REGIONAL STANDARDS OF COVER

APRIL 2011

Submitted by:

Emergency Services Consulting International

25200 SW Parkway Ave. Suite 3 • Wilsonville, Oregon 97070
www.esci.us • 800-757-3724

Washoe County
Regional Fire Services
Nevada

City of Reno
Washoe County Fire Suppression Program
Sierra Fire Protection District
Truckee Meadows Fire Protection District

Regional Standards of Cover

Prepared by Joe Parrott

April 2011

Emergency Services Consulting International

Introduction

The following report serves as the Washoe County Regional Fire Services "Standards of Cover" document. The Center for Fire Public Safety Excellence (CPSE) defines the process, known as "deployment analysis," as written procedures that determine the distribution and concentration of fixed and mobile resources of an organization. The purpose for completing such a document is to assist the agencies in ensuring a safe and effective response force for fire suppression, emergency medical services, and specialty response situations in addition to homeland security issues.

Creating a Standards of Cover document requires that a number of areas be researched, studied, and evaluated. The following report is based on research conducted by Emergency Services Consulting International for the City of Reno Standards of Cover Plan and for the Washoe County Regional Fire Services for this document. In addition, it uses research and information prepared by the Diamante Public Sector Group in the development of Standards of Cover plans for the Truckee Meadows Fire Protection District, Sierra Fire Protection District, and the Washoe County Volunteer Fire Agencies.

This document will provide a summary overview of the communities and agencies. It will describe current fire and emergency services delivery performance. It will offer service level alternatives and approximate costs for implementation. The report will conclude with additional recommendations.

Table of Contents

Table of Figures

Executive Summary

This document identifies Washoe County Regional Fire Services Standards of Cover (SOC). Response resources, deployment strategies, operational elements, and overall community risks that have been evaluated in this and other referenced documents. Using data provided by the fire and life safety agencies, Emergency Services Consulting International (ESCI) completed analysis to determine current levels of response performance. From this analysis, ESCI also identified factors influencing response performance and identified opportunities for improvement. This document establishes response time goals and standards for measuring the effectiveness of resources within the agencies and the deployment of those resources.

In the typical SOC process, potential service area classifications are broken down into five categories:

- **Metropolitan**—Geography with populations of over 200,000 people in total and/or a population density of over 3,000 people per square mile. These areas are distinguished by mid-rise and high-rise buildings, often interspersed with smaller structures.
- **Urban**—Geography with a population of over 30,000 people and/or a population density of over 2,000 people per square mile.
- **Suburban**—Geography with a population of 10,000 to 29,999 and/or a population density of between 1,000 and 2,000 people per square mile.
- **Rural**—Geography with a total population of less than 10,000 people or with a population density of less than 1,000 people per square mile.
- **Wilderness/Frontier/Undeveloped**—Geography that is both rural and not readily accessible by a publicly or privately maintained road.

An analysis of the region's population density and defined land uses reveals that it is primarily of four classifications: urban, suburban, rural, and frontier. Thus, all four categories are recommended for analysis.

Response performance objectives for the services provided by the region's fire services have been developed. These further define the quality and quantity of service expected by the community and consistently pursued by the agencies. This document offers a base level of performance (Service Tier One) and an improvement level (Service Tier Two).

First-Due Service Tier One

Urban: The first response unit capable of initiating effective incident mitigation should arrive within 8 minutes, 85 percent of the time from the receipt of the call.

Suburban: The first response unit capable of initiating effective incident mitigation should arrive within 10 minutes, 85 percent of the time from the receipt of call.

Rural: The first response unit capable of initiating effective incident mitigation should arrive within 20 minutes, 85 percent of the time from the receipt of call.

Frontier: The first response unit capable of initiating effective incident mitigation should arrive as soon as practical based on the best effort of response forces.

Effective Response Force Service Tier One

Urban: The full effective response force to a moderate risk incident should arrive within 10 minutes, 85 percent of the time from the receipt of call.

Suburban: The full effective response force to a moderate risk incident should arrive within 20 minutes, 85 percent of the time from the receipt of call.

Rural: The full effective response force to a moderate risk incident should arrive within 30 minutes, 85 percent of the time from the receipt of call.

Frontier: The full effective response force to a moderate risk incident should arrive as soon as practical based on the best effort of response forces.

First-Due Service Tier Two

Urban: The first response unit capable of initiating effective incident mitigation should arrive within 6 minutes, 85 percent of the time from the receipt of the call.

Suburban: The first response unit capable of initiating effective incident mitigation should arrive within 8 minutes, 85 percent of the time from the receipt of call.

Rural: The first response unit capable of initiating effective incident mitigation should arrive within 15 minutes, 85 percent of the time from the receipt of call.

Frontier: The first response unit capable of initiating effective incident mitigation should arrive as soon as practical based on the best effort of response forces.

Effective Response Force Service Tier Two

Urban: The full effective response force to a moderate risk incident should arrive within 10 minutes, 85 percent of the time from the receipt of call.

Suburban: The full effective response force to a moderate risk incident should arrive within 15 minutes, 85 percent of the time from the receipt of call.

Rural: The full effective response force to a moderate risk incident should arrive within 25 minutes, 85 percent of the time from the receipt of call.

Frontier: The full effective response force to a moderate risk incident should arrive as soon as practical based on the best effort of response forces.

Based on the analysis, additional response resources are needed to meet Service Tier One response time objectives. This includes the addition of five new fire stations (including one recommended in the City of Reno Standards of Cover Plan) and the relocation of two existing fire stations. To meet Service Tier Two, one additional fire station should be considered.

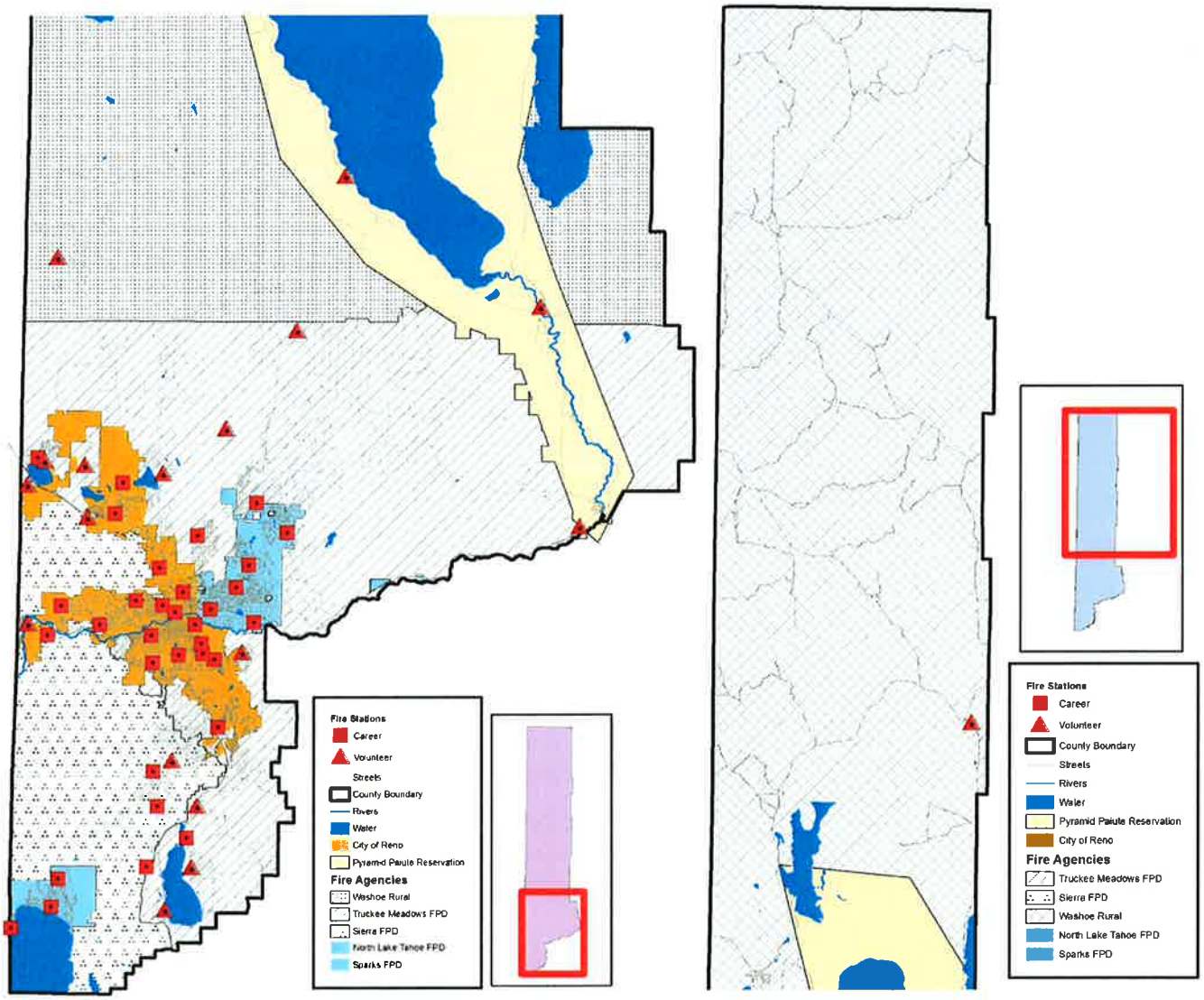
The analysis conducted during the evaluation phase of this process identified a number of other opportunities to improve service. The following are the additional recommendations offered for consideration.

1. Improve call processing times at the dispatch center so that response units are notified of the emergency within 60 seconds of receipt of the call.
2. Improve turnout times so that initiation of response occurs within 1 minute 30 seconds from time of dispatch 85 percent of the time.
3. Explore alternative fire protection capabilities, such as residential fire sprinkler systems, for the Red Rock and Gerlach communities
4. Explore opportunities to improve performance and reliability of the volunteer firefighter program

Description of Community, Services, and Resources

Washoe County is served by a number of fire agencies and volunteer fire departments. The focus of the Regional Standards of Cover Plan is those areas served by the City of Reno Fire Department (RFD), Truckee Meadows Fire Protection District (TMFPD), Sierra Fire Protection District (SFPD), and the Washoe County Fire Services. The following maps show the area under discussion and existing fire stations.

Figure 1: Washoe County



The emergency response forces operate under a seamless system of automatic and mutual aid agreements facilitating the sharing of resources between the several agencies. The only exception is the City of Reno's inability to use volunteer firefighters within the city boundaries due to the collective bargaining agreement with its firefighters. A single dispatch center operated by the City of Reno receives and dispatches requests for service. Detailed information about each agency can be found in the following documents:

- *City of Reno Fire Department Standards of Cover – 2011* (Emergency Services Consulting International)
- *Standards of Cover – Sierra Fire Protection District* (Diamante Public Sector Group)
- *Standards of Cover – Truckee Meadows Fire Protection District* (Diamante Public Sector Group)
- *Standards of Cover – Washoe County Volunteer Fire Agencies* (Diamante Public Sector Group)

City of Reno

(Excerpted from *City of Reno Fire Department Standards of Cover – 2011,* Emergency Services Consulting International)

The Reno Fire Department is a direct operating department of City of Reno and provides fire protection and emergency medical services to the community. The department's jurisdiction encompasses all of the governmental boundaries of the community along with the Truckee Meadows Fire Protection District (a contractual service area). In addition, the RFD administers the daily operation of the volunteer firefighter program and augments response in the area north of Township 22 also known as the County Fire Suppression program, again a contractual service area.

RFD provides emergency services to a city resident population of 218,143. Tourism increases the population by an average of 35,000 daily.[1] Daytime employment increases the population by 31,445.[2] Combined, the Reno Fire Department's service population is estimated to be 284,588 during the day and 249,588 at night. The department serves an area of approximately 105 square miles. The area served by the department had been experiencing light growth until the economic downturn. The department's services are provided from 13 city-owned fire stations. Currently, three are rarely staffed (browned-out) and one is operating with a two-person response crew. The RFD also operates and staffs six Truckee Meadows Fire Protection

[1] Extrapolated from the 2007 Reno-Tahoe Visitor Profile Study, Reno-Sparks Convention and Visitors Authority.
[2] Source: city-data.com.

District stations, some of which contribute to city deployment needs. RFD manages volunteer response forces from an additional ten Truckee Meadows and county fire stations. However, due to provisions in the department's bargaining unit contract, volunteer personnel cannot be used inside the city.

The department maintains a fleet of 115 vehicles and apparatus owned by the city, including engines, ladder trucks, brush engines, and specialty vehicles. The Reno Department of Communication and Technology provides emergency call receipt and dispatch service.

There are 295 individuals involved in delivering services to the combined City of Reno/Truckee Meadows Fire Protection District jurisdiction. The department's primary management team includes a Chief, five Division Chiefs, six Battalion Chiefs, a Fire Marshal, and a Senior Management Analyst. Staffing for emergency response is through the use of career firefighters on 24-hour shifts. For immediate response and at full staffing, at least 89 personnel would be on duty at all times. Due to economic conditions, typically only 74 personnel are on duty at all times, 49 at City of Reno fire stations plus an on-call division chief.

The Insurance Services Office (ISO) reviews the fire protection resources within communities and provides a Community Fire Protection Rating system from which insurance rates are often based. The rating system evaluates three primary areas: the emergency communication and dispatch system, the fire department, and the community's pressurized hydrant or tanker-based water supply. The overall rating is then expressed as a number between 1 and 10, with 1 being the highest level of protection and 10 being unprotected or nearly so. As of the latest rating, ISO gave the service area a rating of Class 3 for properties within 1,000 feet of a fire hydrant and Class 9 for all other areas. This rating was conducted in 2003.

The following chart provides basic information on each of the department's core services, its general resource capability for that service (at current typical staffing levels), and information regarding RFD staff resources for that service. This list includes only those services and resources available from the City of Reno; staffing and resources operated for the Truckee Meadows Fire Protection District, and those provided via mutual and automatic aid from other agencies, are not included.

Figure 2: Core Services Summary

Service	General Resource/ Asset Capability	Basic Staffing Capability per Shift
Fire Suppression	9 staffed engines 2 staffed ladder trucks 2 command response units 1 two-person rescue 1 Safety officer Additional automatic and mutual aid engines, aerials, and support units available	49 suppression-trained personnel. Additional automatic and mutual aid firefighters available.
Emergency Medical Services	9 engines - ILS equipped 2 ladder trucks - ILS equipped 1 rescue – ILS equipped	No less 12 certified emergency medical technicians-Intermediate per shift.
Vehicle Extrication	2 trucks equipped with hydraulic rescue tools, hand tools, air bags, cutting torch, stabilization cribbing, and combination cutter-spreader hydraulic rescue tool. 2 light rescues with extrication tools. 5 fire engines with extrication tools.	All firefighters vehicle rescue trained.
High-Angle Rescue	1 cross-staffed heavy rescue equipped with rescue-rated rope and all associated hardware	All personnel trained to the operations level. 9 personnel per shift trained to the technician level in high-angle rope rescue.
Trench and Collapse Rescue	1 cross-staffed heavy rescue equipped with pneumatic shoring jacks, cribbing, limited lumber and hand tools for initial stabilization	All personnel trained to the operations level. 9 personnel per shift trained to the technician level in trench and collapse rescue.
Swift-Water Rescue	All engines and trucks equipped with throw bags, PFDs, and helmets. 2 cross-staffed water rescue vehicles with light boats	All personnel trained to the operations level. 6 personnel per shift trained to the technician level in swift-water rescue.
Confined Space Rescue	1 cross-staffed heavy rescue equipped with tripod, cribbing, pneumatic shores, air monitoring equipment, basket stretchers, rescue-rated rope	All personnel trained to the operations level. 9 personnel per shift trained to the technician level in confined space rescue.
Hazardous Materials Response	Hazardous Materials response vehicle equipped with personal protective equipment, gas and radiation monitoring equipment, containment supplies, non-sparking tools, and a decontamination trailer.	All personnel trained to the operations level. 9 personnel per shift trained to the technician level in hazardous materials.

RFD unit staffing is constant but station staffing is not. Because of economic conditions, three stations have been "browned-out" or unstaffed for significant periods of time and one reduced to two-person staffing. The following table lists each Reno station, staffed unit, and the staffing assigned to each when fully staffed and as has been typical recently due to brown-outs. Cross-staffed means that firefighters assigned to another response unit in the station may transfer to the cross-staffed unit as needed.

Figure 3: Minimum Staffing Complement – City of Reno Fire Stations

Station	Apparatus	Full Staffing	Staffing When Browned-out
Station 1	Engine 1	4	4
	Truck 1	4	4
Station 2	Engine 2	4	4
	Brush 2	Cross-staffed	Cross-staffed
	Safety Officer	1	1
Station 3	Engine 3	4	4
	Truck 3	4	4
	Rescue 3	0	In-service as staffing permits
	HazMat 3	Cross-staffed	Cross-staffed
	Decon 3	Cross-staffed	Cross-staffed
	Battalion 2	1	1
Station 4	Engine 4	4	4
Station 5	Engine 5	4	4
	Patrol 5	Cross-staffed	Cross-staffed
Station 6	Engine 6	4	4
	Brush 6	Cross-staffed	Cross-staffed
Station 7	Engine 7	4	0
	Brush 7	Cross-staffed	0
Station 8	Engine 8	4	4
	Brush 8	Cross-staffed	Cross-staffed
Station 9	Engine 9	4	0
	Brush 9	Cross-staffed	0
Station 10	Engine 10	0	0
	Truck 10	4	0
	Brush 10	Cross-staffed	0
Station 11	Engine 11	4	4
	Truck 11	0	0
	Heavy Rescue 11	Cross-staffed	Cross-staffed
	Boat 11	Cross-staffed	Cross-staffed
Station 19	Engine 19	4	0
	Brush 19	Cross-staffed	0
	Rescue19	0	2
Station 21	Engine 21	4	4
	Brush 21	Cross-staffed	Cross-staffed
	Boat 21	Cross-staffed	Cross-staffed
	Battalion 1	1	1
Total Minimum Staffing		**63**	**49**

In addition, RFD staffs and operates six fire stations for the Truckee Meadows Fire Protection District. These stations are under the direct control of RFD and regularly respond to emergencies in the city. Staffing for these stations is constant at four firefighters each (24 total), primarily staffing an engine in each station and cross-staffing other units such as brush engines and water tenders. Per the agreement between the city and district, these stations may not be browned-out.

Truckee Meadows Fire Protection District

(Excerpted from *Standards of Cover – Truckee Meadows Fire Protection District,* Diamante Public Sector Group)

The Truckee Meadows Fire Protection District was established in 1972. It entered into a mutual aid agreement with the City of Reno after its formation. Prior to the formation of the District the area was covered by Washoe County, the City of Reno and the City of Sparks. Truckee Meadows Fire Protection District and the Reno Fire Department have had an automatic aid agreement since 1991. Effective July 1, 2000 an INTER-LOCAL AGREEMENT was entered into by and between the City of Reno, a municipal corporation and the Truckee Meadows Fire Protection District organized under NRS 474.460 to provide for consolidation of services and personnel. This Standards of Cover document focuses on the Truckee Meadows Fire Protection District and tried to evaluate the fire and life safety operations of Truckee Meadows.

The District is governed by the Board of County Commissioners (BCC) who serves as the TMFPD Board of Fire Commissioners.

The Volunteer Fire Departments in the County are separate federal 501-C non-profit corporations or associations and each are *[sic]* governed by their own Board of Directors. The District and the VFDs have a contract for services. The contract specifies the District provide funding, apparatus, insurances, and equipment in return for qualified volunteers and response. Those Volunteer Fire Departments are Cold Springs, Lemmon Valley, Pleasant Valley, Silver Lake, and Wadsworth Volunteer Fire Departments.

There are two auxiliary units (these are Truckee Meadows units not autonomous to all) which are Hidden Valley and Palomino Valley. The Volunteer Fire Departments have no statutory ability to provide fire protection on their own and need a recognized local government unit to provide the umbrella, hence their affiliation with the Truckee Meadows Fire Protection District.

The legal relationship between a *[sic]* NRS 474 Fire District and volunteers is defined in NRS 474. The law states the District has a responsibility to "support" but does not provide direction regarding authority. The TMFPD and the VFD jointly developed a contract defining each party's obligations.

The District provides liability and workers compensation insurance, vehicle repair, maintenance of apparatus and facilities, facility insurance, utility payments, uniforms, personal protective equipment and training. In return, each VFD agrees to follow District policy and provide trained and qualified volunteers.

Accountability in meeting training standards has been an area of conflict between the VFD's *[sic]* and their respective Districts. The TMFPD has implemented training levels allowing for additional opportunities for volunteers in support roles.

Fire District	Parcels	Assessed Total	Estimated Population	Tax Rate
Truckee Meadows Fire Protection District	34,628	2,989,721,676	89,895	0.4713

There are many communities within the Truckee Meadows Fire Protection District which are identified by Truckee Meadow Fire Station area. Detailed information is not available for all geographic areas, and due to the Interlocal Agreement it is difficult to determine what areas are considered within the City of Reno and the Truckee Meadows Fire Protection District.

Truckee Meadows Fire Protection District Fire Station Locations

Station Designation	Station Name	Address	City/Area	State	Zip
Truckee Meadows Fire Protection District (Paid)					
TMFPD 13	TMFPD Station 13	10575 Silverlake Rd	Reno	NV	89506
TMFPD 14	TMFPD Station 14	12300 Old Virginia Rd	Reno	NV	89433
TMFPD 15	TMFPD Station 15	130 Quartz Lane	Reno	NV	89511
TMFPD 16	TMFPD Station 16	1240 Eastlake Blvd	Carson City	NV	89704
TMFPD 17	TMFPD Station 17	500 Rockwell Ave	Sparks	NV	89441
TMFPD 18	TMFPD Station 18	3680 Diamond Peak Drive	Reno	NV	89506
Truckee Meadows Fire Protection District (Volunteer)					
TMFPD 220	Cold Springs VFD	3405 White Lake Parkway	Reno	NV	89506
TMFPD 221	Silver Lake Fire Department Sta 221	11525 Red Rock Road	Reno	NV	89508
TMFPD 223	Lemon Valley Station 223	130 Nectar St	Reno	NV	89506
TMFPD 225	Wadsworth 225	400 Stamp Mill Rd	Reno	NV	89442
TMFPD 226	Hidden Valley Auxiliaries	3255 W Hidden Valley Dr	Reno	NV	89502
TMFPD 227	Pleasant Valley Station 227	3010 Lakeshore Dr	Carson City	NV	89702
TMFPD 229	Palomino Valley Station 229	6015 Ironwood Rd	Reno	NV	89510
TMFPD 237	Pleasant Valley Station 237	12300 Old 395 South	Reno	NV	89511

Truckee Meadows Fire Protection District Apparatus

Station 13	Engine 13, Water Tender 13, Brush 13
Station 14	Engine 14, Brush 14, Medium Rescue
Station 15	Engine 15, Truck 15, Brush 15
Station 16	Engine 16, Water Tender 16, Brush 16
Station 17	Engine 17, Water Tender 17, Brush 17
Station 18	Engine 18, Water Tender 18, Brush 18

Truckee Meadows Fire Protection District (Volunteer)		
TMFPD 220	Cold Springs VFD	E 220 Type 3 Brush Engine Light Truck
TMFPD 221	Silver Lake VFD	E 221 Type 3 Brush Engine Type 6 Brush Engine Water Tender 221
TMFPD 223	Lemon Valley VFD	E 223 Type 3 Brush Engine
TMFPD 225	Wadsworth VFD	E 225 WT225 Type 3 Brush Engine
TMFPD 226	Hidden Valley Aux	E 226 Type 3 Brush Engine
TMFPD 227	Pleasant Valley VFD Station 227	Engine 227 Type 3 Brush Engine Patrol
TMFPD 229	Palomino Valley Auxiliary	E 229 Type 3 Brush Engine Water Tender Patrol
TMFPD 237	Pleasant Valley VFD Station 237	E 237 Patrol

Sierra Fire Protection District

(Excerpted from *Standards of Cover – Sierra Fire Protection District,* Diamante Public Sector Group)

The SFPD provides fire and emergency medical (paramedic level) service and response to a 214-square mile narrow ribbon of territory on the eastern slope of the Carson and Sierra Nevada Mountain range. The SFPD is located between federal and the unincorporated lands of Washoe County. The District is a wildland urban interface area served by a combination of 39 shift employees and 95 volunteers. There are three staffed stations and five volunteer stations The District daily staffing level is 13, including three paramedic/firefighters and a Battalion Chief. The District has one fire Prevention Captain, one Training Captain,[3] a Fire Chief, and an Administrative Secretary. The SFPD has a seasonal fire crew of 20 who complete fuels management projects and fight wildland fires. They are rated as a Type II Initial Attack (IA) Hand Crew.

