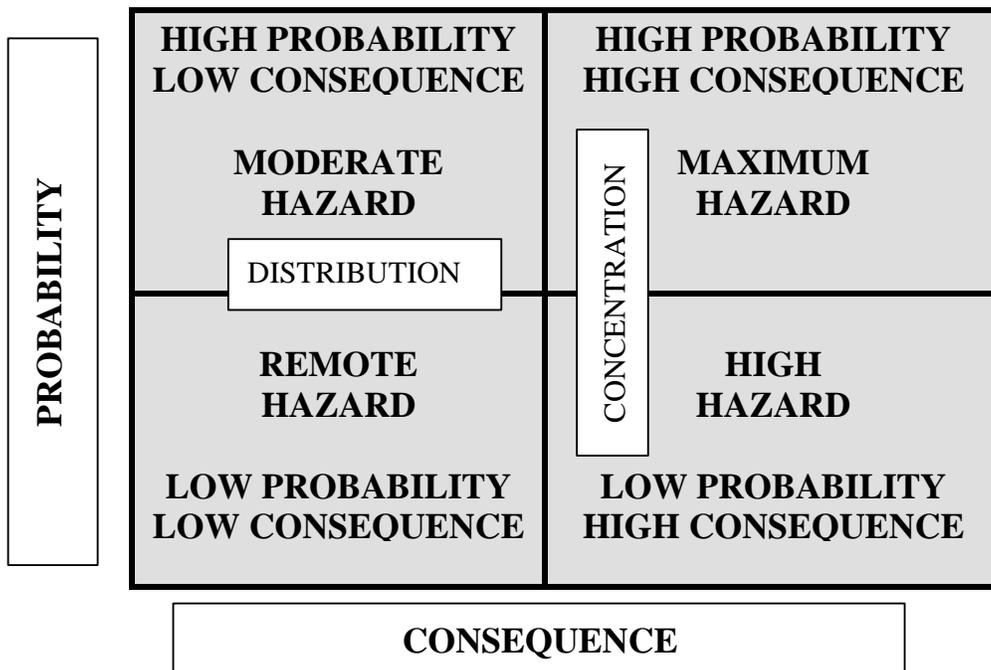
***Risk Statement***

1. We will begin our response on the assumption that we can protect the lives and property.
2. We will risk our lives a lot, if necessary, to protect savable lives.
3. We will risk our lives a little, and in a calculated manner, to protect savable property.
4. We will not risk our lives at all to protect lives or property already lost.

***Response Strategies - Risk Matrix***

By determining the fire and non-fire risks in the community, the risk assessment makes it possible to develop resource deployment strategies. The goal is to determine the probability of an event occurring and the consequence of that event.

In the risk assessment model (below) each quadrant shows the probability of occurrence and the consequence of occurrence for each event included in the assessment. The quadrants also define the relationship between community expectations and the commitment of resources. The following four possible relationships between structures or conditions and the distribution and concentration of resources are represented by the quadrants:



In its risk assessment the Glendale Fire Department determined the probabilities and consequences of events by identifying risk factors in four risk categories; maximum, high/special, moderate and remote. Each demand zone was evaluated based on its risk factors and placed into one of these risk categories.

For example, the community risk assessment may include defining the differences between a single-family dwelling, a multiple-family dwelling, an industrial building, and a six-story hotel, and placing each in a separate category on this chart. Fire stations and apparatus may have to be distributed equally throughout the community to provide initial attack service to all. Conversely, fire station locations and staffing patterns may need to be concentrated in high consequence areas to enable response to a worst-case scenario.

Once risk factors were identified, the risk categories were developed. The fire department acknowledges the possibility that hundreds of risk categories could exist within Glendale. Nevertheless, for a risk assessment to be effective, it must be manageable. For this reason Glendale fire and non-fire risks were placed into one of four risk categories.

### ***Event Propagation and Mitigation - Fire***

The dynamics of fire growth or medical emergencies are directly related to various configurations of fire station locations, built-in fire protection, and company staffing patterns. The fire suppression tasks required at a typical fire scene vary widely depending upon risk level. In order to save lives and limit property damage, fire companies must arrive at the right time with adequate resources to do the job. One of the greatest challenges facing fire managers is to match the arrival of resources with a specific point of fire growth or number of patients found.

The answer for controlling variations in fire dynamics lies in finding a common reference point: one that is common to all fires regardless of the risk level of the structure, the contents of the structure, or the time the fire has burned. This reference point is called flashover.

All fires go through the same stages of growth regardless of speed or length of burn time. The flashover stage is very significant, because it marks a critical change in conditions. It is desirable to have fire companies on-scene with hoselines deployed before flashover occurs.

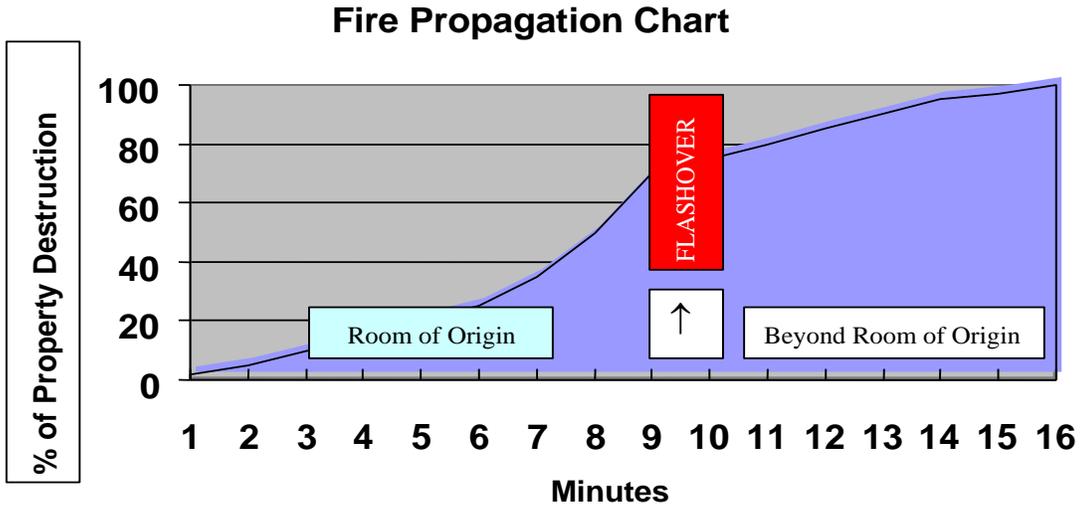
When flashover occurs, everything in the room instantaneously erupts into flame. This eruption generates a tremendous amount of heat, smoke, and pressure resulting in enough force to extend the fire beyond the room of origin through doors and windows or breaches in walls. The combustion process then speeds up because it has an even greater amount of heat to transfer to unburned objects through convection, radiation, and conduction.

Flashover is a critical stage of fire growth for two reasons. First, the chance of saving lives drops dramatically because no living thing in the room of origin will survive. Second, flashover creates a quantum jump in the rate of combustion, and a significantly greater amount of water and resources are needed to reduce the burning material to below its ignition temperature. Once a fire has reached flashover, it is too late to save anyone in the room of origin, and more equipment and personnel are required to handle the larger hose streams needed to extinguish the fire.

A post flashover fire will burn hotter and move significantly faster. This compounds search and rescue problems in the remainder of the structure and at the same time requires more firefighters for fire attack and extinguishment.

Flashover normally occurs from four to ten minutes after free burning begins. The

time to flashover is a function of time and temperature. Fire growth occurs exponentially, doubling itself every second of free burning that is allowed. Consequently, given the progression of a structure fire to the point of flashover, two of the most important elements in limiting fire spread are time and personnel; the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of origin as possible.



The differences between pre-flashover and post-flashover events are listed below:

➤ **Pre-Flashover**

- Fire limited to room of origin
- Requires small attack lines
- Search and rescue efforts easier
- Requires fewer resources
- Can be handled by initial effective response force

➤ **Post-Flashover**

- Fire spreads beyond room of origin
- Requires more or larger attack lines
- Compounds search and rescue efforts
- Requires additional resources
- Additional companies are required

Before on-scene procedures can be established, it must be determined whether the fireground is operating under an offensive or defensive strategy.

- The defensive strategy is one that allows for no interior fire attack; therefore, no rescue of trapped victims is attempted. All firefighting is performed from outside the structure with the goal of containing the fire to the initial structure involved.
- The offensive strategy is an aggressive interior fire attack. The top priority is rescue. An organization providing for an offensive strategy requires fire companies to arrive faster than they would have if only the defensive strategy was provided for.

The fire department's goals include limiting the number of fires that spread beyond the room of origin and limiting fire-related death and injuries. Pursuant to these goals, Glendale Fire Department delivers an offensive strategy fire service.

### ***Fire Outcome Objectives***

This section first describes the difference between the two factors that initially determine how many firefighters will be needed on the fireground—fire flow and critical tasks. Next, the difference between an offensive and defensive strategy is explained, to demonstrate the importance of maintaining an offensive attack capability. Finally, tables representing critical tasks for each of the risk categories are displayed and effective response forces are explained.

On-scene operations, critical tasking, and the assembly of an effective response force are the elements of a standard of cover that determine staffing levels, number of units needed, and duties to be performed on the emergency scene to stop the escalation of a fire where found. Typically this includes search and rescue, confining the fire to the room of origin and limiting the heat and smoke damage to the immediate area of the room of origin. A fire department must be able to determine what tasks need to be completed to have a positive influence on the outcome of the incident.

The first arriving unit for all risk levels shall be capable of: providing 500 gallons of water and 1,500 gallons per minute (GPM) pumping capacity; initiating command; requesting additional resources; establishing and advancing an attack line flowing a minimum of 150 GPM; establishing an uninterrupted water supply; containing the fire; rescuing at-risk victims; and performing salvage operations. These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

The moderate risk Effective Response Force (ERF) shall be capable of: establishing command; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying with the Occupational Safety and Health Administration (OSHA) requirements of two in-two out; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; controlling utilities;

performing salvage and overhaul; and placing elevated streams into service from aerial ladders. These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

Time and on-scene performance expectations are the target indicators established for response time and minimum company standards (MCS). The Glendale Fire Department has established MCS for fireground procedures such as raising ladders, hose lays, and hydrant connections. All MCS are timed events. The times have been established to reflect fireground expectations.

The training division has adopted the Phoenix Fire Department Volume 10, MCS to conform to firefighter competencies established by the National Fire Protection Association (NFPA). Volume 10 is revised and updated by the Regional Operations Consistency Committee, to ensure all valley departments are represented in training discussions. These competencies will serve as the department's on-scene performance expectations.

### ***Fire Operations Strategy***

The variables of fire growth dynamics, property and life risk combine to determine the fireground tasks that must be accomplished to mitigate loss. These tasks are interrelated but can be separated into two basic types; fire flow and life safety. Fire flow tasks are those related to getting water on the fire. Life safety tasks are those related to finding trapped victims and removing them from the building.

Fire flow tasks can be accomplished with hose lines (hand-held hoses) or master streams that can deliver large amounts of water from stationary nozzles or appliances. Each handheld 1 ¾-inch hose line requires a minimum of two firefighters. The hose line can flow 150 gallons per minute (GPM), so when these lines are used, the fire flow is 75 GPM per firefighter. The 2 ½-inch hose line can flow 250 GPM and requires a minimum of two firefighters. For this hose line, the fire flow is 75 to 125 GPM per firefighter. Master streams can flow from 500 to 1,000 GPM each. They take relatively fewer firefighters to operate because they are fixed to the apparatus, but are slower to deploy.

The decision to use hand lines or master streams depends upon the stage of the fire and the threat to life safety. If the fire is in a pre-flashover stage, firefighters can make an offensive fire attack into the building by using hand lines to attack the fire and shield trapped victims until they can be removed from the building. If the fire is in its post-flashover stage and has extended beyond the capacity or penetration of handheld hoses, or if structural damage is a threat to the firefighters' life safety, the structure is declared lost and master streams are employed to keep the fire from advancing to surrounding exposures.

Life safety tasks are based upon the number of occupants, their location, their status (e.g., awake versus unconscious), and their ability to take self-preserving action. For example, ambulatory adults need less assistance than non-ambulatory adults. The elderly and small children always require more assistance.

The key to a fire department's success at a fire is adequate staffing and coordinated teamwork, regardless of whether the fireground tasks are all fire flow related or a combination of fire flow and life safety.

The Glendale Fire Department performs aggressive offensive attacks whenever necessary. The first objective is to put a hose line between the victims and the fire. The second is to contain the fire to the room of origin. Through a structured risk management plan, the department has established the following guidelines to provide direction to on-scene personnel engaged in evaluating conditions.

### ***Fire Critical Tasking***

Critical tasks are tasks that must be conducted in a timely manner by firefighters at structure fires in order to control the fire prior to flashover. In creating standards of response, the capability of arriving companies and individual firefighters to achieve these tasks must be assessed.

The department has evaluated the critical tasks needed to control fires in each risk category. Firefighter safety must be emphasized when identifying critical tasks. Whenever interior fire operations require the use of at least 1 ¾-inch hose lines and protective clothing, including turnout gear and Self Contained Breathing Apparatus (SCBA), additional personnel must be staged outside to perform rescue functions for interior firefighters who may become trapped, injured or run out of air. In this situation, a command structure must also be in place.

Critical tasks are described below. These descriptions are supplemented by tables that outline tasks that must be accomplished by the initial response force if the department is to meet its mission, goals, and objectives.

#### **Attack Line**

A 1 ¾-inch hose that produces 150 GPM and is usually handled by a minimum of two firefighters, or a 2 ½-inch hose that produces 250 GPM handled by two or three firefighters. Each engine carries a set of attack lines pre-connected to the pump, one folded on the hosebed, and a special pack designed to be carried into high-rise buildings.

The selection of attack line for a given situation depends on the type of structure, the distance to the seat of the fire, and the stage of the fire. The pre-connected lines are the fastest to use but are limited to fires within 200 feet of the pumper. When attack lines are needed beyond this limit, the hosebed or high-rise lines are used. A 2 ½-inch

attack line will be used when the fire has passed the flashover stage and threatens an unburned portion of the structure.

### **Search and Rescue**

A minimum of two firefighters is assigned to search for and remove living victims while the attack crew moves between the victims and the fire to stop it from advancing. A four-person crew is normally sufficient for most moderate risk structures, but additional crews are required in multi-story buildings or structures with people who are not capable of self-preservation.

### **Ventilation Crew**

A minimum of two firefighters opens a horizontal or vertical ventilation channel when the attack crew is ready to enter the building. Vertical ventilation or ventilation of a multi-story building may require more than two firefighters. Ventilation removes superheated gases and obscuring smoke, thereby preventing flashover and allowing attack crews to see and work closer to the seat of the fire. Ventilation also gives the fire an exit route so the attack crew can "push" the fire out the opening they choose and keep it away from endangered people or unburned property.

Ventilation must be closely timed with the fire attack. If it is performed too soon, the fire will receive additional oxygen and grow. If performed too late, the attack crew cannot push the fire in the desired direction. Instead, the gases and smoke will be forced back toward the firefighters and their entry point, endangering them as well as any victims and unburned property they are protecting.

### **Back-up Line**

A 1 ¾-inch or 2 ½-inch hose line is taken in behind the attack crew to provide cover in case the fire overwhelms them or a problem develops with the attack line. Back-up hose lines require a minimum of two firefighters per 1 ¾-inch line. A 2 ½-inch hose line is used for backup when the fire is one that could grow rapidly if not stopped by the attack line.

### **Intermediate Rapid Intervention Crew (IRIC)**

Two firefighters equipped with SCBA are available near the entry point to go into the structure, perform search and rescue, or serve as a backup crew if something goes wrong. This critical task became an OSHA requirement in October 1998.

### **Rapid Intervention Crew (RIC)**

Four firefighters equipped with SCBA are available near the entry point to go into the structure, perform search and rescue, or serve as a backup crew if something goes wrong. This critical task became an OSHA requirement in October 1998.

### **Exposure Line**

A 1 ¾-inch attack hose line operated by two firefighters is taken above the fire in multi-story buildings to prevent fire expansion. This line is also used externally to protect nearby structures from igniting due to radiant heat. In situations where the

heat release is great or structures are built close together, a 2 ½-inch hose line or deluge gun is used. The use of 2 ½-inch lines doubles the firefighter-operator requirement.

### **Pump Operator**

One firefighter is assigned to deliver water under the correct pressure to the attack, back-up, and exposure lines; monitor the pressure changes caused by changing flows on each line, and ensure that the water hammer does not endanger any of the hose line crews. This firefighter also completes the hose hook-ups to the correct discharges and the water supply hookup to the intake. The pump operator can sometimes make the hydrant hook-up alone if the pumper is near a hydrant, but the hydrant spacing for moderate risk fires normally precludes this.

### **Water Supply**

A crew of one or two firefighters pulls the large diameter hose between the pumper and the nearest hydrant, hook-up at the hydrant, and deliver a water supply to the pumper before its water tank runs dry. A pumper has about four minutes of water if one 1 ¾-inch line is flowing.

### **Incident Command**

An officer is assigned to remain outside of the structure to coordinate the attack, evaluate results, redirect the attack, arrange for more resources, and monitor conditions that might jeopardize crew safety.

### **Utilities**

At least one firefighter secures natural gas, electrical supply, and water utilities to the affected structures. Utilities must be secured before interior firefighters can open a concealed space such as an attic.

### **Ladder Operations**

At least one, preferably two firefighters set up the aerial ladder and a ground ladder to provide access to the roof of the structure when vertical ventilation is performed.

### **EMS/Rehabilitation**

At least one firefighter establishes a treatment and rehabilitation sector, in preparation for any victims found, and any firefighters who become injured or physically exhausted. This latter event is a common occurrence during Arizona summers.

### **Safety Officer**

One firefighter is dedicated to the exterior of the structure with the sole responsibility of firefighter and scene safety.

The majority of structure fires in Glendale occur in moderate/typical risk occupancies. Table 5.1 Critical Tasks for Initial Response shows the standards of cover required for the initial response force to accomplish the critical tasks necessary

to mitigate a moderate/typical risk occupancy fire. This standard meets NFPA standard 1710 for initial full alarm assignment capability.

