

# SafeTechSolutions

## Final Report

### ASSESSMENT OF GRAND COUNTY, UTAH EMERGENCY MEDICAL SERVICES

September 2016



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## Executive Summary

SafeTech Solutions spent two months in 2016 studying the emergency medical services (EMS) system in Grand County, Utah. This study focused on the long-term sustainability and reliability of Grand County EMS. The study included a site visit, approximately 20 interviews with key stakeholders, extensive research about Grand County and its EMS system, and scrutiny of financial and operational data for Grand County EMS.

Based on its findings, SafeTech Solutions offers the following key recommendations:

1. Grand County EMS should build on past successes and continue to make changes that ensure the provision of high quality EMS in Grand County.
2. Grand County EMS should build a business plan for sustainable EMS in Grand County that defines the right model for EMS, includes appropriate resource deployment, and accounts for the full cost of EMS.
3. Grand County EMS should identify possible and appropriate funding resources.
4. Grand County EMS should identify the best and most appropriate “home” for Grand County EMS.

These recommendations are based on the following key observations:

1. EMS is a vital and essential element of healthcare and quality of life in Grand County and essential to Grand County being a world-class tourist destination.
2. Grand County EMS has made proactive and significant progress in recent years.
3. Advanced Life Support is appropriate for Grand County.
4. Financial performance and efficiency in Grand County are difficult to track and lead.
5. Grand County EMS is not sustainable as operating today.
6. EMS is not prioritized in Grand County.
7. Relationships between Grand County EMS and colleagues at public safety, hospital and park services are strained.
8. The opportunity to participate in backcountry EMS is an important reason that many employees want to be part of Grand County EMS.
9. Grand County’s EMS leadership is burdened by having to work in both administration and on the ambulance.

10. Finding and keeping an engaged workforce that is willing to provide all aspects of EMS (not just backcountry) will be a major challenge going forward.

SafeTech Solutions suggests a gradual implementation process that includes the following steps:

1. Engage the community in planning for a sustainable future.
2. Gradually transition to a more sustainable EMS model, while continuing to use current resources and stop-gap solutions that maintain current levels and quality of care.
3. Seek local medical direction to help solidify the value of EMS in the community.
4. Strengthen the relationship between Grand County EMS and local medical staff to ensure that Grand County EMS is the first choice for interfacility transfers.
5. Strengthen Grand County EMS' workforce value proposition to improve recruitment and retention of EMS personnel.
6. Deploy backcountry resources in a manner that capitalizes on a willing and engaged workforce but does not impede daily 911 and transfer operations, or negatively impact leadership and management.
7. Continue to move toward a full-time, paid staffing model, while respecting and honoring volunteers and volunteerism in the organization.

## I. Introduction & Assessment Methodology

Like many rural counties in America, Grand County, Utah, faces growing challenges in meeting its out-of-hospital emergency medical care needs. The awareness of these challenges and the desire to overcome them led Grand County EMS to seek an assessment of EMS in Grand County. SafeTech Solutions, LLP, was contracted to conduct the assessment.

SafeTech Solutions is an EMS consulting firm with extensive expertise evaluating EMS organizations and assisting in the development of rural ambulance services and systems.

The goals of the Grand County EMS assessment project were to:

- Assess current EMS operations in Grand County and obtain an outside perspective regarding how Grand County EMS compares to similar EMS agencies around the nation and nationally accepted EMS best practices;
- Provide guidance to the leadership team on how to lead change and lead an agency of both paid and volunteer staff;
- Evaluate Grand County EMS' position within the county government and offer suggestions about how EMS should best be positioned and provided in Grand County;
- Provide insight on how to best fund EMS in Grand County;
- Evaluate the current state, reliability and long-term sustainability of EMS in the county, including the current structure and operations of Grand County EMS;
- Validate system components that are working well; and
- Make recommendations for change and improvement, as needed.

The assessment focused on local needs, current operations, system design and available supporting resources with an eye on sustainability. The scope of the assessment was limited; it was not an audit of operations, finances or clinical performance. Air medical service was not part of the assessment.

### **Methodology**

SafeTech Solutions' assessment team used a process of inquiry and investigation that capitalizes on the firm's extensive understanding of rural EMS systems. Its principals gathered quantitative and qualitative data through research, site visits and interviews. SafeTech Solutions' consultants visited Grand County to review documents and data, conduct interviews and assess operations. In addition to evaluating the ambulance organization (organizational structure, leadership and operations), SafeTech Solutions paid special attention to the social, economic, demographic, cultural and political issues in Grand County, carefully analyzing data and making recommendations based on industry best practices, as well as what is practical and doable in Grand County.

This report summarizes the findings, key observations and recommendations for EMS in Grand County.

## II. Overview of Grand County

Grand County is a 3,694-square-mile, rural county in southeastern Utah. The Green River runs along its western border, and it abuts the State of Colorado to the east. The formation of Grand County dates back to 1890, when the area was permanently occupied by Mormon settlers. Moab, its county seat, was incorporated in 1902, but was not recognized by the State of Utah until 1937.

Grand County is part of the Colorado Plateau, an expansive geological province that encompasses much of the state of Utah as well as parts of Colorado, New Mexico and Arizona. The Colorado Plateau is made mostly of sandstone and limestone that has been eroded over time by large rivers, including the Colorado River, which flows through the southeastern corner of Grand County. This erosion has created a stunning landscape of large canyons and rock formations that make Grand County a popular tourist destination. Arches National Park, a red rock wonderland containing the world's largest concentration of sandstone arches, is located entirely within the boundaries of Grand County.<sup>1</sup>

Grand County is bisected by Interstate 70, which runs from Colorado to its terminus in Millard County, Utah. I-70 is a major through-route from the southwestern U.S. to the East Coast, bringing more than three million cars and trucks across Grand County borders each year.<sup>2</sup>

### Economy

Much of the history of Grand County has been the story of small family farms and orchards, livestock and mining. The uranium boom of the 1950s brought the first real population expansion to the area, with the number of residents increasing from 3,000 to nearly 10,000 in just three years.<sup>3</sup> By the mid-1950s, almost six hundred producers on the Colorado Plateau were shipping uranium ore. Employment in the industry topped 8,000 workers in the mines and mills.<sup>4</sup> Potash, salt mining and milling operations added to the local economy until 1983 when the market for uranium dropped. Most mining and milling operations ceased at that time.<sup>5</sup>

Oil exploration in the 1920s led to the development of the Moab Oil Field. Records from the Utah Division of Oil, Gas and Mining indicate that approximately 2,200 petroleum wells have been drilled in the Moab Field Office from the late 1800s through December 2014, of which approximately 281 continued to produce. As of 2014, 248 were inactive but capable of producing, 7 were injection wells, and 1,644 were plugged and abandoned. Cumulative

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<sup>1</sup> <http://www.grandcountyutah.net/383/About-the-County>

<sup>2</sup> Grand County General Plan, 2012

<sup>3</sup> [http://onlinelibrary.utah.gov/research/utah\\_counties/grand.html](http://onlinelibrary.utah.gov/research/utah_counties/grand.html). Used by permission. *Beehive History 14: Utah Counties*. 1988. Utah State Historical Society, 300 Rio Grande, Salt Lake City, UT 84101-1182, 801/533-3500