[3] ESCI update - There are now three Training Captains who also provide shift relief.

The Sierra Forest Fire Protection District (SFFPD) was established in 1949 with the passage of Nevada Revised Statute (NRS) 473. The legal name of the NRS 473 Statute is *Fire Districts Receiving Federal Aid.* The original District was formed to enable federal funds authorized through the Clark/McNary Act to be utilized for watershed protection and wildfire suppression along the eastern slope of the Carson and Sierra Nevada Mountains. The District's 1949 boundaries included Carson, Douglas and Washoe County. The District was designed to provide rural fire protection for counties unable to provide protection and to serve as a fuel barrier between the U.S. Forest Service lands and the privately owned lands of each county.

At the time the District was originally formed, only states were eligible for Clark/McNary federal funds and not the counties. As a result the SFPD was operated by the Nevada State Forester/Fire Warden. The State Forester submitted budget requests for county tax dollars through each County Board of Commissioners to supplement the federal Clark/McNary funds

Similar to the other western states, significant changes occurred throughout the SFFPD since its creation in 1949. The U.S. Forest Service acquired much of the once private timber lands. The federal aid authorized through the Clark/McNary Act expired in 2000. Urban development pushed out of the Truckee Meadows valley into the foothills coining a new term called the Wildland Urban Interface (WUI).These changes caused the SFFPD to become fractured and more difficult to manage.

The Washoe County portion of the SFFPD is called the Sierra Fire Protection District (SFPD). It extends along the eastern slope of the Carson and Sierra Nevada Range and appears on the map as a rectangular 214-square mile thin ribbon of territory. The District is located between the U.S. Forest Service and privately owned lands of unincorporated Washoe County.

Washoe County experienced the largest population growth in the area served by the Sierra Fire Protection District according to SFFPD officials. With the increased growth came an increased demand for urban level fire and emergency medical services. The State expanded service delivery and transformed the District from a wildland only fire suppression agency to an " all risk" fire agency capable of responding to structure fires, wildland fires, hazardous materials incidents, emergency medical services at the paramedic level, and rescues. A Fire Prevention Division was also added.

The NDF[4] transfer from wildland to all risk was evaluated in a 2004 statewide study completed by a consultant company called TriData, which is a division of Systems Planning. The report made statewide recommendations regarding the future NDF mission. One of the 34 recommendations included:

> *Make an orderly transition out of the all-risk emergency service (non-wildland fire) mission in the Sierra Forest Fire Protection District. Devolve responsibility for non-wildland fire services to local government entities capable of providing service. In particular, transition out of all-risk emergency services provided to Verdi, Bowers, and Galena.*

Before this study ended, the NDF already had taken action on this recommendation, setting a target date for transition of January 2006. The transition was completed in July of 2006.

The Tri-data *[sic]* study also recommended the "transition should be guided by a plan to devolve municipal fire, medical and rescue service to the TMFPD by contract." A Washoe County Commission study conducted by Walker and Associates in 2006 recommended a series of options to achieve that goal. Efforts to implement those options were unsuccessful.

One of the findings of the 2006 Walker and Associates report was the impending financial crisis the District would be facing in the next three years (2009-2010). The Walker report recommended the District seek a merger or additional funds as an alternative to reducing current service delivery levels.

The transition from NDF to local control was completed through an interlocal agreement, which transferred personnel and equipment effective July 1, 2006. The state retained ownership of the Bowers Mansion Fire Station and transferred ownership of the Joy Lake Station to the District during the 2007 Legislative Session.

Once the transfer from state to local control was complete, the District began a long-term strategic planning process. A financial analysis completed by Walker and Associates confirmed the earlier predictions of three to five-year period to reach financial instability was actually going to occur in the FY 2007/08 budget. Ms. Walker estimated the District would face a $500,000 revenue shortfall. The strategic planning committee evaluated the upcoming shortfall and concluded the District would have to reduce service levels by closing one station and eliminate up to nine positions unless additional funding or a merger occurred.

[4] Nevada Division of Forestry.

The District worked with local citizen groups to develop long-term options and present them to the Board of Fire Directors. The planning committee recommended a merger or consolidation with either the City of Reno or the North Lake Tahoe Fire Protection District. Those options were opposed by Reno and NLTFPD because of financial instability and concern over subsidizing the SFPD. The planning committee recommended to the Board of Fire Commissioners a series of 20 goals that could be achieved and the necessary funding required to achieve the goals.

The 2007 Nevada State Legislature made changes to the statutes pertaining to NRS 473 and NRS 474 Fire Districts. The changes authorized procedures to establish a new District, alter boundaries for inclusion or exclusion of territory, establish budgets including the levy and collection of taxes, and authorize the issuance of bonds. The State Committee on Local Government Finance concluded that if the Washoe County Commissioners were to dissolve the SFPD NRS 473 District, replace it with a NRS 474 District, and increase the tax rate, the first year of revenue would not be subject to the tax caps enacted by the 2005 Nevada Legislature.

The Washoe County Board of Commissioners dissolved the NRS 473 Fire District and created a NRS 474 District effective July 1, 2008. As part of this change the SFPD Board of Commissioners increased the tax rate from 42 cents to 52 cents to assure on-going service delivery.

After stabilizing service delivery, the District recommended the Board of County Commissioners, acting as the Fire Commissioners of SFPD and TMFPD, embark on long-term strategic planning effort to address the future of fire and fire based emergency medical service delivery in the entire unincorporated area of Washoe County including the Truckee Meadows Fire Protection District and the areas outside of any established fire district.

The District is governed by the Board of County Commissioners (BCC) who serves as the SFPD Board of Fire Commissioners. The BCC also serves as the Board of Fire Commissioners for the Truckee Meadows Fire Protection District.

The Volunteer Fire Departments in the County are separate federal 501-C non-profit corporations or associations and each are governed by their own Board of Directors. The District and the VFDs have a contract for services. The contract specifies the District provide funding, apparatus, insurances, and equipment in return for qualified volunteers and response.

The contract with the Washoe Valley VFD is unique in which SFPD is funding a Department that is physically located in the neighboring Truckee Meadows Fire Protection District.

The relationship between the Volunteer Fire Departments (VFD) and the SFPD is complex. The VFDs are separate 501-C non-profit corporations. There are five VFDs in the SFPD: Cold Springs, Galena, Peavine, Verdi, and Washoe Valley. Each VFD is governed by its own Board of Directors. The Chief of each VFD is elected by the membership. The geographical areas of each VFD overlaps portions of the TMFPD and the geographical boundaries have been impacted by annexation by the City of Reno.

There is an overlap in response to the TMFPD. The Washoe Valley VFD's only station is located in the TMFPD. The Cold Springs VFD has two stations; one station is located in the TMFPD and the second is located in the SFPD. The Cold Springs VFD area within the SFPD is less than one square mile while the Cold Springs VFD within the TMFPD is 75 square miles. Approximately 1,400 acres of Cold Springs in located in the City of Reno and the Cold Springs VFD are *[sic]* not allowed to respond. The same situation exists in Verdi where the Verdi VFD is not authorized to respond to the 2,400 acres of the Verdi area that has been annexed into the City of Reno.

The legal relationship between a NRS 474 Fire District and volunteers is defined in NRS 474. The law states the District has a responsibility to "support" but does not provide direction regarding authority. The SFPD and the VFD jointly developed a contract defining each party's obligations.

The District provides liability and workers compensation insurance, vehicle repair, maintenance of apparatus and facilities, facility insurance, utility payments, uniforms, personal protective equipment and training. In return, each VFD agrees to follow District policy and provide trained and qualified volunteers.

Accountability in meeting training standards has been an area of conflict between the VFD's *[sic]* and their respective Districts. The SFPD District has implemented training levels allowing for additional opportunities for volunteers in support roles.

The VFD's *[sic]* are working with both Districts to provide a consistent program between the VFDs and SFPD and the TMFPD.

Fire Department or District	Parcels	Assessed Land	Assessed Buildings	Assessed Total
Sierra Fire Protection District	8,434	539,559,723	672,712,426	**1,212,272,149**

There are five areas within the SFPD. They include Washoe Valley, Galena, Verdi, Peavine and Cold Springs.

Sierra Fire Protection District Stations and Apparatus

Sierra Fire Protection District	Station Name	Address	City/Area	State	Zip Code
SFPD 30	SFPD Station 30	3905 Old Hwy 395	Washoe Valley	NV	89704
SFPD 301	SFPD Station 301	345 Bellevue Rd	Washoe Valley	NV	89704
SFPD 321	SFPD Station 321	250 South Ave	Reno	NV	89506
SFPD 331	SFPD Station 331	11005 Longview	Reno	NV	89506
SFPD 35	SFPD Station 35	100S Garson Rd	Reno	NV	89439
SFPD 351	SFPD Station 351	165 Bridge St	Reno	NV	89439
SFPD 38	SFPD Station 38	16255 Mt Rose Hwy	Reno	NV	89511
SFPD 381	SFPD Station 381	16133 Mt Rose Hwy	Reno	NV	89511
SFPD 39	SFPD Station 39	4000 Joy Lake Rd	Reno	NV	89511
SFPD HQ	Headquarters	3905 Old Hwy 395	Reno	NV	89511

Apparatus assigned to Stations

Station 30	Engine 30, Brush 30, Water Tender 30
Station 301	Engine 301, Brush 301, Water Tender 301, Rescue 301
Station 321	Patrol 321, Brush 321
Station 331	Brush 331, Patrol 331, Water Tender 331
Station 35	Engine 35, Brush 35
Station 351	Engine 351, Water Tender 351, Brush 351
Station 38	Engine 38, Brush 38, Tender 38
Station 381	Engine 381, Brush 381, Rescue 381

Service Delivery Zones and Response Objectives

The community's risk designations should influence how response resources are distributed now and in the future. Areas of higher fire risk and high incident activity require greater numbers of personnel and apparatus to effectively mitigate emergencies. Staffing and deployment decisions for different regions of the service area should be made in consideration of the level of risk.

Most communities contain areas with different population densities and property risk allowing the community's policy makers to specify different response performance objectives by geographic area. The categories are identified as:[5]

- **Metropolitan**—Geography with populations of over 200,000 people in total and/or a population density of over 3,000 people per square mile. These areas are distinguished by mid-rise and high-rise buildings, often interspersed with smaller structures.
- **Urban**—Geography with a population of over 30,000 people and/or a population density of over 2,000 people per square mile.
- **Suburban**—Geography with a population of 10,000 to 29,999 and/or a population density of between 1,000 and 2,000 people per square mile.
- **Rural**—Geography with a total population of less than 10,000 people or with a population density of less than 1,000 people per square mile.
- **Wilderness/Frontier/Undeveloped**—Geography that is both rural and not readily accessible by a publicly or privately maintained road.

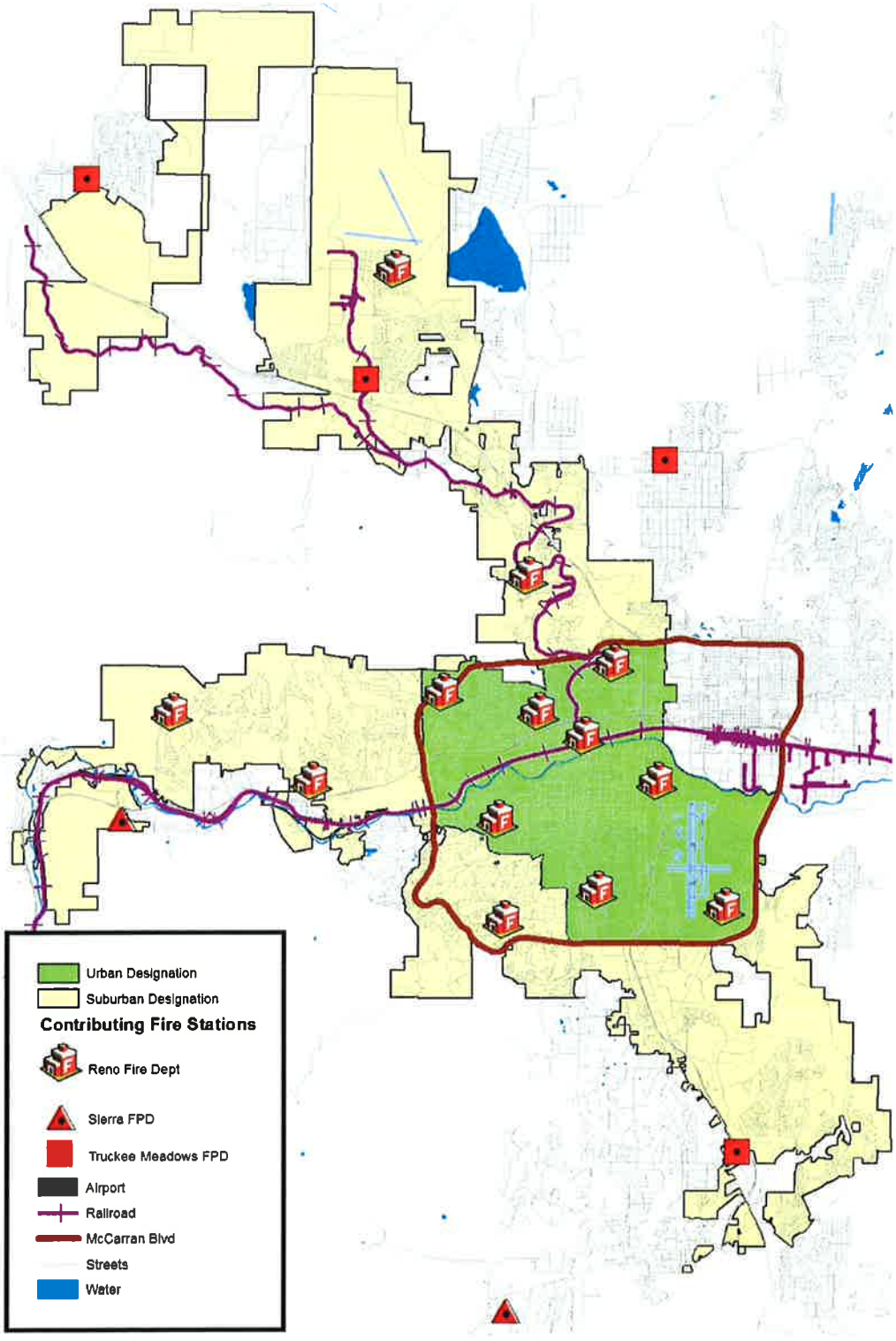
The Washoe County region contains urban, suburban, rural and frontier categories. In the Reno Standards of Coverage report, urban and suburban performance zones were identified and response performance objectives for each recommended. The following First Due Response Performance Objectives were recommended for the City of Reno:

1. The first fire department response unit will arrive at a fire emergency in the urban area within six minutes from time of dispatch 85 percent of the time.
2. The first fire department response unit will arrive at a fire emergency in the suburban area within eight minutes from time of dispatch 85 percent of the time.
3. The first fire department response unit will arrive at a medical emergency in the urban area within six minutes from time of dispatch 85 percent of the time.
4. The first fire department response unit will arrive at a medical emergency in the suburban area within eight minutes from time of dispatch 85 percent of the time.

[5] CFAI *Standards of Cover, 5th edition*, pages 20-21.

The following map illustrates the two response performance zones recommended for the City of Reno.

Figure 4: City of Reno Urban and Suburban Zones



The *Washoe County Master Plan* (2010) describes expected response performance in both the Public Services and Facilities Element and the Land Use and Transportation Element. Each section is reprinted below.

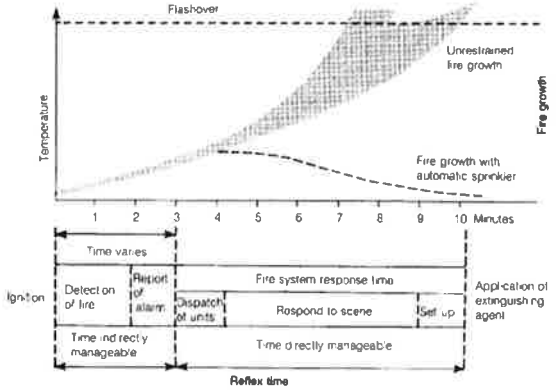
Washoe County Master Plan September 9, 2010
PUBLIC SERVICES AND FACILITIES ELEMENT Page 36

Fire Protection Response Criteria

The "Fire Suppression Rating Schedule" of 1980, published by the Insurance Services Office, represented a change from the previous specification oriented "Grading Schedule" to a performance based schedule. Some credit is available for water delivered to the fire scene regardless of the means of delivery. The new fire suppression rating schedule uses 1.5 mile response distances as a criteria for engine company response to fires. Appendix B lists the factors considered by the "Fire Suppression Rating Schedule". The 16th Edition of the National Fire Protection Handbook makes the following statements about response standards:

As already described, time is another critical factor in the evaluation of public fire protection. It is generally considered that the first arriving piece of apparatus should be at the emergency scene within five minutes of the sounding of the alarm, since additional minutes are needed to size up the situation, deploy hose lines, initiate search and rescue, etc. To be minimally effective in controlling a fire, the initial responding apparatus must reach the emergency scene within approximately 10 minutes of the sounding of the alarm. Figure 4 shows fire growth versus reflex time and illustrates this concept. Table 10 lists the minimum fire protection and emergency medical services response standards used for condition assessment and analysis in Washoe County.

Figure 4
Fire Growth Versus Reflex Time



Source: Managing Fire Services. Second Edition. (International City Management Association. 1988)

Table 10
Minimum Fire Protection and Emergency Medical Services Response Standards

Residential Land Use Designation	Response Time
Urban	5 minutes or less
Suburban	10 minutes or less
Rural	20 minutes or less

Source: Washoe County Department of Community Development.

Table 4: Planning Area Minimum Service Standards[1]

Service	Master Plan Designation			
	Urban, Industrial, and Commercial	**Suburban**	**Rural Residential**	**Rural**
Water	Connection w/community water system	Connection w/community water system; HDR – Individual well	Individual well	Individual well
Sewer	Connection w/community sewage disposal system	Connection w/community sewage disposal system[2]	Individual sewage disposal system	Individual sewage disposal system
Fire, EMS	5 minute or less response time[3]	10 minute or less response time	20 minute or less response time	20 minute or more response time
Police	10 minute response time[4]	10-15 minute response time	20-25 minute response time	25 minute or more response time
Schools:				
Elementary	Walk-in; 1 mile or less	15 minutes one-way	40 minutes one-way	90 minutes maximum
Middle	Walk-in; 2 miles or less	25 minutes one-way	55 minutes one-way	90 minutes maximum
High	Walk-in; 3 miles or less	35 minutes one-way	75 minutes one-way	90 minutes maximum
Libraries	5 miles or less	5 miles or less	40 minutes one-way	75 minutes one-way
Community Parks	7 acres per 1,000 population	7 acres per 1,000 population	7 acres per 1,000 population	7 acres per 1,000 population

Notes:
1. These standards are used for planning purposes and may be modified by the Washoe County Board of County Commissioners as deemed appropriate in response to budget constraints.
2. Exemptions for HDR, LDS and MDS connection to community sewage disposal system may occur in specific cases
3. Response time is measured from the time the initial call is received until the arrival of the first emergency vehicle.
4. For a Class 1 Offense (a major incident or serious crime).
5. Service levels for Open Space Master Plan category are determined on a case-by-case basis.

Source: Washoe County Department of Community Development

In both sections, land designated as "Urban" should have a response time (received to arrival) of 5 minutes or less. Suburban designated land should have a response time of 10 minutes or less. In one section "Rural" designated lands should have a response time of 20 minutes or less. In another there are two categories of Rural, "Rural Residential" and "Rural". Each has a different response time standard.

The use of land use categories to establish response performance objectives is very appropriate. Land use categories and accompanying zoning and development criteria clearly define the intensity of development allowed in each category and expected population densities. It is also a very future looking approach since land use master plans, like the *Washoe County Master Plan*, describe how land is expected to develop in the future. This allows future fire service resource needs to be pre-planned based on planned development density rather than having to react to development as it occurs.

The Washoe County Commission, Truckee Meadows Fire Protection District Board of Directors, and the Sierra Fire Protection District Board of Directors adopted the following response performance zone definitions.

Suburban: Territory identified as the Master Plan category "Suburban Residential", and those areas that have been developed with lots comparable to those allowed by the Suburban Residential" category.

Rural: Territory identified as the Master Plan category "Rural Residential". In addition, territory identified as the Master Plan category as "Rural" except as identified as "Frontier".

Frontier: Territory identified as the Master Plan category "Open Space". In addition, territory north of the line commonly known as Township 22 unless designated as "Rural Residential" or "Suburban Residential".

"Urban Residential", "Commercial", and "Industrial" are identified Master Plan categories; however, they exist in disaggregated pockets. These areas should be treated as "target hazard" areas by the individual fire agencies and response protocols developed according to risk within each area.

ESCI evaluated several areas of the county that had been developed more intensely than would be expected in the rural category. Since "lots comparable to those allowed in the suburban category" means lots not more than one acre in size, only the Arrow Creek development

qualified as suburban level development within the rural category. It has been added to the suburban response performance zone.

The following series of maps illustrate response performance zones as defined by the Reno Standards of Cover plan and the definition above adopted by the Commission and Boards.

