CITYGATE ASSOCIATES, LLC
FIRE & EMERGENCY SERVICES

VALLEY CENTER FIRE PROTECTION DISTRICT

VOLUME 1 OF 3 - EXECUTIVE SUMMARY

STANDARDS OF COVERAGE STUDY

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VOLUME 1—EXECUTIVE SUMMARY

The Valley Center Fire Protection District (District) retained Citygate Associates, LLC (Citygate) to perform a Standards of Coverage (Deployment) Study. This study reviews the adequacy of the existing deployment system from the current fire station locations and makes recommendations for change where indicated. This report is presented in three volumes, including this Executive Summary (**Volume 1**) summarizing our findings and recommendations, a Technical Report (**Volume 2**) that is the Standards of Coverage (deployment) technical assessment, and a map atlas of deployment coverage measures (**Volume 3**).

Throughout this report, Citygate makes key findings, and, where appropriate, specific action item recommendations. Overall, there are 11 key findings and 5 specific action item recommendations in **Volume 2**. These findings and recommendations are presented throughout **Volume 2**, and are presented in this volume as a continuous list for ease of reference.

1.1 POLICY CHOICES FRAMEWORK

First, as the District's Board of Directors understands, there are no mandatory federal or state regulations directing the level of fire service response times and outcomes. The level of service and resultant costs are a local community choice in the United States. The body of regulations on the fire service provides that *if fire services are provided, they must be done so with the safety of the firefighters and citizens in mind*. There is a constructive tension between a desired level of fire services and the level that can be funded. Thus, many communities do not have the level of fire services they may desire.

In growing communities like Valley Center, it is an even harder challenge to keep fire service levels proportionate with growth. Over the past decade, the District has made significant investments in its fire services by adding a small number of career firefighters after separating from a CAL FIRE contract, and creating an innovative partnership for shared staffing with the area's ambulance provider.

This study will identify that, in the near term, additional investment in fire services is still necessary as the District continues to evolve and consider its service level choices. The fundamental policy choices are derived from two key questions:

1. *What outcome is desired* for an emergency? Is the desire to keep a building fire to the room, building, or block of origin, or is it to provide paramedic care in time to decrease the possibility of preventable death and severe disability?

2. *Should equitable response time coverage be provided* to all similar risk neighborhoods? Once the outcomes are stated, the fire and emergency medical services (EMS) deployment system must be designed to cover the most

geography in the fewest minutes to meet the stated outcome goals. In a community such as Valley Center, with multiple neighborhoods across rolling topography and limited cross-connecting streets, the policy choice for the District is whether similarly developed areas, paying approximately the same taxes, should all receive the same response time from a fire services unit.

1.2 CITYGATE'S OVERALL OPINIONS ON THE STATE OF THE DISTRICT'S FIRE SERVICES

The District's fire and emergency medical services have not kept pace with growth and are unable still to meet best-practice outcome response times to all neighborhoods in accordance with suburban or even rural best-practice recommendations. To its credit, the District has staffed the fire crews with at least two personnel enhanced by reserve firefighters, but the District does not have enough crews to cover a community the size of Valley Center. Many emerging communities and counties allow non-contiguous neighborhoods to develop somewhat quickly over a few years. Stated this way, new urbanizing communities do not tend to grow outward from a solid core, with a grid or "right angle" classic street system. Communities build in clusters, and connect meandering subdivision streets between each with longer main boulevards. For quality of life and land owners, this can be a beneficial pattern. For fire services agencies trying to maintain response times from the most efficient (fewest) number of fire stations, it is **not** a cost-effective community design plan. Most urban communities want best-outcome response times to keep small fires small, and to save people with potentially fatal medical emergencies.

If best outcome response times *to all similar risk and population density neighborhoods* are desired, then, in the near term, the District should consider at least one more fire station and fielding three fire engines with a minimum crew of three personnel each for a total of nine per day. In addition, the District should continue to staff the two personnel, per day, on the two EMS partnership units.

1.3 CHALLENGE – FIELD OPERATIONS DEPLOYMENT (FIRE STATIONS)

Fire department deployment, simply stated, is about the **speed** and **weight** of the attack. **Speed** calls for first-due, all-risk intervention units (engines, ladder trucks, ambulances, and/or paramedic squads) strategically located across a coverage area. These units are tasked with controlling moderate emergencies, preventing the incident from escalating to second alarm or greater, which unnecessarily depletes department resources as multiple requests for service occur. **Weight** is about multiple-unit response for serious emergencies, such as a room and contents structure fire, a multiple-patient incident, a vehicle accident with extrication required, or a heavy rescue incident. In these situations, a sufficient quantity of firefighters must be

assembled within a reasonable time frame to safely control the emergency, thereby keeping it from escalating to greater alarms.