<b>Task</b>	<b>Number of Firefighters</b>	<b>Company Assigned</b>
Size-up, Search and Rescue	2	1 <sup>st</sup> Engine
Attack Line	2 – 3	1 <sup>st</sup> Engine
Backup Line	2 – 3	2 <sup>nd</sup> Engine
Pump Operator/Water Supply	1	1 <sup>st</sup> Engine
Ventilation Crew	3 – 4	1 <sup>st</sup> Ladder
Utility Control/Forcible Entry	2	1 <sup>st</sup> Ladder
Command	1 (1)	1 <sup>st</sup> Chief (ISO)
IRIC/RIC Crew	2/4	1 <sup>st</sup> Engine/3 <sup>rd</sup> Engine
<b>Total</b>	<b>15-20</b>	

Critical Tasks for Initial Response

Table 5.1

As indicated in table 5.1, a minimum of 15 firefighters is needed to accomplish the critical tasks necessary to control a moderate risk fire in an efficient and effective manner. The table assumes the availability of an Effective Response Force of three engine companies, one ladder company and two command officers, and that the engine and ladder crews are each staffed with four firefighters.

In the event of a maximum or high-risk fire, chief officers and captains assigned to staff are to arrive on-scene to provide command support. This supports the on-duty response by adding up to ten personnel for command functions such as planning, logistics, and administration.

The fire scene is unpredictable in many ways. Critical tasks must be accomplished in order to extinguish the fire, but it is not always possible to predict how many firefighters it will take to accomplish them. Table 5.2 shows the critical tasks for each risk category found in Glendale and the personnel needed to accomplish them. Activities to be completed by first arriving units are indicated by asterisk.

<b>RISK CATEGORY</b>	<b>MAXIMUM</b>	<b>HIGH</b>	<b>MODERATE</b>	<b>REMOTE</b>
<b>TASK</b>				
Search and Rescue*	4	4	2	2
Backup Attack Line*	4	4	4	4
Ventilation Crew*	2-3	2-3	2-3	2-3
Water Supply*	1	1	1	1
Pump Operator*	2	2	1	1
Utilities Support*	1	1	1	1
Ladder Operations*	2	2		
Incident Command*	1	1	1	1
Safety Officer*	1	1		
EMS*	2-4	2-4		
Rehabilitation*	1-4	1-4	EMS Task	

<b>RISK CATEGORY</b>	<b>MAXIMUM</b>	<b>HIGH</b>	<b>MODERATE</b>	<b>REMOTE</b>
<b>TASK</b>				
IRIC Team*	2	2	2	2
RIC Team	4	4	4	4
Exposure Line*	2-4	2-4	0-2	0-2
Forcible Entry*	1-2	1-2	0-1	0-1
Accountability*	1	1	Command Task	
Salvage	Variable	Variable	Variable	Variable
Overhaul	Variable	Variable	Variable	Variable
Critique Officer	1	1		
Operations Officer	1			
Logistics Officer	1			
Administration Officer	1			
Planning Officer	1			
<b>Critical Tasking*</b>	<b>27-36</b>	<b>27-36</b>	<b>14-18</b>	<b>14-18</b>
<b>Total</b>	<b>36-45</b>	<b>32-41</b>	<b>18-22</b>	<b>18-22</b>

Critical Tasks and Standards of Cover by Risk Category

Table 5.2

The Glendale Fire Department uses its experience, knowledge, and call history to determine what the effective response force should be for a fire in each of the risk categories. These numbers are accurate for the majority of working fires in Glendale. The need for more personnel may arise on any fire scene at any time. Fire conditions must dictate the response needed for any given fire, even if that response exceeds the requirements listed in this document.

The Incident Commanders determine the number of personnel and the amount of equipment necessary to accomplish the critical tasks listed in the Table 5.2 chart.

Critical tasking represents the number of firefighters needed on-scene at the early stages of the fire. Several other tasks, such as salvage and overhaul, must be performed prior to termination of the scene. Additional units summoned for these tasks will increase the number of firefighters on-scene.

***Establishing a Fire Effective Response Force (ERF)***

Once critical tasks have been identified and defined, an effective response force can be established. This force is defined as the amount of equipment and personnel that must reach a specific location within the prescribed maximum response time. For a typical special operations incident, the effective response force is defined as the first due company, the first specialty team and the first command/safety officer unit. An effective response force should be able to handle incidents reported shortly after they start. In order to accomplish this, units must be located close enough to the incident to arrive within the maximum prescribed response time for the full assignment of companies according to the risk level.

Community risk cannot be held to zero. Thus, the objective of this standard of response is to identify a balance among distribution, concentration, and reliability that will keep risk at a reasonable level while yielding the maximum savings of life and property. For firefighting, Appendix Chapter B of the Glendale Fire Code determines emergency response fire flow requirements. An emergency response should contain sufficient staffing and apparatus to mitigate the incident.

**Company Level Tasks**

Once critical tasks have been identified, individual tasks can be combined into company tasks based on staffing levels. NFPA 1710 requires the following staffing:

<b>Company Level Tasks</b>
<b>1st Due Engine</b>
1. Lays in a hydrant supply line.
2. Stretch the 150-foot, 1 ¾-inch hose line to the point of access for search and rescue.
3. Operate the pump to supply water and attach hydrant supply line.
4. Assume command of initial operations.
5. Establish the Initial Rapid Intervention Crew, stretch 2 <sup>nd</sup> 1 ¾-inch hose line.
<b>2nd Due Engine</b>
1. If necessary, lays in a hydrant supply line.
2. Stretch a 3 <sup>rd</sup> 200-foot hose line as a back-up line and for fire attack.
3. Establish treatment (EMS) sector if needed.
<b>3rd Due Engine</b>
1. If necessary, lays in a hydrant supply line.
2. Pump 1 <sup>st</sup> Engine’s supply line if needed.
3. Establish the Rapid Intervention Crew, stretch 1 ¾-inch hose line if needed.
<b>1st Due Ladder</b>
1. Perform positive pressure and/or vertical ventilation
2. Secure utilities.
3. Raise ladders/open concealed spaces/force entry as needed.
4. Provide salvage and overhaul.
<b>1st Due Incident Commander</b>
1. Establish exterior command
2. Assign Safety Officer

Company Tasking for Moderate/Typical Risk

Table 5.3

Table 5.3, Company Tasking for Moderate/Typical Risk, shows company tasking for a fire incident in a moderate/typical risk structure. First due responses for higher risk categories will use this chart as a foundation to complete these tasks and request additional firefighters as needed.

Glendale Fire Department meets the NFPA minimum staffing standard requiring four firefighters for both engine and ladder companies. Vacancies are filled through a constant staffing policy to insure all companies are properly staffed at all times. ALS

emergency response deployments include a minimum of two members trained at the emergency medical technician-basic level and two members trained at the emergency medical technician-paramedic level.

***Fire Response Time Objectives***

The *5-year aggregate* baseline travel time for the first arriving unit staffed with four firefighters, to 90% of all working and structure fires in Glendale, is 5-minutes 10-seconds or less, measured from brake-release at the station to brake-reset at the scene. The baseline total response time is 7-minutes 10-seconds or less, measured from dispatch to arrival on-scene.

The *5-year aggregate* baseline travel time for the arrival of an Effective Response Force (ERF) consisting of 20 firefighters (3 Engines, 1 Ladder, 2 Command), is 9-minutes 10-seconds or less. The baseline total response time for the arrival of the ERF is 11-minutes 40-seconds or less, measured from dispatch to full assembly on-scene.

The table below contains the 90% NFPA benchmarks and fire department five-year aggregate baselines for structure fires in Glendale.

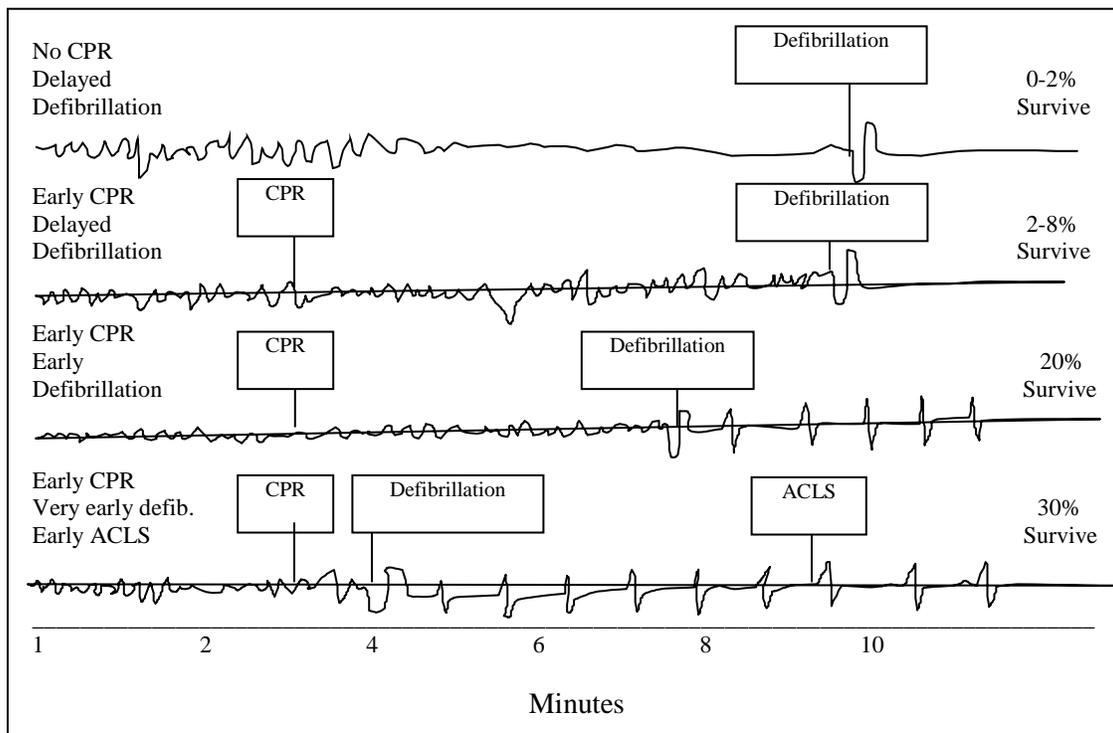
Metro Struc./Wk. Fire	Alarm Handling	Turnout	1 <sup>st</sup> On-scene Travel Time	ERF Travel Time	1 <sup>st</sup> On-scene Total Resp. Time	ERF Total Resp. Time
NFPA Benchmark	1:00/80%	1:20	4:00	8:00	6:20	10:20
<i>Baseline (2010-14)</i>	1:47	1:18	<u>5:09</u>	<u>9:11</u>	<u>7:09</u>	<u>11:37</u>

*NFPA 1221 - 2013: call handling benchmark 80% within 1:00 and 95% within 1:46*

***Event Propagation and Mitigation – Non-Fire***

***Emergency Medical Services (EMS)***

Like fire suppression performance goals, emergency medical services (EMS) response goals are based on a critical point in time around which to deploy resources. This point in time is brain death, which is most often caused when a person's heart has stopped beating and oxygen can no longer reach the brain. The American Heart Association (AHA) has established that the brain begins to die in four to six minutes without oxygen; damage is irreversible after 10 minutes. Interventions include early Continuous Chest Compression (CCC), Cardiopulmonary Resuscitation (CPR), and electrical defibrillation.



According to the AHA, defibrillation is the single most important factor affecting survival of the cardiac patient. Additionally, the AHA has emphasized for many years that the earlier CPR is initiated the better the patient's chance of survival. An AHA Survival Rates from Early Defibrillation model (above) depicts survival rates in relation to early CCC-CPR and defibrillation. This graph shows a 30% survival rate for patients who have received CCC-CPR within two minutes and defibrillation within four. For patients receiving no CPR or CCC and delayed defibrillation (after 10 minutes), the survival rate drops to between zero and two percent.

Setting goals and objectives that will allow EMS patients to have access to CCC-CPR within two minutes and defibrillation within four greatly improves their chances for survival. Currently, all fire department engine companies are advance life support (ALS) with the ability to perform CPR and defibrillation. In addition, Glendale's ladder companies, utility vehicle, incident commanders, special operations vehicle, hazardous materials support truck and crisis responders carry automatic external defibrillators.

The Commission on Fire Accreditation International (CFAI) has defined response time elements as a cascade of events. This cascade is similar to that used by the medical community to describe the events leading up to the initiation, mitigation, and ultimate outcome of a cardiac arrest.

In developing this concept, it was assumed that if a state of normalcy exists, there is no reason for an emergency service organization to respond. Thus, the series of events described in the present document begins with the state of normalcy. This state is defined as a condition under which there is no indication to a person occupying the area that there is an immediate threat to life or property.

The response time continuum begins when the state of normalcy ends and an emergency event is initiated. It is assumed that various agencies will define the events that make up the continuum in a variety of ways due to topographical, geographical and organizational differences. These differences are not necessarily important. What is important is the quality of service provided by the jurisdiction. Whether or not a given agency's response time is better than another's is subject to too many variables to be significant in and of itself.

Travel time is only one of several variables related to an effective response. This point is usually overlooked and leads to overly optimistic and very misleading conclusions about how long it takes to respond to an emergency. The Cascade of Events/Response Time Continuum shows all of these variables in sequential order.

Time is very critical for both medical emergencies and fires. The growth of a fire is exponential. They continue to grow until they run out of fuel, or the fire department intervenes. The AHA has established that the brain begins to die in four to six minutes without oxygen and damage is irreversible after 10 minutes.

### ***EMS Critical Tasks***

The Glendale Fire Department now responds to over 26,000 EMS incidents per year. The wide variety and circumstances of EMS calls makes it difficult and impractical to chart the critical tasks for each call type.

The American Heart Association (AHA) recommends a minimum of two emergency medical technicians and two certified paramedics to adequately operate an emergency cardiac scene. A 2010 EMS study conducted by the National Institute of Standards

and Technology (NIST) clearly demonstrates a crew of four first responders including two paramedics on-scene is the most expedient and efficient means of delivering advanced emergency medical care.

<b>Task</b>	<b>Personnel Required*</b>	<b>Type of Treatment Administered</b>
Compressions	1 – 2	Compression of chest to circulate blood
Ventilate/Oxygenate	1 – 2	Mouth-to-Mouth, Bag-Valve-Mask, Apply O2
Airway control	1 – 2	Manual techniques/Intubation/Cricothyroidomy
Defibrillate	1 – 2	Electrical defibrillation of dysrhythmia
Establish I.V.	1 – 2	Peripheral or central intravenous access
Control hemorrhage	1 – 2	Direct pressure, pressure bandage, tourniquet
Splint fractures	2 – 3	Manual, board splint, HARE traction, spine
Interpret ECG	2	Identify type and treat dysrhythmia
Administer drugs	2	Administer appropriate pharmacological agents
Spinal immobilization	4 – 6	Prevent or limit paralysis to extremities
Extricate patient	3 – 4	Remove patient from vehicle, entrapment
Patient Charting	1 – 2	Record vitals, treatments administered, etc.
Hosp. Communication	1 – 2	Receive treatment orders from Physician
Treat en-route	2 – 4	Continue to treat/monitor/transport patient
<b>Total</b>	<b>4-6</b>	<b>Personnel Required per Patient</b>

Critical Tasks for EMS in Full Code or Level II Trauma Patients Table 5.4  
\*Number of personnel required per patient to limit on-scene time to 10 minutes and/or administer Advanced Cardio Life Support (ACLS) protocol.

The department routinely responds to EMS calls that require treatment for more than one patient. These calls include vehicle accidents, chemical exposures, construction or industrial accidents, and any other event that occurs with several people in close proximity. Patient conditions can range from minor cuts and bruises to life threatening injuries.

Dispatchers are responsible for screening calls to establish the correct initial response. The first fire department officer on-scene amends the response once conditions have been assessed. Standard operating procedures are used to request adequate personnel and resources.

When planning to provide for protection from any risk, it is necessary to plan for the worst-case scenario. Medically speaking, the worst-case scenario for a single patient is cessation of breathing and heartbeat. The AHA and NIST recommendation of four treatment personnel for a single patient EMS incident will be recognized as the staffing standard. In addition, two ambulance personnel will respond to facilitate transportation of the patient to the appropriate medical facility.

***EMS Outcome Objectives:***

To stop the escalation of a medical emergency within the capabilities of the effective response force. The first arriving company assesses patients and prioritizes care to minimize death and disability. They intervene in life-threatening emergencies, stabilize patients to prevent additional injury and provide basic or advanced life support care. Ambulance service is dispatched as needed to provide transportation to treatment facilities.

An effective response force of four to six personnel, including a minimum of two paramedics, will arrive on-scene to administer basic or advanced life support protocols as appropriate.

***EMS Response Time Objectives***

The 5-year aggregate baseline travel time for the first arriving unit staffed with four firefighters and AED capability, to 90% of all medical emergencies in Glendale, is 5-minute 30-seconds or less, measured from brake-release at the station to brake-reset at the scene. The baseline total response time for the first unit on-scene is 7-minutes 50-seconds.

In Glendale, paramedic services arrive aboard the first unit on-scene.

The table below contains the 90% NFPA benchmarks and fire department’s five-year aggregate baselines for medical emergencies in Glendale.

Metro ALS	Alarm Handling	Turnout	1 <sup>st</sup> On-scene Travel Time	ALS Travel Time	1 <sup>st</sup> On-scene Total Resp. Time	ALS Total Resp. Time
NFPA Benchmark	1:30/90%	1:00	4:00	8:00	6:30	10:30
<i>Baseline (2010-14)</i>	1:51	1:29	<u>5:28</u>	<u>5:28</u>	<u>7:47</u>	<u>7:47</u>

*NFPA 1221, 2013: call handling benchmark is 90% within 1:30 and 99% within 2:00*

***Special Operations Critical Tasks – HAZMAT***

The Glendale Fire Department’s Hazardous Materials Response Team (HMRT) currently responds out of Fire Station 157. Staffing provides for a minimum of three hazardous material technicians and one certified toxicology paramedic at all times. The team is trained as a “level A” response team, capable of mitigating most hazardous materials incidents. For incidents of major potential the HMRT responds as a component of a valley-wide hazardous materials response team.

Table 5.5 Critical Tasks for Hazardous Materials Incidents displays the critical tasking for a typical Hazmat incident.