<sup>4</sup> [http://historytogo.utah.gov/utah\\_chapters/utah\\_today/utahsuraniumboom.html](http://historytogo.utah.gov/utah_chapters/utah_today/utahsuraniumboom.html)

<sup>5</sup> <http://www.grandcountyutah.net/387/History>

production within the Moab Field Office through 2014 totaled over 63 million barrels of oil and over 1.3 trillion cubic feet of natural gas.<sup>6</sup>

In addition to mineral wealth, Grand County's natural beauty has made tourism a major contributor to the local economy. Arches National Monument was established in 1929 and attained National Park status in 1971. During the 1970s and 1980s, Moab became perhaps the most important center for river running, mountain-bicycling, and four-wheel drive recreation in Utah.<sup>7</sup> Grand County also has served as the location for many of Hollywood's great western movies. Today, tourism and retail make up over half of the employment in the county. Higher-paying professional and technical services account for more than one-fifth of the jobs.<sup>8</sup>

## People

Approximately 9,429 people live in Grand County, according to U.S. Census Bureau estimates. More than 90 percent are white, and more than half (approximately 5,000) live in the city of Moab. Forty-two percent of residents live in unincorporated regions of the county, and three percent live in the town of Castle Valley.

The age structure is typical of a recreation-based, western, rural community. A recent decline in school-aged children reflects a national trend towards an increase of childless households. Baby boomers (ages 46-64) are evident in the Grand County age structure. The 18-to-29-year-age group, which is attracted to the outdoor recreation lifestyle and fills many of the jobs in the county, is also evident in the Grand County age structure.<sup>9</sup>

Approximately half of the full-time population in Grand County is part of the labor force. The average household size is 2.35 persons, with 72 percent of residents owning homes and 28 percent renting. The average per capita income totals over \$29,000, which is just below the state average and ranks 12th highest out of Utah's 29 counties.<sup>10</sup>

The population is expected to grow, according to the county's General Plan, which forecasts an additional 2,134 residents to live in Grand County by 2030. The city of Moab is forecasted to accommodate over half of that growth. The unincorporated areas of the county are allocated 42 percent of the forecasted growth, or an additional 881 people by the year 2030.<sup>11</sup>

In addition to permanent residents, Grand County has two types of part-time residents: second home/vacation home owners and seasonal workers. Second home use parallels the

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<sup>6</sup> <http://www.blm.gov/ut/st/en/fo/moab/energy.html>

<sup>7</sup> *ibid*

<sup>8</sup> Grand County General Plan, 2012

<sup>9</sup> Grand County General Plan, 2012

<sup>10</sup> Grand County General Plan, 2012

<sup>11</sup> Grand County General Plan, 2012

peaks and off-seasons of the tourist seasons. Seasonal workers also reside in the region during the busy times of year when jobs are available.<sup>12</sup>

Tourism accounts for some 1.6 million tourist visitor days annually. In 2008, the two national parks in the area had a combined visitation greater than 1.3 million people; state parks had over 200,000 visitors. The Utah Office of Tourism indicates that half of leisure visitors are on day trips, while the other half stay an average of 2.25 nights in the area. Short-term occupancy options in Grand County include more than 4,000 campground sites and hotel rooms.<sup>13</sup>

## **Healthcare in Grand County**

The University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation each year publish health rankings that shed light on the health and wellness of resident populations by county throughout the United States. The annual County Health Rankings measure vital health factors, including high school graduation rates, obesity, smoking, unemployment, access to healthy foods, the quality of air and water, income, and teen births in nearly every county in America. Experts compile the rankings using county-level measures from a variety of national data sources.

The *2015 County Health Rankings* report ranks Grand County 24<sup>th</sup> in health and wellness out of 26 reporting counties in Utah, which suggests that the overall health of Grand County's permanent residents is poor compared to other counties within the state. Fifteen percent of residents report poor mental or physical health an average of 3.6 to 3.8 days per month, compared to under 3.0 days per month among top U.S. counties. Eight percent of babies born in the county are underweight, compared to six percent among top performers and seven percent statewide. Teen birthrates in Grand County are substantially higher than average, as are rates of sexually transmitted disease, alcohol-impaired driving deaths, and injury deaths. Of particular concern is suicide. Rates of suicide mortality are 43 percent, compared to 19 percent statewide and 12 percent nationwide.<sup>14</sup> Twenty-two percent of children live in poverty, and 34 percent in single-parent households, compared to 13 percent and 19 percent statewide respectively.

Part of Grand County's challenge with healthcare is the large number of uninsured – 27 percent – compared with 14 percent in Utah and across the U.S.<sup>15</sup>

Grand County residents meet their healthcare needs at Moab Regional Hospital, a 17-bed Critical Access Hospital and Level IV Trauma Center. The Emergency Department is equipped with specialty rooms for pediatrics, OB/GYN, trauma, critical care, and wound care; telemedicine and telestroke technology; a decontamination room; and state-of-the-art imaging equipment, including MRI, CT, X-Ray scanners. Patients with neurologic systems

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<sup>12</sup> Grand County General Plan, 2012

<sup>13</sup> Grand County General Plan, 2012

<sup>14</sup> Moab Regional Hospital Community Health Needs Assessment, June 2016

<sup>15</sup> Moab Regional Hospital Community Health Needs Assessment, June 2016

suspicious for acute stroke are evaluated by a neurologist from the University of Utah Hospital using telemedicine technology in the Emergency Department; however, the closest hospital to receive stroke victims is San Juan Hospital in a neighboring county. Non-urgent healthcare is provided by Moab Family Medicine, Moab Regional Medical Clinic and a variety of clinics and physicians outside the county.

### III. Overview of the EMS System in Grand County

Emergency medical care in Grand County includes a 911 emergency call system, emergency medical dispatch, first response, ground ambulance, search and rescue, air medical transport, medical oversight and quality assurance. The system works through the coordinated efforts of a variety of agencies that includes:

- Grand County Sheriff's Department
- Grand County EMS
- Grand County Search and Rescue
- Moab Police Department
- Castle Valley First Responders
- Thompson Springs Fire Department
- Moab Valley Fire Department
- Moab Regional Hospital
- Classic Air Medical
- St. Mary's Careflight Medical Services

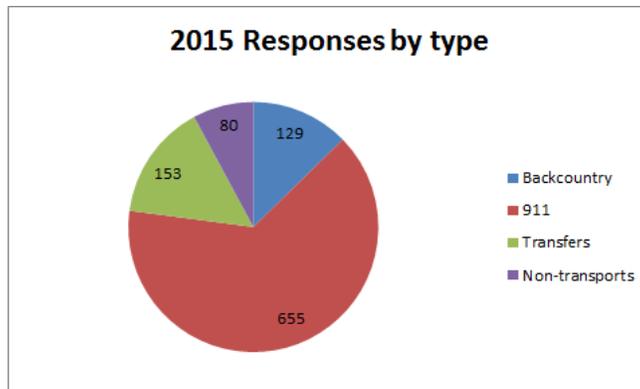
The system uses a tiered response, with first responders and local search-and-rescue teams providing first and Basic Life Support (BLS) response, and Grand County EMS providing Advanced Life Support (ALS) response and medical transport. Air medical resources are also used for scene response, transport and interfacility transport.