In **Volume 2** of this study, the Technical Report, Citygate's analysis of prior response statistics and use of geographic mapping tools reveals that the District currently does not have adequate fire station coverage in the District for typically expected emergency outcomes in suburban to rural areas. The deployment system does not meet the District's geographic coverage needs, and is meeting current incident demands, but with very long response times in many instances. The maps provided in **Volume 3,** and the corresponding text explanation beginning in **Volume 2** describe, in detail, the District's current deployment system performance.

For effective outcomes on serious medical emergencies and to keep serious but still emerging fires small, national organizations and Citygate's best-practices advice is as follows:

NFPA #1710 for career departments in urban/suburban population density areas recommends:

- Four (4:00) minutes travel time for the first-due unit to all types of emergencies. When 3:30 minutes are added for dispatch and crew turnout, this is a total response time measure of 7:30 minutes.

- Eight (8:00) minutes travel time for multiple units needed at serious emergencies (First Alarm). When 3:30 minutes are added for dispatch and crew turnout, this is a total response time measure of 11:30 minutes.

NFPA #1720 for combination departments recommends:

- Urban areas of >1,000 people per square mile, 15 personnel in 9:00 minutes from crew notification, 90 percent of the time. This assumes a 1:00-minute turnout time, so it is effectively an 8:00-minute *travel time* measure.

- Suburban areas of 500-1,000 people per square mile, 10 personnel in 10:00 minutes from crew notification, 80 percent of the time. (9:00-minute travel time).

- Rural areas of <500 people per square mile, 6 personnel in 14:00 minutes from crew notification, 80 percent of the time. (13:00-minute travel time).

Therefore, to assist the District in developing an updated and complete best practices response time policy, our GIS analysis tested three travels times for first-due units—5:00, 8:00, and 11:00 minutes. For First Alarm unit travel time, Citygate tested 8:00, 11:00, and 12:00 minutes. This helps the District visualize how different travel time goals will or will not cover the most populated areas of the District.

When up to a total of 3:30 minutes is added for dispatch processing and crew turnout times, then the maps effectively show the area covered by a single unit from 8:00 to 14:00 minutes, and by multiple units from 11:00 to 15:00 minutes.

In the District, the current fire station system provides the following unit response time performance, across a variety of population density/risk areas for emergency medical and fire incident types. As the following table shows, no measure is close to a 7:30-minute *total response* time best-practice goal for an urban area.

Table 1—Call to Arrival Response Time (Minutes) – 90 Percent Performance (Table 18)

Station	Overall	RY 13/14	RY 14/15	RY 15/16
Districtwide	14:00	14:21	14:00	13:48

As **Volume 2** of this report will detail, the District's *travel* times are all higher than recommended best practices in urban areas. The travel times are more reflective of an emerging suburban to rural area:

Table 2—Travel Time Performance (Minutes) – 90 Percent Performance (Table 21)

Station	RY 13/14	RY 14/15	RY 15/16
Districtwide	10:43	11:03	11:12

The District's travel times are reflective of the reality that, in rolling topography with limited cross-connecting roads and only two fire stations, achieving quick travel coverage to all neighborhoods will not be possible to 90 percent of the serious incidents.

1.4 Overall Deployment Evaluation

If the risk of fire is to be limited to only part of the inside of an affected building, for the foreseeable future, the District will need both a first-due firefighting unit, and Effective Response Force (multiple-unit, also known as First Alarm) coverage, in all parts of the District consistent within best practice advice; an adopted District policy; and the ability to fund increased deployment levels.

While residential fire sprinklers are now included in the state model fire codes, it will be decades before the existing housing stock will be upgraded or replaced, even if these codes were to be adopted for all new construction.

While the volume of, and response times to, EMS incidents consume much of the District's attention, all communities need a "stand-by and readily available" firefighting force to respond to

fires that break out. While the District partners in the provision of paramedic care with the ambulance provider, it would still require resources *in addition to EMS hourly demand* for an effective response to emerging fires.

If the District wants to continue in providing the three following elements, the District will need to add a third fire station:

- Provide equitable response times to all similar population density neighborhoods
- Provide for depth of response when multiple incidents occur
- Provide for a concentration of response forces for high-risk properties.