<b>Hazmat ERF Critical Tasks</b>	<b>Number of Personnel</b>	<b>Training Level</b>
Command	1	Non-HMRT
Hazard Sector	1	HMRT
Research	1	HMRT
Entry Team	2	HMRT
Back-up Team	2	HMRT
Decontamination Team	2	HMRT/or Non-HMRT
Hazard Sector Safety	1	HMRT
<b>Support Critical Task</b>	<b>10</b>	<b>Training Level</b>
Lobby Control	1	HMRT/or Non-HMRT
Support	4	Non-HMRT
Medical Officer	1	Non-HMRT
Scene Support	8-20	Non-HMRT
<b>Total</b>	<b>Total 24-36</b>	

Critical Tasks for Hazardous Materials Incidents

Table 5.5

***Hazmat Outcome Objectives:***

For hazardous materials emergencies, isolate, evacuate and identify the hazardous material(s) that created the emergency. Mitigate the hazard. An initial effective response force composed of ten personnel is deployed in engine and ladder companies, hazmat apparatus and one battalion chief. Included are four, specially trained and certified hazmat technicians, with one toxicology medic.

***Hazmat Response Time Objective***

For 90% of all emergent Hazmat incidents in Glendale, the *5-year aggregate* baseline travel time for the first arriving unit is 5-minutes 45-seconds or less, measured from brake-release at the station to brake-reset at the scene. The baseline total response time for the first arriving unit staffed with 4 firefighters, shall be 9-minutes 30-seconds or less, measured from dispatch to arrival on-scene. This measurement is affected by the extended handling time.

For 90% of all Hazmat emergencies requiring an effective response force, the *5-year aggregate* baseline travel time for the assembly of 10 firefighters (1 engine, 1 rescue team, and 1 command unit) on-scene, is 11-minutes 30-seconds or less. The baseline total response time for the arrival of an ERF, is 16-minutes 20-seconds or less, measured from dispatch to assembly on-scene.

The table below contains the 90% NFPA benchmarks for handling and turnout times, and the fire department’s five-year aggregate baselines for total response times to hazardous materials emergencies in Glendale.

*(5-year comparisons in Section IV, Performance Measurement)*

Metro HAZMAT	Handling	Turnout	1 <sup>st</sup> On-scene Travel Time	ERF Travel Time	1 <sup>st</sup> On-scene Total Resp. Time	ERF Total Resp. Time
NFPA Benchmark	1:30/90%	1:20	N/A	N/A	N/A	N/A
<i>Baseline (2010-14)</i>	3:35	1:11	<u>5:44</u>	<u>11:28</u>	<u>9:26</u>	<u>16:17</u>

*NFPA 1221, 2013: call handling benchmark is 90% within 1:30 and 99% within 2:00*

***Special Operations - Technical Rescue (TRT)***

In addition to the HMRT, the Glendale Fire Department also maintains a Technical Response Team (TRT) at Fire Station 159. Staffing provides for a minimum of five personnel that includes at least four firefighters trained both in hazardous materials and technical rescue. In addition, one certified toxicology paramedic is required. Technical rescue incidents include high angle, long-line, tree, confined space and swift water rescue techniques. This team is also trained in terrorist attack mitigation in conjunction with the HMRT.

***TRT Critical Tasks***

Table 5.6 Critical Tasks for Technical Rescue Incidents (Rope Rescue) displays the critical tasking for a typical TRT incident, involving a rope rescue.

<b>Technical Rescue ERF Critical Task</b>	<b>Number of Personnel</b>	<b>Training Level</b>
Command	1	Non-TRT
Rescue Sector	1	TRT
Entry Team	2	TRT
Back-up Team	2	TRT
Environmental (meters)	3	1 TRT/HMT 2 Non-TRT
Technical Safety	1	TRT
<b>Support Critical Task</b>	<b>10</b>	<b>Training Level</b>
Attendant Communications	1	TRT
Aircraft Attendant	1	TRT
Airline Management	4	Non-TRT
Rope Supervisor	1	TRT
Rope System Management	5	Non-TRT
Mechanical Advantage	3	Non-TRT
<b>Total</b>	<b>Total 25</b>	

Critical Tasks for Technical Rescue Incidents (Rope Rescue) Table 5.6

**\*all non-TRT personnel are operating under the supervision of TRT personnel**

***TRT Outcome Objectives***

For technical rescue operations, determine the number, location and condition of victims and extricate them using the lowest risk option. An initial effective response force composed of ten personnel is deployed in engine and ladder companies, technical rescue apparatus and one battalion chief. Included are four, specially trained and certified rescue technicians, with one toxicology medic.

***TRT Response Time Objectives***

For 90% of emergent TRT incidents in Glendale, The *5-year aggregate* baseline travel time for the first arriving unit staffed with 4 firefighters is 6-minutes 50-seconds or less, measured from brake-release at the station to brake-reset at the scene. The 90% baseline total response time is 8-minutes 30-seconds or less, measured from dispatch to arrival on-scene.

For 90% of all technical rescue emergencies requiring an effective response force, the baseline travel time for the arrival of 10 firefighters (1 engine, 1 rescue team, and 1 command unit), is 11-minutes 50-seconds or less. The baseline total response time for the arrival of the ERF, measured from dispatch to assembly on-scene, is 13-minutes 50-seconds or less. Extended handling times on these calls increase total response times.

The table below contains the 90% NFPA benchmarks for handling and turnout times, and the fire department’s five-year aggregate baselines for technical rescue incidents in Glendale.

Metro TRT	Handling	Turnout	1 <sup>st</sup> On-scene Travel Time	ERF Travel Time	1 <sup>st</sup> On-scene Total Resp. Time	ERF Total Resp. Time
NFPA Benchmark	1:30/90%	1:20	N/A	N/A	N/A	N/A
<i>Baseline (2010-14)</i>	3:23	1:22	<u>6:52</u>	<u>11:51</u>	<u>8:26</u>	<u>13:50</u>

*NFPA 1221, 2013: call handling benchmark is 90% within 1:30 and 99% within 2:00*

***Crisis Response (CR) Deployment***

The crisis response units respond immediately through the Phoenix Regional Automatic Aid Dispatch System, allowing responders to return to available status sooner, adding to the reliability of emergency service delivery. Two volunteers will staff each CR Unit based on volunteer availability.

- CR155 – Crisis Response In-training/Customer Follow up Unit/Flexible Shifts
- CR158 – Available 7-days a week, 24-hours a day based on Volunteer Staffing.

<b>CR Deployment Incident Natures</b>	
3-1 House Fires	1 <sup>st</sup> , 2 <sup>nd</sup> , & 3 <sup>rd</sup> Alarm Structure Fires
Drowning	Codes
Assaults	Stabbings
Shootings	Sexual Assaults
Domestic Violence	Mentally Ill
Death Notification	Grief Support
Pediatric Emergencies	Occupant Services
Mass Casualty Incidents	Special Events
Traffic Accidents	Suicides
Child/Elder Abuse	Lost Children/Elderly
Police Requests	Any Special Ops Incidents.
Large Scale Evacuations	Alert 3's at Glendale Airport

**CR Non-medical Transport:**

The CR Unit may transport non-injured family members or friends to the hospital to be with the patient(s).

The CR Unit may transport sexual assault victims to the Family Advocacy Center for follow-up, with the Police Department's approval. The CR Unit may remain with, and/or transport, the victim to their residence.

**CR Restricted Non-Transport:**

The CR Unit may remain on the scene with a customer who is considered alcohol intoxicated, until Magellan, Comtrans, family or other resources, including supportive friends arrive to take custody.

The CR Unit SHALL NOT transport alcohol intoxicated or other altered consciousness customers.

The CR Unit SHALL NOT transport combative or seriously mentally ill patients (customers). The CR Unit may transport mentally ill customers, following a vehicular accident, to a shelter if there has been no exacerbation of symptoms. The CR Unit will respond to, and remain on the-scene with the customer until Magellan, family, other resources, or supportive friends arrive.

The CR Unit SHALL NOT transfer any customer who has been treated as a "patient" by a physician or charted by fire personnel.

### ***Dispatch Policy***

The Glendale Fire Department will respond to any emergency situation that threatens life, safety or property. In cases when the fire department is not the appropriate agency, or is not capable of delivering the needed assistance, or if the situation is not a true emergency an attempt will be made to place the caller in contact with the appropriate agency.

The fire department will dispatch the closest available unit(s) with the assigned capability to control the emergency. The judgment of both the dispatcher and emergency response personnel is an integral part of the decision-making process, taking into consideration the information received and the potential risk that exists.

Timely response and effective management of EMS, rescue and fire control situations represent the most immediate priorities of the fire department. Upon receipt of adequate information (location and nature of the emergency) Dispatch will send the appropriate assignment. Dispatch will upgrade the response, as required, until command is established upon the arrival of the 1st unit.

### ***Jurisdiction***

Emergency incidents will be dispatched without regard to jurisdiction if they occur within the city limits of Phoenix, Avondale, Chandler, Daisy Mountain, El Mirage, Glendale, Goodyear, Guadalupe, Laveen, Peoria, Sun City, Sun City West, Sun Lakes, Surprise, Tempe, Tolleson, Buckeye, Scottsdale, Maricopa, Paradise Valley and Youngtown. Units will also be dispatched to borderline locations when Dispatch personnel cannot make an accurate determination of the jurisdiction.

The Phoenix Fire Regional Dispatch Center also dispatches for Luke Air Force Base, Harquahala, Gila Bend and Buckeye Valley. These jurisdictions are dispatched under mutual aid guidelines.

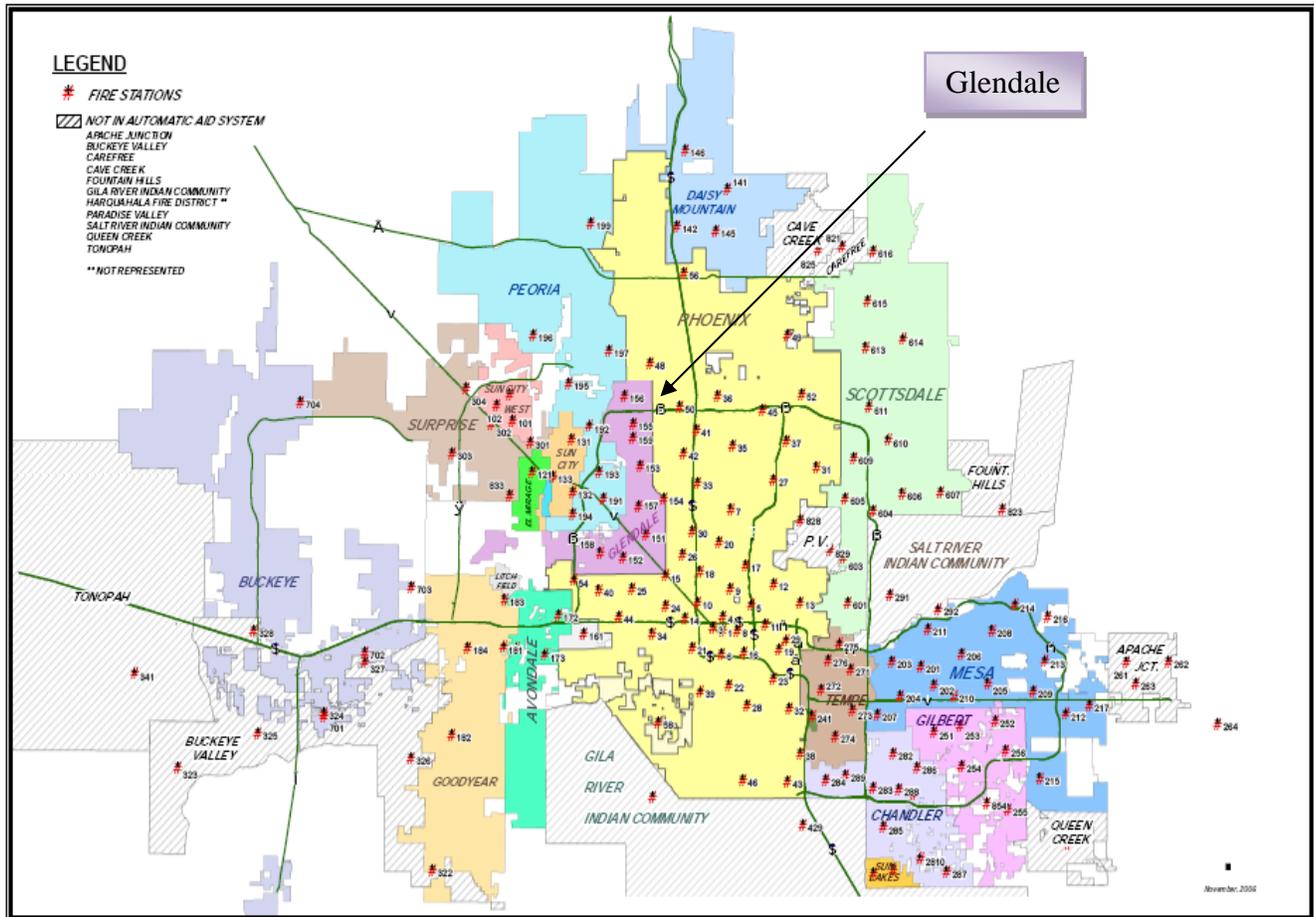
Calls for assistance from public or quasi-public agencies outside the city limits will be dispatched as mutual aid incidents, with the approval of the individual jurisdiction's Chief and/or BC, or the Phoenix Fire Department Shift Commander.

Calls for assistance from citizens outside the city limits will be transferred to the appropriate agency. If that agency requests mutual aid assistance, the Regional Dispatch Center will contact the appropriate jurisdiction for approval of the mutual aid request and dispatch accordingly.

### ***Automatic Aid Jurisdictions***

The City of Glendale is located near the geographic center of the Phoenix Metropolitan Area. It is bordered by Phoenix on three sides (north, east and south). Peoria borders the city to the north and west. Strip-annexed areas in west Glendale include Luke Air Force Base. There are six city council districts. However, political boundaries have no bearing on emergency services deployment. The Phoenix area

automatic aid dispatch system sends the closest available unit regardless of jurisdiction.



### Call Routing

Determining the nature of the problem may indicate that a caller does not have a true emergency and that fire department response is not necessary. Avoiding unnecessary responses is a basic part of the dispatch function. The call routing process must not delay response to valid emergency incidents, but should attempt to verify the nature of questionable calls. When a positive determination of need for emergency response cannot be made the fire department's policy is to dispatch.

### Incident Taker

The primary responsibility of the Incident Taker is to determine, without delay, the nature and location of the emergency, the source of the call (call back number), and to verify entry of the incident into the Computer Aided Dispatch (CAD) system.

The Incident Taker determines the appropriate response (Nature Code) based on the information gathered from the caller. This information is necessary to process the incident. Additional details may be sent to responding units as they become available.

### ***Nature Codes***

The Incident Taker enters the appropriate Nature Code, based on information derived from the caller. The CAD system determines the appropriate response based on the nature of the emergency, the location and the jurisdiction in which the incident is located. On some incidents the CAD system will select different types of capabilities for different jurisdictions. This guarantees an appropriate response in the different cities that have varied capability requirements for similar incidents. (The call requirements listed in this document fulfill the standard regional dispatch system requirements only.)

### ***Unit Selection***

The CAD system recommends the closest, most appropriate units for dispatch based on current unit location, capability and status information. The CAD system combines this information with the response type.

A response type is assigned to each Nature Code. The response type identifies the requirements needed on the assignment. Requirements can be identified by unit capability, such as engine or ladder, or by specific unit, such as BC2. Requirements are also expressed as primary or secondary. One unit can fulfill only one primary requirement. One unit can fulfill more than one secondary requirement.

When an incident is selected for dispatch, the CAD system builds an ordered unit consideration list. As a unit is considered for dispatch, its capabilities are inventoried against the outstanding response requirements. If it can satisfy any outstanding requirement it is added to the recommendation. The CAD system will continue to add units to the recommendation until all response requirements have been satisfied or all units have been exhausted. Some unit capabilities have distance limitations added to requirements. The system will not send certain types of units if they are out of the predetermined response range.

### ***Distribution and Concentration***

#### ***Distribution***

Station locations and resource distribution should assure optimal first due response and availability, and the timely arrival of resources. Objectives use 5-year baselines.

- **Structure Fires**  
3-1 Assignment Baseline: Arrival shall occur within 5-minutes 10-seconds travel time (4-minute NFPA) for first arriving unit to 90% of structure fires in Glendale; and/or arrival within 9-minutes 10-seconds travel time (8-minutes NFPA) for an effective response force of 20 firefighters consisting of three engines, one ladder and two command units to 90% of structure fires in Glendale.

First Alarms: Arrival shall occur within 10-minutes 24-seconds *travel time* for an initial effective response force of 36 firefighters, consisting of five engines, two ladders and four incident commanders to 90% of 5-2 working structure fires in Glendale.

- **Emergency Medical Services**  
Arrival shall occur within 5-minutes 30-seconds *travel time* (4-minute NFPA) for the first arriving unit to 90% of code three emergency medical incidents in Glendale, delivering AED and paramedic capability.
- **Special Operations**  
Arrival shall occur within 5-minutes 45-seconds *travel time* for the first unit on-scene on 90% of hazmat incidents, or 6-minutes 50-seconds for the first unit on-scene on 90% of TRT incidents. An effective response force of one engine, a special operations team and one command unit shall arrive within 11-minutes 30-seconds *travel time* for 90% of emergent hazardous materials incidents and 11-minutes 50-seconds or less for emergent technical rescue incidents in Glendale.
- **Ambulance Request – Code 3: Arrival within a 10-minute response time**, measured from unit notification to ambulance arrival on-scene, for the first arriving ambulance to 90% of code three (by Nature) medical incidents in Glendale.
- **Ambulance Request – Code 2: Arrival within a 20-minute response time**, measured from unit notification to ambulance arrival on-scene, for the first arriving ambulance to 100% of code two (by Nature) medical incidents in Glendale.

### ***Concentration***

Concentration is the spacing of multiple resources arranged within close enough proximity that an initial effective response force can be assembled on-scene within a specified time frame. An initial effective response force is an assembly of personnel and resources that will accomplish the critical tasks identified for incident mitigation and most likely stop the escalation of the emergency. This analysis is specific to maximum and high-risk demand zones that require higher concentrations of fire department resources. In determining concentration, the department considers risk assessment, call volume, population, and critical tasking requirements. The department concentrates its resources for deployment based on the response goals to maximum and high-risk fire management areas.

