Scott County Health Department
Davenport, Iowa

COMPREHENSIVE STUDY OF EMERGENCY MEDICAL SERVICES

FINAL REPORT

April 2014

Prepared by:
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Scott County Health Department
Davenport, Iowa

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April 2014

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ACKNOWLEDGEMENTS

This study could not have been accomplished without the cooperation and assistance of the entire Scott County EMS community. Many people from throughout the community unselfishly gave of their time and resources to assist with the process. TriData wishes to recognize Scott County Public Health Officer Ed Rivers, and EMS Manager Denny Coon for their special contribution toward the success of this study.

The following persons within the EMS community participated in the study.

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Carol T. Earnhardt	Supervisor	Board of Supervisors
Tom Sunderbruch	Supervisor	Board of Supervisors
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Dr. Ann O'Donnell	Vice-Chair	Board of Health
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Scott County EMS Physicians' Advisory Board

Dr. Andrew Andresen	EMS Medical Director	Walcott Fire Department
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Jim Tweed	Secretary/Treasurer	Dixon Fire
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Jim Bickford	Deputy Chief	Davenport Fire
Paul Hartman	Battalion Chief	Davenport Fire
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David Coon	Fire Chief	Donahue Fire
Mike Rose	EMS Captain	Donahue Fire
Christopher Thompson	Training Officer	Long Grove Fire
Chad Petersen	Fire Chief	New Liberty Fire
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Eric Griffith	Trustee	IAFF Local 17
Matt Lawson	President	IAFF Local 3190
Tom Sheetz	Vice President	IAFF Local 3190
Kyle Priest	Secretary/Treasurer	IAFF Local 3190

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Kim Lopez	President	Durant Ambulance
Dick Bullard	Member	Durant Ambulance

ACRONYMS

The following commonly used acronyms are presented for the readers better understanding of the subject matter:

ACO	Accountable Care Organization
ADM	Alternate Delivery Model
ALS	Advanced Life Support
BLS	Basic Life Support
CAAS	Commission on Accreditation of Ambulance Service
CAD	Computer Aided Dispatch
CHF	Congestive Heart Failure
CMS	Federal Center for Medicare Services
CQI	Continuous Quality Improvement
EICC	Eastern Iowa Community College
EMD	Emergency Medical Dispatch
EMR/FR	Emergency Medical Responder/First Responder
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMT-I	Emergency Medical Technician – Intermediate
ESA	Exclusive Service Area under Chapter 28, Scott County Code
FF I and FF II	National Fire Protection Association Fire Fighter Training Levels
First Responder	Anyone providing organized EMS care
First Response	Initial EMS provided by local fire departments
IAFF	International Association of Fire Fighters
MCI	Mass Casualty Incident
MEDCOM	EMS dispatch provided by MEDIC EMS
MEDIC EMS	Primary EMS transport organization in Scott Count
MPD	Medical Priority Dispatch
MPDS	Medical Priority Dispatch System
NFPA	National Fire Protection Association
PAI	Pre-arrival instructions
PSAP	Public Safety Answering Point
SECC	Scott County Emergency Communications Center (Fire and Police)
TIGER	Topologically Integrated Geographic Encoding and Referencing

EXECUTIVE SUMMARY

The Scott County Board of Supervisors and Board of Health instructed the Public Health Officer to complete a comprehensive study of EMS within Scott County. SPC/TriData, a professional public safety consulting firm was hired to complete this study. The study started in August of 2013, and received Board of Health approval on March 27, 2014.

Chapter 1. EMS in Scott County

Iowa Bureau of EMS – The Iowa Bureau of EMS promulgates the regulation of EMS under the oversight of the Iowa State Board of Health. The Bureau is headed by an interim director, and there is no state EMS medical director. Guidance for the Bureau is provided by the Iowa EMS Advisory Committee, consisting of 20 members, including 7 physicians and 13 members who represent the various stakeholder agencies.

There are four state EMS Regional Directors to cover 99 counties in Iowa, recently reduced from six. The state continues to place more responsibilities on Counties for the regulation of EMS. This trend is expected to continue for the near future. The Scott County EMS system is held in high regard by state agencies and officials.

Iowa Emergency Medical Services Association – The Iowa Emergency Medical Services Association (IEMSA) represents the 12,000 EMS providers within the state. Representation includes lobbying state and local legislators, and representing the EMS community regarding the oversight of EMS. It is very interested in the results of this study because it may indicate the statewide direction of EMS.