The District's diverse geography, road network, and population density differences make setting a response time policy harder than in other communities. While newer residents may see themselves in a suburban setting and expect short, urban response times, the reality is that, given the road network over the topography and the constrained overall tax base, the District cannot provide the level of services that cities like Escondido or San Marcos can provide.

In this study Citygate, contrasted the District's unit travel time performance against best-practice advice for similar areas, as well as the risks to be protected in the District. The current travel time to 90 percent of all incidents is 11:12 minutes, and the GIS map projection with a third fire station shows that most all the most populated sections of the District are within 11:00 minutes of one of these three fire stations.

Adding a third fire station and staffed engine company adds more than just a third unit; It provides three units quickly to serious fires before mutual aid can arrive. It also means that, when one engine is busy on a EMS incident, there are still two engines likely available for other events, before mutual aid is needed. Thus, adding a third fire company provides resilience to the District's response system.

Based on our measures, Citygate recommends the District adopt a response time measure of a suburban to rural area, and thus not set an urban goal that cannot be met. While severe emergencies need a first-unit arrival within 8:00 minutes or less from fire dispatch call receipt, that is difficult at the outer edges of the District. However, the greatest populations and incident densities are closer to what should be three fire stations and, as such, would receive better service. Thus, Citygate is recommending a balanced measure between urban and rural response time goals:

- First Unit – 8:00 minutes travel time, plus 3:30 minutes for dispatch and crew turnout = 11:30 minutes total response time
- Multiple-Unit Emergencies – Three fire engines, a Chief Officer, and either the EMS squad or ambulance within 11:00 minutes travel time, plus 3:30 for dispatch

and crew turnout = 14:30 minutes total response time, followed up with mutual aid units within 30 minutes.

1.5 Findings and Specific Recommendations

Based on the deployment analysis contained in this study, Citygate's multiple findings and recommendations in **Volume 2** of our Technical Report will strengthen deployment performance and ensure quality paramedic coverage as incidents increase year to year. The broad themes of our recommendations are:

- Adopt updated, outcome-driven response time goals.
- Consider the equity of coverage issue to similar neighborhoods.
- If continued, incremental growth in fire services is desired, build a multi-year plan for additional fire services balanced to revenue growth projections.

1.5.1 Our Findings in the Order They Occur in Volume 2

Finding #1: The Board of Directors has not adopted a complete and best-practices-based deployment measure or set of specialty response measures for all-risk emergency responses that includes the beginning time measure from the point of the North Comm. Fire Dispatch Center receiving the 9-1-1 phone call from the County Sheriff's center, nor a goal statement tied to risks and outcome expectations. The deployment measure should have a second measurement statement to define multiple-unit response coverage for serious emergencies.

Finding #2: The District's minimum daily staffing of three personnel per fire engine, totaling six per day, is insufficient to begin control on serious fires and technical emergencies. The District is too dependent on outside mutual aid for anything more than minor fires and modest severity EMS events.

Finding #3: As can be seen on Map #3c for first-due unit travel time, a 5:00- or even 8:00-minute travel time from only two stations cannot reach all the most populated areas of the District.

Finding #4: As Map #5 shows, only the core of the District receives two units in 8:00 minutes travel time. Most of the most-populated areas are reached within 11:00 minutes travel time.

Finding #5: A third fire station on Cole Grade Road at or near the intersection of Cole Grade Lane increases both the first-unit coverage as shown in Map #3e, and raises the

two-engine coverage to three engines for the most populated north-central areas of the District.

Finding #6: The performance of North Comm. Center, at 1:11 minutes to 90 percent of the EMS and fire emergencies, is better than a best practices recommendation of 1:30 minutes.

Finding #7: The District's turnout times have improved, and are now just under a Citygate-recommended 2:00-minute goal.

Finding #8: The District's travel times to fire and EMS incidents are reflective of a suburban to rural area with less densely populated area.

Finding #9: The District's multiple-unit travel times to fire and EMS incidents are longer to both suburban and urban population density areas than national best-practice recommendations. The District's two fire engine deployment is completely dependent on mutual aid from a distance to provide an effective response force to serious fires.

Finding #10: The District's simultaneous incident rate of two incidents at 24 percent of the time is problematic as the District only deploys two engine companies for firefighting.