The initial response may stop the escalation of the emergency even in maximum risk areas. Still, an initial effective response force is not necessarily the total number of units or personnel that would be needed if the emergency escalated to its maximum potential. For example, a building has been pre-planned for a worst-case fire flow of



***Reliability***

Response reliability is defined as the probability that the required amount of staffing and apparatus will be available when a fire or emergency call is received. The Glendale Fire Department’s response reliability would be 100% if every piece of fire apparatus were available every time a fire or Emergency Medical Service (EMS) call was received.

In reality, there are times when a call is received in a particular first due area where that company is already deployed on another call. This requires dispatching a second-due unit from a station located further from the incident. As this distance increases, the next-due company cannot respond within the prescribed baseline travel time.

Factors affecting reliability may include unit responses per shift; unavailability caused by mechanical breakdown, company training, etc; the size of the first due area; population and barriers; peak demand hours; unusually lengthy incidents. In 2015, eight of the department’s twelve ALS companies averaged 7 to 10 incidents every shift, including automatic aid given. Most backup coverage in Glendale was provided by next-due Glendale stations. Studies indicate that this next-due coverage takes from 1 to 3 minutes longer to arrive on-scene than the home unit.

***Availability and Concurrent Incidents***

Station availability declines in proportion to service demand. For every incident dispatched, at least one unit becomes unavailable for the duration of that emergency. To provide backup coverage in all areas of the city, resources are distributed according to population, service demand and risk, concentrating resources in the busiest parts of the city. This overlapping coverage ensures a variety of resources are available, even during busy times.

<b>Type of Incident</b>	<b>Arrivals</b>	<b>Avg. Duration</b>	<b>% of Inc.</b>	<b>Total Durations</b>	<b>% of Durations</b>
Advance Life Support	18,793	0:27:28	53%	4567:14:21	47%
Basic Life Support	11,297	0:24:29	32%	2590:24:58	26%
Non-structure Fire	834	0:19:48	2%	392:35:06	4%
Fire Alarm Indication	742	0:17:02	2%	139:54:33	1%
Structure and Wk. Fire	1,765	0:41:45	5%	576:42:11	5%
Hazardous Materials	500	0:37:00	1%	140:38:36	1%
Technical Rescue/TLO	180	0:47:38	0.5%	79:43:50	1%
Miscellaneous Service	1,342	0:25:35	4%	562:56:00	6%
Event Coverage	265	4:58:47	0.5%	941:09:52	9%

### ***Stop Loss Policy***

Drawdown is defined as the resource level an agency will not go below when asked for mutual aid. The Automatic Aid Agreement contains a commitment from all surrounding jurisdictions to automatically send any and all resources if requested. This ensures a timely response for all concerned. In order to address drawdown, a “backfill” process is in place to cover cities that empty their resources to meet another city’s immediate needs. Once the Glendale Fire Department has given up its resources to an agency needing help, another agency automatically sends enough units to adequately cover Glendale.

Glendale is surrounded on all sides by departments that participate in the automatic aid dispatching consortium. When large scale incidents result in the activation of the greater alarm mechanism, automatic move-ups occur to provide coverage in the affected first due areas, ensuring continuous coverage until the home unit(s) return to quarters.

In addition, the System Wide Available Resource Guidelines in Phoenix Fire Department’s Standard Operating Procedure Volume II, Emergency Deployment, 205.05 define the limits to automatic aid redeployment and the required level of coverage that must remain in service locally to handle routine activity.

### ***System-wide Available Resource Guidelines:***

Any one (1) large scale incident may use sixty percent (60%) of Automatic Aid resources. Forty percent (40%) of Automatic Aid resources must remain in service to handle routine emergency activity within the system.

If two (2) large scale incidents are working simultaneously, each incident may use thirty-five percent (35%) of Automatic Aid resources. Thirty percent (30%) of Automatic Aid resources must remain in service to handle routine emergency activity within the system.

If three (3) large scale incidents are working simultaneously, each incident may use twenty-five percent (25%) of Automatic Aid resources. Twenty-five percent (25%) of Automatic Aid resources must remain in service to handle routine emergency activity within the system.

### ***Shift Staffing***

The department utilizes a three-shift (A, B and C) platoon staffing schedule, with each shift covering a 24-hour period, working 8:00am to 8:00am.

***NFPA-1710 Crew Staffing***

All engine and ladder companies are staffed with a minimum of four personnel, in compliance with NFPA 1710.

All four personnel on each engine and ladder company are Emergency Medical Technician certified and at least two of the four are Paramedic certified.

**Command Staffing**

Battalion responder vehicles are staffed with one incident commander (battalion chief) and one incident safety officer (captain).

The Shift Commander unit is staffed by one incident commander (deputy chief) and one incident safety officer (captain).

A standardized incident command/management system is defined in Phoenix Fire Department's Volume II SOP 201.01, Command Procedures. The command system is compliant with the National Incident Management System (NIMS).

**Automatic Aid**

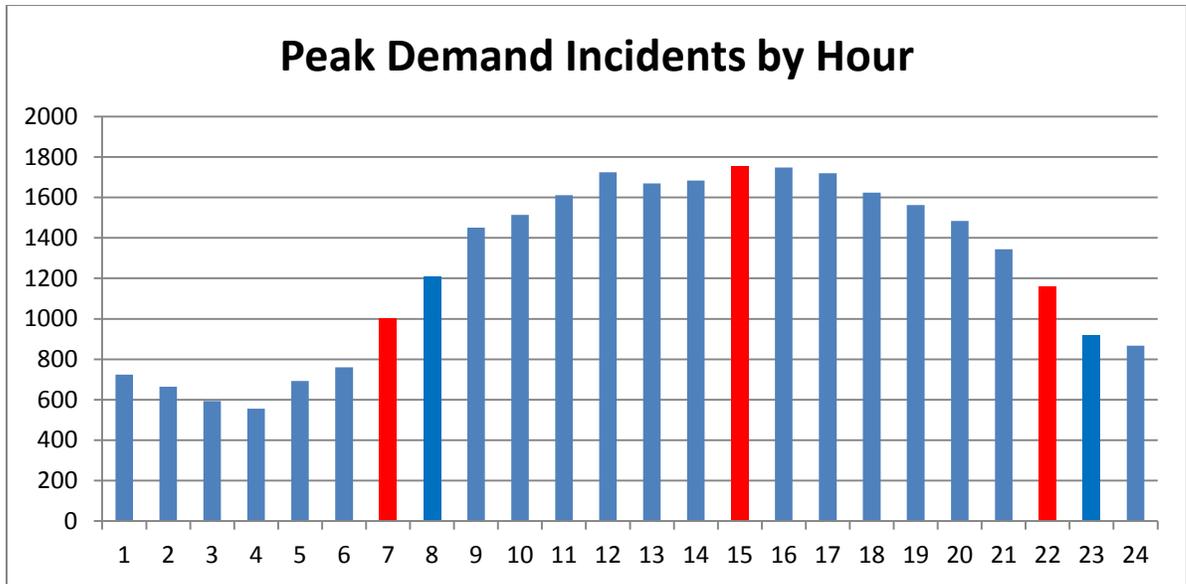
Glendale benefits from resources made available through the valley-wide automatic aid consortium, which responds without regard to political boundaries. Automatic aid stations and responders are included in the department's concentration, availability and response time analyses.

**Standard Operating Procedures**

Departments dispatched through Phoenix's central dispatch system train and respond according to Phoenix's Volume II Standard Operating Procedures, which define the levels of response and critical tasks for each incident type. The Regional Operations Consistency Committee (ROCC), comprised of representatives from each participating department, meets regularly to review, revise and update Volume II according to the schedule defined in SOP #208.01 adopted in 2014. (2012 Strategic Recommendation #4)

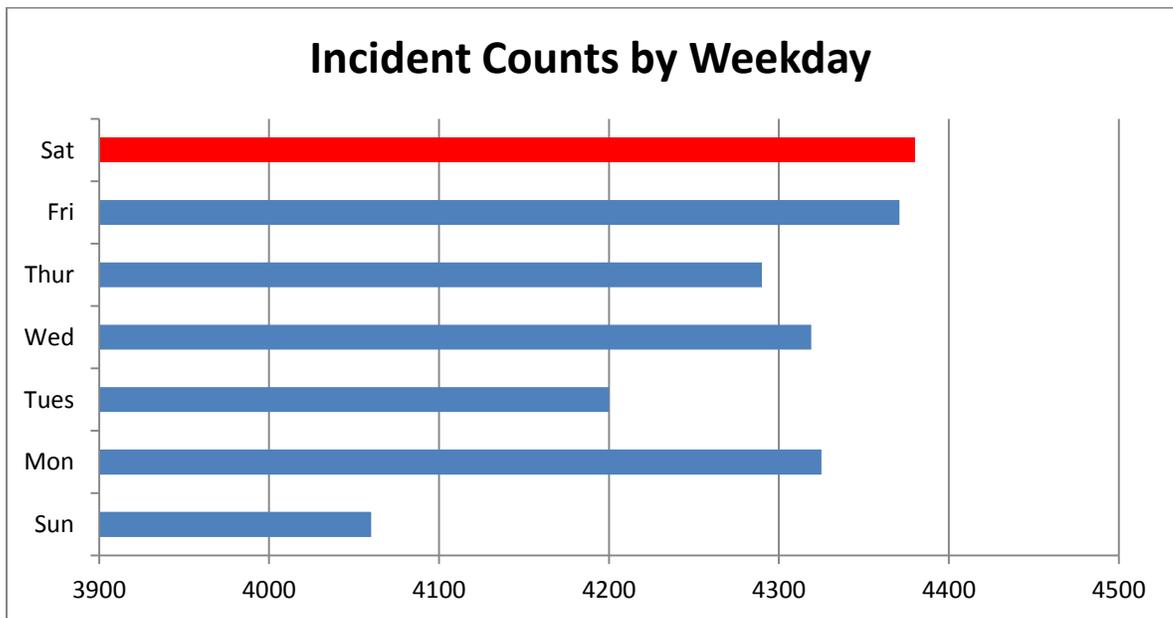
***Peak Demand Hours***

Analysis of 2015 incidents reveals the hours with the most incident activity are 7:00am to 10:59pm, with the highest call volume occurring from 3:00-3:59pm. This represents 81% of incident activity. The remaining 19% of incidents occurred during the off-peak night and early morning hours.



***Busiest Weekday***

Most incidents in 2015 occurred on Saturdays. Sundays had the fewest incidents of any day of the week. This is consistent with 2014.



***Response Time Continuum***

The response time continuum is composed of the following durations and intervals:

**Event Initiation**

The point at which factors occur that ultimately result in activation of the emergency response system.

**Emergency Event**

The point of awareness that conditions exist requiring an activation of the emergency response system

**Public Safety Access Point (PSAP) Time**

The duration from when the public safety access point receives the call reporting the incident, to when the call is transferred and received by the fire dispatch center

**Alarm/Dispatch Time**

The duration from when the call for service is received by the dispatch center and the emergency response system is activated

**Notification**

The point at which alarm notification is received by the first due fire station

**Turnout Time**

The duration from station notification time to a unit responding en route

**Travel Time**

The duration from when the unit's parking brake is released at the station to when the parking brake is reset upon arrival on-scene

**Arrival Time**

The moment the first arriving unit sets the parking brake upon arrival on-scene

**Total Response Time**

Calculated from the time the alarm is first received at the PSAP to the Arrival Time of the first arriving unit

**Initiation of Action**

The point when operations to mitigate the event begin. This may include size-up, search and rescue, resource deployment, etc.

**Termination of Incident**

The point at which the emergency is mitigated and all units have gone available to respond.

## SECTION V: PERFORMANCE EVALUATION

### ***NFPA Benchmarks***

It is the goal of the Glendale Fire Department to attain compliance with National Fire Protection Association (NFPA) standards 1221 for call processing, and 1710 for response times. (*Appendix #6*)

#### **NFPA 1221 CALL ANSWERING (2013 Edition)**

*Installation, Maintenance, and Use of Emergency Services Communications Systems*

- **7.4.1**  
95% of alarms shall be answered at the Public Safety Access Point (PSAP) within 15 seconds, and 99% of alarms shall be answered within 40 seconds.
- **7.4.1.1**  
Compliance with 7.4.1 shall be evaluated monthly.

*The Glendale Police Dispatch Center is the PSAP for the Glendale Fire Department. The majority of fire department incidents are not entered into the police dispatch system and there is no measurable record of the initial call receipt or the transfer time to measure PSAP. Only incident types that receive a police response are entered into the police dispatch system.*

#### **NFPA 1221 CALL PROCESSING (2013 Edition)**

- **7.4.2**  
With the exception of call types identified in 7.4.2.2 (below), 80% of emergency call processing and dispatching shall be completed within 60 seconds, and 95% of emergency call processing and dispatching shall be completed within 106 seconds.
- **7.4.2.1**  
Compliance with 7.4.2 shall be evaluated monthly.
- **7.4.2.2**  
Emergency Alarm Processing for the following Call types shall be completed within 90 seconds 90% of the time, and within 120 seconds 99% of the time.
  - Calls requiring emergency medical dispatch questioning and pre-arrival medical instructions
  - Calls requiring language translation
  - Calls requiring the use of a TTY/TDD device or audio/video relay services
  - Calls of criminal activity that require information vital to emergency responder safety prior to dispatching units
  - Hazardous Materials incidents
  - Technical Rescue incidents

**NFPA 1710 (2010 Edition)**

*Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, establishes the following response time objectives:

- **4.1.2.1**
  - Sixty seconds or less turnout time for non-fire incidents and 80 seconds or less for fire and special operations incidents
  - Four minutes (240 seconds) or less (travel time) for arrival of the first arriving engine company at a fire suppression incident and/or eight minutes (480 seconds) or less (travel time) for arrival of a full first alarm assignment at a fire suppression incident.
  - Four minutes (240 seconds) or less (travel time) for arrival of a unit with first responder or higher-level capability at an emergency medical incident.
  - Eight minutes (480) seconds or less (travel time) for arrival of an advanced life support unit at an emergency medical incident, where this service is provided by the fire department.

***Compliance with NFPA Staffing Standards***

Glendale Fire Department meets the NFPA standard requiring minimum staffing of four firefighters for both engine and ladder companies. Vacancies are filled through a constant staffing policy to insure all companies are fully staffed at all times.

- **Engine Companies:** These companies shall be staffed with a minimum of four, on-duty firefighters, including two trained to the EMT-Basic Level and two trained to the EMT-Paramedic Level.
- **Ladder Companies:** These companies shall be staffed with a minimum of four, on-duty firefighters, including two trained to the EMT-Basic Level and two trained to the EMT-Paramedic Level.
- **Incident Commanders:** These units shall be staffed with one battalion chief and one incident safety officer (captain).

***Department Five Year Baselines***

**Public Safety Access Point (PSAP) Time**

The baseline objective is 95% of all alarms shall be answered in 30 seconds or less, and in no case shall the initial call taker's response to an alarm exceed 60 seconds. However, the Glendale Police Dispatch Center, the PSAP for the Glendale Fire Department, only enters fire department incidents into the police dispatch system that also receives a police response. Consequently, there is no measurable record of the initial call receipt or the transfer time to measure PSAP on most fire incidents.

**Dispatch Time**

The Glendale Fire Department contracts with the City of Phoenix Fire Department for dispatching services as part of the automatic aid agreement. The baseline objective for Phoenix's call processing time is 90-seconds or less for 90% of medical emergencies and structure/working fires.

Special Operations call handling requires additional time to determine the precise location, nature, scope and appropriate level of response. The baseline handling time objective for 90% of Hazmat and TRT emergencies is 3-minutes or less.

The alarm room uses pre-alerts and call prioritizing during call handling. For certain critical calls, such as drownings and structure fires, the closest units receive pre-alert tones and incident locations on their computers before the alarm room verbally dispatches the emergency. In addition, the use of incident categorization is being implemented to separate priority emergencies from those that require long handling times to determine the incident scopes.

**Turnout Time**

The baseline objective for turnout times is 90-seconds or less for Fires, EMS and Special Operations incidents, measured from station notification to en route.

***Response Time – Fire***

The *5-year aggregate* baseline travel time for the first arriving unit staffed with four firefighters, to 90% of all working and structure fires in Glendale, is 5-minutes 10-seconds or less, measured from brake-release at the station to brake-reset at the scene. The baseline total response time is 7-minutes 10-seconds or less, measured from dispatch to arrival on-scene.

The baseline travel time for the arrival of an Effective Response Force (ERF) consisting of 20 firefighters (3 Engines, 1 Ladder, 2 Command), is 9-minutes 10-seconds or less. The baseline total response time for the arrival of the ERF is 11-minutes 40-seconds or less, measured from dispatch to full assembly on-scene.

Working/Structure Fires - 90th Percentile Times Baseline Performance		2010 – 2014 Baseline	2015 65 inc.	2014 60 inc.	2013 71 inc.	2012 82 inc.	2011 74 inc.
<b>Alarm Handling</b>	Pick-up to Dispatch	1:47	1:11	1:38	1:20	1:45	2:11
<b>Turnout Time</b>	Turnout Time 1st Unit	1:18	1:17	1:12	1:06	1:12	1:30
<b>Travel Time</b>	Travel Time 1st Unit <b>Distribution</b>	<u>5:09</u>	5:33	5:07	5:13	4:41	5:36
	Travel Time ERF <b>Concentration</b>	<u>9:11</u>	9:18	10:09	9:06	8:15	9:22
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	<u>7:09</u>	7:31	6:31	7:08	7:00	7:49
	Total Response Time ERF <b>Concentration</b>	<u>11:37</u>	11:18	11:49	11:46	11:52	12:37

***Response Time - Emergency Medical Services***

The 5-year aggregate baseline travel time for the first arriving unit staffed with four firefighters and AED capability, to 90% of all medical emergencies in Glendale, is 5-minute 30-seconds or less, measured from brake-release at the station to brake-reset at the scene. The baseline total response time for the arrival of paramedic services is 7-minutes 50-seconds or less, measured from dispatch to arrival on-scene.