Figure 5: Response Performance Zones - South

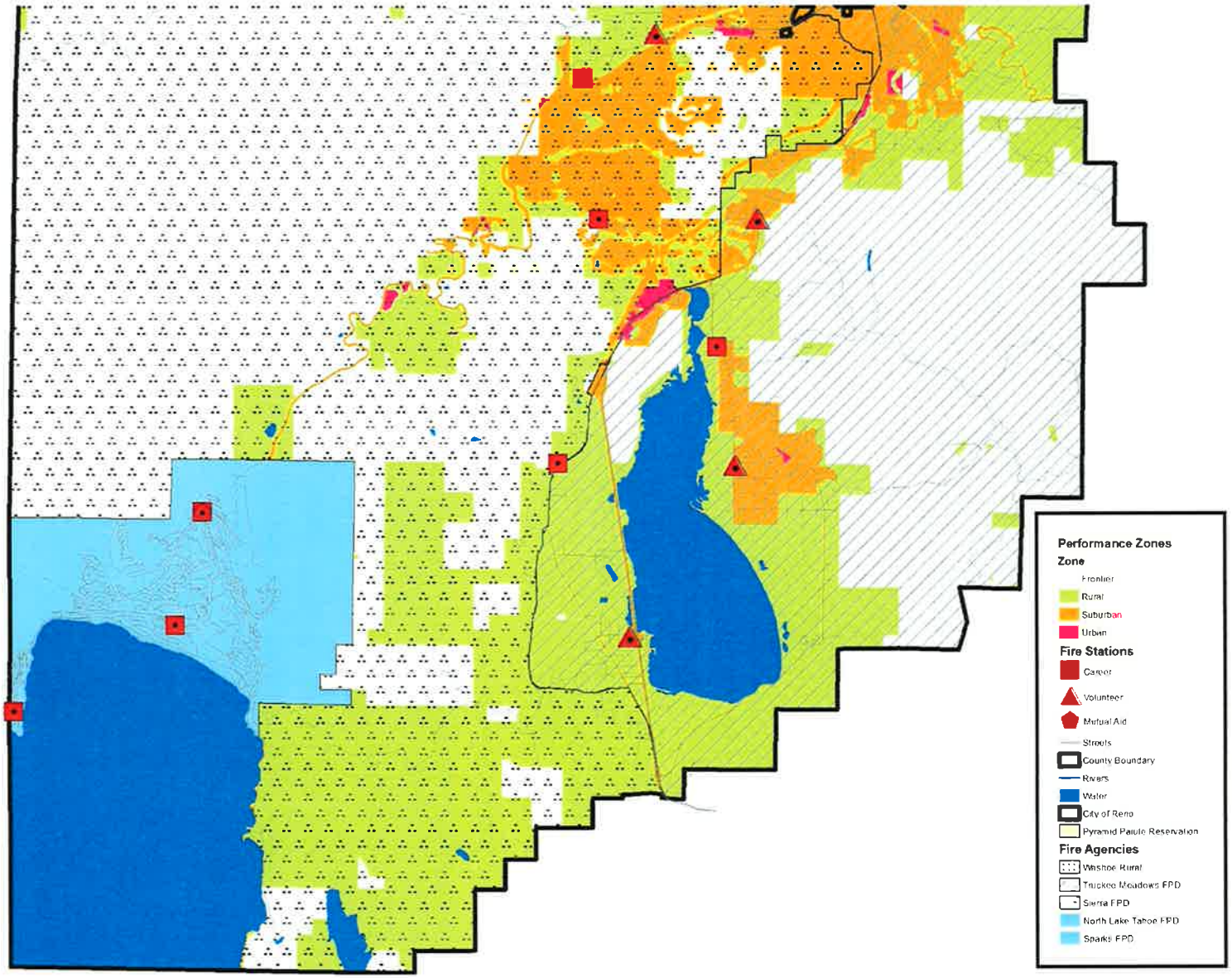


Figure 6: Response Performance Zones – Central

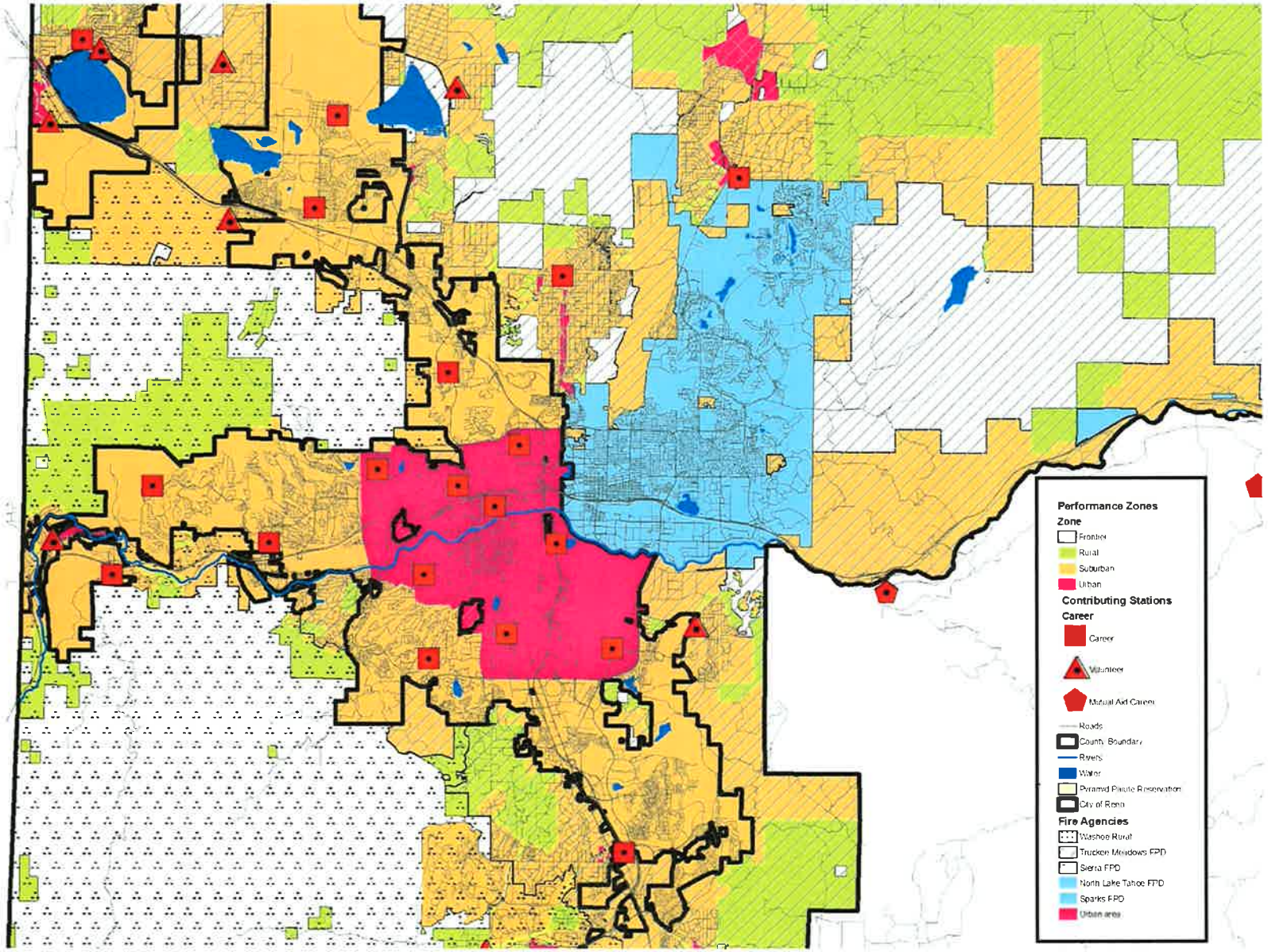


Figure 7: Response Performance Zones – East Central

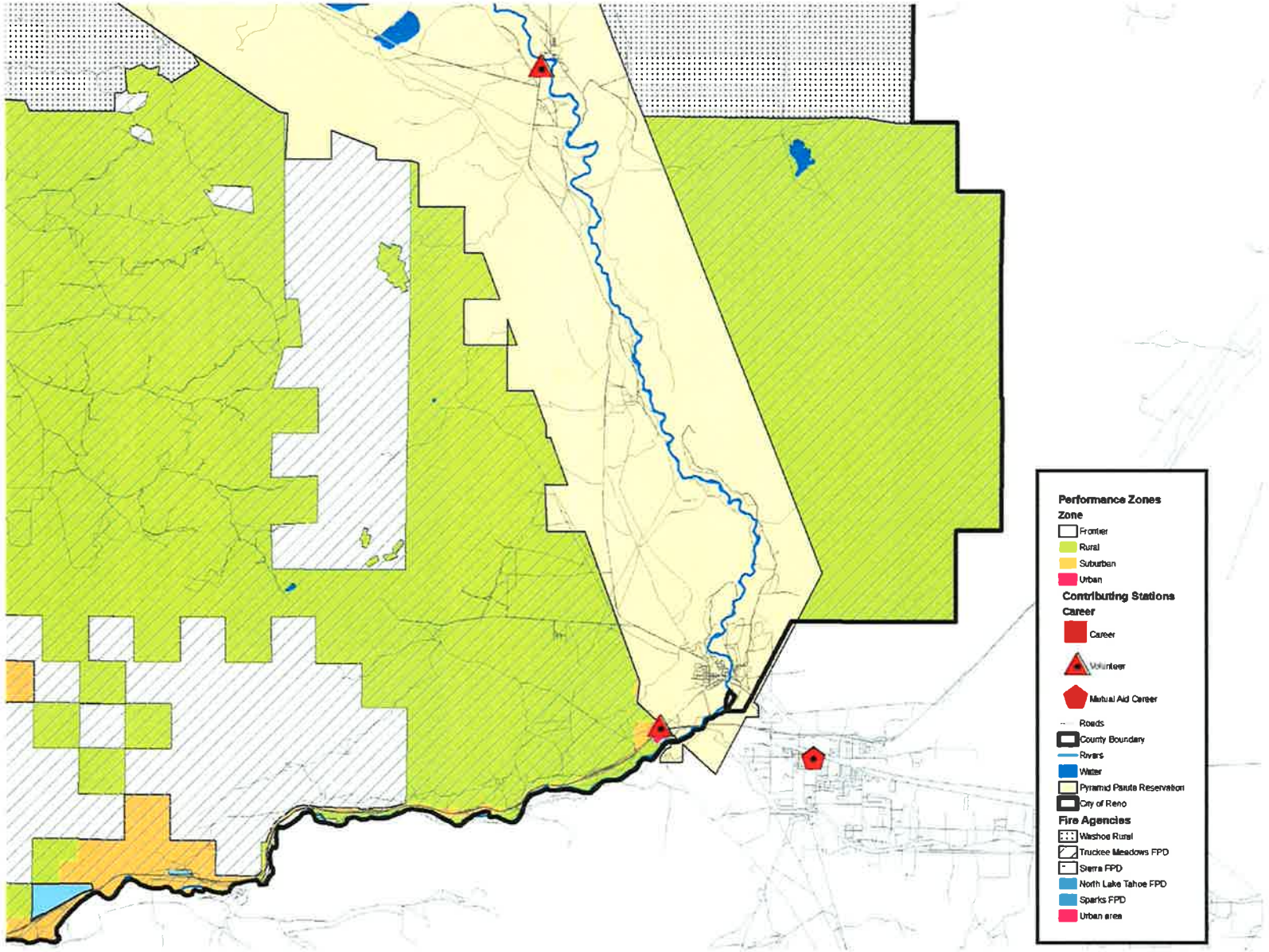


Figure 8: Response Performance Zones – North Central

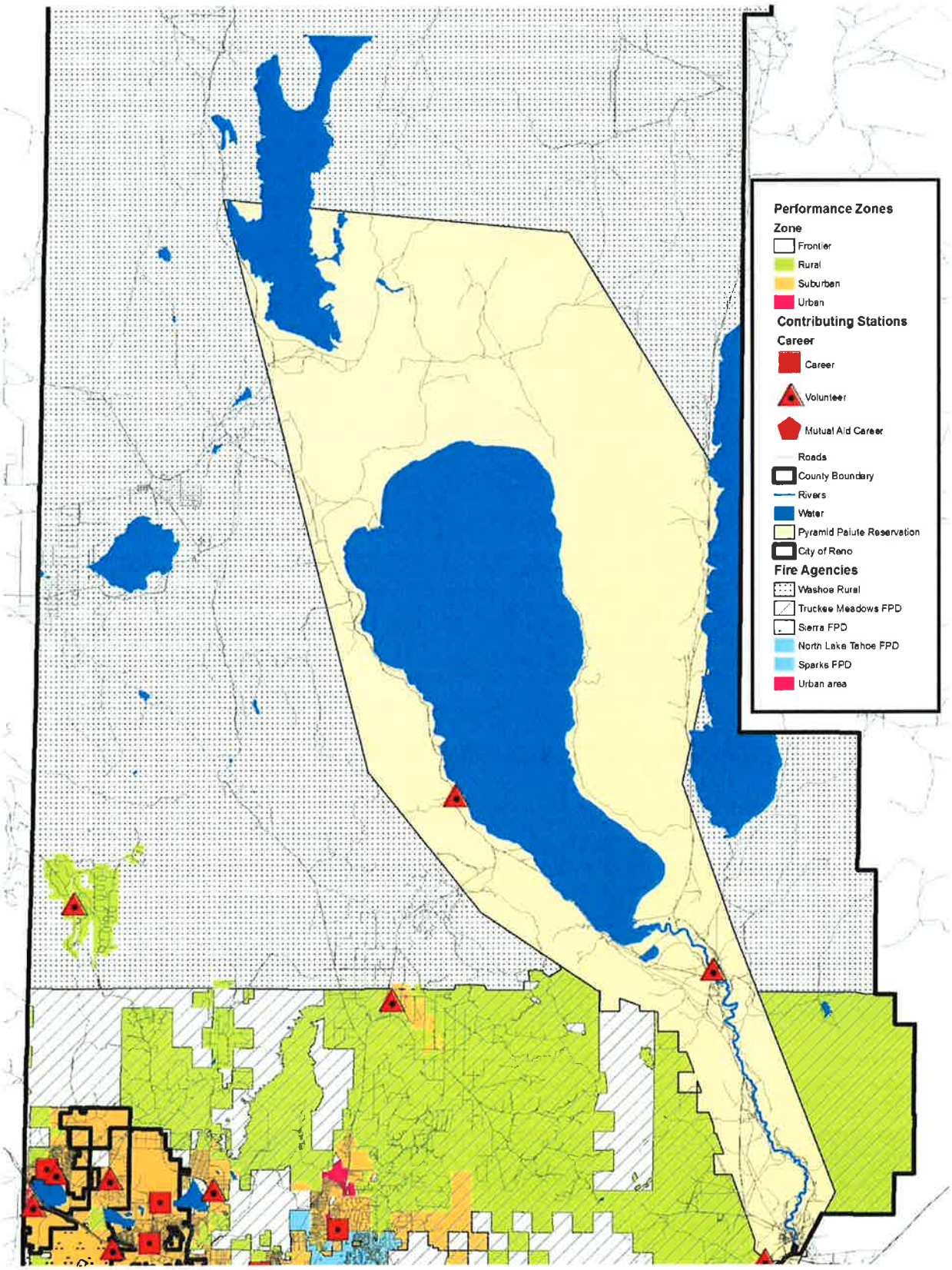
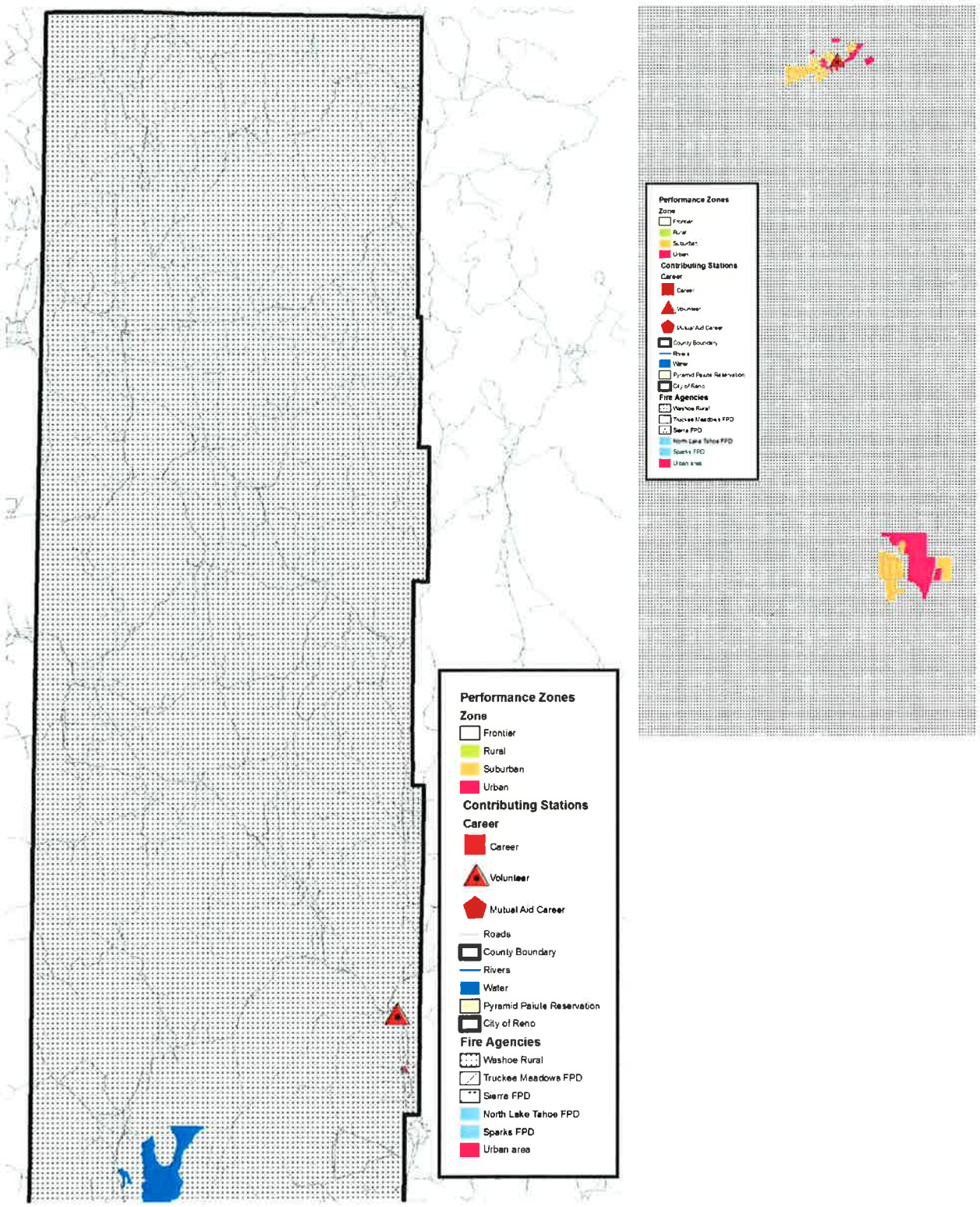


Figure 9: Response Performance Zones – North and Gerlach Area



Historic System Performance

ESCI completed an analysis of current response performance by region. This analysis used data gleaned from the Reno Emergency Communications Center (ECOMM) computer-aided dispatch database. ESCI assumed that the ECOMM data is accurate and did not independently verify the information. The data used was for the time period October 1, 2009, through September 30, 2010. This analysis evaluated performance only in areas outside the City of Sparks and the North Lake Tahoe Fire District.

Basis for Analysis

The response phase of an emergency is made up of several parts. These are:

1. Detection – That period of time during which it is recognized that an emergency exists.
2. Call processing – The time from the initial contact with the dispatch center (typically the 9-1-1 call) until emergency response personnel are notified of the emergency.
3. Turnout – The time between response personnel notification and the beginning of apparatus and personnel movement towards the incident location.
4. Travel – The time between initiation of response and arrival at the incident.

From the customer's standpoint, emergency services delivery time begins when the 9-1-1 call is placed to the dispatch center and ends when help arrives at the emergency location. Thus phases 2, 3, and 4 above combine to define "response time". Actual performance for each phase has been determined based on the data described above.

Call processing time and turnout time are particularly important for the evaluation of fire station location. Call processing time and turnout time must be subtracted from the target response time in order to determine the amount of travel time available for each fire station. The longer the first two phases, the less territory a fire station can cover within the target response time.

Time performance is described at the "85th percentile". This means that at 85 percent of all incidents had time performance equal to or less than the result.

Call Processing Time

The analysis determined that call processing time for incidents occurring during the study period was within 2 minutes 1 second, 85 percent of the time for City of Reno incidents and within 2 minutes 6 seconds in all other areas.

Turnout Time

Turnout time varies significantly from station to station. Those stations staffed with career personnel respond more quickly than those dependent on volunteer firefighters. This is to be expected since volunteers must travel to the station from home, work, or elsewhere before they can initiate a response.

Career station turnout times were within 2 minutes 25 seconds, 85 percent of the time. Individual station times were very consistent with each other, varying from a low of within 2 minutes 5 seconds, 85 percent of the time and a high of within 3 minutes 11 seconds, 85 percent of the time.

Volunteer fire department turnout times are shown in the following table. Times listed are at the 85th percentile for the first unit to respond from the station. A unit is defined as any unit whether it is a fire engine or an individual reporting their response by radio.

Figure 10: Volunteer Fire Departments' Response Times

Volunteer Fire Dept (Managing Department)	Turnout Time
Cold Springs Fire Department (Sierra FD)	9:58
Galena Fire Department (Sierra FD)	9:02
Peavine Fire Department (Sierra FD)	14:04
Verdi Fire Department (Sierra FD)	11:59
West Washoe Valley Fire Department (Sierra FD)	9:54
Cold Springs Fire Department (TMFPD)	8:05
Gerlach Fire Department[6]	12:17
Hidden Valley Auxiliary (TMFPD)	7:09
Lemon Valley Fire Department (TMFPD)	6:26
Palomino Valley Auxiliary (TMFPD)	10:50
Pleasant Valley Fire Department (TMFPD)	9:32
Red Rock Fire Department[6]	9:29
Silver Lake Fire Department (TMFPD)	11:02
Sutcliffe Fire Department (Pyramid Lk/Paiute Tribe)	7:04
Wadsworth Fire Department (TMFPD)	13:53

Out of Area Resources 'Received to Enroute' Time

There are several fire departments or districts with fire stations adjacent to the Sierra, Truckee Meadows, and Reno service areas. Their contribution to system performance is considered in this analysis.

[6] Gerlach and Red Rock stations are part of the county fire suppression program whose daily operations are overseen by Truckee Meadows Fire Protection District.

To determine the area these resources might serve in Washoe County it is first necessary to identify the time required for each to begin response. All are notified of emergencies by their own dispatch centers requiring that ECOMM notify the other dispatch centers of the incident location and resources requested. This call information transfer can be time consuming.

Based on data provided for this study the out of area resource times below have been determined. The times begin with the receipt of the call at ECOMM and end when response units report enroute to the incident.

- North Lake Tahoe Fire District – Within 7 minutes 45 seconds, 85 percent of the time
- Storey County Fire District – Within 8 minutes, 85 percent of the time
- North Lyon County Fire District – Within 7 minutes, 85 percent of the time

Travel Time

Travel time is exclusively the combination of the distance between the response unit and the incident location along with travel route impedance. Route impedance is a combination of factors such as traffic density, road speed, road grade, weather conditions, and others. Travel time varies considerably throughout the county based on all these factors.