Finding #11: While the busiest unit in the District achieves 25 percent Unit-Hour Utilization (UHU) and is not busier than a Citygate-recommended maximum of 30 percent UHU, with only a two-fire engine system that also has significant simultaneous incidents, the District's EMS workload means that the District may not have both of its firefighting units available at peak hours of the day, and thus is highly dependent on automatic aid.

1.5.2 Our Specific Recommendations in the Order They Occur in Volume 2

Recommendation #1: **Adopt Deployment Measures Policies**: The District's elected officials should adopt updated, complete performance measures to direct fire crew planning and to monitor the operation of the District. The measures of time should be designed to save patients where medically possible and to keep small but serious fires from becoming greater alarm fires. With this is mind, Citygate recommends the following measures:

1.1 Distribution of Fire Stations: To treat medical patients and control small fires, the first-due unit should arrive within **11:30** minutes, 90 percent of the time from the receipt of the 9-1-1 call in the North

Comm. Fire Communications Center. This equates to a 1:30-minute dispatch time, a 2:00-minute company turnout time, and an 8:00-minute drive time in the most populated areas.

1.2 Multiple-Unit Effective Response Force for Serious Emergencies: To confine fires near the room of origin, to stop wildland fires to under three acres when noticed promptly, and to treat up to three medical patients at once, a multiple-unit response of a minimum of three engines, one paramedic squad or ambulance, and one Battalion Chief totaling 12 personnel should arrive within **14:30** minutes from the time of 9-1-1 call receipt in the North Comm. Fire Communications Center, 90 percent of the time. This equates to 1:30 minutes dispatch time, 2:00 minutes company turnout time, and 11:00 minutes travel time spacing for multiple units in the most populated areas.

1.3 Hazardous Materials Response: Provide hazardous materials response designed to protect the community from the hazards associated with uncontrolled release of hazardous and toxic materials. The fundamental mission of the District response is to minimize or halt the release of a hazardous substance so it has minimal impact on the community. It can achieve this with a travel time for the first company capable of investigating a hazmat release at the operations level within 8:00 minutes travel time 90 percent of the time. After size-up and scene evaluation is completed, a determination can be made whether to request additional resources from the District's multi-agency hazardous materials response partnership.

1.4 Technical Rescue: Respond to technical rescue emergencies as efficiently and effectively as possible with enough trained personnel to facilitate a successful rescue. Achieve a travel time for the first company in for size-up of the rescue within 8:00 minutes travel time 90 percent of the time. Assemble additional resources for technical rescue capable of initiating a rescue within a total response time of 14:30 minutes 90 percent of the time. Safely complete rescue/extrication to ensure delivery of patient to a definitive care facility.

1.5 Emergency Medical Services: The District should continue to continue to provide first responder paramedic services to all neighborhoods to 90 percent of the higher priority medical incidents within at least **11:30** minutes total response time from North Comm. Fire Communications Center call receipt.

Recommendation #2: The staffing partnership with the ambulance provider is an excellent model and should be continued as long as economics allow.

Recommendation #3: Continue to use less expensive Reserve Firefighters as long as an adequate roster can be maintained.

Recommendation #4: The District should strive to fund a minimum daily staffing per fire engine of three career firefighters per day, and with three engines this would provide nine firefighters per day plus the two firefighters on the EMS units. When this level is reached, the Reserve Firefighters can become the fourth firefighter on the engines.

Recommendation #5: Begin a community conversation regarding a tax increase method that would provide for three firefighters per engine per day, and the staffing for a third fire station with crew, thus making the District's minimum daily career *firefighter* staffing nine per day.

1.6 NEXT STEPS

The purpose of this assessment is to compare the District's current performance against the local risks to be protected, as well as to compare against nationally recognized best practices. This analysis of performance forms the base from which to make recommendations for changes, if any, in fire station locations, equipment types, staffing, and headquarters programs.

As one step, the Board of Directors should adopt updated and best-practice-based response time goals for the District, and provide accountability for the District personnel to meet those standards. The goals identified in Recommendation #1 meet national best practices. Measurement and planning as the District continues to evolve will be necessary for the District to meet these goals. Citygate recommends that the District's next steps be to work through the issues identified in this study in the near term:

1.6.1 Near-Term Steps

- Absorb the policy recommendations of this fire services study and adopt updated District performance measures to drive the deployment of firefighting and emergency medical resources.
- Continue the innovative ambulance staffing partnership.
- Maintain a reserve firefighter force.
- Start a community conversation regarding growing revenues to add a third career position to each fire engine, and to add a third staffed fire station.