ALS - 90th Percentile Times Baseline Performance		2010 – 2014 Baseline	2015 16,134	2014 15,226	2013 14,522	2012 14,310	2011 13,510
<b>Alarm Handling</b>	Pick-up to Dispatch	1:51	1:25	1:53	1:41	1:47	1:52
<b>Turnout Time</b>	Turnout Time 1st Unit	1:29	1:32	1:31	1:28	1:27	1:31
<b>Travel Time</b>	Travel Time 1st Unit On Scene <b>Distribution</b>	<u>5:28</u>	5:49	5:36	5:33	5:29	5:32
	ERF (ALS) Travel Time <b>Concentration</b>	<u>5:28</u>	5:49	5:36	5:33	5:29	5:32
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	<u>7:47</u>	7:58	7:55	7:51	7:48	8:02
	ERF (ALS) Total Response Time <b>Concentration</b>	<u>7:47</u>	7:58	7:55	7:51	7:48	8:02

The alarm room uses pre-alerts and call prioritizing during call handling. For certain critical calls, such as drownings and structure fires, the closest units will receive a

pre-alert tone and location on their computer before the verbal dispatch. As calls are placed into the dispatch queue, critical emergencies, preempt minor emergencies.

***Response Time - Technical Rescue***

The *5-year aggregate* baseline travel time for the first arriving unit staffed with 4 firefighters is 6-minutes 50-seconds or less, for 90% of all emergent technical rescue incidents in Glendale, measured from brake-release at the station to brake-reset at the scene. The baseline total response time is 8-minutes 30-seconds or less, measured from dispatch to arrival on-scene.

For 90% of all technical rescue emergencies requiring an effective response force, the *5-year aggregate* baseline travel time for the arrival of 10 firefighters (1 engine, 1 rescue team, and 1 command unit), is 11-minutes 50-seconds or less. The baseline total response time for the arrival of the ERF, measured from dispatch to assembly on-scene, is 13-minutes 50-seconds or less.

TRT - 90th Percentile Times Baseline Performance		2010 – 2014 baseline	2015 (18)	2014 (19)	2013 (9)	2012 (18)	2011 (17)
<b>Alarm Handling</b>	Pick-up to Dispatch	3:23	4:03	3:32	2:41	2:49	4:21
<b>Turnout Time</b>	Turnout Time 1st Unit	1:22	1:22	1:25	0:47	1:28	1:18
<b>Travel Time</b>	Travel Time 1st Unit On Scene <b>Distribution</b>	<u>6:52</u>	6:45	6:49	5:07	7:37	6:43
	ERF Travel Time <b>Concentration</b>	<u>11:51</u>	9:57	14:30	10:47	12:03	12:32
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	<u>8:26</u>	10:46	9:00	8:26	8:15	7:47
	ERF Total Response Time <b>Concentration</b>	<u>13:50</u>	13:31	15:19	13:46	12:53	13:20

***Response Time - Hazardous Materials***

NFPA 1710 does not specify a travel time standard for Special Operations. The department’s *5-year aggregate* baseline travel time for 90% of emergent Hazmat incidents is 5-minutes 45-seconds or less, measured from brake-release at the station to brake-reset at the scene.

The baseline total response time for the first arriving unit staffed with 4 firefighters, is 9-minutes 30-seconds or less, measured from dispatch to arrival on-scene.

For 90% of all Hazmat emergencies requiring an effective response force, the baseline travel time for the assembly of 10 firefighters (1 engine, 1 rescue team, and 1 command unit) on-scene, is 11-minutes 30-seconds or less. The baseline total

response time for the arrival of an ERF, is 16-minutes 20-seconds or less, measured from dispatch to assembly on-scene.

HAZ - 90th Percentile Times Baseline Performance		2010 – 2014 baseline	2015 (12)	2014 (12)	2013 (22)	2012 (20)	2011 (9)
<b>Alarm Handling</b>	Pick-up to Dispatch	3:35	2:13	3:14	3:09	2:49	3:13
<b>Turnout Time</b>	Turnout Time 1st Unit	1:11	1:35	0:59	1:00	1:32	1:20
<b>Travel Time</b>	Travel Time 1st Unit On Scene <b>Distribution</b>	<u>5:44</u>	5:28	4:48	6:30	5:49	5:32
	ERF Travel Time <b>Concentration</b>	<u>11:28</u>	11:50	14:20	13:30	10:56	8:21
<b>Total Response Time</b>	Total Response Time 1st Unit On Scene <b>Distribution</b>	<u>9:26</u>	9:56	7:07	10:24	6:44	12:30
	ERF Total Response Time <b>Concentration</b>	<u>16:17</u>	14:03	15:59	16:55	14:08	18:50

***Ambulance Response Times***

The Arizona Department of Health Services’ response time requirements are:

- Code-2 response: within 20 minutes, 100% of the time
- Code-3 response: within 10 minutes, 90% of the time.

Ambulance Resp. Time	Benchmark – Code 2	Benchmark – Code 3
Year	100% within 20-Minutes	90% within 10-Minutes
	% On-time	90% arrival time
2010	99.9%	9:25
2011	99.8%	8:34
2012	99.7%	8:48
2013	99.7%	9:20
2014	99.3%	9:47
2015	98.6%	10:10

Ambulance response times are reviewed and reported to the EMS chief monthly to monitor the vendor’s compliance with DHS response time requirements. The Code 2 response times have deteriorated over the past five years, now dropping into the 98% range in 2015. Code 3 response times have also deteriorated, exceeding the DHS 90% benchmark of 10-minutes. Performance continues to be monitored.

## SECTION VI: RESPONSE CAPABILITIES IMPROVEMENT PLAN

### *Monitor and report performance*

Deployment and response time objectives will continue to be reviewed and reported quarterly in the quarterly reporting process. In addition, the Category II annual self-assessment and the Standards of Cover update will include the analysis of outcome objectives and response times. The Fire Analyst will report response time information quarterly, and include it in the annual Category II self-assessment and Standards of Cover update.

### *Monitor changes in risk and service demand*

The Community Risk Assessment – Standards of Cover (CRA-SOC) includes information on anticipated growth and new development occurring throughout the response area. The planning zone of each project is identified, along with the type and size of the development, and the first due stations that will be effected by potential changes in risk and demand. Updated information will continue to be obtained annually from the City's Planning Department to remain current with new and emerging developments. The Fire Analyst will include this information in the CRA-SOC, to aid Operations and Deployment staff in planning for potential changes to community risk and service demand.

### *Improve Ambulance Response Times*

Response times for the contract ambulance service provider have steadily deteriorated over the past six years. Competition and instability in the ambulance transport industry is creating a reliability issue. The Fire Analyst will continue to monitor and report ambulance transport performance over the next year, and the EMS and Executive Chiefs will either develop a means to improve response times, or pursue a state Certificate of Need to add this service to the department's EMS program.

### *Maintain apparatus and station replacement schedules*

Front line apparatus replacement will continue to be conducted via an established age and mileage schedule to ensure the apparatus fleet is optimally reliable. Station construction and apparatus needs will be requested by the Executive chiefs in the city's Capital Improvement Plan (CIP) during the annual budget process.

### *Research industry for alternative response options*

The department's performance methodology includes the annual division self-assessments to evaluate efficiency and effectiveness internally. The division quarterly reports will continue to provide an opportunity to monitor division efficiency and effectiveness throughout the year. Industry research through benchmarking and networking will continue, to enable Division heads and Executive chiefs to measure performance against other fire departments and evaluate emerging and innovative

approaches to service delivery that could be adopted here. The Fire Analyst will conduct comparative research by participating in benchmarking opportunities.

*Remain active in the Regional Operations Consistency Committee (ROCC)*

The Operations Chief and designated personnel will continue to be active participants in the ROCC, meeting quarterly to discuss and assess regional performance adequacies, consistencies, reliabilities, resiliencies, and opportunities for improvement for the total response area. In addition, the SOC will continue to be updated annually to assess response performance and identify areas where improvements might be warranted. The SOC will be used as a tool for performance measurement and deployment assessment.

*Update City Council at least annually on budget and service gaps*

The CRA-SOC provides an annual review of risks and response capabilities. The Executive chiefs will keep the governing body apprised of the status of department operations by presenting perceived increases in risk and deficiencies in operational capabilities at televised City Council Workshops or Voting Meetings. This information will also be included in the annual budget process. The Fire Analyst will continue to include risk and response information in the CRA-SOC.

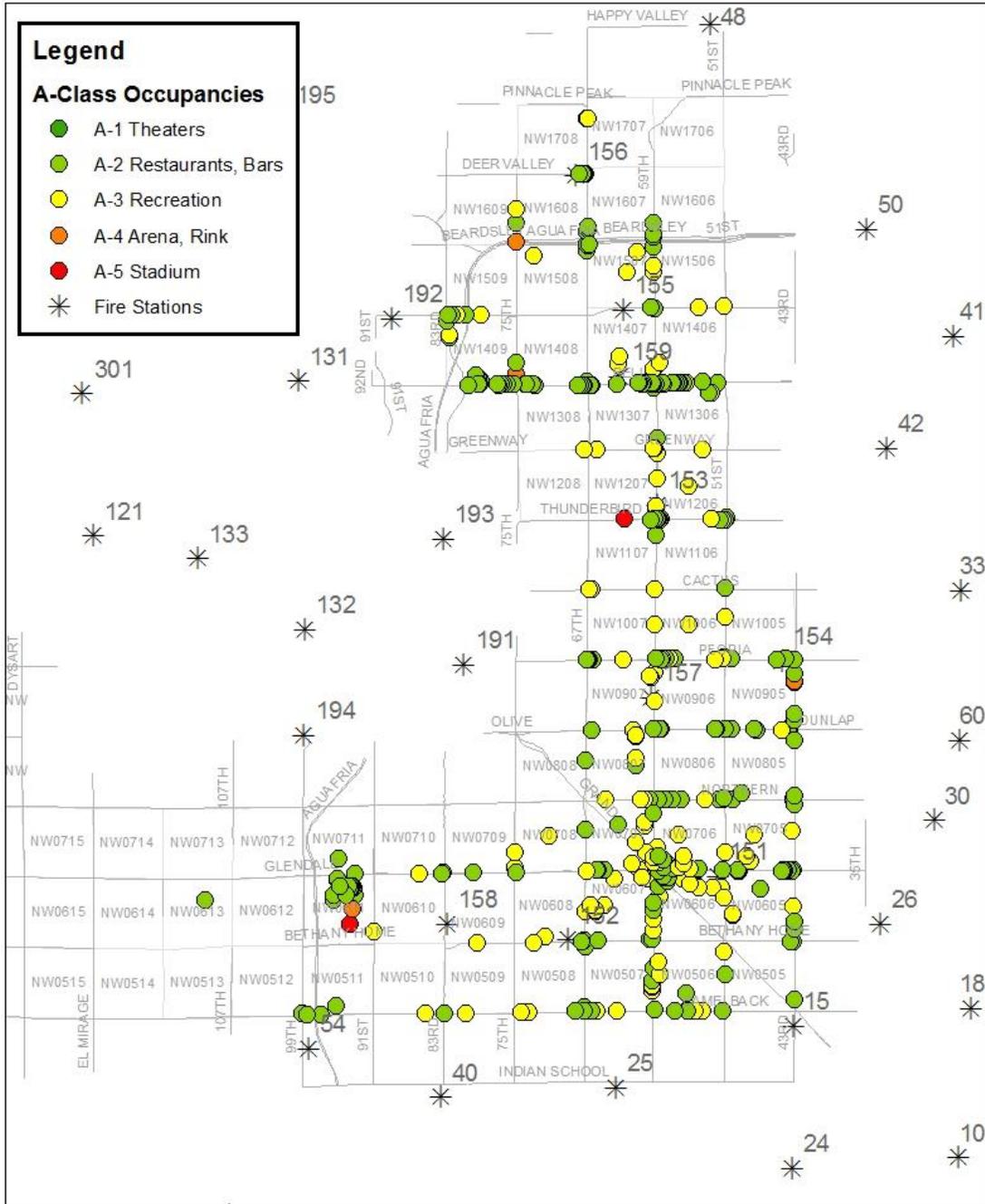
*Continue community involvement in the strategic planning process*

The department's Customer Based Strategic Plan (the Plan) was formulated using feedback from groups of citizens interested in guiding the future of fire and emergency services in Glendale. The Plan will be re-evaluated every three years to gain fresh community feedback and validate the mission and services being provided. The Executive staff will conduct follow-up community reviews of the Plan every three years to gain fresh insight into the citizens' fire and emergency services priorities.

**SECTION VII: MAPS**

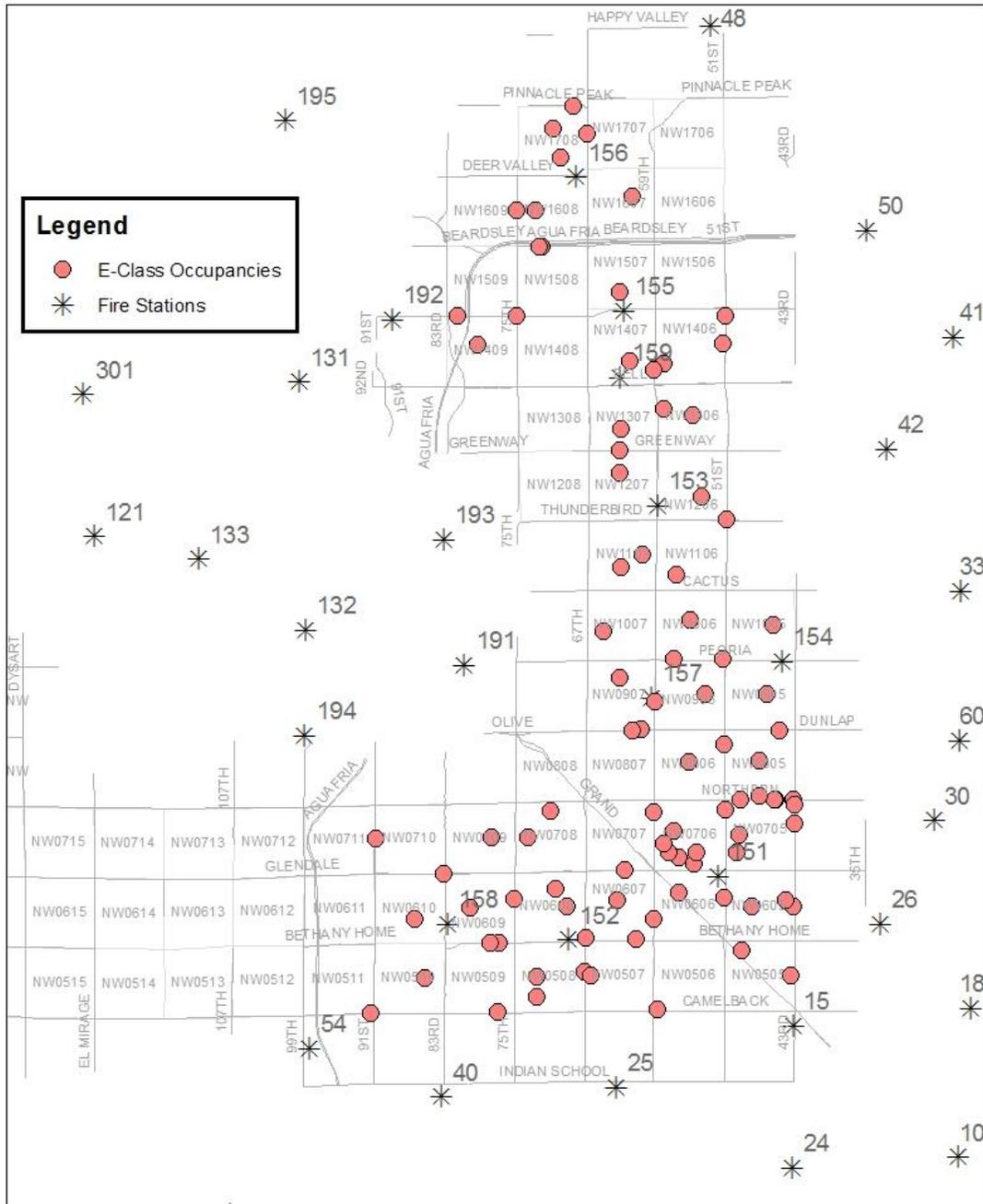
*Risk Assessment – IBC Assembly Group*

**IBC A-Class Occupancies**



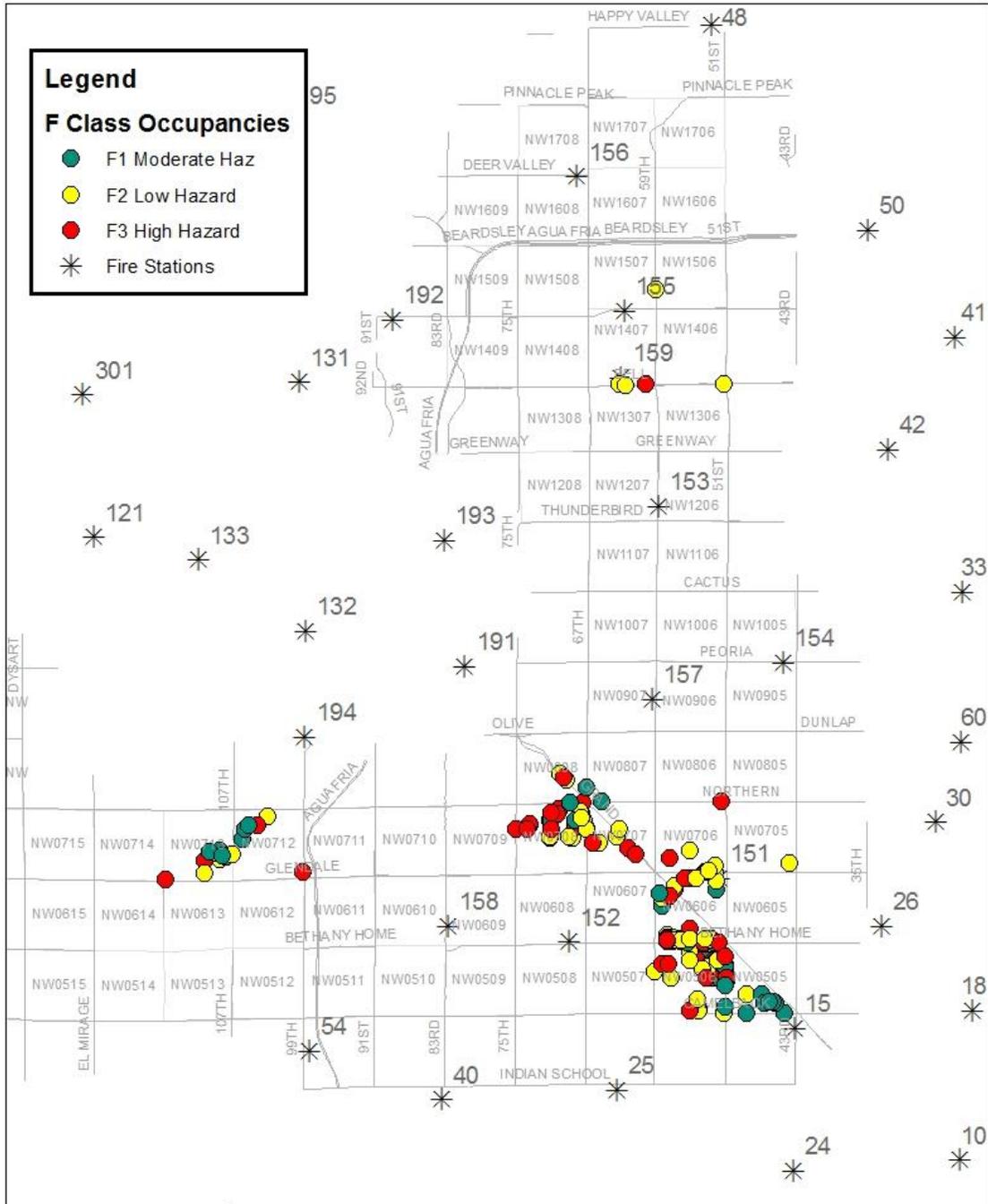
*Risk Assessment – IBC Educational Group*