Received to Arrival Time

Received to arrival time is the elapsed time from the initial call to the dispatch center until arrival of the first response unit. The following charts illustrate received to arrival time performance for the City of Reno and for the Sierra, Truckee Meadows, and County Fire Suppression Program areas.

Figure 11: Received to Arrival Time – City of Reno

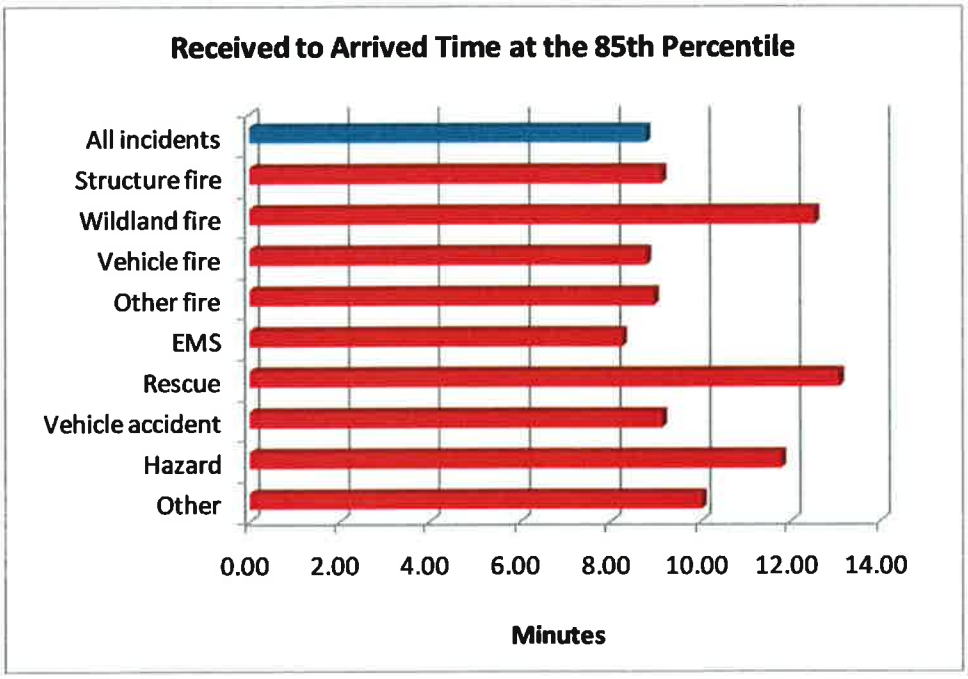
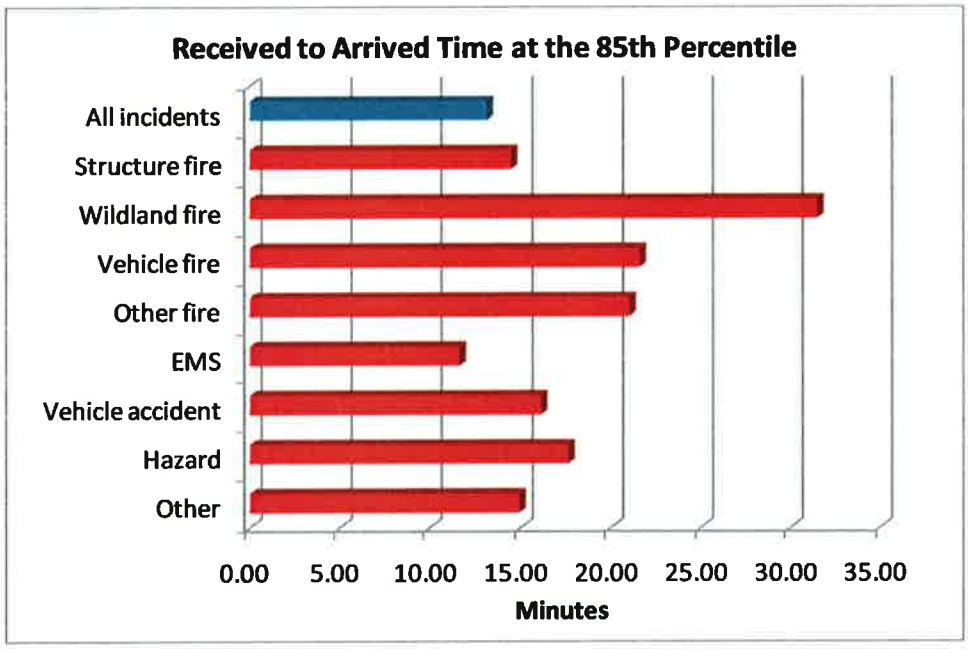


Figure 12: Received to Arrival Time – Sierra, Truckee Meadows, and County



The following maps show received to arrival time at the 85th percentile based on incidents occurring between October 1, 2009, and September 30, 2010. Approximately 87 percent of all incidents outside of the City of Reno and 89 percent of incidents in the City of Reno successfully plotted (geo-coded) to the map. No incidents geo-coded to the map for areas shown in white.

Figure 13: Received to Arrival Performance by Dispatch Zone – South County

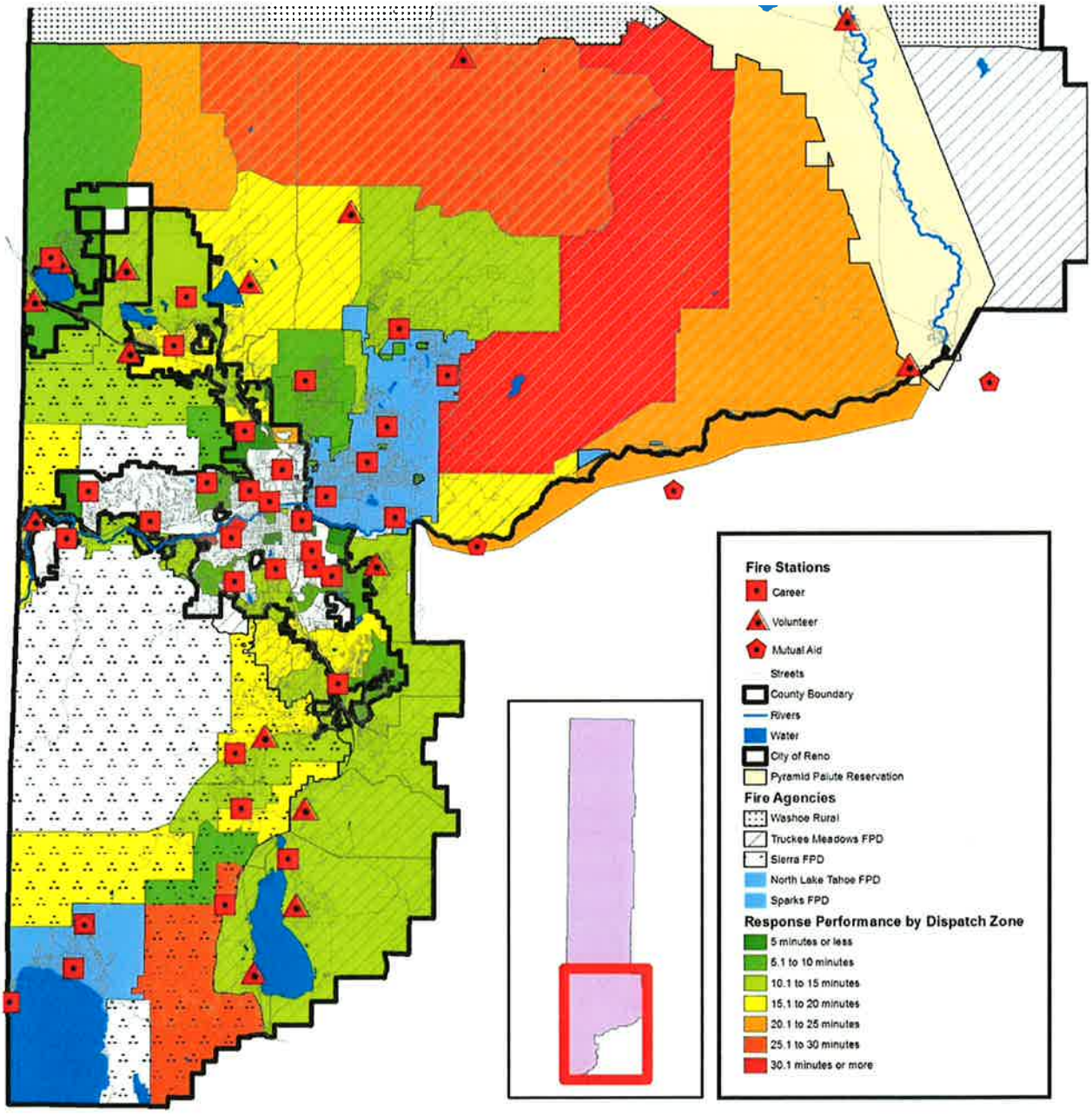
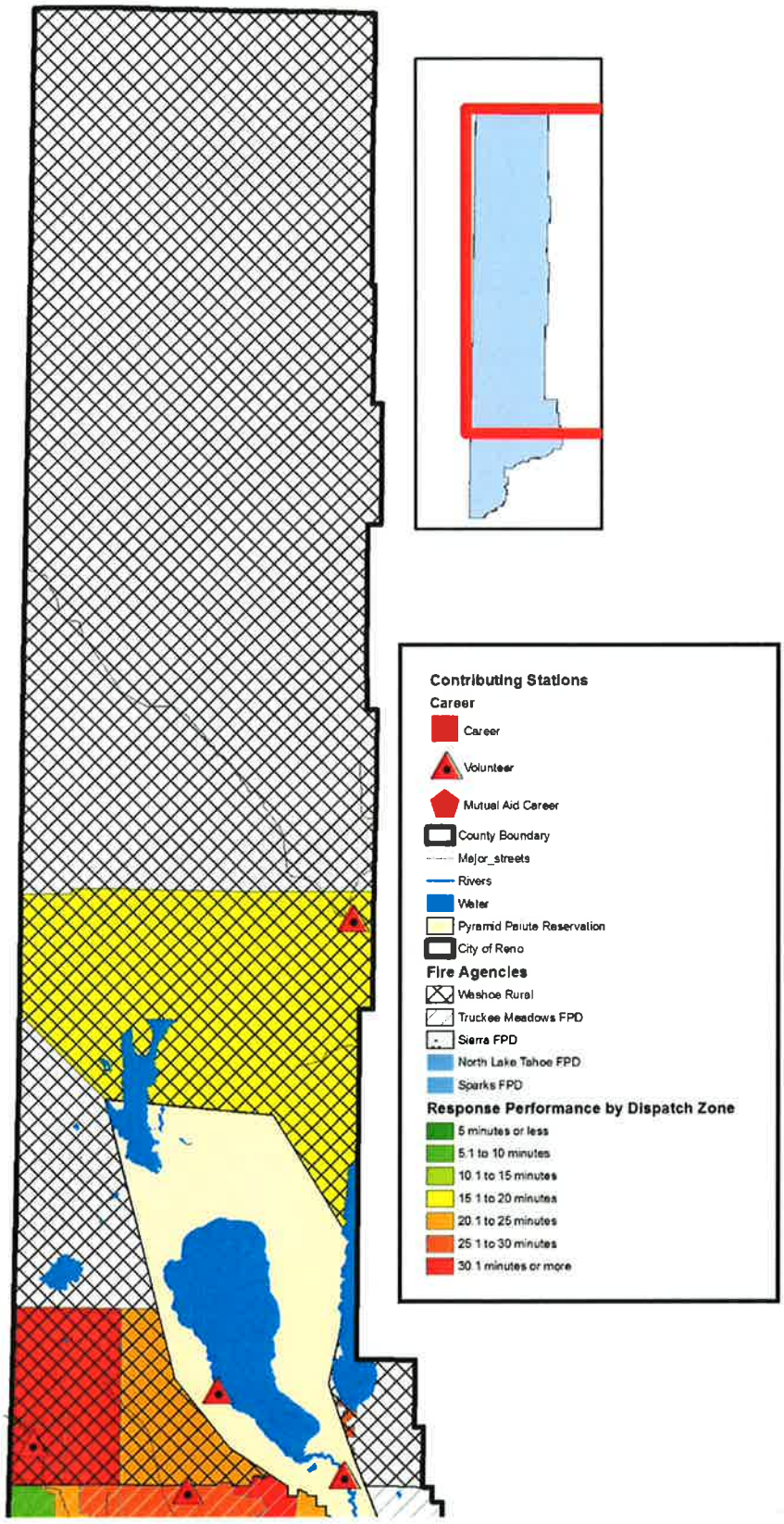


Figure 14: Received to Arrival Performance by Dispatch Zone – North County



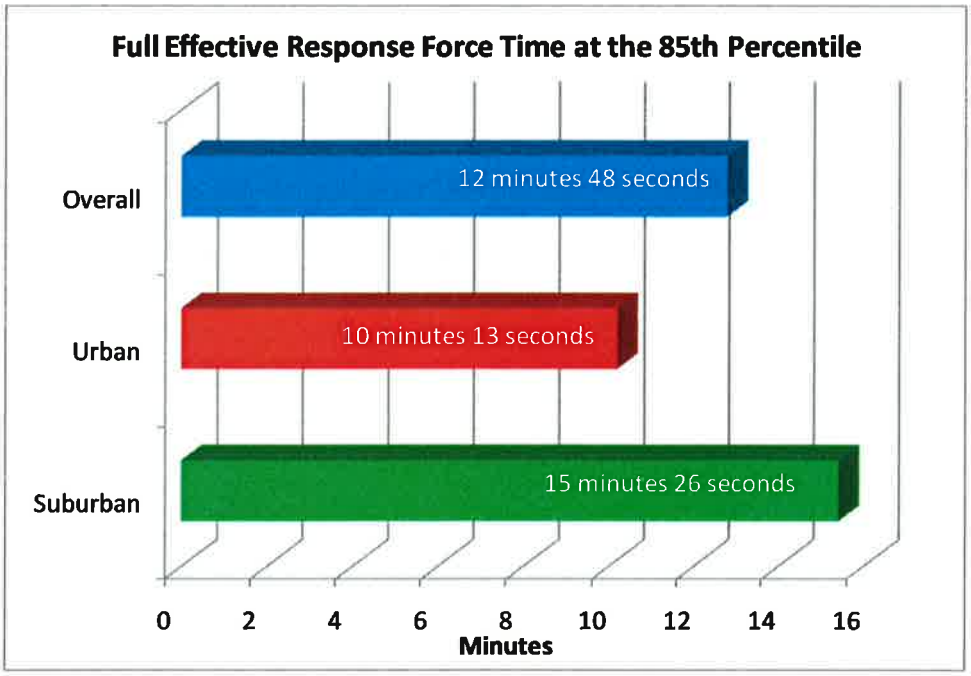
Current Effective Response Force Capability Analysis

Effective Response Force (ERF) is the number of personnel and apparatus required to be present on the scene of an emergency incident to perform the critical tasks in such a manner to effectively mitigate the incident without unnecessary loss of life and/or property. The ERF is specific to each individual type of incident, as are the critical tasks that must be performed.

Moderate risk structure fires are used as the primary risk category for this analysis. In the City of Reno, at least four response units (three fire engines and one ladder truck with 16 firefighters) must arrive on scene. In the county area the minimum force is three response units (three fire engines or two fire engines and one ladder truck with 13 firefighters).

In the city's urban area actual full effective response force performance was within 10 minutes 13 seconds, 85 percent of the time. In the suburban area actual full effective response force performance was within 15 minutes 26 seconds, 85 percent of the time.

Figure 15: City of Reno Full Effective Response Force Performance – 85th Percentile



Within the county area the full effective response force arrived within 29 minutes 21 seconds, 85 percent of the time within the suburban zone. No structure fires were identified that occurred outside the suburban zone.

The following maps shows each structure fire incident in the city and county areas with the marker color-coded by the amount of time it took for this minimum effective response force to arrive at the incident location from the time the call was received at the dispatch center.

Figure 16: City of Reno Structure Fires

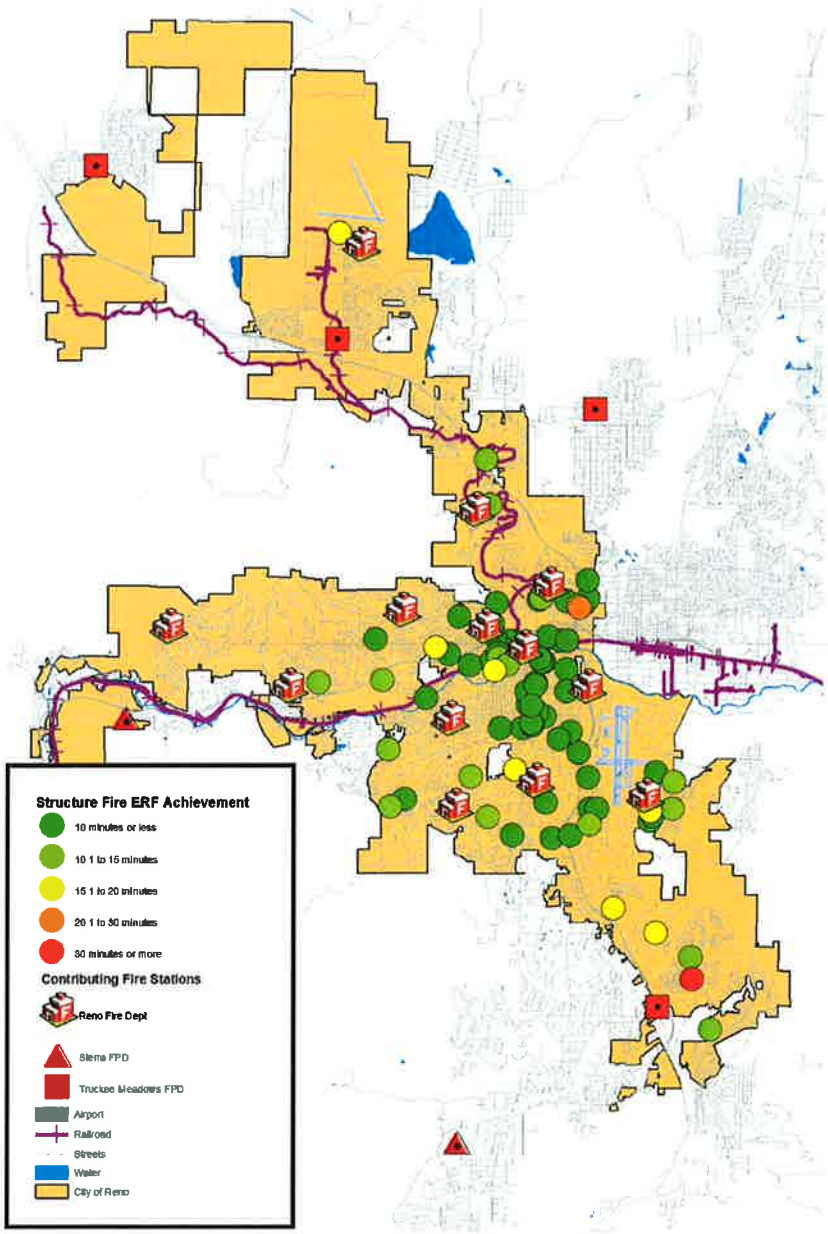
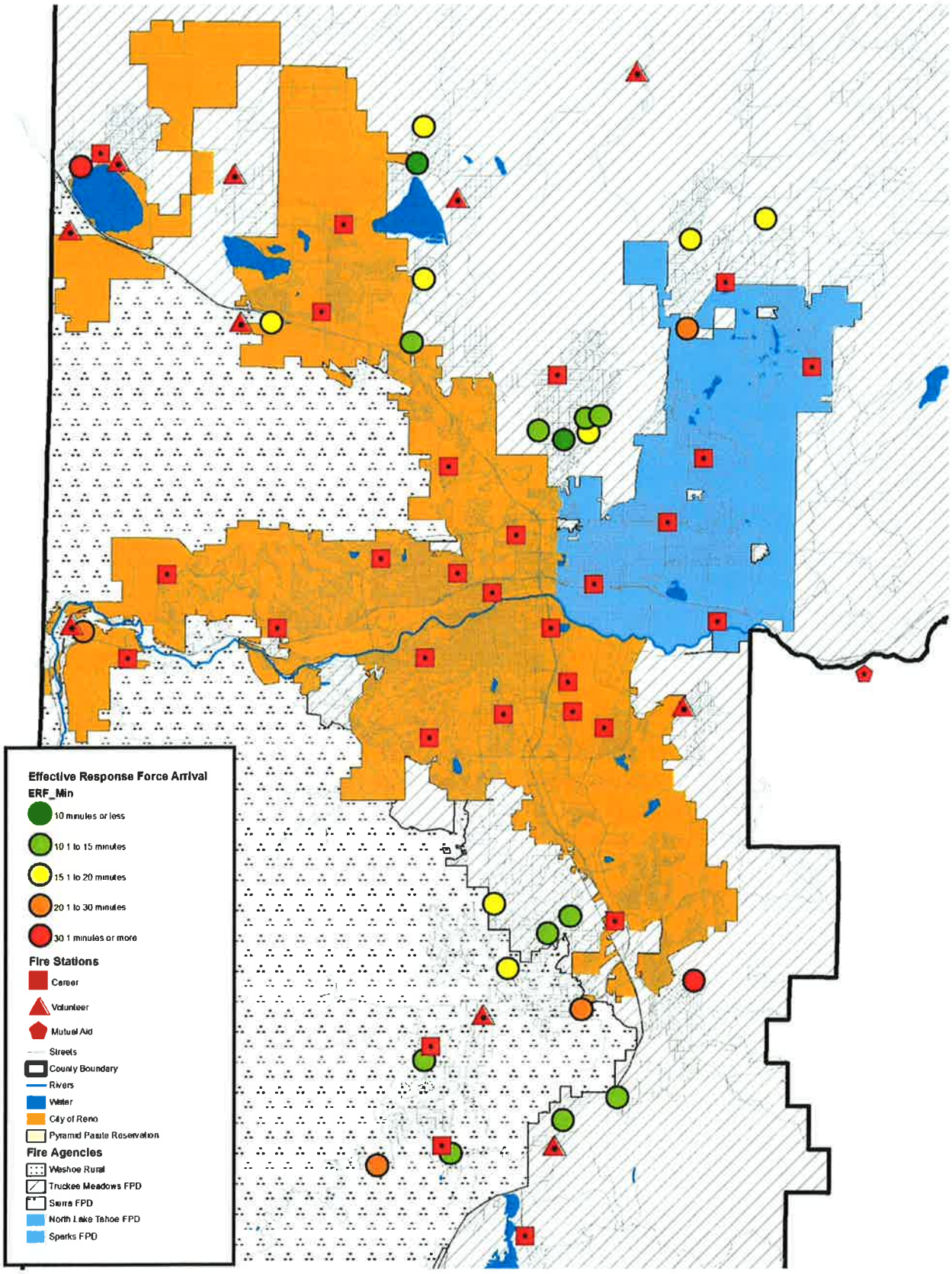


Figure 17: County Area Structure Fires



Volunteer Fire Department Reliability

In many areas of the County quick response is dependent on the availability of volunteer firefighters. In Washoe County, as in many areas of the country, volunteer firefighters do not provide 100 percent response reliability. Personal commitments to family and work can prevent a volunteer firefighter from responding to an emergency. This results in a more distant station being the first emergency unit on scene of the incident, extending the time to deliver the needed assistance.