#### **Call Volume**

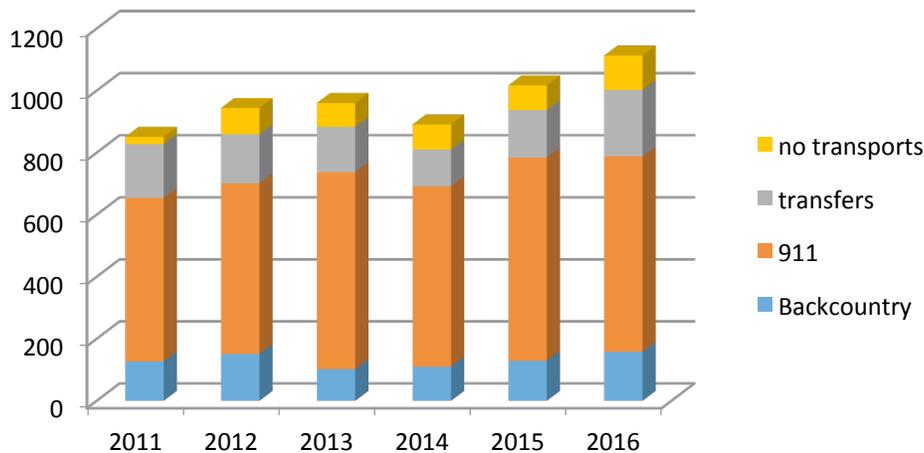
Grand County has approximately 1,000 annual requests for out-of-hospital EMS, with 90 percent of calls resulting in patient transports. More than 10 percent of calls require backcountry response to wilderness areas. More than 40 percent of medical transports are for patients who do not reside in Grand County.

Total EMS call volume for 2015 is reported to be 1,017. This number does not include air medical responses, for which data was unavailable. Of the 1,017 ground responses:

- 655 were for 911 calls (response and transport),
- 153 were for interfacility and airport medical transfers,
- 129 were for backcountry/wilderness rescues, and
- 80 calls resulted in non-transports.



## Year-by-Year Response Trend



### Communications & Dispatch

Calls for out-of-hospital EMS are received by Grand County Sheriff’s dispatch center, the local public safety answering point. The center answers more than 25,000 calls per year and is staffed by professional dispatchers certified in POST’s public safety dispatcher program<sup>16</sup> and certified as Emergency Medical Dispatchers.<sup>17</sup> The dispatch center does not routinely provide pre-arrival instructions and does not use emergency medical dispatch software.

<sup>16</sup> Peace Officer Standards Training Commission (P.O.S.T.) has a certification course for dispatchers employed by agencies participating in POST’s public safety dispatcher program.

<sup>17</sup> Emergency Medical Dispatch certification is an international certification from the International Academies of Emergency Dispatch that attests to the specific and highly specialized knowledge, skills, abilities and attributes of an emergency medical telecommunicators.

First responders and EMS are summoned via pager and radio. Responders use VHF radio and cell phones for communications. Because of the rugged terrain, both radio and cell phone coverage is limited in remote, wilderness areas.

Grand County EMS does not pay for dispatch services. The relationship between the dispatch center and EMS is reported to be functional, but not amiable. Both the communication center and EMS report disagreements about when to start EMS resources and who is in charge of emergency scenes.

## **First Response**

First response in Grand County is provided by a variety of agencies that provide a range of services and levels of emergency medical care. These agencies include:

- Grand County Sheriff's Department
- Grand County Search and Rescue
- Moab Valley Fire Department
- Moab Police Department
- Castle Valley First Responders
- Thompson Springs Fire Department
- National Park Service

Throughout the county, Grand County Sheriff's Department deputies respond to medical emergencies with basic medical equipment and AEDs to provide initial stabilization, support and scene safety.

In the remote backcountry, Grand County Search and Rescue (part of the Grand County Sheriff's Department) provides emergency medical First Response, BLS and a variety of search, rescue and recovery services. The organization currently has approximately 20 active volunteer members and responds to nearly 100 requests for service each year.

Within the city of Moab, Moab Police Department officers respond to medical emergencies with basic medical equipment to provide initial stabilization, support and scene safety. Some squads are equipped with AEDs.

Moab Valley Fire Department responds to emergency medical calls that require heavy rescue, extrication, hazmat, underwater or swiftwater rescue. The fire department is part of a special fire protection district that responds to 100 to 125 calls per year from three fire stations that are equipped with 28 pieces of apparatus. The department has 38 firefighters, three of which are full-time paid; the balance are volunteers.

Along the 1-70 corridor, Thompson Springs Special Service Fire District provides intermittent EMS first response from a single station in Thompson. The department currently has three active volunteer members. It responds only when these members are available.

In the small community of Castle Valley 16 miles northeast of Moab, EMS First Response is provided by Castle Valley First Responders. The group is owned and overseen by Grand County EMS, but operates somewhat independently as a local volunteer first responder agency. Castle Valley First Responders are Emergency Medical Responder (EMR) trained, and respond in an ambulance provided by Grand County EMS. They do not transport. Currently, the group has 11 members, of which three to four are active.

The National Park Service provides emergency medical First Response within Arches National Park and Canyonlands National Park. Park service personnel provide initial response, stabilization and movement of patients from backcountry locations. The level of emergency medical care varies with the training of Park Service personnel responding.

### **EMS Response & Medical Transport**

Grand County EMS is the sole provider of ground ambulance services in Grand County. Ambulances respond from a fixed station in Moab with EMTs/EMT-As and Paramedics providing ALS care. The agency provides 911 response, stabilization and transportation; medical support and transportation between medical facilities as well as medical standby at events where EMS may be needed, emergency medical education, and backcountry response with rope rescue and river rescue capabilities.

Grand County EMS endeavors to staff three ambulance units 24 hours per day with a combination of paid and on-call staffing, as follows. Occasionally, a fourth unit is staffed.

Ambulance Unit	Staffing	Status	Available
1	1 EMT or Paramedic 1 EMT or Paramedic	On duty at station On call (responds to station when needed)	24/7
2	1 EMT or Paramedic 1 EMT or Paramedic	On duty at station 12 hrs.; on call 12 hrs. On call (responds to station when needed)	24/7
3	1 EMT or Paramedic 1 EMT or Paramedic	On call (responds to station when needed) On call (responds to station when needed)	24/7

Grand County EMS strives for a five-minute chute time (time from call until unit rolling toward call) for its first unit. Fully staffing second and third units can be difficult at times. When needed, administrative staff and other qualified personnel may respond in a non-transporting echo unit to provide initial patient care and stabilization.

On-task time for 911 calls can range from 30 minutes to several hours due to distances, geography, weather and the diverse nature of calls. On-task time for interfacility transfers can range from 5 to 10 hours.