Scott County EMS Oversight – The Scott County Board of Health is primarily responsible for EMS in Scott County. Daily responsibility is vested in the Scott County Health Officer and the Health Department Staff. Chapter 28 of the Scott County Code of Ordinances governs and provides standards for the licensing, inspection and operation of ambulance services in Scott County. Much of the controversy surrounds a Chapter 28 provision that designates specific EMS agencies as the exclusive emergency and non-emergency provider for the zone. The County Attorney has determined that that the County was within its rights to enact these ordinances.

Ambulance Service Funding – Scott County provides limited funding to ambulance services that serve the County. It is also authorized to provide funds to cover MEDIC EMS financial shortfalls. This has not been necessary for many years. In 2013, due to "Iowa Care," MEDIC EMS suffered a financial shortfall. No request has been made for County funding.

EMS Dispatch – EMS dispatch is provided from the SECC via a cooperative agreement between SECC and MEDCOM. SECC provides the 911 call-taking, and dispatch of EMS first responders, while MEDCOM provides dispatching of ambulances and medical priority dispatch components. The public/private partnership works well, but there are issues. These include: incompatibility between the SECC CAD and MEDCOM CAD, delays in dispatching first

responders, insufficient information provided to first responders, and beliefs that the public/private partnership creates a conflict of interest.

First Responders – EMS first response is provided by 15 fire companies, one career, one combination, and 13 all- volunteer. Davenport and Bettendorf provide most of the first responder services. Service levels vary, with Davenport providing paramedic first response, Bettendorf providing EMT-I response, and the all-volunteer companies providing EMT-I, EMT, or EMR service. As Iowa adopts the National Scope of Practice, these levels may change. As in other areas of the country, the volunteers are concerned about their ability to provide daytime response. They have also requested assistance with coordinating quality management activities.

Ambulance Transportation – Paramedic care and ambulance transport are provided by eight agencies in Scott County. Five of these agencies provide emergency ambulance services, while four of these five and three others also provide non-emergency services. MEDIC EMS provides over 94% of emergency service, while precise numbers for non-emergency services were not provided. The remainder of emergency service is provided by three non-Scott County services under an automatic aid Aeromedical EMS is mainly provided by MedForce.

Chapter 28 Appendix 2, and the future of volunteer ambulance services in rural areas are areas of concern. We comment on these issues throughout the report.

Hospitals – Scott County is home to two hospital systems, including Genesis Health System Hospital, with two campuses in Davenport, and Unity Point-Trinity Hospital in Bettendorf. Genesis has plans to move most high level care to the East Campus.

Scott County Organizations – There are several Scott County organizations that influence EMS in different ways. The main organizations include the Scott County Board of Health, the Scott County Department of Health, including the EMS office, and the Scott County Emergency Management Agency. The Director, as Public Health Officer is responsible for EMS oversight within the County, including the enforcement of Chapter 28 EMS Standards. The EMS Program Coordinator provides support and liaison for each component of the EMS system. A County EMS Medical Director and the Physicians' Advisory Board provide EMS medical direction for all phases of EMS. The Physicians' Advisory Board listed seven specific areas needing attention. The most significant area is the lack of clinical and operational data for EMS.

Chapter 2. Scott County EMS System Administration and Management

The Changing Structure of EMS at the State Level – The State of Iowa is consolidating its EMS resources and oversight, shifting more responsibilities to the county and local levels. There is no state EMS Medical Director and no permanent state EMS administrator. EMS regions have been reduced from six to four, with each the area regional manager responsible for 25 counties. There have also been issues with EMS medical discipline that will likely require expansion of local EMS quality management.

Effects on Scott County EMS – The need for greater system sophistication and the reduction of state resources will affect Scott County EMS .In addition to support and advocacy, the Health Department should add a greater oversight role. An EMS Medical Director should

appoint assistant medical directors, with the physicians' advisory board being more advisory in nature.

Perhaps the greatest EMS system enhancement will be in EMS Quality Management. The Scott County Chief Officers and EMS Association have asked that the County assist them with local quality management. There is also a need for greater system improvement in EMS information management. This includes merging information starting at SECC and continuing through the entire response cycle.

We also recommend changes to the Chapter 28 to fortify County oversight of EMS. While controversial, we believe that Chapter 28 (including the appendices) is appropriate for the good order of EMS care.