IBC E-Class Occupancies



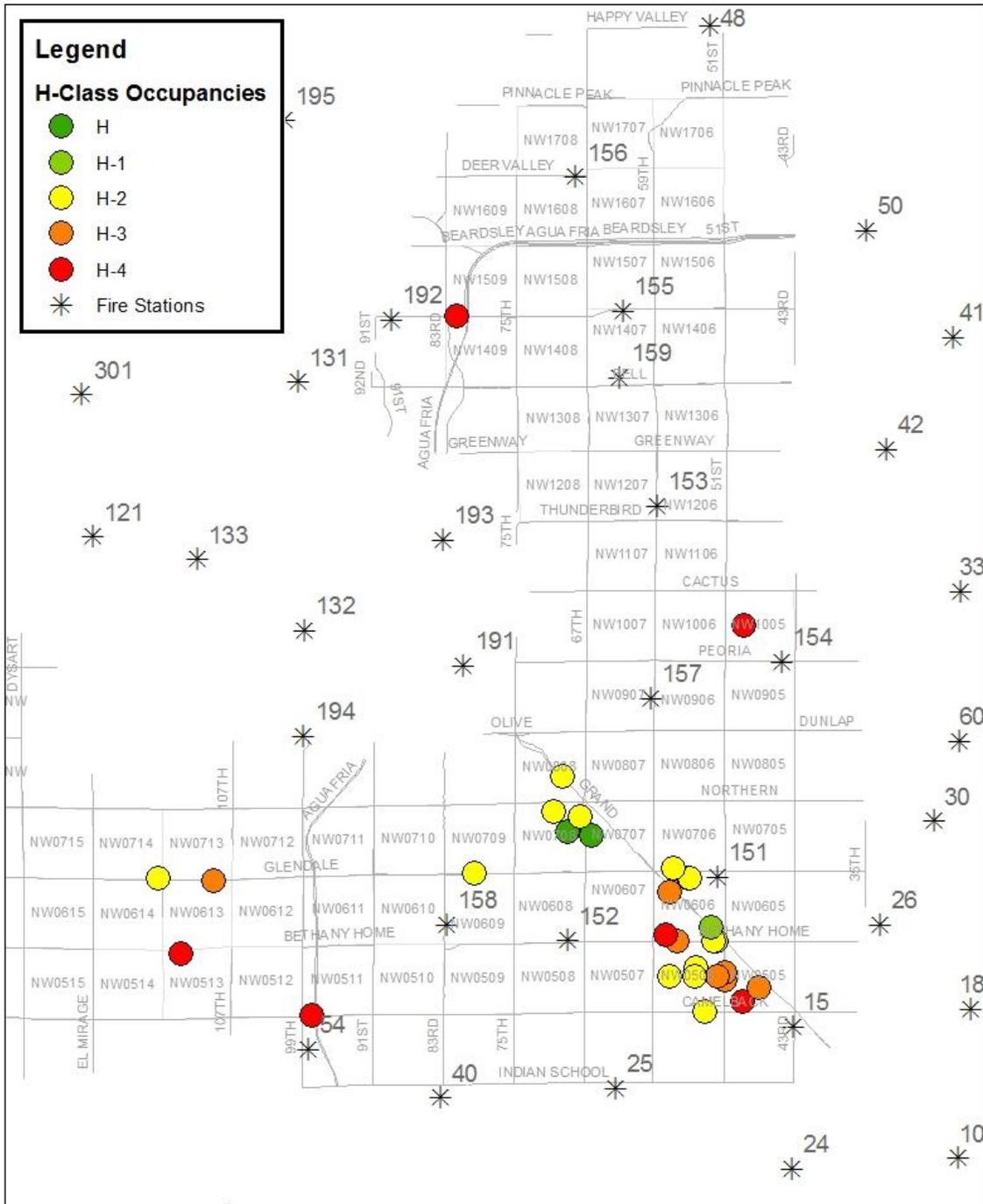
*Risk Assessment – IBC Factory Group*

**IBC F-Class Occupancies**



**Risk Assessment – IBC High-Hazardous Group**

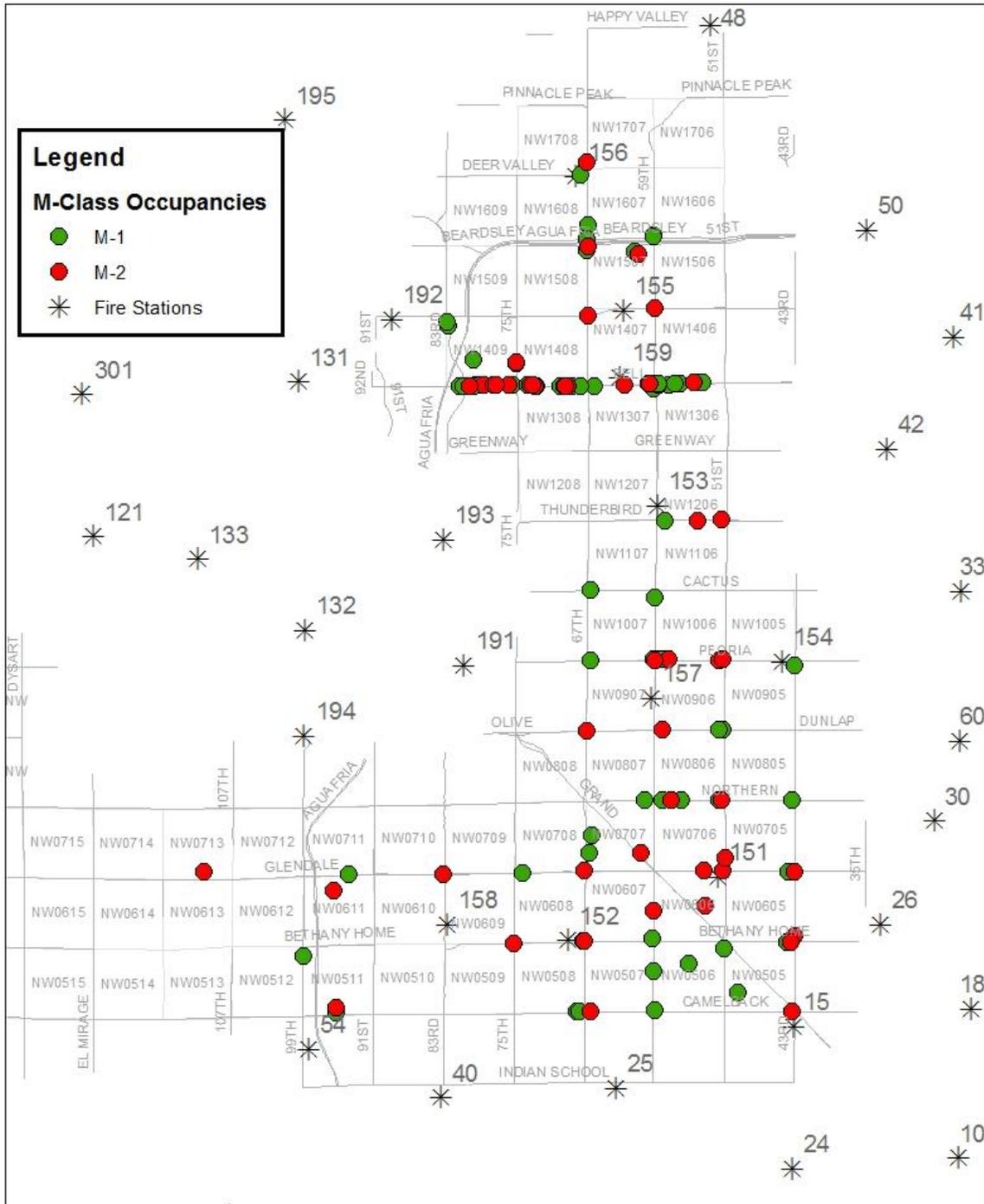
**IBC H-Class Occupancies**





**Risk Assessment – IBC Mercantile Group**

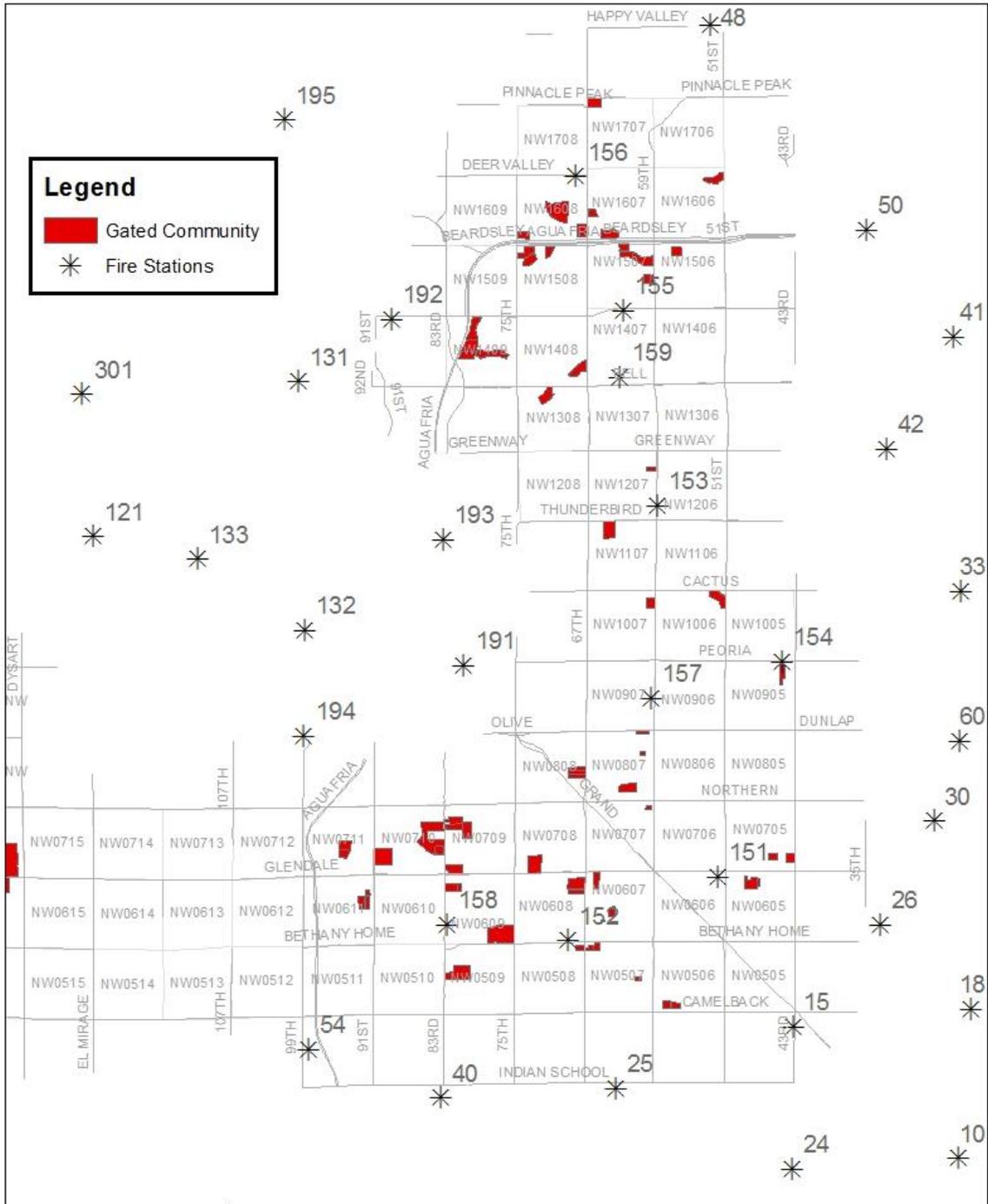
**IBC M-Class Occupancies**





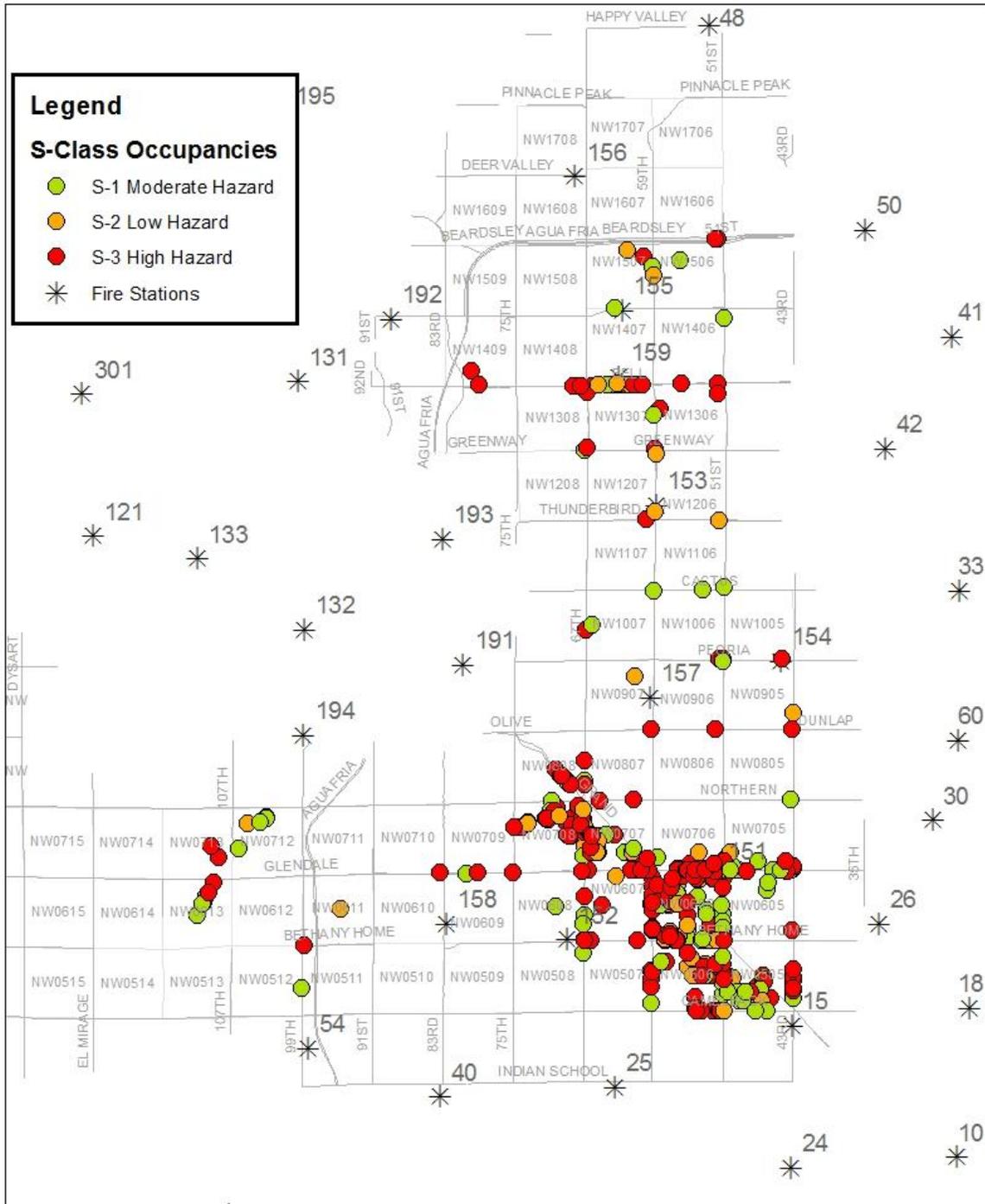
**Risk Assessment – Gated Residential**

**Gated Communities**



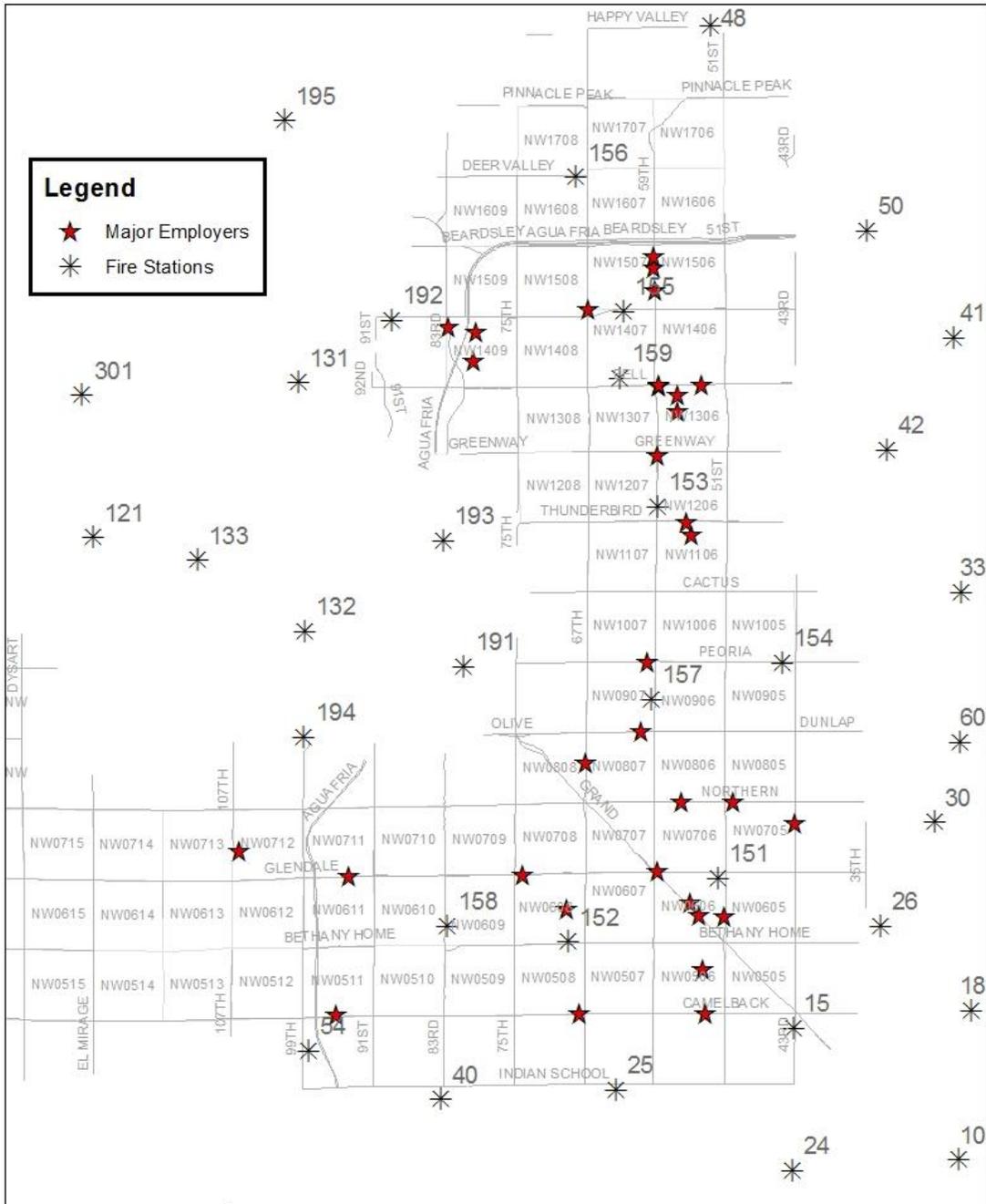