The following tables, using data from the ECOMM computer-aided dispatch system, lists each volunteer fire department, the number of incidents to which it was dispatched, the number of times each department responded, and the corresponding reliability percentage.

Figure 18: VFD Reliability Percentages

Volunteer Fire Dept (Managing Department)	Number of Times Dispatched	Number of Times Responded	Reliability Percentage
Cold Springs Fire Department (Sierra FD)	68	25	36.8%
Galena Fire Department (Sierra FD)	572	40	7.0%
Peavine Fire Department (Sierra FD)	78	19	24.4%
Verdi Fire Department (Sierra FD)	236	47	19.9%
West Washoe Valley Fire Department (Sierra FD)	67	3	4.4%
Cold Springs Fire Department (TMFPD)	382	61	16.0%
Gerlach Fire Department[7]	62	52	83.9%
Hidden Valley Auxiliary (TMFPD)	127	1	0.8%
Lemon Valley Fire Department (TMFPD)	390	58	14.9%
Palomino Valley Auxiliary (TMFPD)	90	3	3.3%
Pleasant Valley Fire Department (TMFPD)	683	110	16.1%
Red Rock Fire Department[2]	165	134	81.2%
Silver Lake Fire Department (TMFPD)	163	134	82.2%
Sutcliffe Fire Department (Pyramid Lk/Paiute Tribe)	242	180	74.4%
Wadsworth Fire Department (TMFPD)	510	286	56.1%

An audit of the Sierra Fire Protection District, prepared by the Washoe County Internal Audit Division and dated March 17, 2011, also identified volunteer firefighter response reliability as a concern. Additionally, compliance with medical screening and minimum training requirements were identified concerns.

At present, the volunteer fire departments, with the exception of Red Rock Fire Department, Gerlach Fire Department, and Silver Lake Fire Department, do not offer sufficient reliability to

[7] Gerlach and Red Rock stations are part of the county fire suppression program whose daily operations are overseen by Truckee Meadows Fire Protection District.

consider in an analysis of available response capability. Silverlake's turnout times and its location in a predominately suburban zone make it unlikely to provide first-due service within current suburban response time objectives.

Geographic Coverage From Existing Stations

The following maps illustrate territory that can be covered from each contributing fire station. All career staffed stations along with Gerlach Station 242 and Red Rock Station 240 are included. In addition, out of region fire resources from North Lyon Fire District, Storey Canyon Fire District, and North Lake Tahoe Fire District are also included.

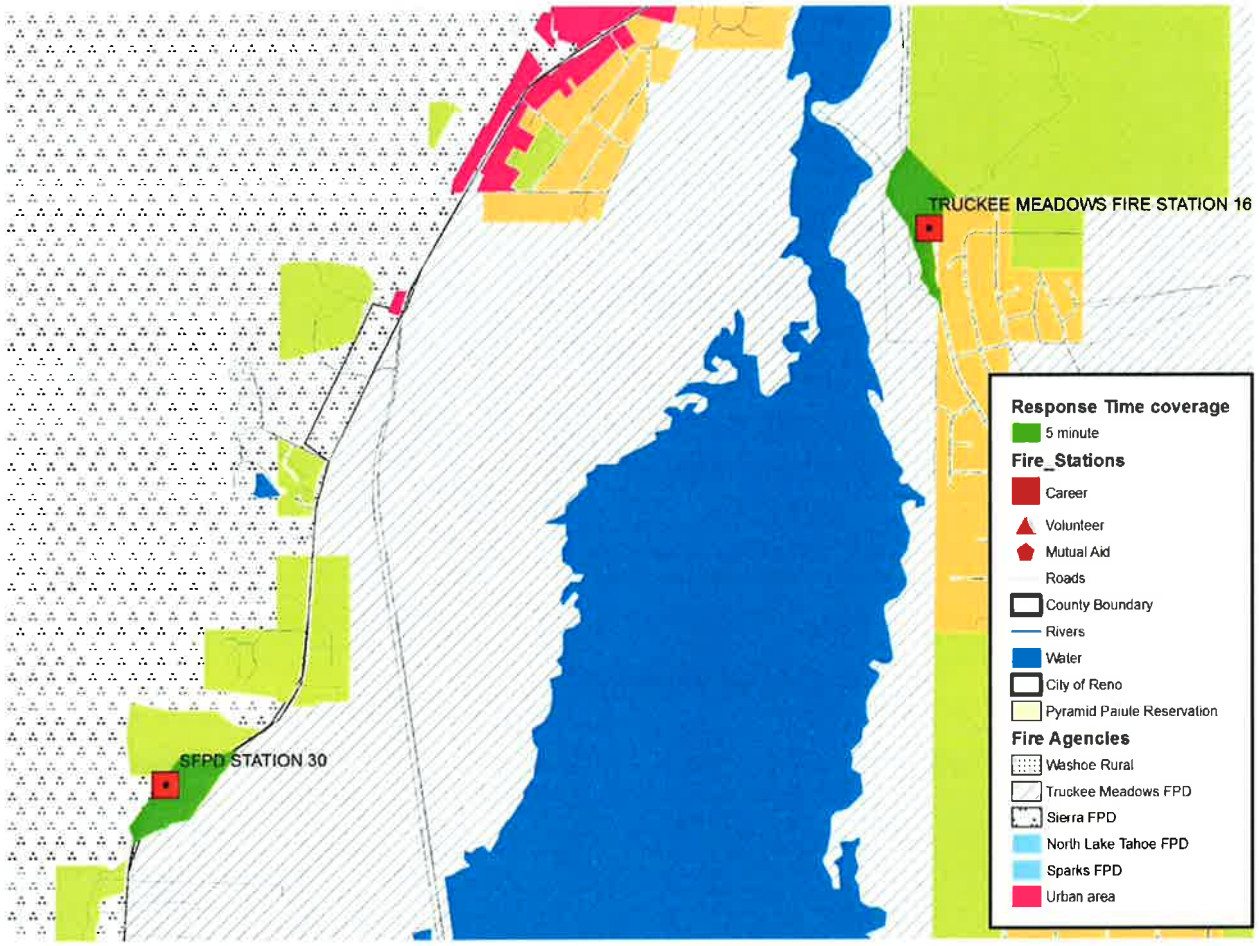
The following maps model coverage based on total response time from call receipt until arrival of the first response unit. The following assumptions are included in the analysis:

1. Dispatch call processing time for units dispatched by ECOMM is within 2 minutes, 85 percent of the time
2. Dispatch call processing and turnout time for out of region resources is within7 minutes 30 seconds, 85 percent of the time. This accommodates the need for ECOMM to call the out of region dispatch center to relay call information.
3. Career station turnout time is within 2 minutes 30 seconds, 85 percent of the time
4. Red Rock Fire Department and Gerlach Fire Department turnout time is within 10 minutes, 85 percent of the time.

Each station has been evaluated based on its ability to reach areas within 5 minutes, 10 minutes, 15 minutes, and 20 minutes from receipt of call at the dispatch center.

The first map shows an example of area that can be served within five minutes from receipt of the call. Virtually no area is served at this performance level. Since 4 minutes 30 second is used in call processing and turnout, only 30 seconds is left for travel to the incident. On average 30 seconds of travel time serves an area only within one-quarter mile (about two blocks) from each fire station.

Figure 19: Five-Minute Response Coverage



The following series of maps illustrate response service coverage at 10, 15, and 20-minute response time intervals. The service area from each career staffed station, on average is:

- 10-minute response time – 2.75-mile travel distance
- 15-minute response time – 5.25-mile travel distance
- 20-minute response time – 7.75-mile travel distance

Figure 20: 10, 15, and 20-Minute Response Coverage – South

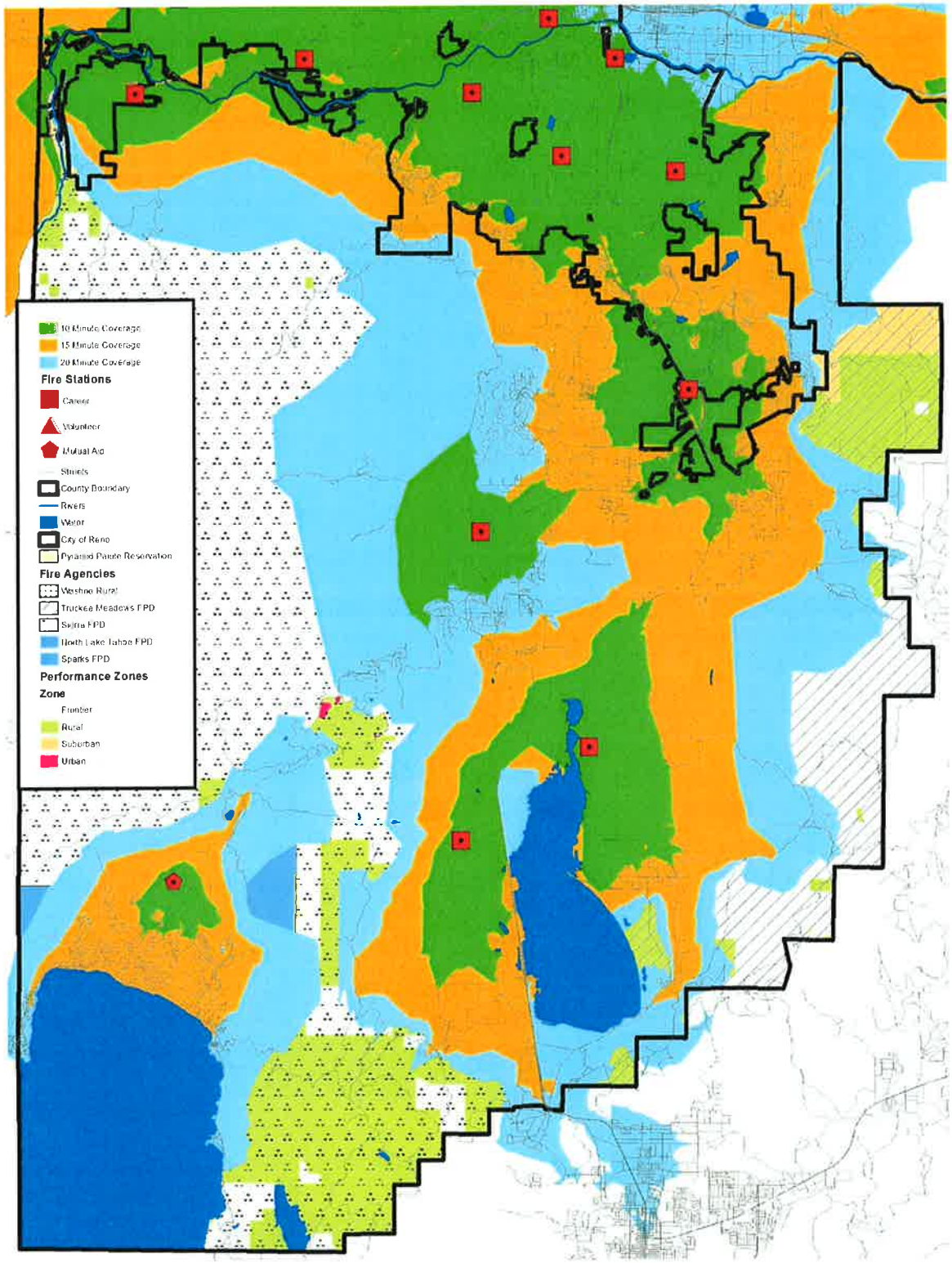


Figure 21: 10, 15, and 20-Minute Response Coverage – Central

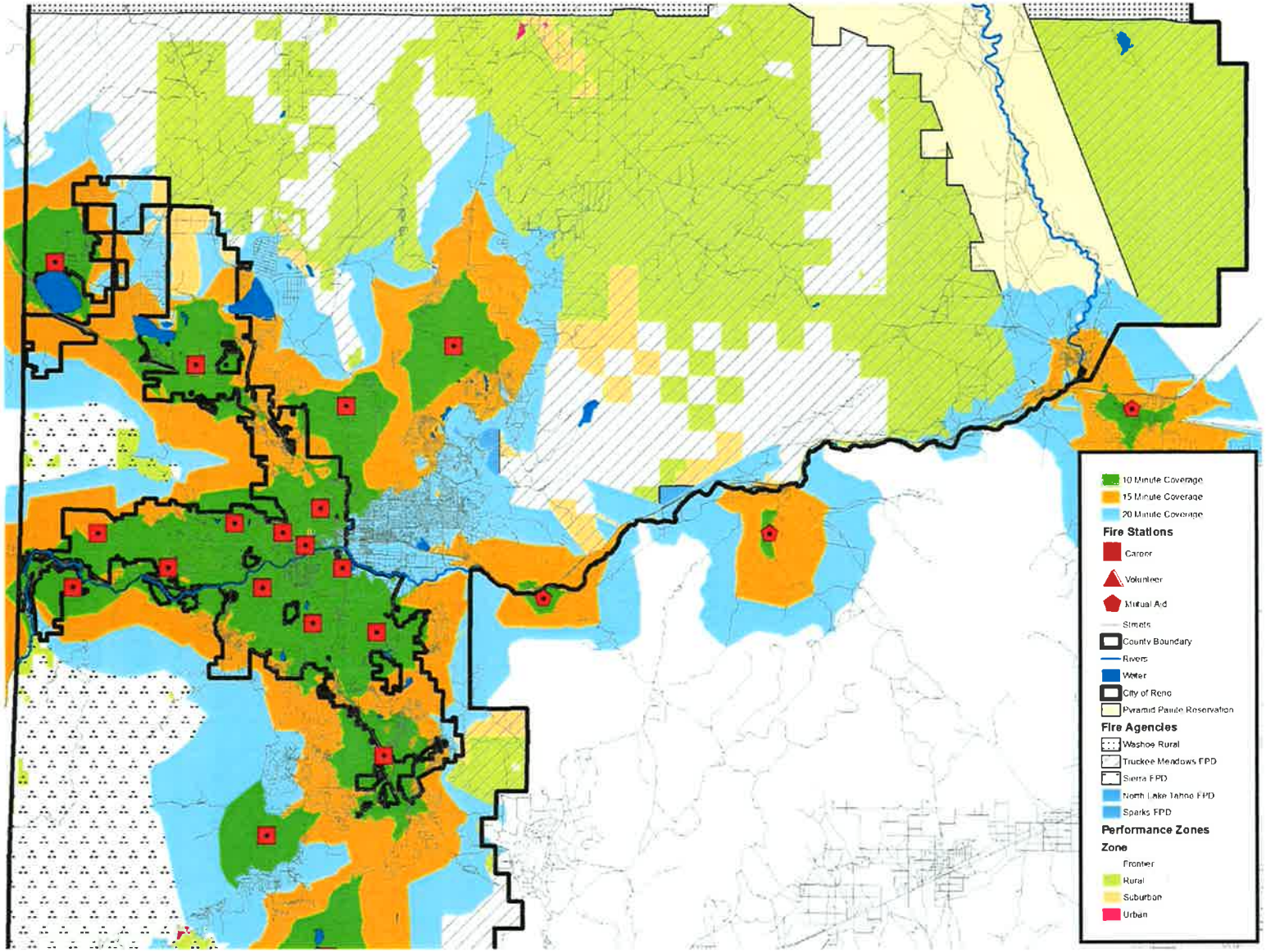


Figure 22: 10, 15, and 20-Minute Response Coverage – Red Rock Area

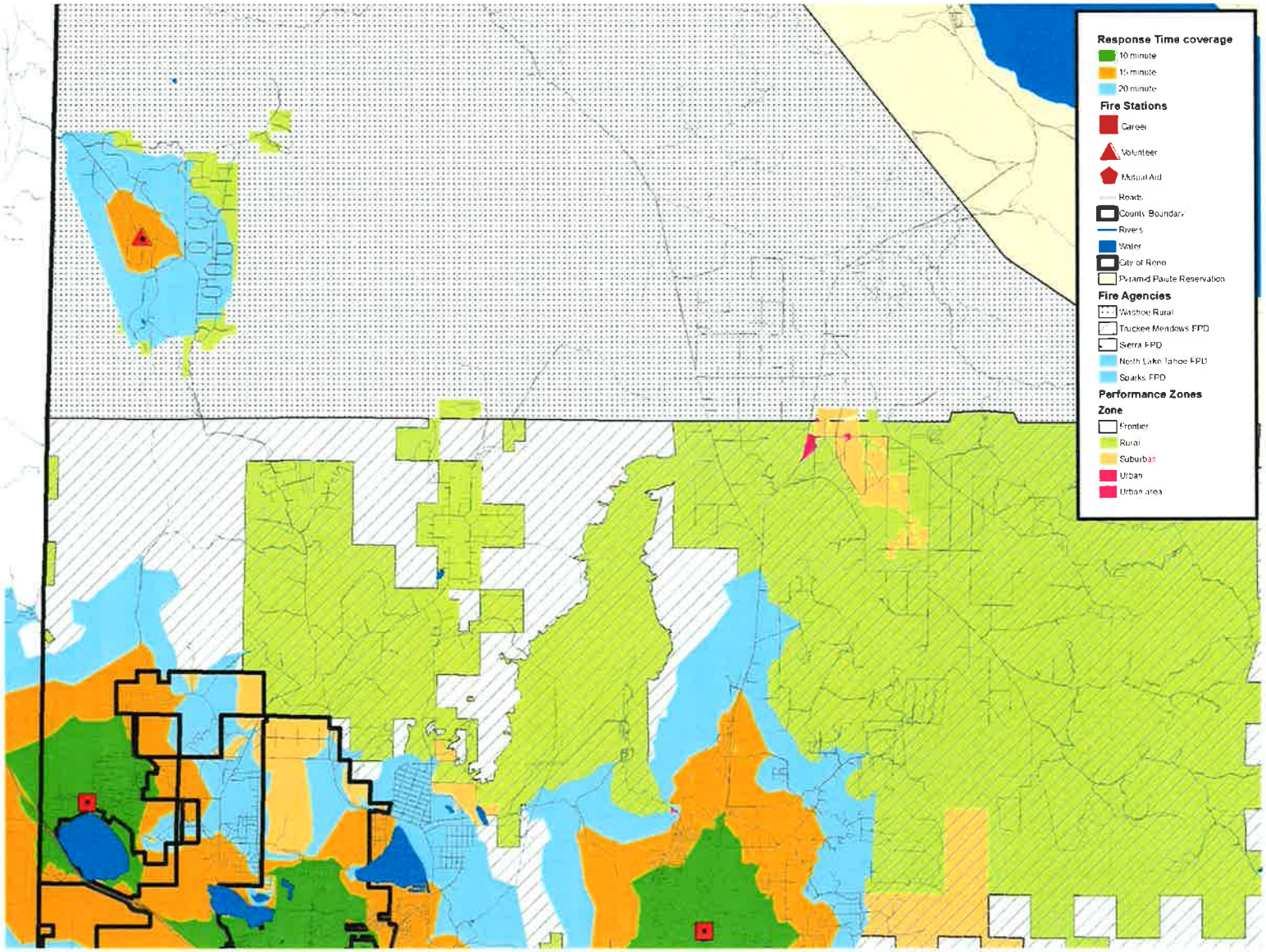
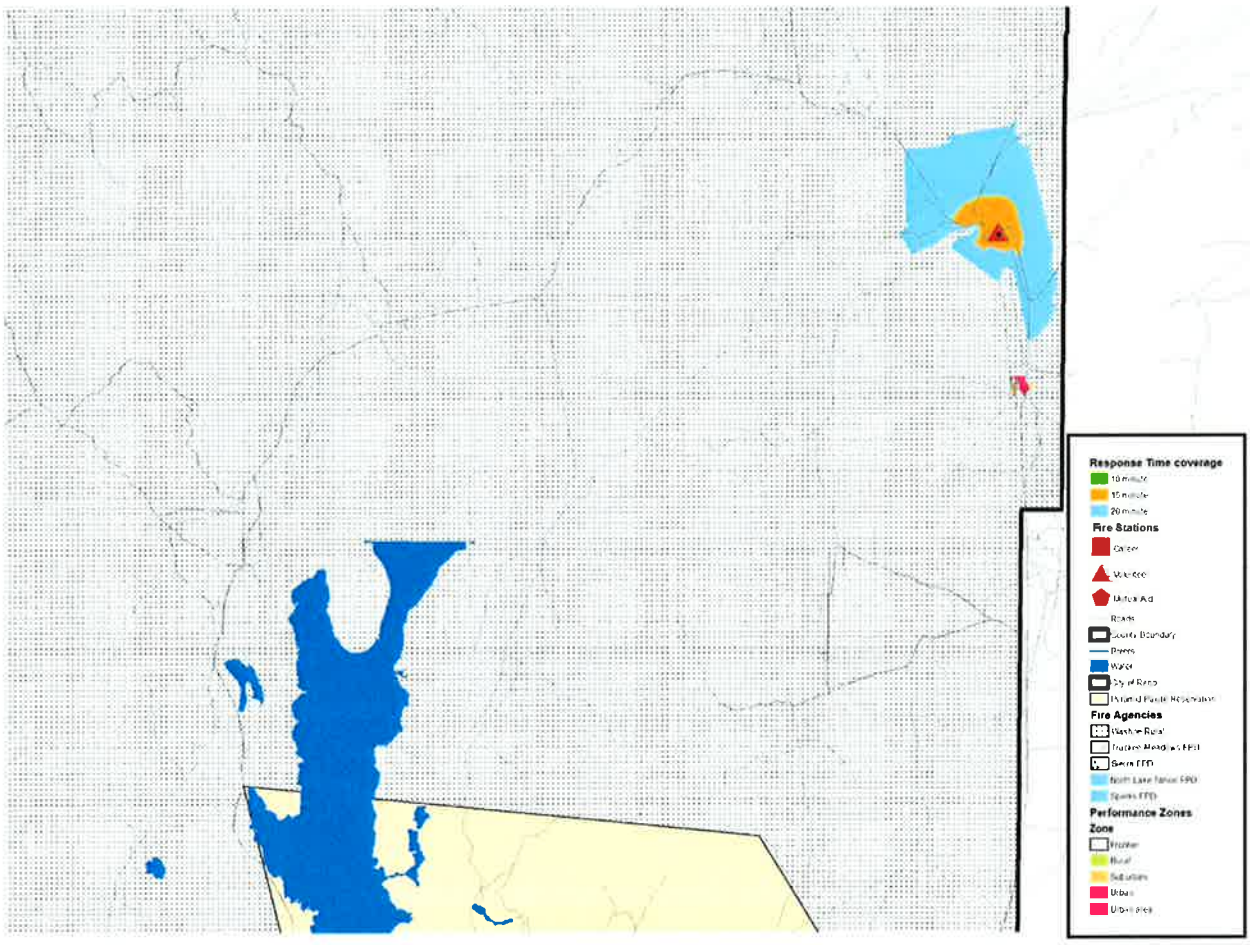


Figure 23: 10, 15, and 20-Minute Response Coverage – Gerlach Area



Further analysis reveals that during the study period 3,268 of 4,810 incidents in the Suburban performance zone (68 percent) occurred within the 10-minute response service coverage area; 200 of 479 incidents in the Rural performance zone (42 percent) occurred within the 20-minute response service coverage area.