Chapter 3. MEDIC EMS and EMS in Scott County

MEDIC EMS is the largest EMS provider in Scott County, employing 124 personnel and 27 volunteers that augment EMS in smaller cities. It is one of few ambulance services accredited by an ambulance and dispatch agency.

Governance – MEDIC EMS is governed by a Board of Directors that represents various hospitals and governmental agencies. The most significant controversy involves Genesis Hospital having an eight member majority on the board. This should be reconsidered, spreading representation between the two major hospitals and adding more citizen representation.

EMS Administration and Operations – EMS Administration and Operations is overseen by an Executive Director who reports to the Board of Directors. The Executive Director is assisted by a team of division managers responsible for paramedic services, quality management/education, MED COM, human resources, and prevention/public education. Emergency ambulance service accounts for 60-70 percent of calls, while the remainder is non-emergency service. Also included is the Alternative Delivery Medic (ADM) program where paid and volunteer EMS providers staff medic units in Eldridge and Le Claire.

An analysis of resuscitation and other EMS skills showed that MEDIC EMS personnel meet or exceed the national averages for cardiac resuscitation, citizen CPR and the successful performance of certain critical skills. Additional data should be collected. Scott County and MEDIC EMS have forged an excellent relationship with Eastern Iowa Community College (EICC), who provides primary and continuing EMS education. This relationship is worth continuing.

MEDIC EMS communications division, MEDCOM, provides excellent service under a somewhat unique relationship with SECC. Greater interaction is needed to assure that CAD to CAD interface is achieved. This will enhance data management, storage, and analysis.

Finances – MEDIC EMS did not provide us a financial report. We were able to determine that the past two years were financially stressful due to the loss of contracts with Unity Point-Trinity Hospital and Specialty Select Hospital. Unreimbursed services secondary to the

"Iowa Cares" program also caused a loss of revenue. The successor program to "Iowa Cares" will allow for some future reimbursements.

Chapter 4. Planning for the Future of EMS in Scott County

The Scott County EMS System – We believe that the current Scott County EMS system will meet the challenges for the present and future of EMS. Some realignment would enhance the system, including expansion of the Department of Health EMS Office to include a greater oversight role. We also provide guidance on Scott County compliance with Iowa EMS Standards and additions to Chapter 28.

Volunteer Sustainability – The question of volunteer sustainability is being asked not only in Scott County, but across the country. Volunteer fire services in Scott County are being affected, but are meeting the current challenge. We suggest that volunteer fire departments consider modifying some of their traditional membership requirements to recruit non-firefighting EMS providers as members.

Affordable Care Act – Another pressing issue is the effect of the Affordable Care Act (ACA) on Scott County EMS. While we are unsure of its exact impact, we believe that Scott County's EMS system structure will be able to provide needed services. The ACA may provide hospitals and EMS systems to enhance patient care, while controlling the expanding costs of healthcare by creating interdependency for mutual survival.

Scott County should proceed cautiously with the expansion of the EMS Scope of Service because two regulatory issues must occur to insure success. First, the federal government must authorize reimbursement for care that excludes EMS transportation. Second, EMS providers must be given greater latitude to determine that EMS transportation may not be necessary, or that transport to alternative facilities may be appropriate. An enhanced Scott County EMS System will expand the County's ability to handle these challenges.

Chapter 5. Station Location and Apparatus Deployment

The chapter provides a comprehensive review of response times, coverage areas, other data needed to evaluate EMS response. In general, Scott County has good first responder and ambulance coverage. For the most part, response times meet EMS standards for urban, suburban, and rural response.

We were also asked to examine special issues concerning the I-80 Truck Stop and EMS response. A multi-organizational group met to discuss and examine the issues, and several alternatives were discussed. We discovered that part of the challenge involved the alerting and response of Durant Ambulance. These issues were being corrected. Also, Walcott Volunteer Fire Company has enhanced its first responder services.

Overall, the citizens of Scott County enjoy excellent EMS services, including efficient first response and excellent ambulance services. Our report details these findings and offers suggestions for the future.

CHAPTER 1. EMS IN SCOTT COUNTY

The Scott County Board of Supervisors and Board of Public Health engaged SPC/TriData, a professional consulting firm with 32 years of experience, to report on the current status and future issues facing Scott County.