In the event that Grand County EMS is not available or additional ambulance resources are needed, Grand County EMS has mutual aid agreements with:

- Emery County EMS in Green River, Utah (52 miles/50 minutes from Moab);

- San Juan EMS in Monticello, Utah (54 miles/56 minutes from Moab); and
- Lower Valley Fire Protection District in Fruita, Colorado (101 miles/90 minutes from Moab).

### **Air Medical Resources**

Helicopters and fixed wing aircraft are used in Grand County for scene response, rescue and interfacility transports. Air medical services are provided primarily by Classic Air Medical and St. Mary's Careflight Medical Services. Classic Air Medical maintains a helicopter in Moab; St. Mary's Careflight responds from Grand Junction, Colorado.

The exact number of air medical responses and transports is difficult to determine. There is no formal tracking of air medical use in Grand County. SafeTech Solutions estimates there may be 10 to 20 or more air medical transports per month from the county.

### **Receiving Medical Facilities**

Approximately 80 percent of EMS patients in Grand County are transported to Moab Regional Hospital. Approximately 19 percent of EMS patients in Grand County are transported to St. Mary's Hospital and Medical Center in Grand Junction, Colorado (112 miles from Moab). Approximately 1 percent of EMS patients are transported elsewhere, including University of Utah Medical Center in Salt Lake City, Utah (214 miles from Moab), a medical clinic in Green River, Utah (52 miles from Moab), and other destinations.

St. Mary's Hospital and Medical Center is a 346-bed general medical and surgical hospital. It is designated as a Level II Trauma Center by the American College of Surgeons and has more than 42,000 emergency department visits per year.

The University of Utah Medical Center is a 527-bed general medical and surgical hospital. It is designated as a Level I Trauma Center by the American College of Surgeons and sees some 36,000 emergency department patients each year.

### **EMS Education**

Access to EMS education in Grand County is limited. Grand County EMS is the primary provider of EMS education in Grand County, offering:

- First aid and CPR training (it is a designated American Heart Association training center),
- First Responder training,
- EMT and advanced EMT training, and
- Continuing EMS education for EMTs and Paramedics.

Paramedic education is not available in Grand County. The nearest paramedic programs are located at:

- Western Colorado Community College, in Grand Junction, Colorado;

- Weber State University in Ogden, Utah;
- Utah Valley University in Orem, Utah; and
- Dixie State University in St. George, Utah.

### **EMS System Oversight & Planning**

Currently there is no formal body or group that oversees the overall EMS system or conducts system-wide planning in Grand County. System-wide planning and oversight is informal and ad hoc. Grand County EMS is overseen by a county administrator and the county council.

## IV. Description of Grand County EMS

Grand County EMS is a combination agency with full-time, part-time and paid on-call staff that provides an advanced level of emergency medical response and transport in eastern Utah. Its 3,700-square-mile response area contains nearly 6,000 miles of roads and trails and includes some of the most remote backcountry in the state. Grand County EMS has one of the highest per capita call volumes in Utah because of heavy tourism in the area. Many of Grand County EMS' calls involve extended patient contact because of remote backcountry and distances to definitive medical care.

The stated mission of Grand County EMS is as follows:

“As a community-built agency, Grand County Emergency Medical Services is dedicated to providing the highest level of Public Safety and Public Health for our residents and visitors. We protect lives through pre-hospital emergency medical care, transport, rescue, disaster response and public education.”

### **Historical Perspective**

Formal ambulance services began in Grand County in 1973. A volunteer ambulance service was formed and eventually came to be overseen and operated by the hospital in Moab. In 2000, the ambulance service transitioned from hospital ownership to county ownership under the condition that the ambulance service remain financially self-sustaining. Through most of its 40-year history, the ambulance service provided BLS services only, and was staffed with volunteers or employees paid less-than-regular wages.

In 2003, Grand County Resolution #2610 gave oversight of EMS to the Canyonlands Health Care Special Service District. However, such oversight has never been realized. Today, Grand County EMS continues to operate as a department of the county, as it has since 2000.

### **Organizational Ownership & Structure**

Grand County EMS is owned and operated by Grand County and operates as a department of Grand County government. The EMS Director is hired by and reports to the Grand County Council Administrator, who reports to the Grand County Council. The Council Administrator oversees 13 direct reports within the county government, including the EMS director. The Grand County Council is made up of seven elected council members.

The current Grand County EMS Director was hired in 2012 and has led the department to deliver higher levels of emergency medical care using a combination of paid and on-call staff as well as volunteers. The director works alongside a full-time, paid assistant director and several captains, who serve in supervisory and special assignment roles.

## Workforce

Grand County EMS currently has 35 employees, six of whom work full-time. The balance work part-time or on-call and are paid less-than-regular wages. Of the 35 employees, there are:

- 14 Paramedics
- 13 AEMTs
- 8 EMT-Basics

Employees range in age from 19 to 53, with a median age of 30. The staff is 60 percent female, 40 percent male, and 90 percent white. Fourteen percent of the staff lives an hour or more away from Moab. Employees report their motivation for belonging to Grand County EMS as follows:

- Opportunity to serve their community,
- Opportunity to obtain EMS experience,
- Opportunity to obtain backcountry experience,
- Opportunity to stay involved in EMS while working another career,
- Opportunity to work when needed and available, and
- A desire to develop a career in EMS or emergency services.

Full-time employees are paid hourly wages when on duty, and on responses or transports. On-call employees are paid one hour's worth of their wage to be on-call (available from home or a remote location) for 12 hours. Non-salaried compensation is as follows:

### Hourly Employee Compensation

Title	Current Compensation	National Averages
EMT	\$11.31	\$15.19
AEMT	\$13.10	
Paramedic	\$15.92	\$21.98
Captain/Supervisor	1 hr call time	\$25.34
Asst. Director	\$18.98	\$26.80 - \$37.62
Director	\$26.48	\$40.84 - 47.77

Full-time employees work 48/96-hour weeks. They frequently work 12 hours during daytime hours for their regular hourly wage, and 12 hours overnight at the on-call rate of one hour of regular pay for 12 hours being on-call away from the station. If employees are called in, they are paid regular hourly wages or overtime wages.

Full-time employees describe the county benefit package, which includes full health insurance, dental care and the state retirement plan, as "fair" or "good." Grand County EMS provides \$150 annual uniform allowance and some reimbursement for attendance at EMS conferences and meetings.

## Facilities, Vehicles & Equipment

Grand County EMS is housed in three buildings in Moab:

- a garage facility,
- an older home within walking distance of the garage that serves as crew quarters, and
- administrative offices and training facilities in a former senior center building (not within walking distance of the garage and crew quarters).

The three buildings provide adequate space; however, the separation creates access and communication issues. The house used for crew quarters is run-down and inadequate.

Grand County EMS has modern, up-to-date equipment and vehicles that appear to be well maintained.