Effective Response Force Coverage

For the purpose of this analysis, a target ERF response time of within 12 minutes from receipt of call, 85 percent of the time, will be used for the City of Reno urban area and within 15 minutes from receipt of call, 85 percent of the time in the region's suburban area. ERF for the rural area will be evaluated at within 25 minutes from receipt of call, 85 percent of the time.

The following maps depict the physical capability of regional resources to assemble sufficient apparatus within the specified times. The modeled analysis shown assumes that all response

units are available. At current staffing levels, the assembly of sufficient numbers of apparatus also provides the minimum number of firefighters.

Figure 24: Effective Response Force – Urban and Suburban

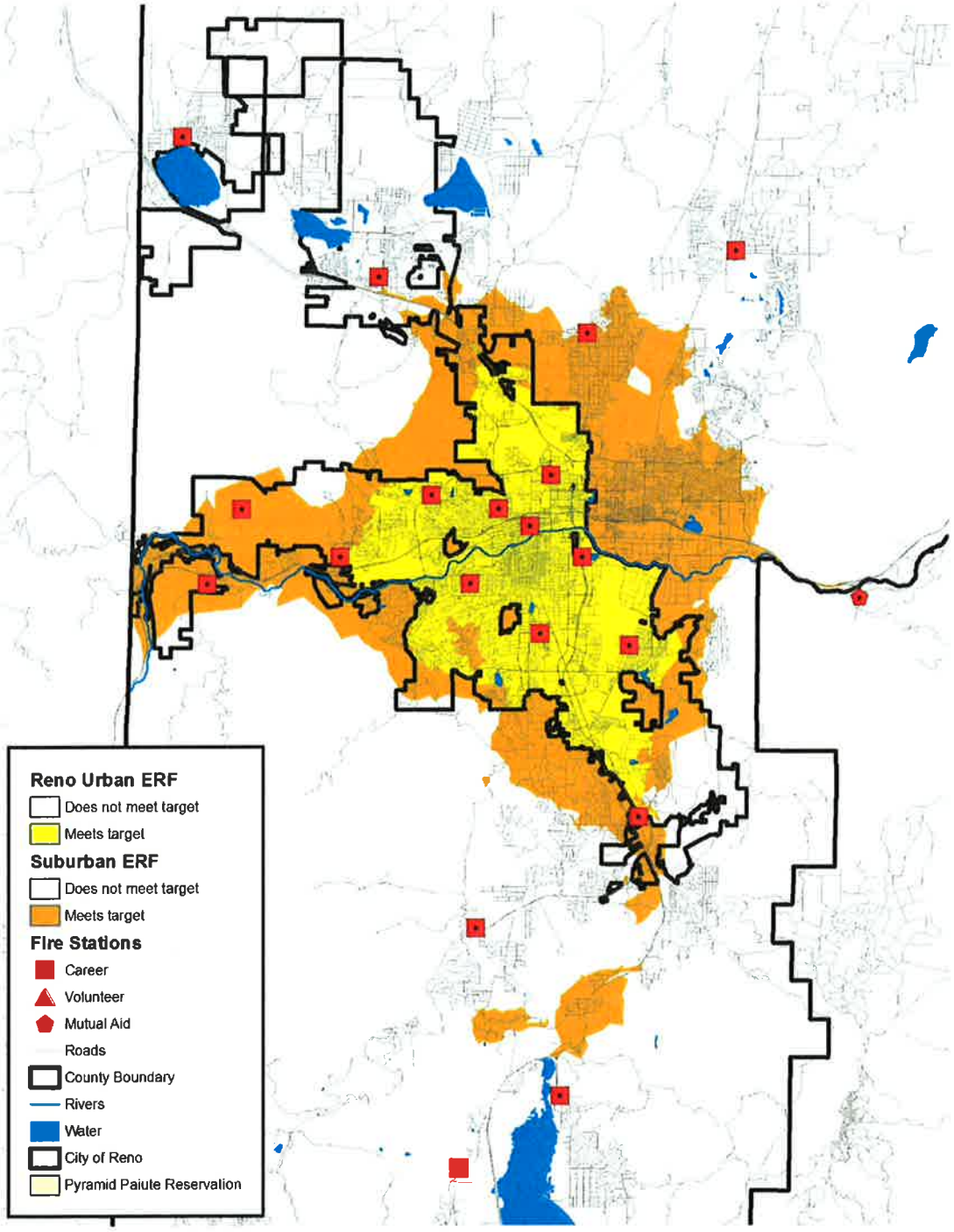
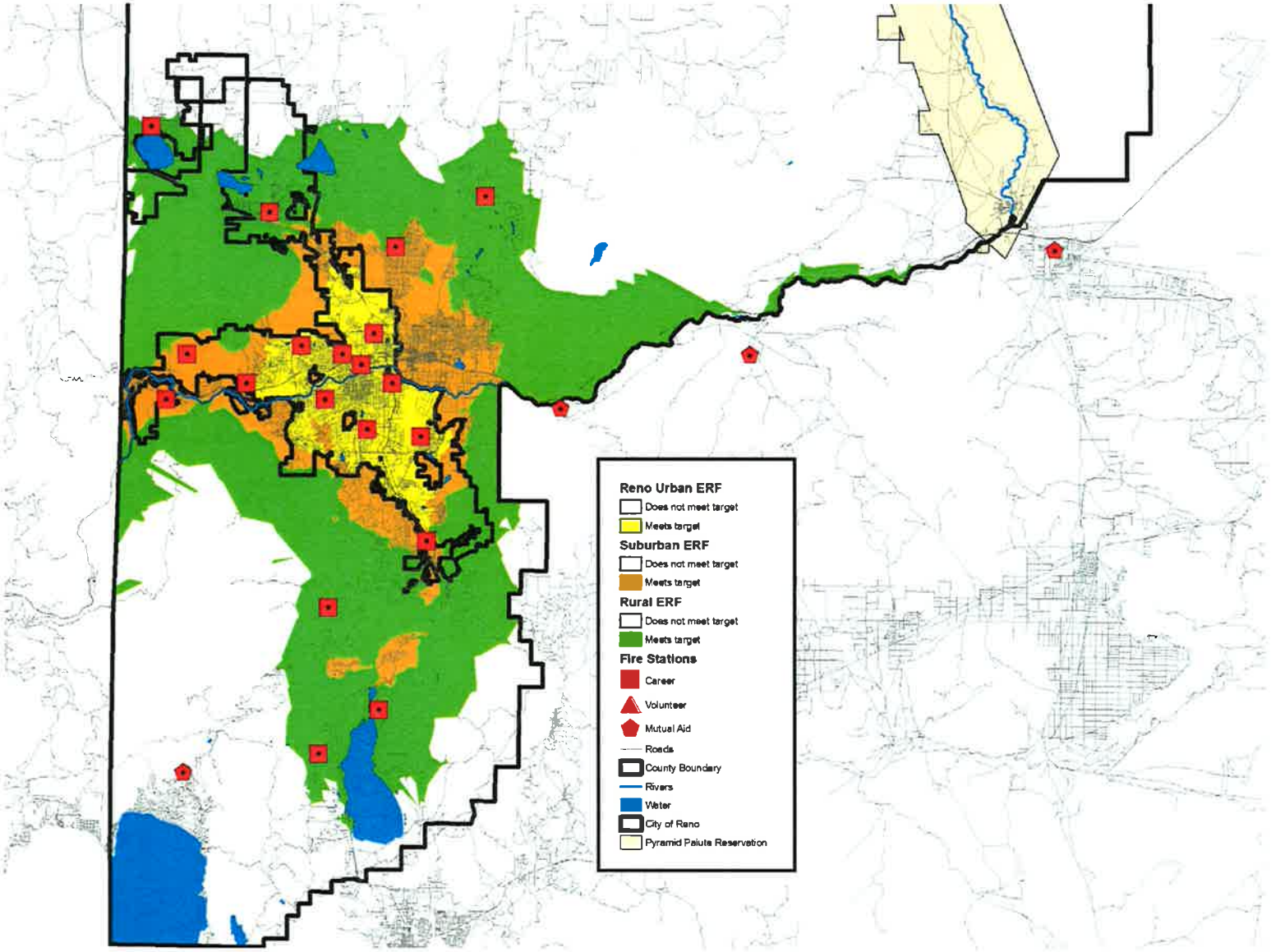


Figure 25: Effective Response Force – Urban, Suburban, and Rural



Suburban level coverage (within 15 minutes from receipt of call) does not serve all of the region's suburban area. Areas in and around north Reno as well as areas within Washoe Valley do not have sufficient apparatus and personnel to achieve target performance.

Rural level coverage (within 25 minutes from receipt of call) is more widely available, but areas in the far southern part of the county, north of Reno, and east of Reno also do not have sufficient apparatus and personnel to achieve target performance.

Response Performance Objectives

The following section describes the emergency response performance levels that are reasonable and achievable for the City of Reno, Sierra Fire Protection District, Truckee Meadows Fire Protection District, and Washoe County Fire Services region (Region). Where desired performance is not currently met, actual current performance is described.

A community's desired level of service is a uniquely individual decision. No two communities are exactly alike. Performance objectives must be tailored to match community expectations, community conditions, and the ability to pay for the resources necessary to attain the desired level of service.

Levels of service and resource allocation decisions are the responsibility of the elected officials of each jurisdiction. The policy making bodies must carefully balance the needs and expectations of its citizenry when deciding how much money to allocate to all of the services the jurisdiction provides. For the Region this is further complicated by current economic conditions.

With this in mind the following response performance objectives are recommended as the Region's fire and life safety response performance objectives. **These are not levels of service that must be achieved immediately but instead are targets for achievement when resources are available to do so.** Later in this report are recommendations that will help accomplish that goal.

Call-Processing Performance Statement

In many areas of the country, call handling or call processing are not functions under direct control of the fire department. This is the case in Reno. RFD is provided communications and dispatch services through by the Reno Department of Communication and Technology Communications Center (ECOMM). The dispatch center is the primary Public Safety Answering Point and dispatch center for Reno fire and police, the Washoe County Sheriff's office, University of Nevada-Reno Police, Truckee Meadows Community College Police, Sierra Fire Protection District, and Washoe County Alternative Sentencing. The Regional Emergency Medical Service Authority operates its own dispatch center.

ECOMM is managed by a Communications Manager along with Shift Supervisors who are on duty with each shift in the center. The center uses cross-trained dispatcher/call-taker positions

and typically dedicates at least one communications position to the dispatch function for fire and EMS. ECOMM has established the following performance objectives:

1. 97 percent of incoming calls will be answered within 10 seconds or less.
2. 100 percent of Priority 1 (imminent threat to life) calls will be entered and dispatched within five minutes.
3. 100 percent of Priority 2 (no imminent threat to life) calls will be entered and dispatched within 15 minutes.

ECOMM is meeting its performance objective for the Region 96 percent of the time. Many of the longer dispatch times appear to be anomalies that should be excluded. With those excluded, ECOMM is meeting it performance objective 97 percent of the time.

ECOMM should consider aligning its performance objective to dispatch incidents more closely with national guidance, specifically National Fire Protection Association *Standard 1221*. This standard recommends that calls be entered and dispatched within 60 seconds, 90 percent of the time. ECOMM's current performance against this standard is within 60 seconds, 51 percent of the time.

Turnout Time Performance Statement

Turnout time is one area over which the fire department has total control. Turnout time, or the time between when the call is received by the response units (dispatched) and when the unit is actually en route to the scene (responding), can dramatically effect overall response time.

A national standard[8] recommends turnout time performance of 80 seconds or less for structure fire response and 60 seconds or less for all other priority responses. Current Region turnout times are longer than this. Reno Fire Department turnout time is within 2 minutes 22 seconds, 85 percent of the time. Sierra Fire Protection District and Truckee Meadows Fire Protection District turnout time is within 2 minutes 25 seconds, 85 percent of the time.

Given that turnout time is one area in which field personnel can improve overall response time, an aggressive objective is recommended. With this in mind, the following Turnout Time Performance Objective is recommended:

1. For 85 percent of all priority responses, the Region fire agencies will be en route to the incident in 90 seconds or less, regardless of incident risk type.

[8] National Fire Protection Association *Standard 1710*.

Two ERF service level tiers are offered for consideration by policy makers. Each builds on the previous providing more prompt response and a resulting higher level of performance. Service Tier One reflects currently achievable performance. Tier Two offers policy makers the opportunity to understand the scope and cost of resources that will be required to improve levels of service in the future.

Effective Response Force Service Tier One

Urban: The full effective response force to a moderate risk incident should arrive within 10 minutes, 85 percent of the time from the receipt of call.

Suburban: The full effective response force to a moderate risk incident should arrive within 20 minutes, 85 percent of the time from the receipt of call.

Rural: The full effective response force to a moderate risk incident should arrive within 30 minutes, 85 percent of the time from the receipt of call.

Frontier: The full effective response force to a moderate risk incident should arrive as soon as practical based on the best effort of response forces.

Effective Response Force Service Tier Two

Urban: The full effective response force to a moderate risk incident should arrive within 10 minutes, 85 percent of the time from the receipt of call.

Suburban: The full effective response force to a moderate risk incident should arrive within 15 minutes, 85 percent of the time from the receipt of call.

Rural: The full effective response force to a moderate risk incident should arrive within 25 minutes, 85 percent of the time from the receipt of call.

Frontier: The full effective response force to a moderate risk incident should arrive as soon as practical based on the best effort of response forces.

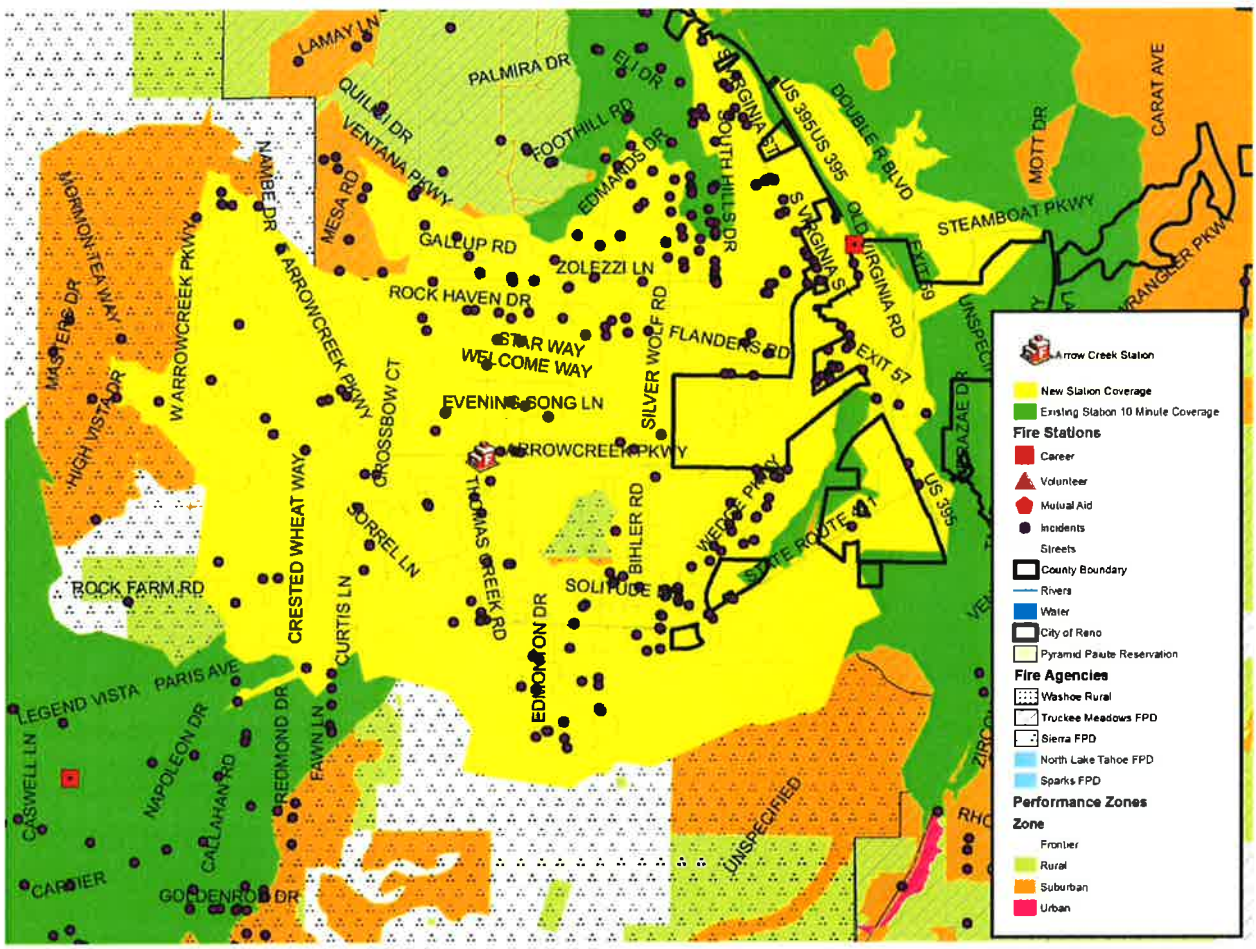
Deployment Needed to Achieve Service Tiers

As evidenced by the analysis, currently defined service levels are not attainable with existing resources. In order to achieve currently defined Suburban Zone response time objectives additional resources will be needed. The following describes recommended locations for new resources as well as the relocation of one existing fire station in order to meet the response time objectives of Service Tier One.

Service Tier One Deployment Recommendations

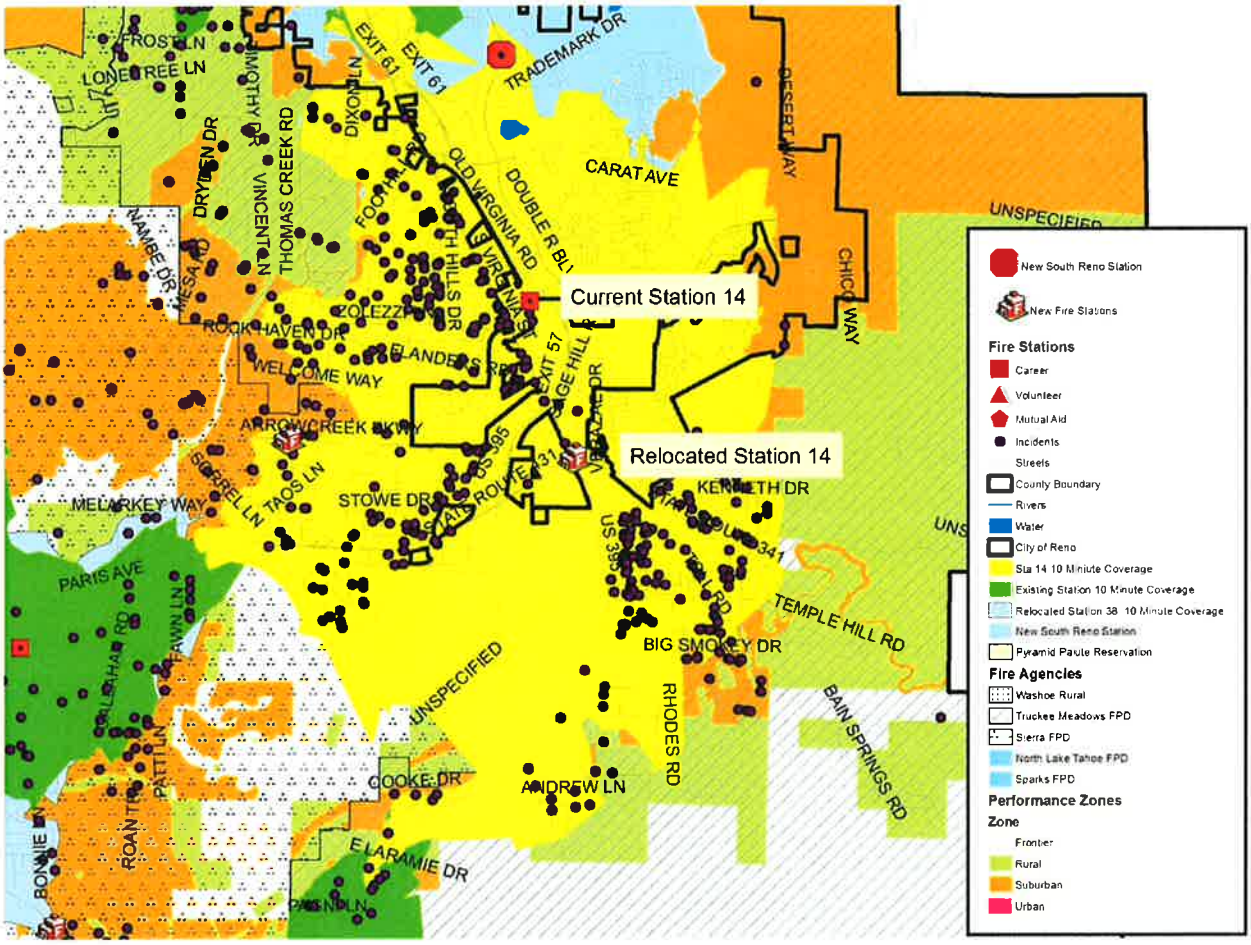
The first additional resource recommended is the Arrow Creek area fire station. The map below shows its location at the property acquired for this purpose (Arrow Creek Parkway and Thomas Creek Road) and the area it can serve within the ten-minute response time objective for the Suburban Zone.