Iowa Bureau of EMS

Regulations governing emergency medical services (EMS) in Iowa are promulgated by the Iowa Bureau of EMS, a division of the Iowa Department of Public Health. The Bureau's primary responsibilities include the regulation of EMS services, administration of the hospital trauma designation program, and provision of standards for the education, certification, and recertification of EMS providers and first responders.

Guidance for the Bureau is provided by the Iowa EMS Advisory Committee, consisting of 20 members, of whom 7 are physicians. The remaining 13 members represent the various stakeholder agencies that make up the system. The position of State EMS Medical Director was eliminated several years ago due to budget cuts, and there is currently no commitment to re-establishing the position. The position of Bureau Director is currently vacant, and there is doubt as to whether it will be filled. With these changes, the mission of the Bureau has been modified to include only regulatory functions.

Representatives of the State Bureau of EMS hold the EMS system in Scott County in high regard, finding Scott County's providers and services to be generally more aggressive than others in the State regarding the implementation of new therapeutic modalities and the adoption of the National EMS Scope of Practice.

Like many state EMS agencies, the Iowa Bureau of EMS has been challenged by funding cuts. The number of regional administrators has decreased, thereby making the administrator responsible for Scott County also responsible for 24 counties. This situation taxes the State's ability to provide the level of oversight once provided.

Currently, the Iowa Bureau of EMS has an acting Bureau Chief who has additional higher level responsibilities. State regulations do not allow for a State EMS Medical Director. These issues lead to greater responsibility for regulatory matters such as equipment, medical protocols, quality management, etc. being pushed down to County levels.

The State has little oversight of the emergency medical dispatch (EMD) program. There is no EMD certification nor is any EMS agency required to provide medical priority dispatch (MPD) or pre-arrival instructions (PAI).

Iowa Emergency Medical Services Association

The Iowa Emergency Medical Services Association (IEMSA) is a professional organization that represents the more than 12,000 EMS providers who provide services in Iowa. IEMSA includes members from all aspects of EMS regardless of career or volunteer status. An example of their involvement includes:

- Initiating & Supporting EMS Legislation
- Hosting an Annual Conference & Trade Show
- Conducting an Annual EMS Memorial Service
- Representing Iowa EMS providers at EMS Day on the Hill Day in Washington, DC
- Operating a Leadership Training, Membership Outreach, Communications
- Sponsoring an Annual Ambulance Billing Conference

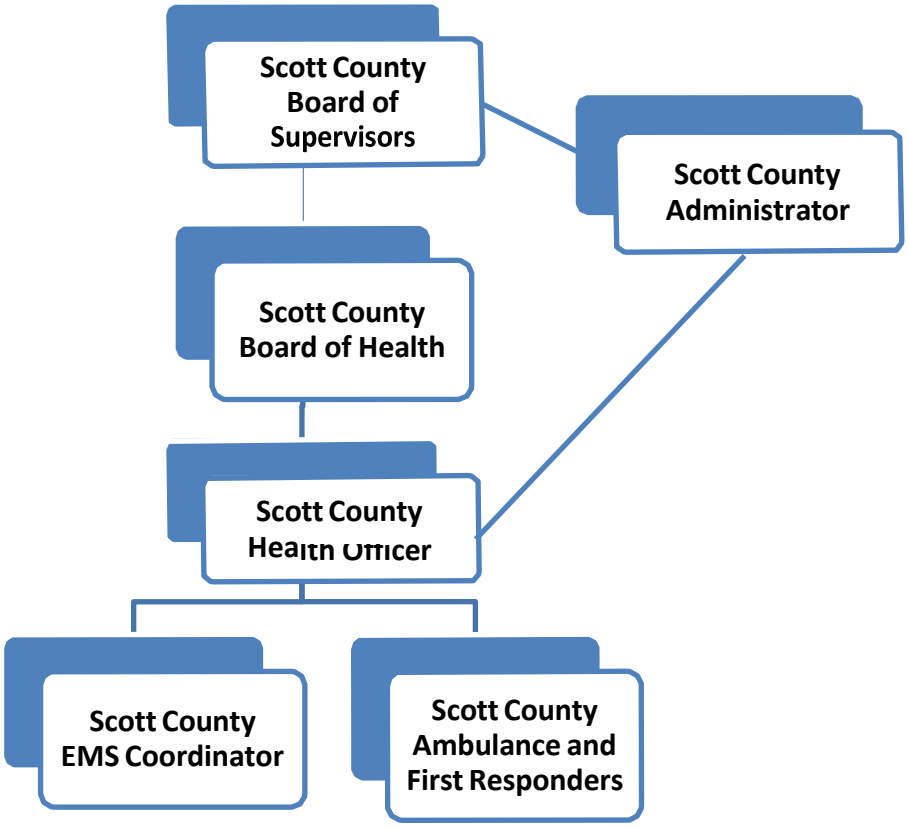
IEMSA spends much of their time lobbying for the passage of state legislature to improve patient care, access funding for volunteer EMS agencies, obtaining tax credits for volunteer EMS providers, and increasing revenues for local EMS provider organizations. It is also intimately involved in the EMS scope of practice changes, and EMS education and training.