### Vehicles, Trailers and Major Equipment

<b>Ambulance 1T150</b> 66,245 miles	Wheeled Coach	2012 Chevy 3500HD Chassis Equipped with Power Lift cot, Zoll X series ALS/critical care monitor
<b>Ambulance 1T513</b> 117,461 miles	Wheeled Coach	2009 Ford F-350 Chassis Equipped with Power Lift cot, Zoll X series ALS/critical care monitor
<b>Ambulance 1T514</b> 213,000 miles	Wheeled Coach	2004 Ford F-350 Chassis Equipped with Power Lift cot, Zoll X series ALS/critical care monitor
<b>Ambulance 1T512</b> 20,770 miles	Wheeled Coach	2005 Ford E-350 Chassis 4X4 Backcountry Equipped with standard cot, Zoll E series ALS monitor
<b>Ambulance 1T515</b> 17,102 miles	Wheeled Coach	2007 Ford E-350 Chassis 4X4 Backcountry Equipped with standard cot, Zoll E series ALS monitor
<b>Ambulance 1T500</b> 131,174 miles	Wheeled Coach	1999 Ford F-350 Chassis Equipped with standard cot, Zoll E series ALS monitor
<b>Ambulance new</b> No mileage or equipment to date	Demers	2016 Sprinter
<b>Med 1 QRV</b> 55,262 miles	2006 Ford F150 (4 door) Quick Response Unit Equipped with AED, ALS equipment when staffed by ALS personnel	
<b>Med 2 QRV</b> 26,071 miles	2013 Ford Explorer Interceptor Package Quick Response Unit Equipped with AED, ALS equipment when staffed by ALS personnel	
<b>Med 3 QRV</b> 78,000 miles	2003 Ford F150 (2 door/extended cab) Quick Response Unit Equipped with AED, ALS equipment when staffed by ALS personnel	
<b>Multi-Casualty Incident Trailer</b>		Fully equipped for disaster response

### Medical Oversight & Quality Assurance

The clinical care provided by Grand County EMS is guided and overseen by internal processes that include physician medical direction, up-to-date clinical protocols, clinical quality review, and continuing EMS education.

Medical direction is provided by a board-certified emergency medicine physician practicing in Provo, Utah. The role of medical direction is defined by a job description that ensures

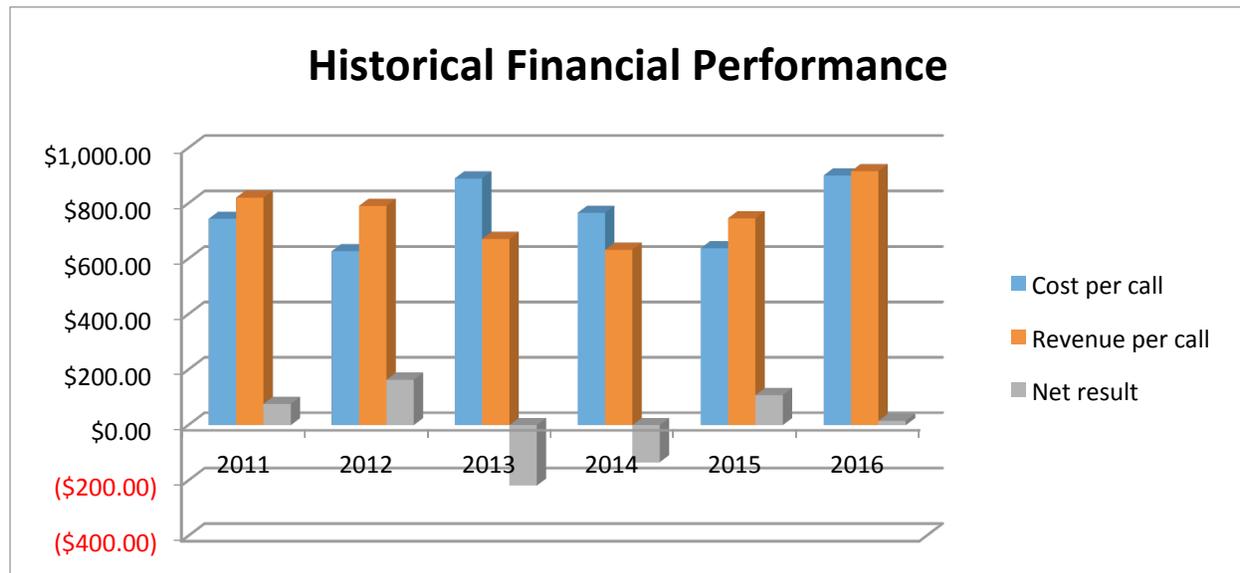
physician involvement in establishing and guiding clinical care, protocol development, chart review, individual provider performance and performance review, and ongoing training and education. The physician conducts regular, face-to-face case reviews and education and training with the staff. Grand County EMS has a written contract with the physician and pays \$300 per month for the service.

Clinical protocols are up-to-date and reflect common and current out-of-hospital clinical practices and clinical best practices. Protocol compliance and clinical quality is reviewed through regular internal chart review by the assistant director, who is the designated quality coordinator. Clinical knowledge and skills are assured through an in-depth onboarding process and ongoing clinical review and continuing education.

### Finance & Funding

Grand County EMS operates with an annual budget of roughly \$1 million. The service generates approximately \$1 million worth of income, primarily through fees charged for treatment and transport. Thus, it operates essentially at break-even (based on projected 2016 run volume and financial performance).

Unlike many governmental agencies and other departments in Grand County, Grand County EMS is expected to operate solely on revenues generated through fee income. In past years, this financial model has generated surpluses, while in other years, it has resulted in losses. When revenues exceed expenditures, excess funds are set aside for future use or capital expenditures.



	2011	2012	2013	2014	2015	2016
Cost per call	\$744.32	\$627.51	\$889.78	\$765.76	\$637.88	\$900.59
Revenue per call	\$820.71	\$790.69	\$671.60	\$632.31	\$745.78	\$915.78
Net result	\$76.39	\$163.18	(\$218.18)	(\$133.45)	\$107.90	\$15.19

Grand County EMS receives funding through the annual county budgeting process. The director submits a budget for approval and is expected to operate within the approved budget. Historically, the department's expenditures are to be no more than the projected amount of revenue collected through billing. The department has been able to limit expenditures by relying on subsidized, donated labor (volunteers).

In fact, much of the true cost of Grand County EMS is hidden, due to the use of less-than-full-time staff. These volunteers provide the bulk of the staffing for Grand County EMS but are not paid regular wages. The true cost of operating Grand County EMS, which is close to \$2.2 million when the volunteer hours are accounted for, would result in a net operating loss.

Grand County EMS' ability to generate additional revenue by raising fees is severely limited due to rate regulation. The Utah Department of Health, Division of Family Health and Preparedness sets the maximum amount that an ambulance service can charge. The state determines those rates by surveying cost and revenue data from ambulance services in the state and setting rates based upon the income that it estimates is needed to provide financial viability. The process is heavily influenced by cost and revenue data submitted by ambulance services that use volunteer labor, resulting in rates and do not truly reflect the real cost of providing EMS.

For example, the chart below shows Grand County EMS transport rates (the maximum amounts allowed by the state) compared to national averages as provided by the 2015 Medicare ambulance cost file. While Grand County's EMS mileage rate is close to the national average, its service rates are significantly below national averages. These mandated rates significantly limit Grand County EMS' ability to generate enough revenue to be self-sufficient when accounting for the full costs of providing service.