**Risk Assessment – IBC Storage Group**

**IBC S-Class Occupancies**

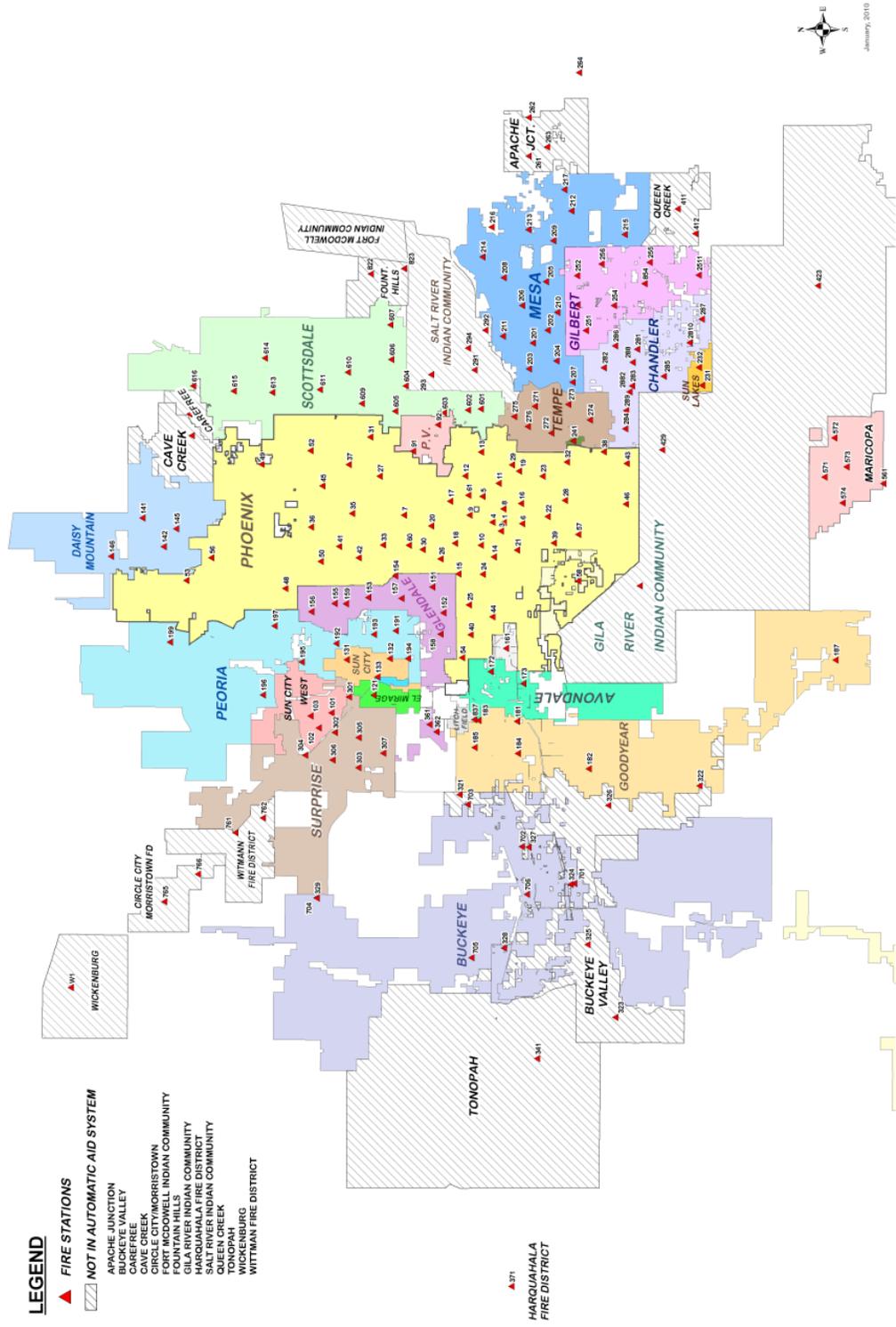


*Major Employers*

Major Employers (More than 200 employees)

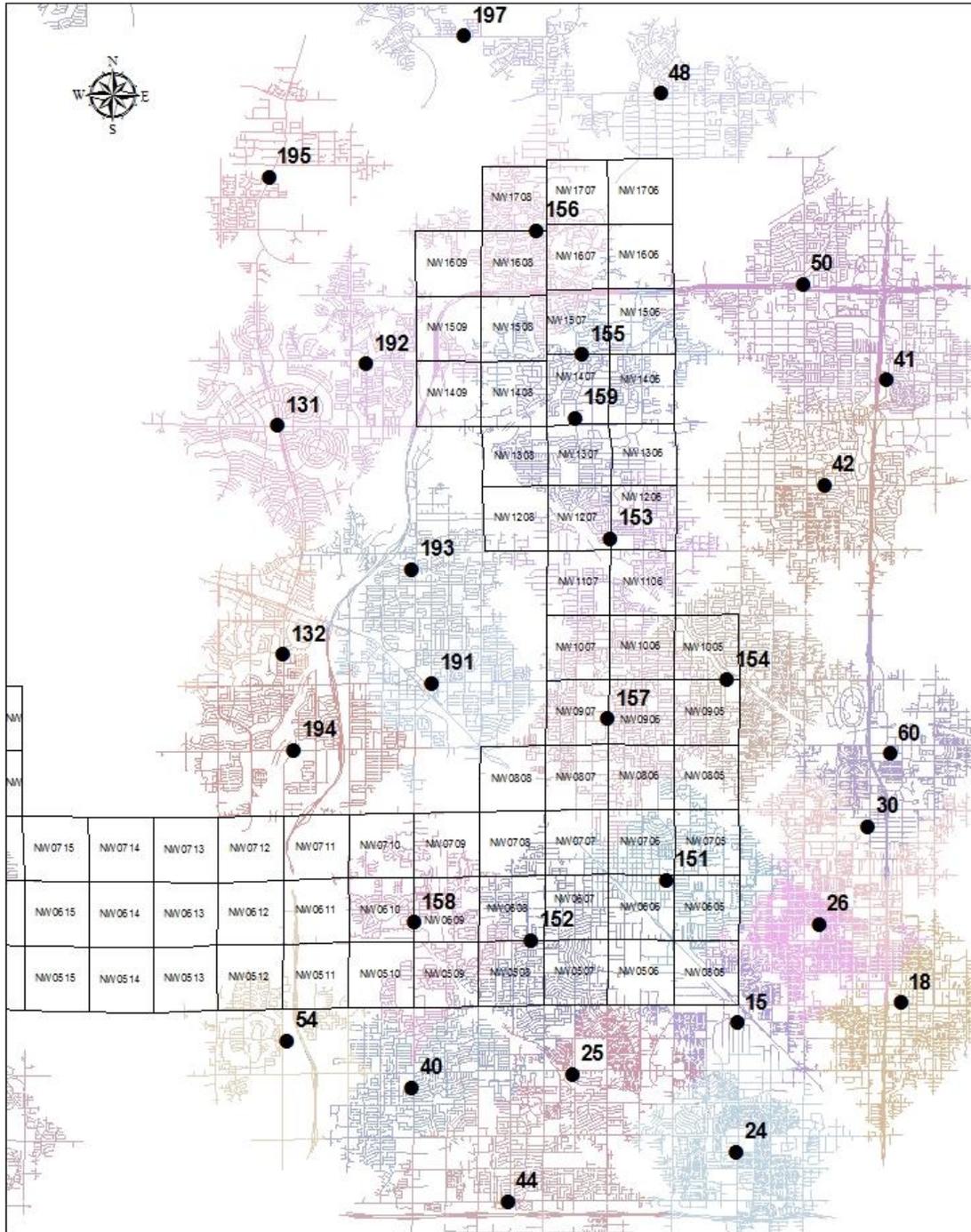


*Valley-wide Automatic Aid Distribution*

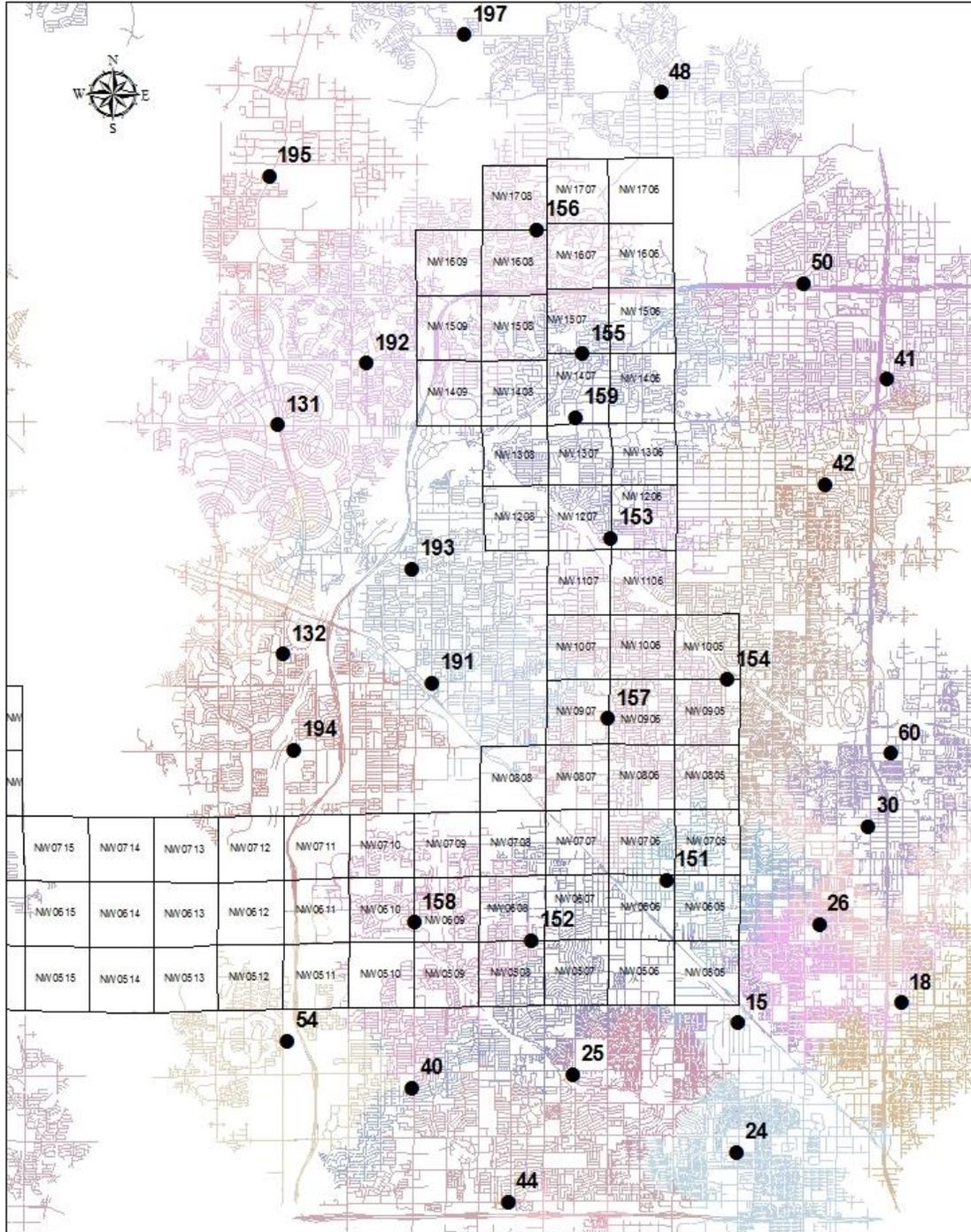


*Service Area Travel Time*

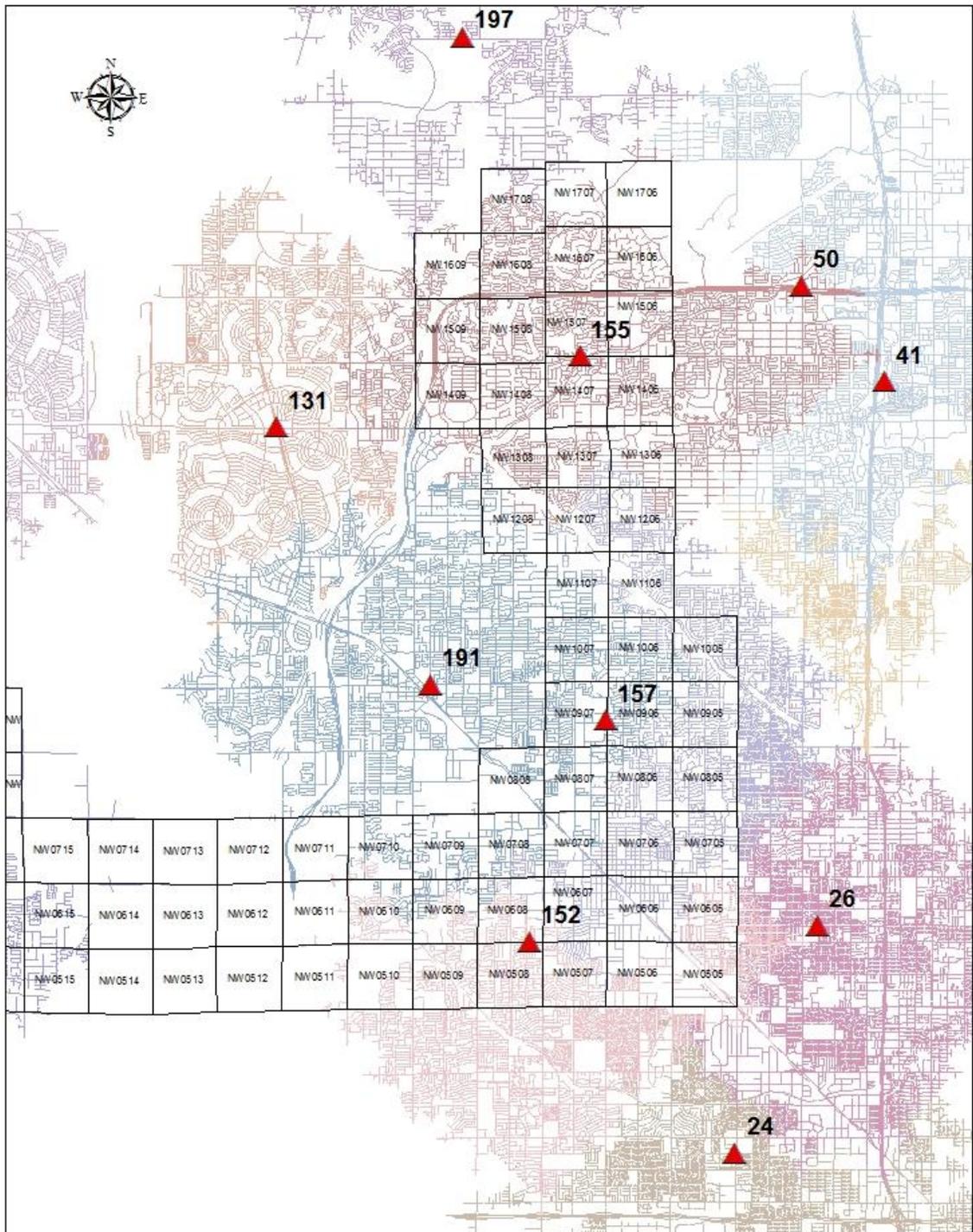
4-Minute Travel from Stations, with Auto Aid