IEMSA leadership is concerned about the future of EMS in Iowa, especially involving the scaling back of State oversight, volunteer EMS provider sustainability, and the transition to the new National EMS Scope of Practice. It is very interested in the results of this study because it may indicate the statewide direction of EMS.

Scott County EMS Oversight

The Scott County EMS program operates within the Scott County Department of Health under the Scott County Board of Health. The program is responsible for regulating and licensing all ambulance services operating within Scott County, reviewing ambulance service activity reports, investigating complaints regarding ambulance service, and assigning the areas in which ambulances respond to calls. Figure 1 shows the Scott County EMS oversight structure.

Figure 1: Scott County EMS Organizational Structure



Chapter 28 of the Scott County Code of Ordinances governs and provides standards for the licensing, inspection and operation of ambulance services in Scott County, provides for renewal and revocation of licenses and requiring written reports, establishes ambulance service areas, and establishes penalties for violation of its provisions. Originally written in 1979, it was revised in July of 2013 to further define the areas for ambulance response for each of the agencies currently serving the County. This revision has proven to be highly controversial.

Much of the controversy surrounds a Chapter 28 provision that designates specific EMS agencies as the exclusive emergency and non-emergency provider for the zone. Scott County granted exception to those providing service to an entity or entities in an area prior to Chapter 28 enactment. Pursuant to the opinion of the Scott County Attorney's office these services are allowed to keep their current provider relationships.

Some area hospitals and ambulance services question the legality of the above Chapter 28 provision. During our interviews, respondents claimed that state and federal laws prohibited such restraint of trade, but no one could specifically identify said law. The County Attorney's office determined that the County was within its rights to enact these ordinances.

Ambulance Service Funding

The County provides some funding for Ambulance services. This includes covering a portion of any financial shortfall incurred by its largest provider, MEDIC EMS. This has not been an issue recently, since MEDIC EMS has for many years met all of its expenses without financial aid from the County. The "Iowa Care" program has sent many patients formerly seen at local hospitals to the University of Iowa Hospital, which is much farther away. This created a negative impact on ambulance service finances. The increased cost of longer transports, coupled with ambulance services not being compensated for these transports, has produced a deficit which the County could have been asked to cover.[1] Although the Iowa Care program expired December 31, 2013, it is not known whether the previous positive/revenue neutral financial position of county-based ambulance providers can be recovered.

EMS Dispatch

Scott County government operates a consolidated dispatch center for police, fire and EMS located in a single, state-of-the-art facility. The Director's position for the communications center is currently being filled on an interim basis. At the time of our meetings, the Scott County Emergency Communications Center (SECC) has been attempting to fill the full-time position. The center handles approximately 28,000 fire and EMS calls per year.

Call-taking and dispatch functions for police and fire are conducted by personnel employed by the Scott Emergency Communication Center, a 28E intergovernmental joint powers agency under the Iowa Code. Each employee undergoes a 1.5 week orientation, followed by six to eight months of training. Employees are also required to complete the Basic Iowa System Training (BIST) program. They are recertified every two years by the Iowa Department of Public Safety.

The system of dispatch for EMS calls differs from that for police and fire. Police and fire calls are handled solely by SECC call-takers and dispatchers. For EMS calls, the SECC call-taker receives the initial call and, upon determining it is EMS in nature, transfers the call to a second dispatcher, an employee of MEDIC EMS, who is co-located in the consolidated communications center. This person completes the MPD process and dispatches the appropriate ambulance service from either their organization or from one of the other transport ambulance services serving the County, based on the location of the emergency. MEDIC EMS does not charge for this service. Meanwhile, the SECC dispatcher sends the appropriate first responder agency, in accordance with established protocols.