Billing Levels	Current Rates	National Averages
Mileage	\$31.65/ mile	\$30 - \$40
ALS non-emergency	n/a	
ALS emergency	n/a	\$2,500 - \$3,500
BLS non-emergency	\$707.00	
BLS emergency	\$707.00	\$1,000 - \$2,000
ALS2 emergency	\$1,365.00	\$3,000 - \$4,000
ALS1 scheduled	\$1,365.00	
ALS1 emergency	\$1,365.00	
Specialized Critical Transport (SCT)	none allowed	\$3,500 - \$4,500

Grand County EMS uses a billing agency (HSI or Health Services Integration, Inc.) to facilitate billing for its services. HSI appears to be providing excellent services to Grand County EMS with an efficient and effective claims management process and user portal.

In 2015, Grand County EMS had a payer mix that was roughly 60% non-governmental payers and 40% governmental payers. This payer mix results in reimbursement of roughly \$0.40 on every dollar billed. This information, coupled with the state regulated rates, further contributed to Grand County EMS' limited ability to generate enough fee revenue to cover the true costs of EMS.

## V. Key Observations

### **1. EMS is a vital and essential element of healthcare and quality of life in Grand County and essential to Grand County being a world-class tourist destination.**

Demographics, geography, climate, distances to medical facilities, tourism and the limits of local medical specialties create an important need for EMS in Grand County. Local residents, business owners, visitors, medical staff and government officials all view EMS as a vital service in Grand County that is essential to safety and quality of life. A local business owner described the need for quality EMS in Grand County as an expectation of the growing tourism industry.

With more than one million visitors each year to Arches National Park, Canyonlands National Park, Dead Horse Point State Park, the Colorado River, scenic byways, and thousands of square miles of red rock landscapes, local residents, business owners and government officials all describe tourism as the county's economic lifeline and future. Such a future suggests a growing need for medical resources, especially emergency medical resources that can respond not only to local needs but also to the inevitable emergencies that result from activities such as mountain biking, hiking, four-wheel driving, river rafting, canyoneering, rock climbing and jumping, ballooning, and skydiving.

Additionally, with increasing regionalization of medical specialties, ensuring that local residents and visitors have reliable and high quality medical transportation to appropriate facilities is an essential part of the local healthcare infrastructure.

### **2. Grand County EMS has made proactive and significant progress in recent years.**

Over the last four years, Grand County EMS has made significant progress in adopting nationally recognized best practices, ensuring reliability, preparing EMS workers, maximizing the use of available resources, advancing the level of care to the community, addressing internal conflicts, and growing the capabilities of the EMS department. Specifically, Grand County EMS has:

- Hired professional and knowledge leadership,
- Increased service to the community from basic to advanced levels of care,
- Updated and expanded medical protocols to meet the unique needs of Grand County,
- Facilitated and supported the development of paramedics,
- Facilitated and supported the advancement of basic EMTs to the Advanced EMT level,
- Strengthened internal education programs,
- Developed reliable scheduling practices,
- Expanded capabilities and safety practices, especially as related to backcountry response,
- Expanded the vehicle fleet,

- Addressed internal conflict,
- Brought more professionalism to the department, and
- Developed accurate and consistent budgeting processes.

Such forward-thinking developments are unusual in rural EMS agencies and demonstrate clear leadership and proactive, visionary thinking and planning.

### **3. Advanced Life Support is appropriate for Grand County.**

Advance Life Support (ALS) is considered a common if not best practice in all major EMS systems across the United States today.

ALS uses an advanced set of algorithms and protocols beyond Basic Life Support and include invasive, life-saving procedures such as advanced airway management, intravenous infusions and medications, synchronized cardioversion, cardiac monitoring, electrocardiogram interpretation and other procedures conventionally used in hospitals. ALS is provided by paramedics, nurses, physicians and other specially trained professionals.

The benefit of ALS in urban environments with short transport times is being questioned; however, researchers believe ALS can be beneficial in rural settings where it takes a long time to reach a hospital.<sup>18</sup>

Grand County presents unique needs where transport times can be long and/or delayed by remote backcountry locations, creating a need for extended on-scene stabilization of patients. In addition, local medical resources and specialties are limited. ALS allows for the patient to receive the highest level of out-of-hospital medical care.

ALS is the common level of prehospital care in most of the developed world and goes hand-in-hand with Grand County positioning itself as a world-class tourist destination.

### **4. Financial performance and efficiency in Grand County are difficult to track and lead.**

Tracking the financial performance of Grand County EMS is difficult because its finances are not clearly separated from the rest of the county. For example, it is difficult to assess whether the department, as operating today, is losing money or if it is operating as efficiently as possible and maximizing its revenues. The current accounting practices do not match with the expectation that the department operate as a break-even business or enterprise fund.

The absence of clear information on financial performance makes planning difficult. It is

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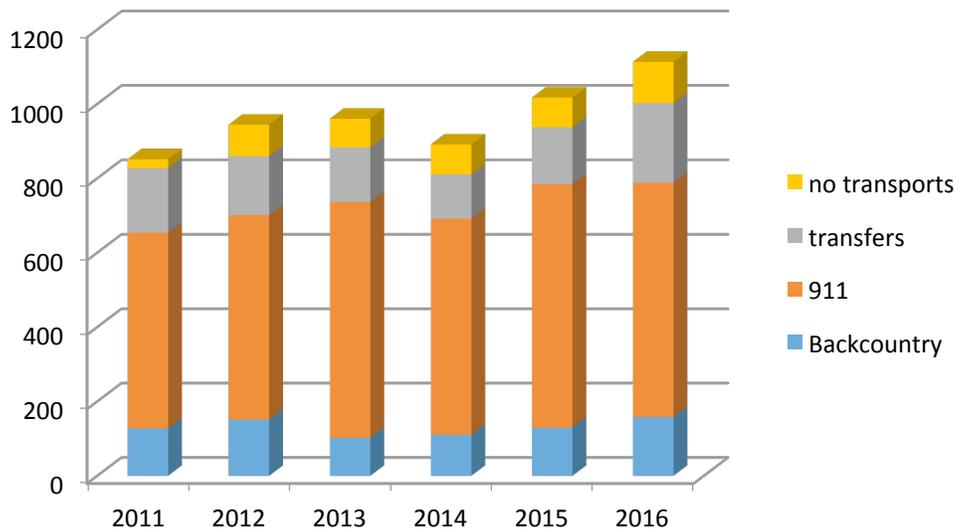
<sup>18</sup> Ryyänen, O.-P., Iiro, T., Reitala, J., Pälve, H., & Malmivaara, A. (2010). Is advanced life support better than basic life support in prehospital care? A systematic review. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, 18, 62. <http://doi.org/10.1186/1757-7241-18-62>

also difficult for leadership to strengthen efficiency and improve performance.