Figure 26: Arrow Creek Station Location



Placement of a fire station on this site creates a significant amount of overlap of the coverage provided by Truckee Meadows Fire Station 14. A better location for Fire Station 14 (S. Virginia and Geiger Grade Roads) is shown in the map below. This relocation brings more Suburban Zone land within the ten-minute response time objective. ***Implementation of this recommended fire station relocation is highly contingent on implementation of the recommendation in the Reno Standards of Cover report for a new south end fire station located at Double R Boulevard and Double Diamond Parkway.***

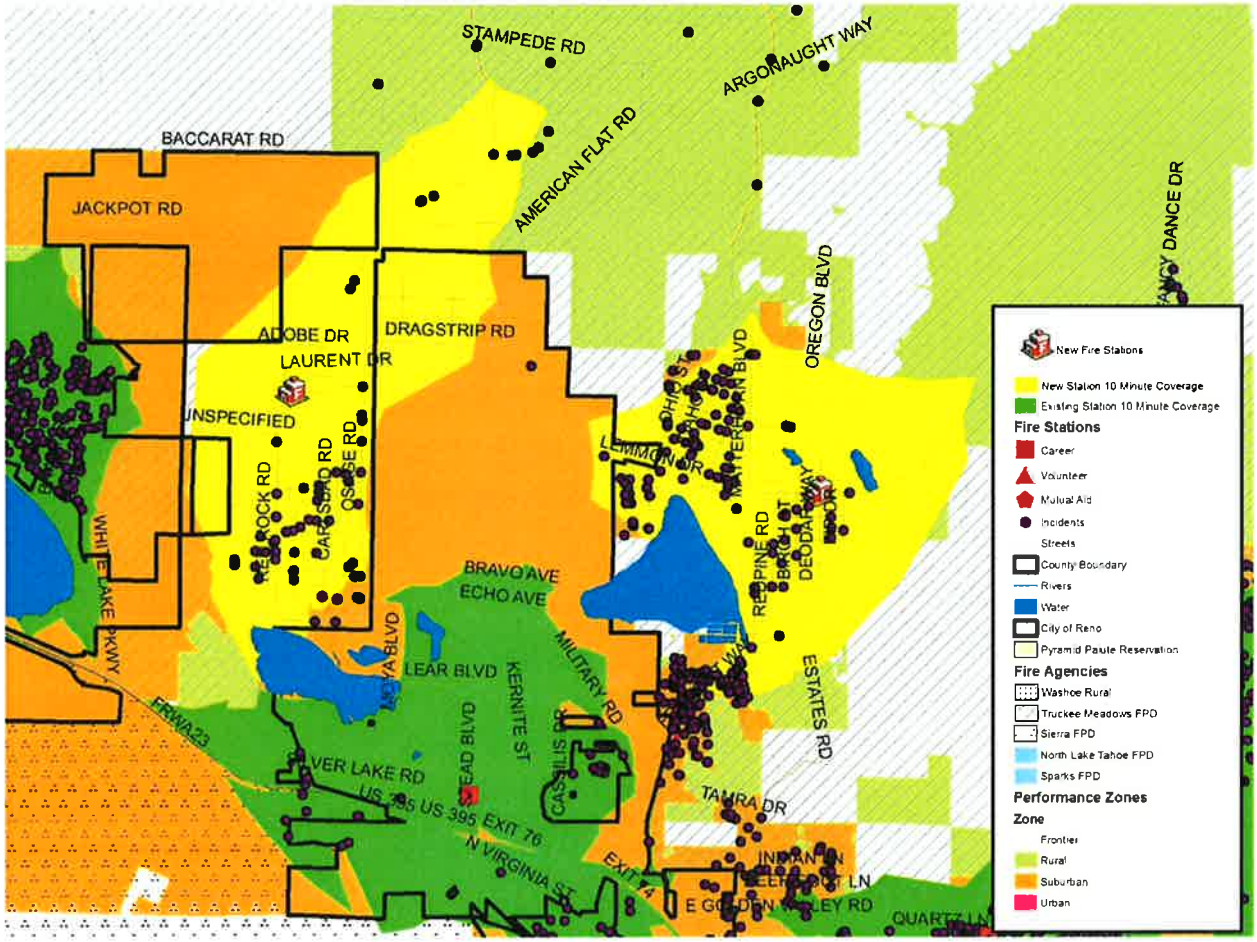
Figure 27: Relocated Fire Station 14



The Reno Standards of Cover plan recommended two additional stations north of the City of Reno in the future. Incident activity is low in the area, but it does contain underserved Suburban Zone land. In addition, it is an area with insufficient resources to provide the effective firefighting force within reasonable response time objectives.

The following map shows the locations of these two stations. One is recommended at Red Rock Road and Placerville Road and the other at Deodar Way and Chickadee Drive. ***The station proposed on Red Rock Road was also recommended as a future fire station location (Station A) in the Reno Standards of Cover report. These locations diminish the need for Reno Fire Station 9.***

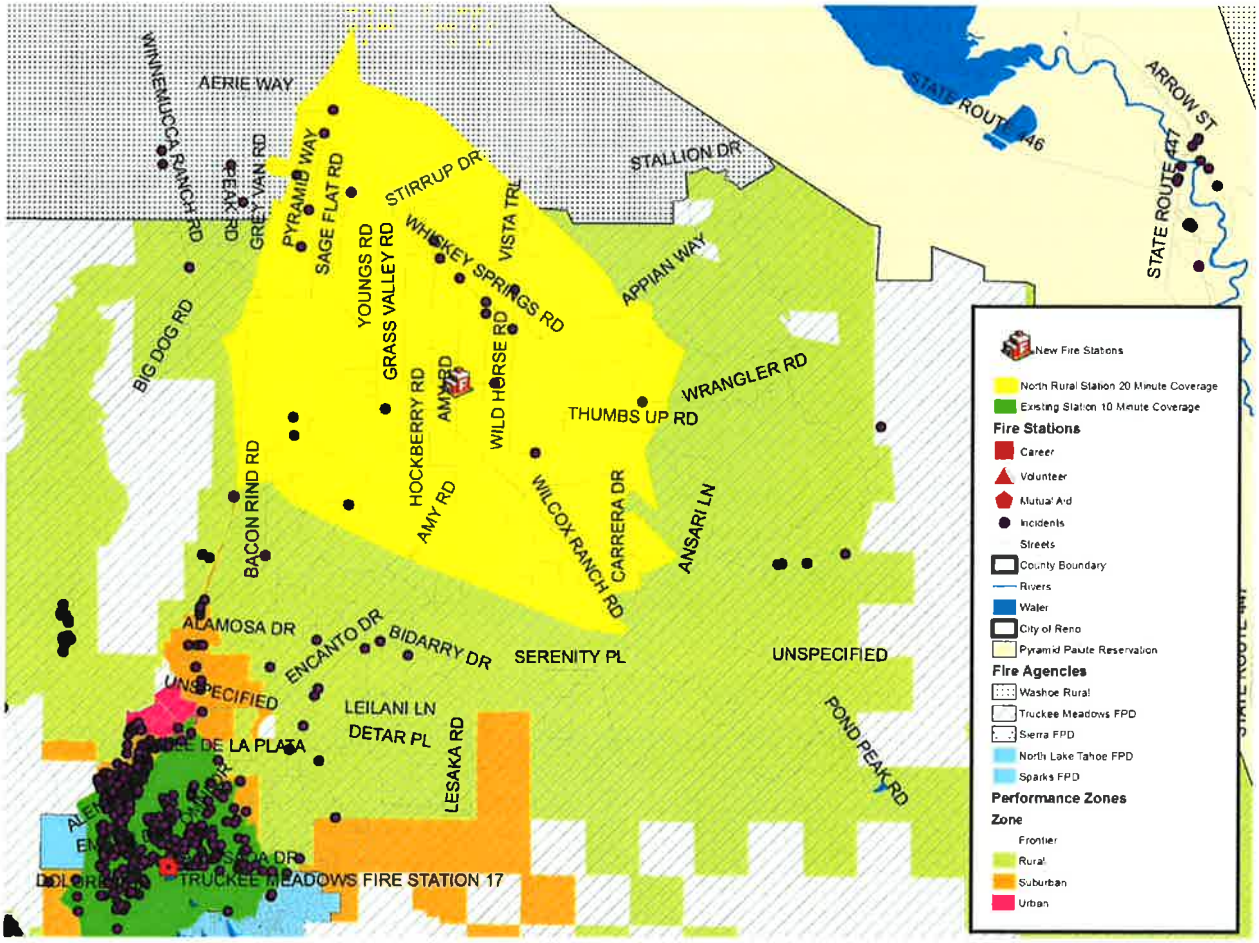
Figure 28: North End Fire Stations



There is a significant area of Rural Zone land north of Reno but south of the Township 22 line that is very underserved. Also within this area is a small area of Suburban Zone land.

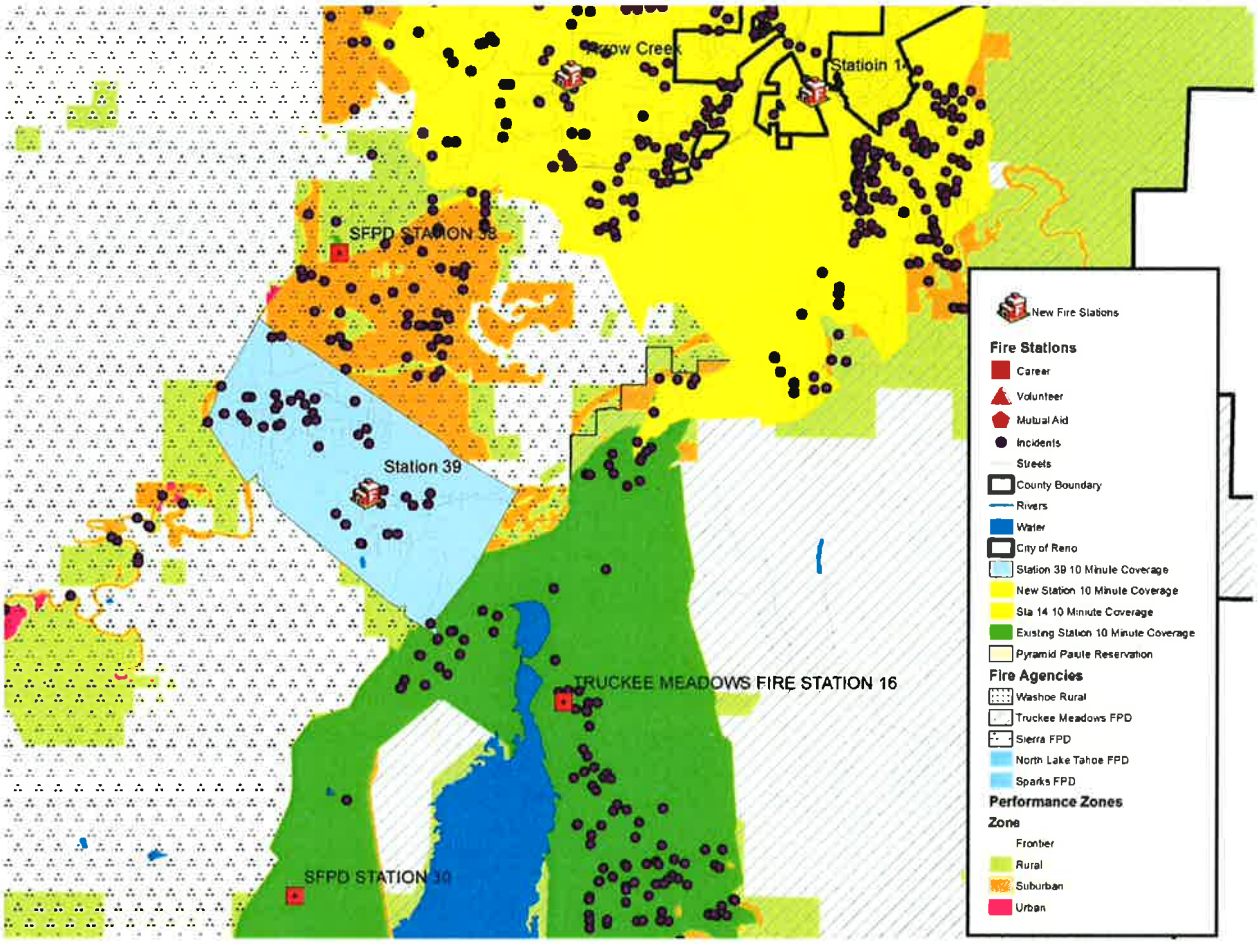
The following map shows the recommended location for this station (Sharrock Road and Amy Road). Response coverage is shown at the Rural Zone 20-minute standard. This area has a very low level of incident activity; however, response times to the area are currently very long.

Figure 29: North Rural Fire Station Location



There has been some conversation about moving response personnel from Fire Station 38 to Fire Station 39. Current and proposed coverage does leave some service delivery gaps in the Station 39 neighborhood. However, relocating response personnel to Station 39 from Station 38 would create even more gaps in coverage. The speed limit and geometry of the road network in the Station 39 area do not lend to fast response times. The following map illustrates the result of this move.

Figure 30: Coverage with Response Personnel Moved from Station 38 to Station 39

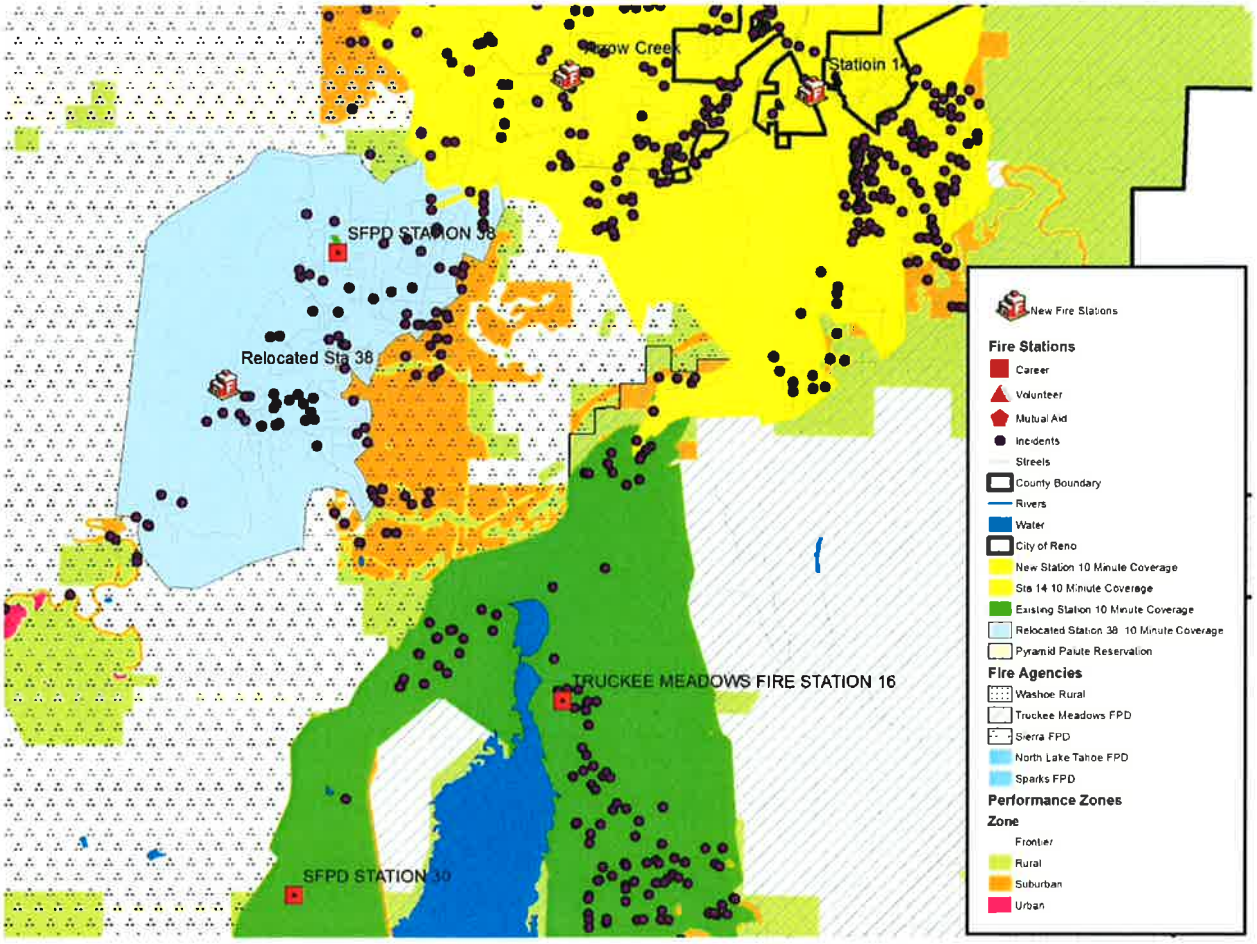


Station 39's coverage area at the ten-minute response time serves relatively little area compared to other station sites. This relocation also decreases service to Suburban Zone lands adjacent to Station 38.

A better option, though more expensive, would be to move Station 38 to a location at or near the intersection of Mt. Rose Highway and Joy Lake Road. The following map illustrates that

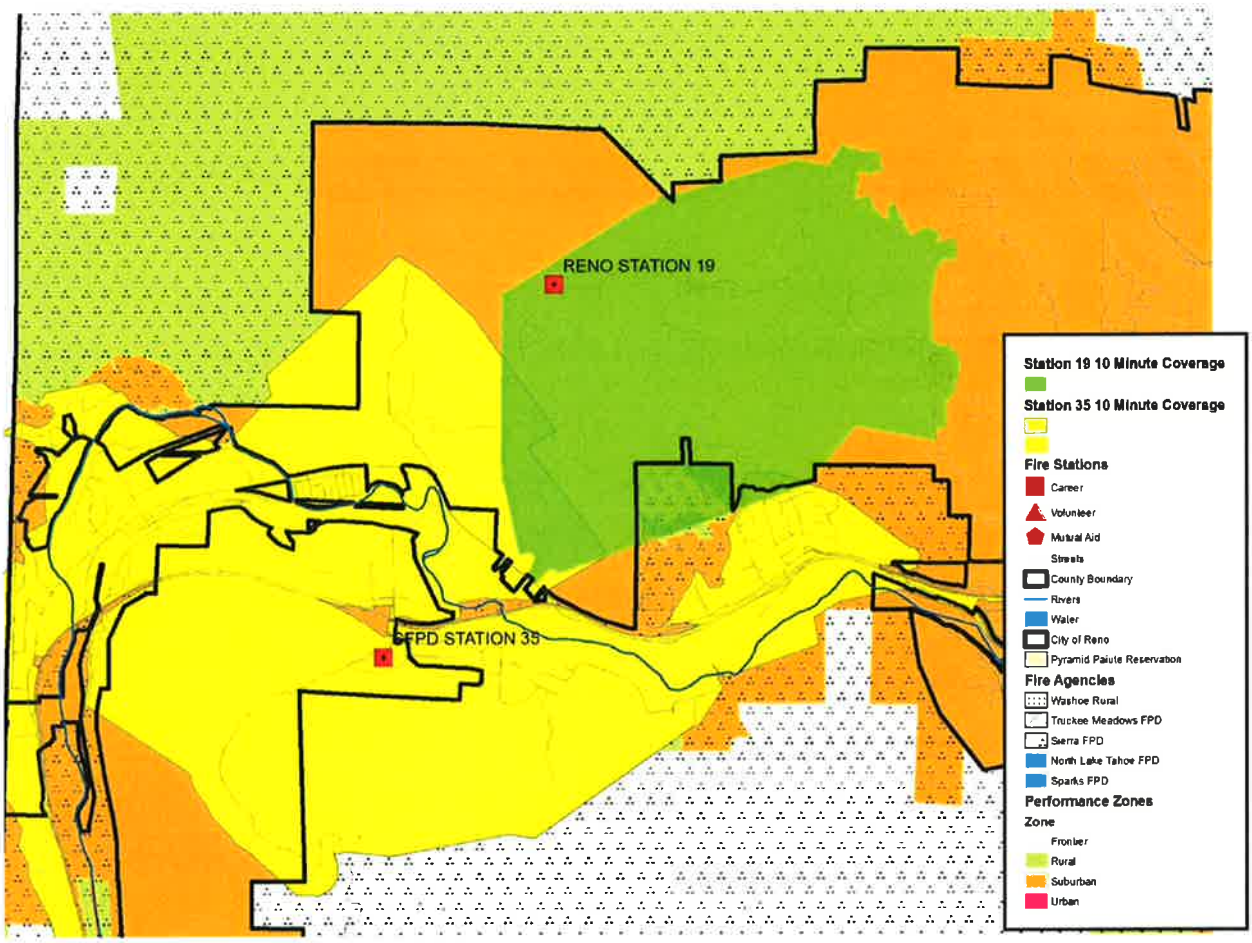
coverage from this location not only maintains existing coverage along Mt. Rose Highway but better serves area south and southeast along Joy Lake Road.

Figure 31: Relocated Station 38



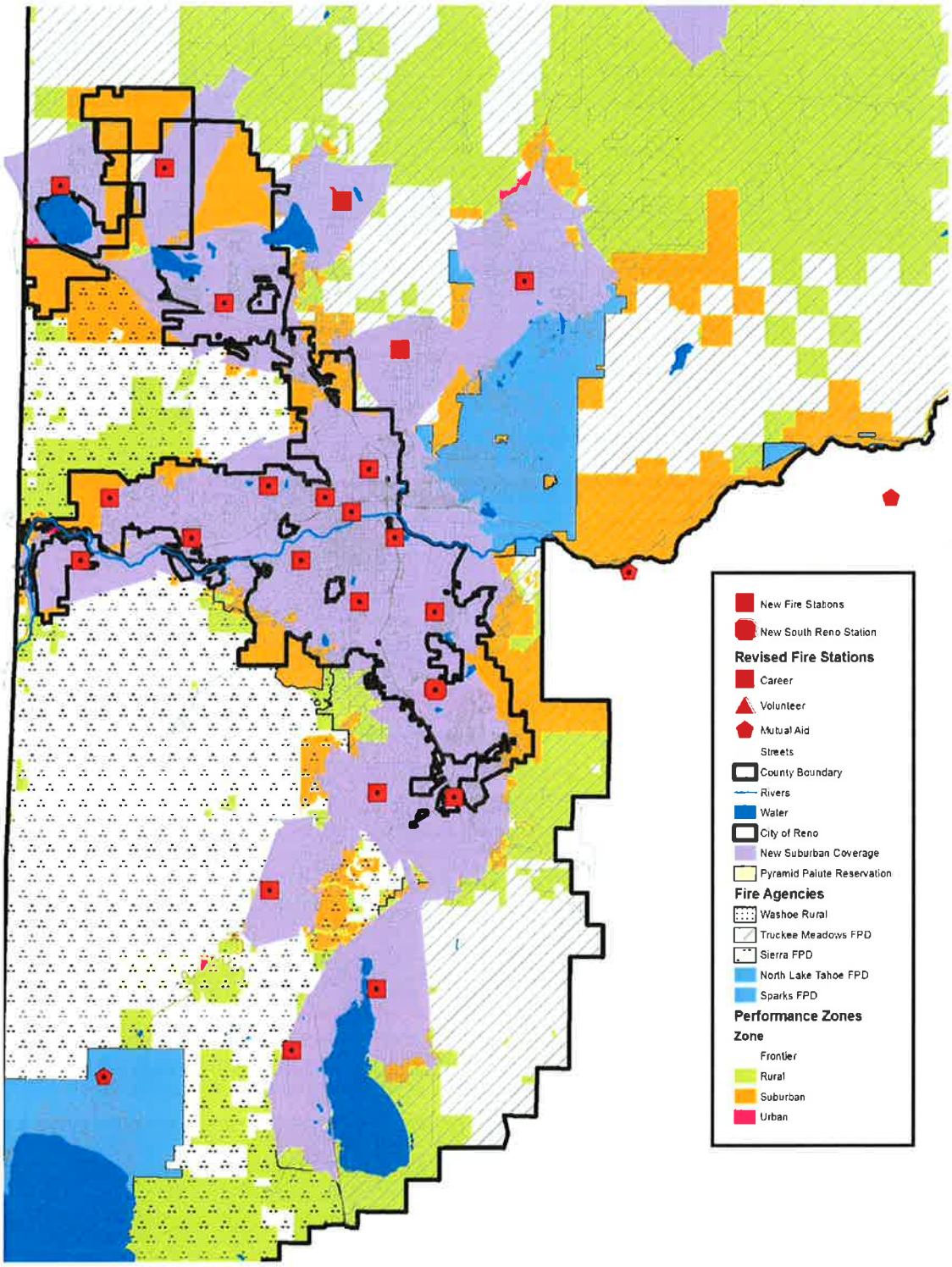
There has also been some consideration of consolidating Sierra Fire Station 35 with Reno Station 19. This is not recommended. The inability of Station 19 to quickly cross the Interstate 80 to the south negates its value to serve the Station 35 area. In addition, travel distances, even with easy access would exceed current travel time targets. Northbound access is much easier for Station 35, but its location leaves much of the Station 19 area outside the 10 minute response time target. The following map illustrates 10 minute response coverage from each station.