Current system issues include:

1. The SECC CAD operates on the New World platform, while MEDIC EMS CAD operates on a Zoll platform. Efforts are currently underway to enable these systems to interact more efficiently and effectively.

[1] At this time, Scott County has not been asked to cover this shortfall.

2. Some constituents believe that the alerting and response of first responders on EMS calls is sometimes delayed because of the routing of the call between two dispatch entities. Due to CAD system incompatibilities, we are unable to confirm this problem.
3. First responders are concerned that they do not always receive critical information pertaining to the patient's condition and/or safety issues, again due to the routing protocol.
4. There are some agencies and officials that believe that Scott County should directly control all elements of EMS dispatch. The current dichotomy sets up a potential conflict of interest for MEDIC EMS because they are also the primary ambulance provider.
5. In contrast, should MEDIC EMS withdraw its staff support to the communications center, the center would need to hire approximately 12-15 new employees, and provide additional EMD training for approximately 42 current dispatchers.

To hire 15 additional dispatchers would cost between $584,376 and $790,608 annually in salary alone, excluding benefit costs and additional training costs.[2] It is unlikely that County elected officials would endorse this additional expense. Unfortunately, doing that now would be expensive, with the costs likely passed on to the citizens or ambulance vendors. While some monies would be available by grants, it would be far below the amount needed to make up this deficit.

At this time, MEDCOM provides EMS dispatch services for all agencies serving Scott County. If commercial agencies are granted license to provide emergency or non-emergency services in Scott County, it would be appropriate for these agencies to be charged a user fee for several services. At a minimum, this would include:

1. A 911 Access Fee charged by SECC to receive and process ambulance requests.
2. A MEDCOM dispatch and MPDS user fee.
3. A first responder fee for units that respond as emergency first responders, or who provide patient care assistance (i.e. lift assist, extrication, etc.).

Fees for 911 and MEDCOM would likely be an annually assigned fee, while first responder fees would be charged on a per call basis. This would be necessary because fees would likely be split between Scott County and individual first responder agencies.

Recommendation 1: Continue with public/private partnership between SECC and MEDIC EMS for EMS dispatch services. Any commercial service using SECC, MEDCOM, or first responder services should pay an access or user fee.

[2] Scott County, IO Public Safety Dispatcher, Salary of $18.73 - $25.34 hourly, X 2080 hours per year.

First Responders

First response in Scott County is provided by 15 fire departments. The largest of these, Davenport Fire Department, is a fully paid department. The next largest, Bettendorf Fire Department, is a combination paid/volunteer agency. The remaining 13 agencies are all volunteer services, although a few do employ personnel to provide staffing, particularly during daytimes when volunteers find it difficult to respond. Each service has medical oversight by a physician medical director. One medical director functions as a medical director for several services, educational programs, and other processes.

Certification levels vary among first responder agencies. Davenport and Bettendorf career personnel, for example, are licensed at the Paramedic or EMT-Intermediate (EMT-I) level, and provide advanced life support (ALS) care while awaiting the arrival of the transport ambulance. While all career personnel are not paramedics, most career units are staffed with at least one paramedic. Personnel from other first responder agencies are a mix of paramedics, EMT-Is and EMTs, and provide care in accordance with their certification level.

The new National Scope of EMS practice identifies four levels of EMS provider including, paramedic, advanced EMT, EMT, and emergency medical responder. At this time, Iowa has decided not to certify providers as advanced EMTs. This will require currently certified EMT-Is to achieve paramedic certification or revert to EMT status. Some providers expressed displeasure with this decision, but no grassroots effort exists to encourage state reconsideration. Iowa also allows for the EMS certification of registered nurses and physician assistants as paramedics, and several are active within the EMS system. Local medical directors have significant control over which allied health providers can pursue paramedic licensing based on other healthcare qualifications.

Call volumes also vary greatly, with the City of Davenport responding to more than 13,000 EMS calls a year to smaller, rural agencies with fewer than 40. As with volunteer agencies across the country, the primary concern of the rural EMS provider agencies is the ability to recruit and retain volunteers. Many of the volunteers serving in their communities work in the larger metropolitan areas of Davenport and Bettendorf, leaving few daytime responders. While financial support is available from the State for volunteer fire training, no such support currently exists for volunteer EMS providers. Length of Service Award Programs (LOSAP) used in other areas of the country to encourage volunteer retention are not employed in Scott County. Many departments are not in a financial position to hire staff to supplement the volunteers, and the inability to respond to calls is becoming more common.