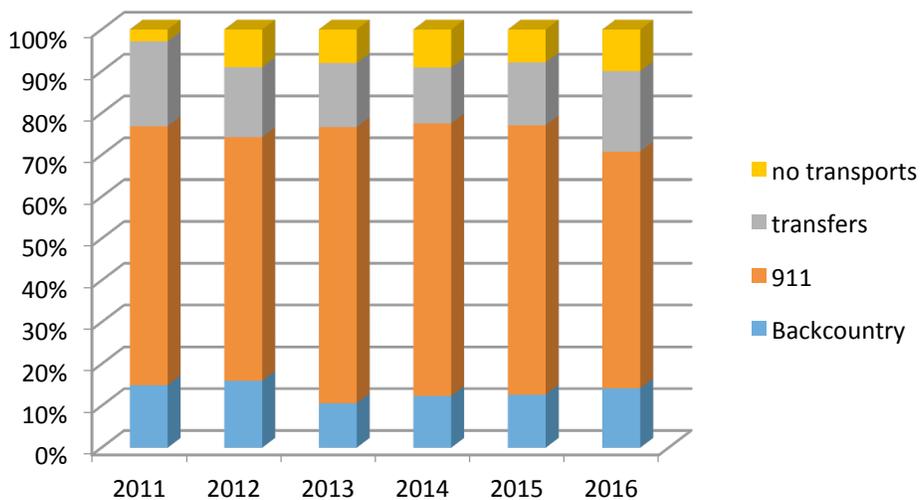
**5. Grand County EMS is not sustainable as operating today.**

Increasing 911 call volume, the demands of interfacility transports, the expectation that Grand County EMS covers its costs, and the decline in donated labor make Grand County EMS unsustainable, as operating today. As noted in the bar graph below, 911 call volume has increased from just over 500 in 2011 to 655 last year.

**Year-by-Year Call Volume**



**Call Types as % of the Total**



Interfacility transfers also are increasing. While the increase may be small, because of the length of these transfers (5 to 10 hours per transfer), they have a big impact on the resources of the organization. Many of the on-call volunteer employees are reluctant to take these calls because of the time commitment.

Grand County EMS is funded by the revenues it collects for medical transportation from insurance, Medicare, Medicaid and private payers. Over the years, Grand County EMS has relied heavily on donated labor to contain costs; however, donated labor is declining. Departmental leadership reports significant declines in the availability of on-call employees to fill regular shifts. On-call employees report decreasing willingness to make themselves available for long shifts and interfacility transfers. Fifty percent of the schedule for the second ambulance unit often remains unfilled, forcing the leadership team to work on the ambulance. National trends in Utah and across the United States suggest that volunteerism is increasingly becoming an unreliable primary means of staffing rural ambulance services.

Currently, the accounted cost of operating the department is approximately \$800,000 per year, or an estimated \$900 per call in 2016. But the costs are actually higher than they appear because the current budget fails to account for the use of volunteer labor.

The cost of donated labor is calculated to be \$883,800 per year. This is calculated by valuing the wages and benefits of EMTs at \$20/hr. and paramedics at \$30/hr. These figures are conservative, as the value of an unskilled volunteer hour in Utah is \$23.92.<sup>19</sup>

<b>Cost of Donated Labor</b>							
	12 hrs	12 hrs	Volunteer each day	Hours a day	Annually	Pay	Pay Annually
<b>Truck 1</b>							
Person 1	Paid	Paid		24			
Person 2	Paid	Paid		24	8760	\$20.00	\$175,200.00
<b>Truck 2</b>							
Person 1	Paid	oncall	12	12	3180	\$30.00	\$95,400.00
Person 2	oncall	oncall	24	24	8760	\$20.00	\$175,200.00
<b>Truck 3</b>							
Person 1	oncall	oncall	24	24	8760	\$30.00	\$262,800.00
Person 2	oncall	oncall	24	24	8760	\$20.00	\$175,200.00
<b>Sub total</b>							<b>\$883,800.00</b>

The full cost of providing ambulance services in Grand County with three EMS units is around \$2.2 million per year.

<sup>19</sup> Based on yearly earnings provided by the Bureau of Labor Statistics and estimated by the Independent Sector. See [https://www.independentsector.org/volunteer\\_time](https://www.independentsector.org/volunteer_time)

## Full Cost when Accounting for Donated Labor

Truck	Person	12 hrs	12 hrs	Volunteer each day	Hours a day	Annually	Pay	Pay Annually	Expenses 1/3 of current
Truck 1	Person 1	Paid	Paid		24	8760	\$30.00	\$262,800.00	\$300,706.72
	Person 2	oncall	oncall		24	8760	\$20.00	\$175,200.00	
Truck 2									\$300,706.72
Truck 2	Person 1	Paid	oncall	12	24	6360	\$30.00	\$190,800.00	
	Person 2	oncall	oncall	24	24	8760	\$20.00	\$175,200.00	
Truck 3									\$300,706.72
Truck 3	Person 1	oncall	oncall	24	24	8760	\$30.00	\$262,800.00	
	Person 2	oncall	oncall	24	24	8760	\$20.00	\$175,200.00	
Sub total								\$1,242,000.00	\$902,120.15
Total									\$2,144,120.15

Significantly increasing the revenue that Grand County EMS receives from billing for EMS transports is impossible because the State of Utah regulates billing rates.

Grand County EMS does not have a sustainable business plan for the future.

### 6. EMS is not prioritized in Grand County.

EMS is viewed by residents, business owners, the medical community and visitors in Grand County as an essential public service similar to public works, law enforcement, and schools. However, in structure and funding, it is not treated as an essential service.

While a department of the county, Grand County EMS is expected to operate solely on the revenues it generates. Unlike other departments, however, Grand County EMS must rely on donated labor to balance its books. Furthermore, the wages that it pays are not in line with wages paid in other county departments – especially when considering the responsibility and risks associated with performing the job.

EMS developed as a volunteer service in Grand County. As a result, it appears that the county is reluctant to subsidize EMS and support a paid, full-time staff. This position calls into question whether EMS is best served by being a county department.

Further, EMS operations are spread between three facilities, and the condition of the current crew quarters is unacceptable.

### 7. Relationships between Grand County EMS and colleagues at public safety, hospital and park services are strained.

Working relationships between Grand County EMS and colleagues at public safety, the local hospital and the National Park Service appear to be strained and less than fully collaborative. The issues impacting these relationships appear to be associated with:

- when EMS is called,

- the reach and authority of EMS,
- the role EMS plays in backcountry responses,
- the development of ALS services,
- the increasing responsibility and accountability that EMS has for providing out-of-hospital healthcare, and
- competition for limited resources.

The issues appear to have historical roots. They also may be related to the lack of system-wide EMS planning, as well as how EMS is viewed, understood and undervalued in Grand County.

**8. The opportunity to participate in backcountry EMS is an important reason that many employees want to be part of Grand County EMS.**

The interesting and beautiful geography of Grand County is an inviting backcountry destination that attracts many EMS workers who are willing to volunteer simply to have an opportunity to practice EMS in this unusual environment. Grand County EMS employees readily acknowledge that the backcountry is a prime reason people want to work there. Employees come from far beyond Grand County for the opportunity to work in the backcountry.

Backcountry response is an important part of Grand County EMS' business, but only represents about 12 percent of its calls. Backcountry response is resource-intensive (time and equipment) and demands specialized skill and training. While the backcountry may be a major attractor in recruiting staff, it may draw undue attention and resources away from the regular 911 and interfacility transfer business.