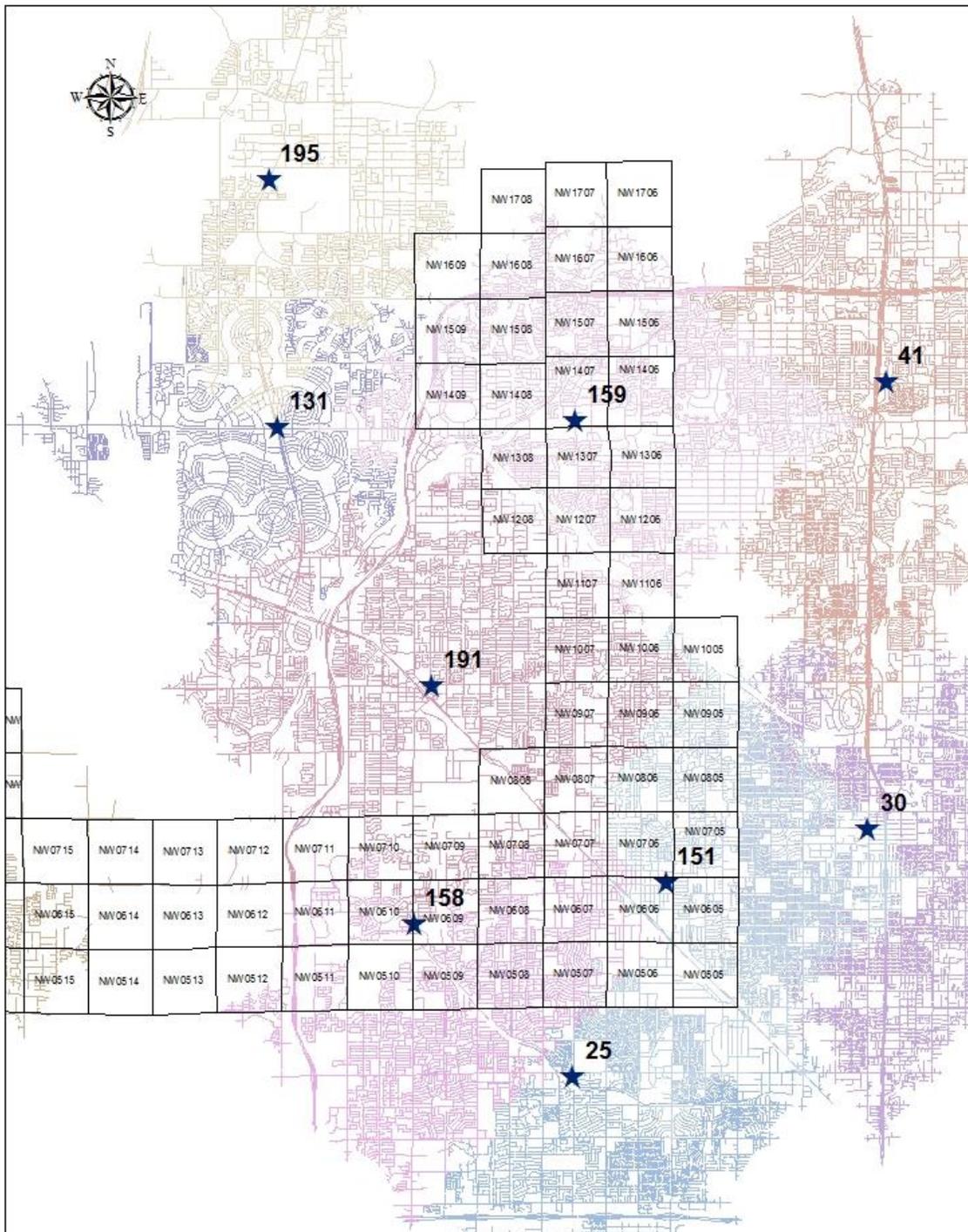
### 5-Minute Travel from Stations, with Auto Aid



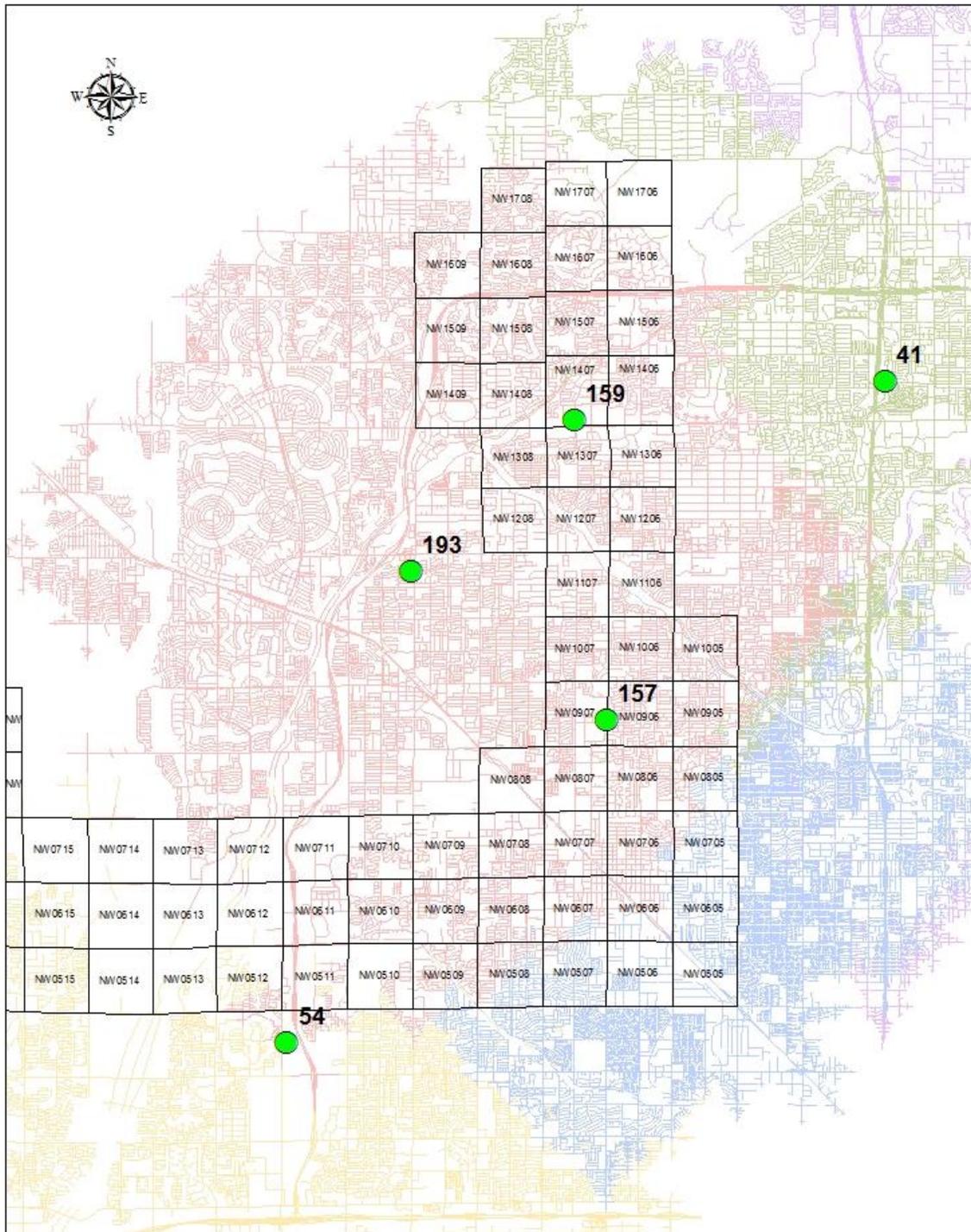
### 8-Minute Travel from Ladder Stations, with Auto Aid



### 8-Minute Travel from Command Stations, with Auto Aid



### 14-Minute Travel from Hazmat Stations, with Auto Aid



**SECTION VIII: APPENDIX**

***1 - Major Employers by Zone***

<b>MAJOR PRIVATE EMPLOYERS</b>	<b>ADDRESS</b>	<b>ZONE</b>	<b>1<sup>ST</sup> DUE</b>
Corning Gilbert Engineering Co., Inc.	5310 W Camelback Road	NW0506	FS25
Ranch Market	6730 W Camelback Rd	NW0508	FS152
Walmart	5010 N. 95th Ave.	NW0511	FS54
Sanderson Ford, Inc.	6400 N 51st Avenue	NW0606	FS151
S C P Construction	5340 W Luke Avenue	NW0606	FS151
Sands Motor Company	5418 W Grand Avenue	NW0606	FS151
USPS	6537 N 55th Ave.	NW0606	FS151
GE School District #40	6905 W Maryland Avenue	NW0608	FS152
GU High School Dist. #205	7650 N 43rd Avenue	NW0705	FS151
Walmart	5605 W. Northern Ave.	NW0706	FS151
City of Glendale	5850 W Glendale Avenue	NW0706	FS151
Walmart	7450 W. Glendale	NW0708	FS152
Humana	91st Ave. and Glendale, NEC	NW0710	FS158
Cabela's	9380 W Glendale Ave.	NW0711	FS158
Conair Corporation	7475 N Glen Harbor Blvd	NW0712	FS194
US Air Force - Luke AFB	14002 W Marauder	NW0717	LAFB
Ace Building Maintenance Co	5008 W Northern Avenue	NW0805	FS151
Friendship Retirement Corp/ Glencroft	8611 N 67th Avenue	NW0807	FS157
Glendale Community College	6000 W Olive Avenue	NW0907	FS157
USPS	5955 W. Peoria	NW0907	FS157
Life Care Center of North Glendale	13620 North 55th Avenue	NW1106	FS153
Banner Health System	5555 W Thunderbird Road	NW1106	FS153
Thunderbird School of Global Mgmt.	15249 N 59th Avenue	NW1206	FS153
Precision Research	5681 W Beverly Ln.	NW1206	FS153
Walmart	5845 W Bell Rd.	NW1306	FS159
AAA	5353 W Bell Rd.	NW1306	FS159
Betchel Corporation	5651 W. Talavi Blvd.	NW1306	FS159
Honeywell Intl	19019 N 59th Avenue	NW1406	FS159
WINCO Foods	5850 W Bell Road	NW1406	FS153
Costco Wholesale	17550 N. 79th Avenue	NW1409	FS192
Midwestern University	19555 N 59th Avenue	NW1506	FS155
USPS	19801 N 59th Ave.	NW1506	FS155
Arrowhead Community Hospital	18701 North 67th Avenue	NW1507	FS155
Walmart	18501 N 83rd Ave.	NW1509	FS192
Honeywell Intl	18301 N 79th Ave.	NW1509	FS192
DVUSD #97	21150 N. Arrowhead Loop	NW1607	FS156

**2 - Glendale Schools by Zone**

SCHOOLS	LOCATION	AES	Enrolled	Grades	ZONE
CAROL G. PECK SCHOOL	5810 N 49th AV	Yes	657	K – 3	NW0505
DON MENSENDICK ELEM	5535 N 67th AV	None	880	4 – 8	NW0507
BICENTENNIAL NORTH	7237 W MISSOURI AV	Yes	778	K – 8	NW0508
BICENTENNIAL SOUTH	7240 W COLTER ST	Yes	605	PreK – 3	NW0508
CAMELBACK ACADEMY	7634 W CAMELBACK RD	Yes	530	K – 8	NW0509
COYOTE RIDGE ELEM.	7677 W BETHANY HOME RD	Yes	909	K – 8	NW0509
SUNSET RIDGE ELEM.	8490 W MISSOURI AV	Yes	602	K – 8	NW0510
COPPER CANYON ELEM.	9126 W CAMELBACK RD	Yes	1743	K – 8	NW0511
BARCELONA ELEM	6530 N 44th AV	None	737	4 – 8	NW0605
GLENN F. BURTON ELEM	4801 W MARYLAND	None	744	K – 8	NW0605
ISAAC IMES ELEM.	6625 N 56th AV		564	PreK – 8	NW0606
HAROLD W SMITH SCHOOL	6534 N 63rd AV	Yes	946	K – 8	NW0607
CHALLENGER MIDDLE SCH.	6905 W MARYLAND AV	Yes	741	4 – 8	NW0608
DESERT GARDEN ELEM.	7020 W OCOTILLO RD	Yes	773	PreK – 3	NW0608
INDEPENDENCE HIGH SCH.	6602 N 75th AV	Yes	1926	9 – 12	NW0609
DISCOVERY ELEM SCHOOL	7910 W MARYLAND AV	Yes	710	K – 8	NW0609
DESERT MIRAGE ELEM	8605 W MARYLAND AV	Yes	686	PreK – 8	NW0610
MELVIN E SINE ELEM.	4932 W MYRTLE AV	Yes	758	PreK – 8	NW0705
LANDMARK SCHOOL	5730 W MYRTLE AV	None	718	K – 8	NW0706
OLPH CATHOLIC SCHOOL	7521 N 57TH AV	Partial	500	PreK-8	NW0706
GLENDALE HIGH SCHOOL	6216 W GLENDALE AV	Yes	1684	9 – 12	NW0707
DESERT SPIRIT ELEMENT.	7355 W ORANGEWOOD AV	Yes	806	K – 8	NW0708
RAYMOND S. KELLIS HIGH	8990 W ORANGEWOOD AV	Yes	1801	9 – 12	NW0710
APOLLO HIGH SCHOOL	8045 N 47th AV	Yes	1886	9 – 12	NW0805
HORIZON SCHOOL	8520 N 47th AV	None	803	K – 8	NW0805
SUNSET ELEMENTARY	4626 W MOUNTAIN VIEW RD	None	586	PreK – 6	NW0905
HERITAGE ELEMENTARY	5312 W MOUNTAIN VIEW RD	Partial	724	K – 8	NW0906
SAHUARO RANCH SCHOOL	10401 N 63rd AV	Yes	621	K – 8	NW0907
ARROYO ELEMENTARY	4535 W CHOLLA ST	None	390	K – 6	NW1005
DESERT PALMS ELEM	11441 N 55 <sup>th</sup> Av.		607	PreK – 8	NW1006
COPPERWOOD ELEM.	11232 N 65th AV	None	898	K – 8	NW1007
MARSHALL RANCH ELEM	12995 N MARSHALL RANCH	Yes	769	PreK – 8	NW1106
IRONWOOD HIGH SCHOOL	6051 W SWEETWATER AV	Yes	1980	9 – 12	NW1107
DESERT VALLEY ELEM SCH.	12901 N 63rd AV	None	570	K – 8	NW1107
KACHINA ELEMENTRY SCH.	5304 W CROCUS AV	Yes	432	K – 8	NW1206
PIONEER ELEM SCHOOL	6315 W PORT AU PRINCE LN	None	530	K – 8	NW1207
DESERT HEIGHTS CHARTER	5821 W BEVERLY LN	Yes	720	K – 10	NW1306
CANYON ELEMENTARY	5490 W PARADISE LN	Yes	440	PreK – 8	NW1306

<b>SCHOOLS</b>	<b>LOCATION</b>	<b>AES</b>	<b>Enrolled</b>	<b>Grades</b>	<b>ZONE</b>
CACTUS HIGH SCHOOL	6330 W GREENWAY RD	Yes	1399	9 – 12	NW1307
FOOTHILLS ELEM. SCHOOL	15808 N 63rd AV	Yes	648	PreK – 8	NW1307
CHALLENGER CHARTER SCH	5801 W GREENBRIER Dr.		628	K – 6	NW1405
DEER VALLEY HIGH SCH.	18424 N 51st AV	Yes	1858	9 – 12	NW1406
DESERT SKY JUNIOR HIGH	5130 W GROVERS DR	None	740	7 – 8	NW1406
GREENBRIER ELEM SCHOOL	6150 W GREENBRIER RD	Yes	474	PreK – 6	NW1407
HIGHLAND LAKES SCHOOL	19000 N 63rd AV	Yes	855	K – 8	NW1507
ARROWHEAD ELEMENTRY	7490 W UNION HILLS DR	Yes	633	PreK – 6	NW1508
LEGEND SPRINGS ELEM.	21150 N ARROWHEAD LOOP	Yes	648	K – 6	NW1607
SIERRA VERDE SCHOOL	7241 W ROSE GARDEN LN	Yes	795	PreK – 8	NW1608
CHURCH OF JOY SCHOOL	21000 N 75th AV	None	600	K-12	NW1609
MOUNTAIN RIDGE HIGH SCH	22800 N 67th AV	Yes	2312	9 – 12	NW1708
HILLCREST JR HIGH SCHOOL	22833 N 71st AV	Yes	1144	7 – 8	NW1708
PINNACLE POINT ACADEMY	6753 W PINNACLE PEAK RD	None	289	K-6	NW1708
COPPER CREEK ELEMENT.	7071 N HILLCREST BL	Yes	816	PreK – 6	NW1708

**3 - National Register of Historic Places**

NATIONAL REGISTER OF HISTORIC PLACES	YEAR BUILT	LOCATION	ZONE
Beet Sugar Factory	1906	5243 W Glendale AV	NW0606
Saguaro Ranch	1895	9802 N 59th AV	NW0907
First National Bank Building	1918	6838 N 58th DR	NW0606
Manistee Ranch	1897	5127 W Northern AV	NW0805
Glendale Tract Historic District (14)	Plat 1933	SEC of 51st AV and Northern AV	NW0705
Glendale Grammar School	1920	7301 N 58th AV	NW0706
Glendale's Woman's Club	1912	7032 N 56th AV	NW0706
First United Methodist Church Sanctuary	1926	7102 N 58th DR	NW0706
C.H. Tinker House	1913	6838 N 59th DR	NW0606
Glendale High School Auditorium	1939	6216 W Glendale AV	NW0707
59th AV Residential Historic District (8)	1895-1955	7508-7714 N 59th AV	NW0706
Jonas McNair House	1897	5919 W Myrtle AV	NW0707
E. C. Bunch House	1898	5602 W Lamar RD	NW0606
Myrtle AV Historic District (4)	1896/1935	6300-6400 W Myrtle AV	NW0707
George O. Dowdy Rental Cottage	1932	6818 N 60th AV	NW0607
Sage Acres	Plat 1959	48th AV - Bethany Home RD	NW0605
Glendale Town Site Catlin Court Historic District (71)	Plat 1914	59th AV - Gardenia AV 58th AV - Myrtle AV 57th AV - Palmyra AV 58th DR - Myrtle AV	NW0706
Floralcroft Historic District (56)	Plat 1928	59th AV - State AV 61st AV - Myrtle AV	NW0707
Catlin Court Expansion (134)	Plat 1895- 1908-1914	59th AV - Glenn DR 55th AV - Orangewood AV	NW0706
Thunderbird Estates McDonald Addition	1953-1955	59th AV - Northern AV 57th AV - Royal Palm RD	NW0806
Sands Estates	1947-1966	59th AV - Belmont AV - W Morten AV - Orangewood to Vista 55th AV	NW0706
Glendale Gardens	Plat 1955	51st AV - Gardenia AV - W State AV - N 50th DR	NW0705

4 - Organizational Chart



Glendale Fire Department