The Scott County Fire Chiefs Association is an active stakeholder in the Scott County EMS system. This organization acts as liaison between the County, fire-based first responder agencies, ambulance services, and the communications center. Among their recommendations is the establishment of a County Quality Management Coordinator who would coordinate these entities on a daily basis, dealing with small problems before they become large ones. Among the concerns of the first responder organizations is the lack of a standardized EMS report form, making data collection extremely difficult and hampering quality improvement efforts.

Fire and EMS chiefs are concerned about the ability to recruit and retain EMS providers. Since many volunteers work in one area of the county and live in another, there are opportunities for volunteers to come upon incidents where volunteers from multiple companies are on scene and could provide care. Some volunteer chiefs are rightfully concerned that credentialing issues lead to the incident commander's reluctance to accept assistance. During our meeting with volunteer representatives, a suggestion was offered that Scott County could issue a uniform photo identification that a provider could show the incident commander when they are available to assist outside their assigned area.[3] This idea has considerable merit, and warrants further consideration by the County and volunteer chiefs. These issues are currently being addressed by MEDIC EMS, Scott County fire chiefs, and Scott County Department of Health.

Recommendation 2: Scott County should work toward issuing those providing EMS skills a uniformed ID. There are obviously many challenges needing to be addressed, but the ability to do this is within grasp.

First Responder Agencies

EMS first response is provided by career and volunteer fire departments throughout the County. We visited or spoke with most agencies to determine what EMS services they are providing and what services they expect to continue providing.

Bettendorf Fire, Rescue, and EMS Department – Originally a volunteer fire and EMS service, the Bettendorf Fire, Rescue, and EMS Department (BFD) is the second largest EMS first response agency within Scott County. After the enactment of Chapter 28 in 1979, BFD discontinued providing ambulance service, but provides paramedic first responder services.

Government Involvement: Bettendorf's elected and administrative officials are very active in supporting EMS. Government officials believe that EMS is operating efficiently, and providing an appropriate level of service. A stumbling block was identified as the need for countywide cooperation. While the EMS delivery model works well, a countywide system may provide better patient-centered services. There is concern about a possible takeover of EMS by a single hospital. Administrative officials are also very active within EMS, with the City Administrator being a member of the MEDIC Board of Directors. He believes that the current system is operating well and is sustainable. There is good collaboration among most agencies and the system is patient driven. Administrative officials do not believe that they should get into the transport business, nor should a hospital-based agency takeover the EMS service. They believe more attention should be paid to how aeromedical EMS operates within the County.

Fire and Rescue Operations: In 2012, Bettendorf responded to 2,378 EMS calls, an increase of approximately 7-10%.

[3] For example, an EMT from Company X is driving home and comes upon an EMS situation requiring multiple units. The incident commander has determined that a second ambulance is needed, but the first due company has a driver but not EMT. After the EMT shows her Scott County Uniformed ID to the incident commander, the IC could choose to advise his company to respond with just a driver and for the EMT to upgrade. This could prevent a mutual aid unit from having to leave their area unprotected.

Over the years, the BFD has transitioned to a majority career service, with one volunteer station that provides response daily from 7:00 p.m. to 7:00 a.m. There are 24 career fire/EMS providers and three daytime worker (fire chief, captain-fire marshal, and an inspector) all qualified to provide service. Response 7a-7p is from Station 2 and response from 7p-7a is from Station 4. There are 36 volunteers on the books with various levels of activity. Eight career firefighters are assigned to each shift, with a minimum of six firefighters on duty 24/7. There are a set number of volunteers who live in department owned housing in exchange for being available for responses. Staffing and response from each station is variable.

The BFD provides first response to all emergency calls within the City and within the Benefitted Fire District 1, with ambulance service provided by MEDIC. There is an interest in considering what calls really need first response. They would like Scott County to consider implementing a medical priority dispatch program.