Figure 32: Fire Station 19 and 35 Response Coverage



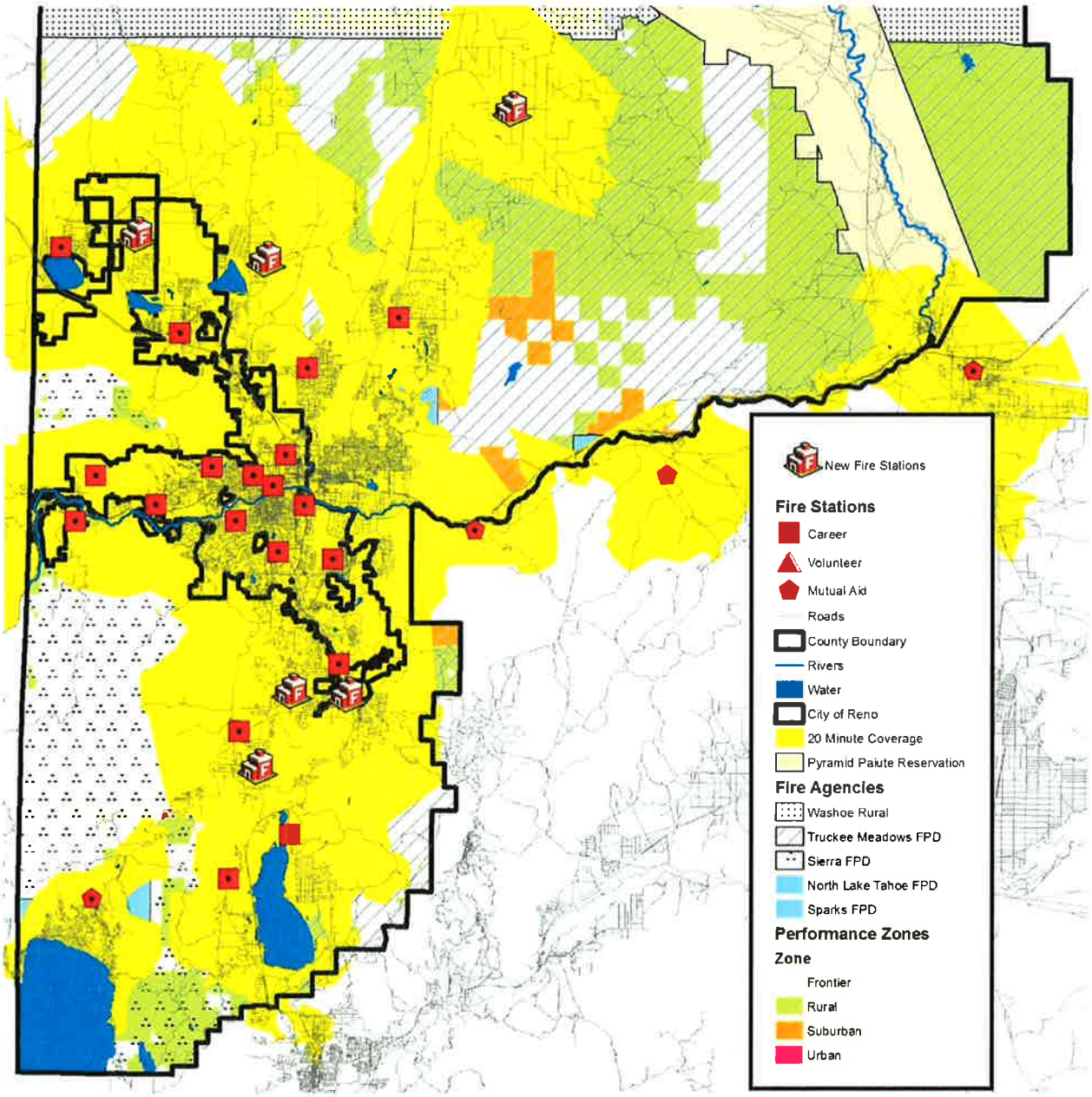
The proposed fire station additions and relocations greatly improve service to Suburban zone lands. The following map shows areas served at the 10 minute response time level.

Figure 33: South County Suburban Service Level Coverage



With these additional fire stations, the Rural Zone lands are more than adequately served at the 20-minute response time level. The following map shows coverage with the new stations included.

Figure 34: South County Rural Service Level Coverage

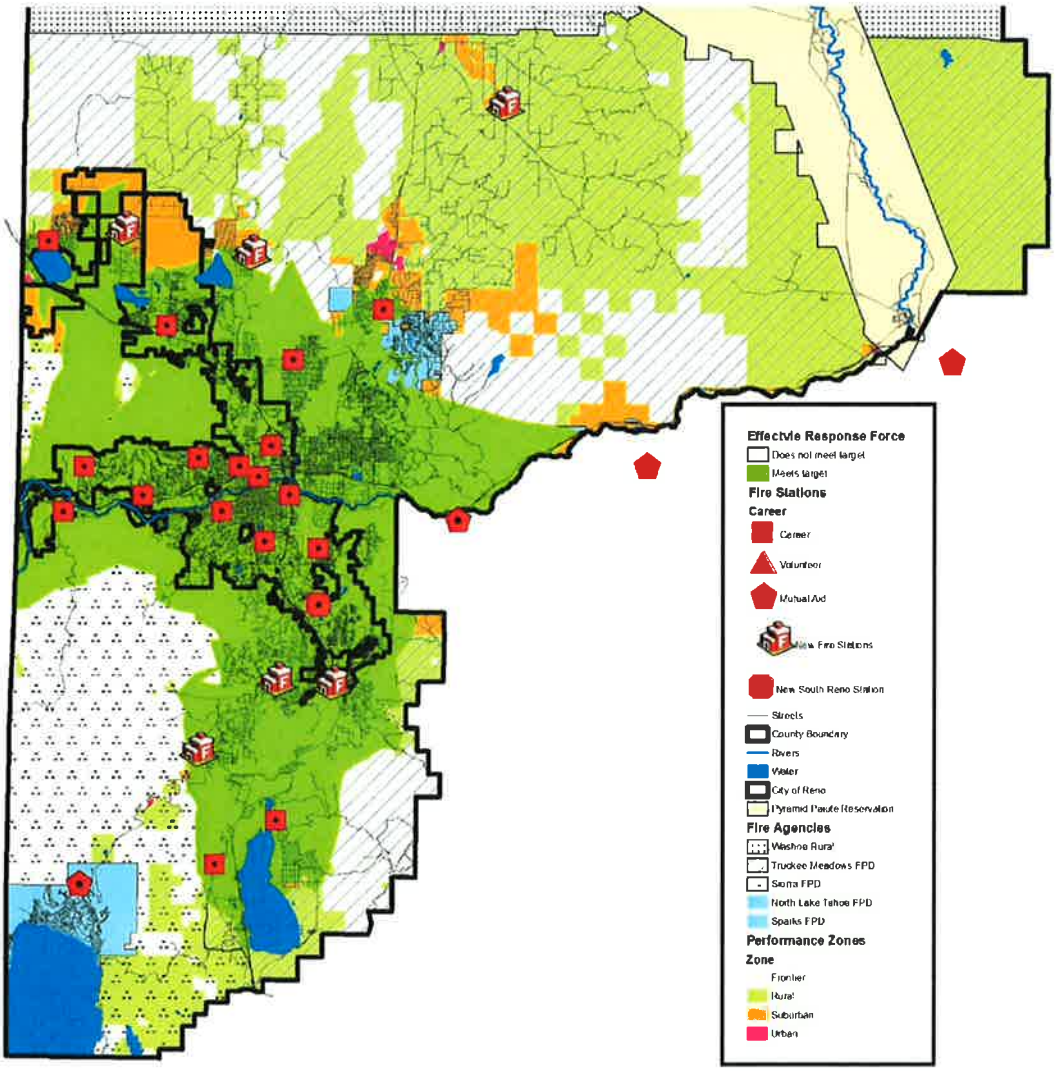


Although the area south of the Township 22 line is well served by these changes, the Gerlach and Red Rock areas remain unique challenges. Red Rock Fire Department serves only Rural Zone land and provides response coverage at the 20-minute response time objective. Gerlach serves both Suburban Zone and Rural Zone lands. Gerlach does not provide response time

coverage in its Suburban Zone areas in accordance with the ten-minute objective. Other alternatives for these areas are offered in the next section (Recommendations).

Finally, the addition of these recommended fire stations greatly increases the area that can be provided the full effective response force. Most underserved Suburban Zone lands, with the exception of the area in and around the area north of Reno, will be able to achieve the full effective response force within the 20-minute objective. The following map illustrates the improvement.

Figure 35: Effective Response Force with New and Relocated Stations



The cost to implement the recommended new stations is not insignificant and will clearly be dependent on the various jurisdictions ability to fund these improvements. The following table illustrates approximate costs to construct and equip the stations and the annual operating costs.

Figure 36: Acquisition and Operating Cost Estimate for Each New Station

Item	One-time Costs	Annual Costs
Fire Station and furnishings	$3,000,000	$100,000
Land	$500,000	$0
Apparatus and equipment	$800,000	$10,000
Staffing (4 per shift)	$24,000	$1,650,000
TOTAL	**$4,324,000**	**$1,760,000**

The total one-time and annual cost to implement the five new stations (including the south Reno station recommended in the City of Reno SOC) and two station relocations are as follows:

- One-time costs: $28,620,000
- Annual operating costs: $ 8,800,000

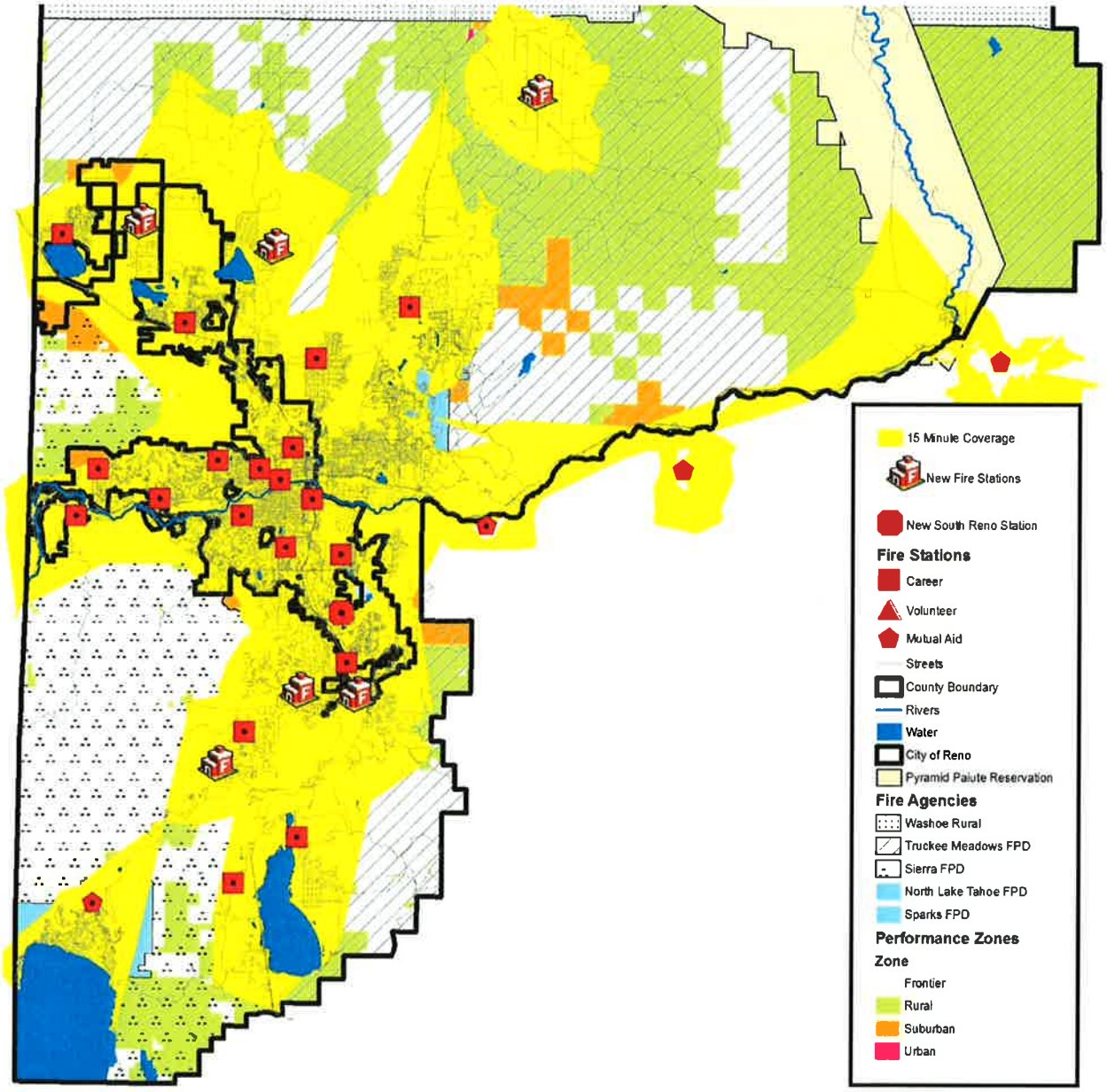
Service Tier Two Deployment Recommendations

Service Tier Two seeks to improve first-due response time (received to arrival) in the Urban Zone from within 8 minutes to within 6 minutes, 85 percent of the time. It also seeks to improve first-due response time in the Suburban Zone from within 10 minutes to within 8 minutes, 85 percent of the time. Finally, it seeks to improve first-due response time in the Rural Zone service from within 20 minutes to within 15 minutes, 85 percent of the time.

The first two recommendations in the following section of this report (Recommendations) will accomplish the response time improvements in the Urban and Suburban zones. No further deployment of fire stations or response companies should be needed.

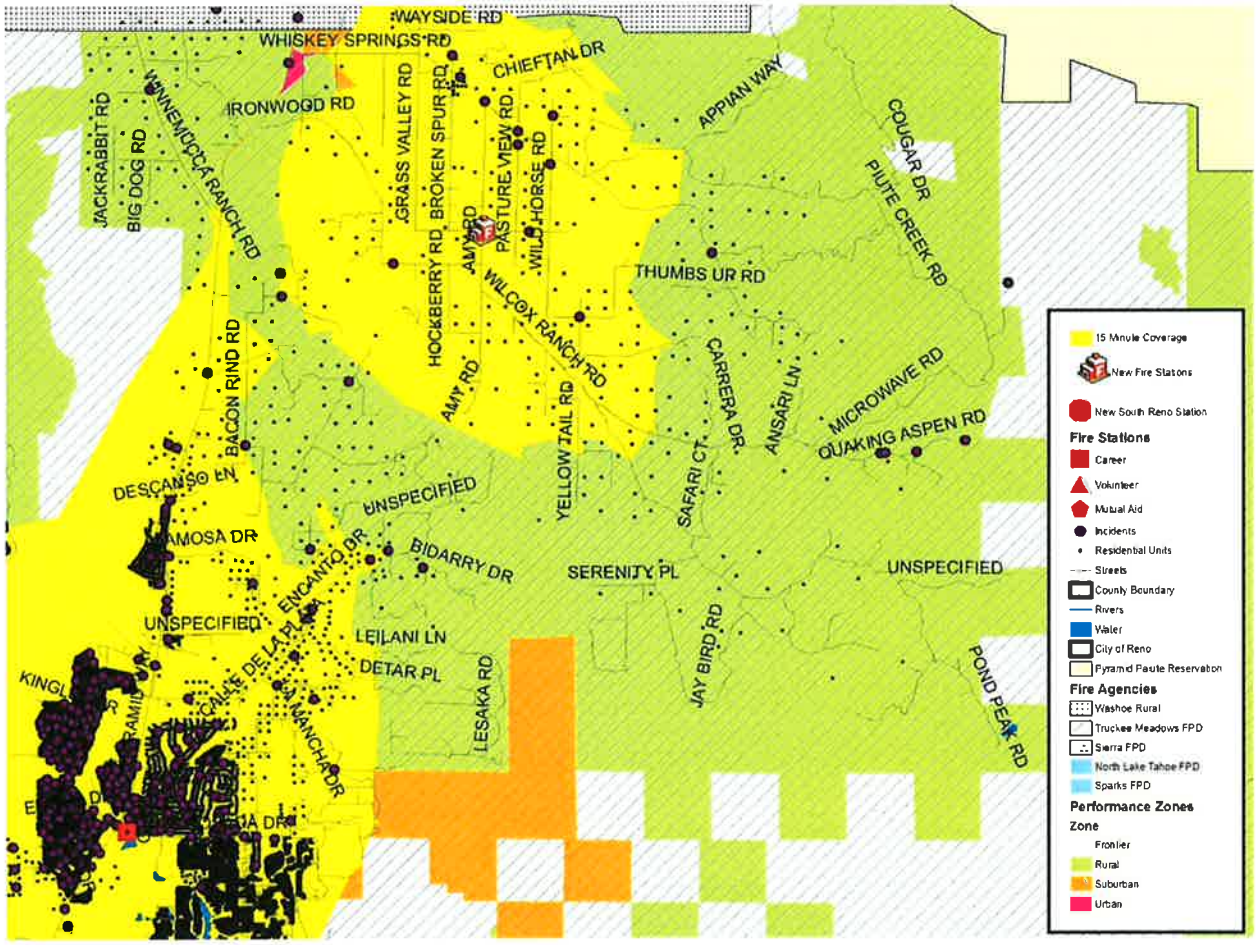
With the addition of fire stations needed to accomplish the Service Tier One ten-minute Suburban Zone objective, Rural Zone coverage improves to the Service Tier Two 15-minute objective. Only one area remains deficient at this performance level. The following map shows 15-minute Rural Zone coverage for the south county area.

Figure 37: 15-Minute Response Time Coverage



The area not served at the 15-minute response time level is shown in the following map. For reference, incidents occurring during the study period and points representing dwelling locations are included.

Figure 38: Underserved Rural Zone



A new station in the Wilcox Ranch Road and Carrera Drive area would provide additional coverage to this rural area, but would have almost no response activity.

Recommendations

The previous section (Deployment Needed to Achieve Service Tiers) described in detail new or relocated fire stations and response companies needed to improve overall service delivery to the region. This section describes additional recommendations that will further improve the delivery of fire and emergency services to the communities.

Dispatch Center Call Processing Time

As noted earlier in this report, the time taken at the dispatch center (ECOMM) to answer the call, gather needed information, and inform response personnel of the emergency type and location currently takes 2 minutes 1 second, 85 percent of the time, in the City of Reno and 2 minutes 6 seconds, 85 percent of the time, in the rest of Washoe County. This exceeds the time expressed in National Fire Protection Association *Standard 1221* by more than a minute.

ECOMM should take steps to improve its performance. ESCI has noted call processing times as short as within 34 seconds, 85 percent of the time, in another community. Improving call processing time by even one minute will improve overall response time by the same amount. Suburban Zone times, assuming implementation of the previous station location recommendations, should improve from within ten minutes to within nine minutes, 85 percent of the time.

Shortening call processing time may require improvements to dispatch center operations and resources, including:

- Modification or replacement of current computer aided dispatch systems
- Additional staffing
- Implementation of response company pre-alerting procedures

Response Company Turnout Time

Also noted earlier in this report, response company turnout time is currently within two minutes 25 seconds 85 percent of the time. The National Fire Protection Association Standard 1710 turnout time objective for structure fires is within 80 seconds 90 percent of the time and within 60 seconds 90 percent of the time for all other types of responses. Though these are highly aggressive performance levels, they suggest that improvement from current performance should be accomplished.

A one-minute improvement improves overall response time by the same amount. Suburban Zone times, assuming implementation of the previous station location recommendations, call processing time improvement and turnout time improvements of one minute should improve response time from within ten minutes to within eight minutes, 85 percent of the time.

Shortening turnout time may require some system improvements such as:

- Mobile data computers with automated response routing
- Response personnel training
- Fire station layout improvements
- Response personnel awareness and accountability

Gerlach and Red Rock Area Fire Suppression Capability

The Gerlach and Red Rock communities represent a unique emergency services challenge. Their remote locations, particularly for Gerlach, make providing the full effective response force (three fire engines and 13 firefighters) very expensive. The volunteer fire departments serving these communities do a good job responding to incidents requiring only a single unit, but delivering the full effective response force in time will always be a challenge. To do so would likely require placing career staffed response companies in each community.

An alternative is to utilize available technology to build fire suppression capability into each home. Residential fire sprinklers are an affordable option that provides a high degree of life safety to those exposed to a home fire and typically accomplishes fire control or extinguishment preserving property. Retrofitting a typical home with residential fire sprinklers can cost between $3,000 and $5,000. The estimated cost to retrofit homes in each community is as follows:

Figure 39: Estimated Cost to Retrofit Residence

Community	Number of Homes	Cost per Home	Total Cost
Red Rock	371	$3,000	$1,113,000
		$5,000	$1,855,000
Gerlach	102	$3,000	$306,000
		$5,000	$510,000

For a one-time investment of between $1.4 million and $2.3 million, residents of these communities are provided a very improved level of home fire protection without the need for additional fire stations and response companies.

Volunteer Fire Departments

The volunteer fire service represents roughly 80 percent of this nation's fire service capability. Many communities rely exclusively on volunteer response personnel for their fire and emergency services. Volunteer fire services have a long tradition of valuable service.

Those communities that depend exclusively on volunteer personnel demand a high degree of reliability. Most achieve it. The system in Washoe County, however, is not providing consistent response reliability as evidenced by both the analysis completed by ESCI and the recently released audit of the Sierra Fire Protection District. It was for this reason that volunteer companies were not included in the assessment of available response capability in this report.

Efforts should be undertaken to improve the reliability and capability of volunteer response personnel. This will be a significant undertaking, but in the end a capable and reliable volunteer response force will add measurable benefit to the community's fire and life safety. Several initiatives are recommended for consideration. These include:

- Improve systems for reporting participation, performance, and other activities. No meaningful system exists to document the activities of volunteer personnel in a manner that allows a true understanding of the contribution made by volunteer personnel.
- Establish minimum participation standards, including response reliability, training attendance, and medical screening. Volunteers not meeting standards should be provided opportunities to improve or be dropped from the program.
- Assimilate volunteer firefighters into each of the fire districts (Sierra and Truckee Meadows). The current structure of independent organizations under contract to the agencies can lead to confusion about chain of command, accountability, and performance reporting.