**9. Grand County's EMS leadership is burdened by having to work in both administration and on the ambulance.**

The Grand County EMS director and assistant director are shouldering significant levels of call time because of insufficient staffing. They frequently are continuously on call to ensure that the schedule is full and that there are three units are available to respond. This situation is not sustainable long-term.

As Grand County EMS continues to meet the growing healthcare needs of the community and its more than one million visitors, the EMS director and assistant director must focus on leading and managing the department (creating, planning, developing and building creating), not using their time covering shifts and taking calls. It also appears that the current leaders are trying to fill too many roles in the department (i.e. education, quality, scheduling etc.) and could benefit from additional leadership and management help.

The salaries of the leadership team are low and are not commensurate with expectations, workload and salaries for similar leadership positions and responsibilities.

**10. Finding and keeping an engaged workforce that is willing to provide all aspects of EMS (not just backcountry) will be a major challenge going forward.**

Like many other EMS agencies in Utah and across the United States, Grand County EMS faces workforce shortages. A shortage of workers is a national trend.

“Our capability to provide adequate pre-hospital care to citizens in need across the country has become greatly diminished. Depleted volunteer numbers and lack of adequate career staffing levels have impacted our ability to provide high quality care. The current staffing shortages in EMS have taxed our response system, increased response times and left patients without adequate levels of care. We will continue heading down this path until everyone is made aware of the problem and measures are taken to stave off impending disaster.”<sup>20</sup>

This trend is related to declining volunteerism, increasing demands of the job, relatively low wages paid to EMS workers, and the increasing demand for long-distance transports in rural areas.<sup>21</sup>

Grand County EMS is experiencing increasing challenges with finding workers who are willing and able to fill regular shifts. In planning for the future, fielding a reliable and high quality workforce may be the department’s greatest challenge.

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<sup>20</sup> Peluse, S. “Critical Staffing Shortages.” *EMS Insider* 9-09-15. retrieved from <http://www.jems.com/ems-insider/articles/2015/07/critical-staffing-shortages.html>

<sup>21</sup> EMS Workforce for the 21st Century: A National Assessment (2008). NHTSA’s Office of EMS.

## VI. Recommendations

### **1. Grand County EMS should build on past successes and continue to make changes that ensure the provision of high quality EMS in Grand County.**

Grand County EMS should build upon the success of the past four years and continue the trend of:

- developing leadership and management capacity,
- improving services delivered,
- ensuring reliability,
- increasing the level of care provided,
- implementing best business practices,
- strengthening workers' skills,
- replacing donated labor with paid labor,
- creating an inviting work environment, and
- assuring quality of care.

### **2. Grand County EMS should build a business plan for sustainable EMS in Grand County that defines the right model for EMS, includes appropriate resource deployment, and accounts for the full cost of EMS.**

Planning for the future demands a sustainable business plan. Grand County EMS must develop a comprehensive business plan that envisions the gradual establishment of the following:

- Staffing of three ambulance units 24/7;
- Replacement of donated labor with fully paid staff for three units;
- The creation of an employment value proposition (wages, benefits, opportunities) that ensures the development, recruitment and retention of a quality workforce;
- The development of a reasonably sized leadership team that accounts for leadership, management, and supervision, and fits the needs of the organization;
- Appropriate vehicles and equipment and regular replacement;
- Prioritization of interfacility transfers;
- Acquisition/development of a reasonably sized facility; and
- Use of on-call or volunteers to staff backcountry needs.

This plan should clearly project all costs and revenues from billing for services, and identify any needed subsidy. SafeTech Solutions estimates the full cost of annual operation to be approximately \$2.1 million.

### **3. Grand County EMS should identify possible and appropriate funding resources.**

As part of the development of a sound business plan, Grand County EMS must identify funding resources. Some of the potential funding resources suggested during this

assessment include:

- County general fund,
- Special healthcare taxing district tax,
- Transient Room Tax.

Each of these options presents challenges and opportunities that will become clear with more exploration and investigation.

**4. Grand County EMS should identify the best and most appropriate “home” for Grand County EMS.**

Best ownership of EMS in Grand County can be clarified with a business plan and the identification of the likely funding resources. During this assessment, the following options were discussed:

- Remain a county department,
- Become part of the Canyonlands Health Care Special Service District,
- Become an independent not-for-profit organization,
- Become part of the Grand County Sheriff’s Office,
- Become part of the Moab Regional Hospital, or
- Contract for EMS services from an out-of-county vendor.

## VII. Implementation Steps

Grand County EMS should implement the above recommendations gradually. A stepped implementation process starts with the development of positive relationships in the community, telling a powerful story about EMS, and gradually winning support for a more sustainable EMS system in the future. SafeTech Solutions recommends the following implementation steps.

### **1. Engage the community in planning for a sustainable future.**

The leaders of Grand County EMS should involve a variety of key stakeholders in planning for the future. Form a local EMS stakeholder group to review and build support for a business plan, funding options, and future “home” for EMS. This group should include residents, business leaders, municipal and county officials, hospital leaders, medical community leaders, law enforcement, and the Park Service.

### **2. Gradually transition to a more sustainable EMS model, while continuing to use current resources and stop-gap solutions that maintain current levels and quality of care.**

As community support builds for a more sustainable EMS system, gradually transition EMS to its new “home” by implementing a sound business plan and financial model. A gradual transition will require temporary continued use of current resources, looking for stop-gap solutions, and ensuring that all stakeholders involved in the transition are successfully led through the change.

### **3. Seek local medical direction to help solidify the value of EMS in the community.**

A medical director can play an important role in building community support for EMS. The physician’s knowledge, expertise, position and relationships can be a powerful asset in building local support for EMS and navigating local political issues. A local medical director is a powerful way of showing stakeholders that EMS is truly a local service.

### **4. Strengthen the relationship between Grand County EMS and local medical staff to ensure that Grand County EMS is the first choice for interfacility transfers.**

Interfacility transfers are likely to increase in coming years. Transfers are an important revenue source and an important service to provide in a rural area with limited medical specialties. Grand County EMS should seek to gain as much of the transfer business as possible by developing a trusting, open and mutually beneficial relationship with local hospital and medical staffs.

**5. Strengthen Grand County EMS' workforce value proposition to improve recruitment and retention of EMS personnel.**

Finding and keeping quality EMS workers, especially paramedics, is likely to be an ongoing challenge for Grand County EMS. Through appropriate planning and budgeting, Grand County EMS should ensure that its recruiting value proposition (pay, benefits, career opportunities and perks) is competitive and compelling enough to attract workers from across Utah and beyond.

**6. Deploy backcountry resources in a manner that capitalizes on a willing and engaged workforce but does not impede daily 911 and transfer operations, or negatively impact leadership and management.**

**7. Continue to move toward a full-time, paid staffing model, while respecting and honoring volunteers and volunteerism in the organization.**

As funding allows, daily 911 and transfer operations should be staffed with fully paid employees. However, volunteerism has been a large part of Grand County EMS' history and culture. Grand County EMS should endeavor to use volunteers or on-call employees in ways that honor the dedication of those who have consistently donated their time over the years without creating unobtainable expectations.