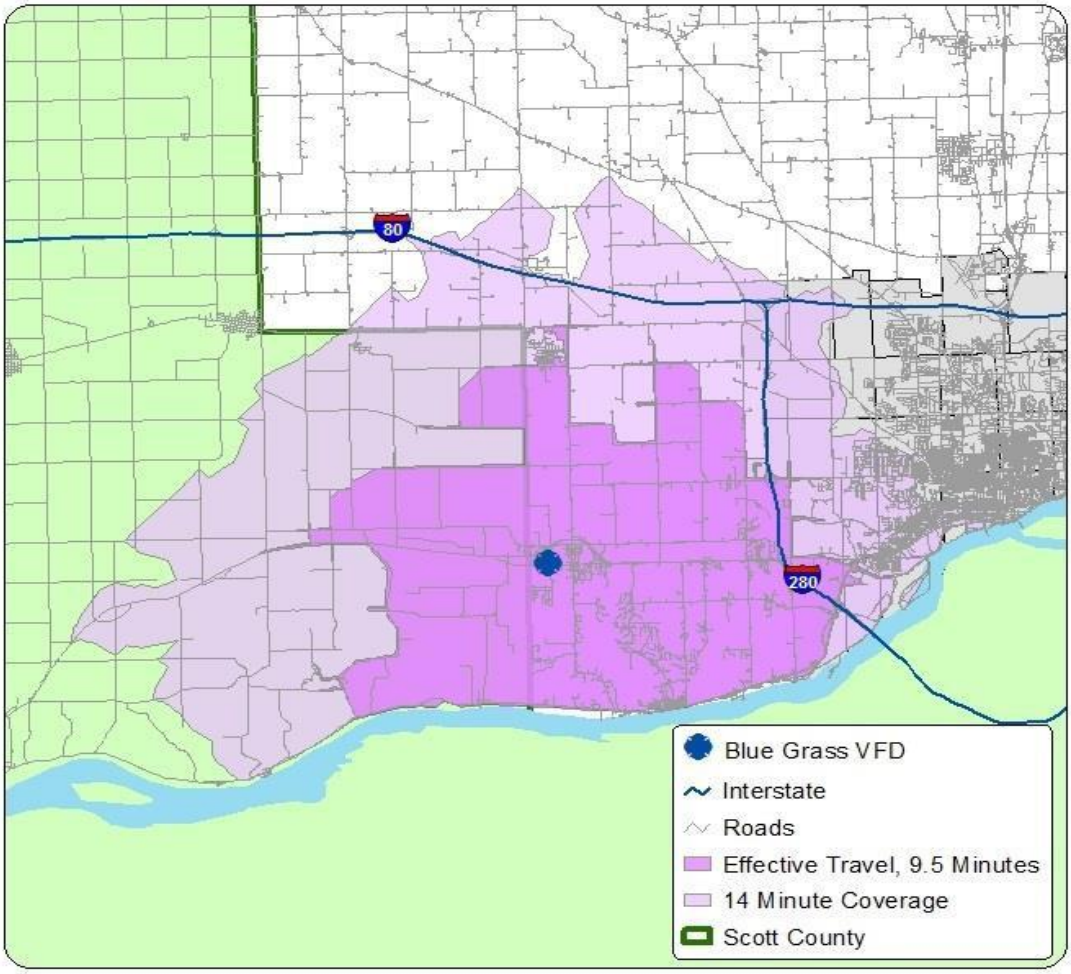
Career personnel must be EMTs prior to being hired, while volunteers are sent for EMT training after one-year of service. Nine of the 27 career personnel are certified paramedics. Two are EMT-I certified and the rest are EMT certified. At this time, career personnel are trained to be EMT-Is, but the state's plan to drop this level will likely lead to EMT becoming the standard of care.

EMS Providers Joint Interview: We were fortunate to have a joint, unplanned meeting with a sample of Bettendorf firefighters and MEDIC EMS personnel. All personnel were happy with the working relationship between agencies and agreed on most issues.

Blue Grass Volunteer Fire Department – Blue Grass Volunteer Fire Department (BGVFD) responds to approximately 350 calls annually, with 260 (74%) being EMS related. BGVFD remains exclusively volunteer with 24 members (25 allowed by the City) of various activity levels. During emergencies, members usually respond from home to the station. Of the 24 active members, 12 have current EMS certifications. Three are EMTs, two are paramedics, and the rest are EMR/FRs.

At this time, the BGVFD does not miss any calls, but are concerned about the future. During daytime hours, most volunteers work outside Blue Grass and the trend is expected to continue. It will be very difficult to find funding to pay members. There is also concern about increased time commitment due to increased requirements to obtain and keep firefighting and EMS qualifications. Figure 2 shows the 9.5 and 20 minute response areas.

Figure 2: Blue Grass Volunteer Fire Department Effective Coverage Area

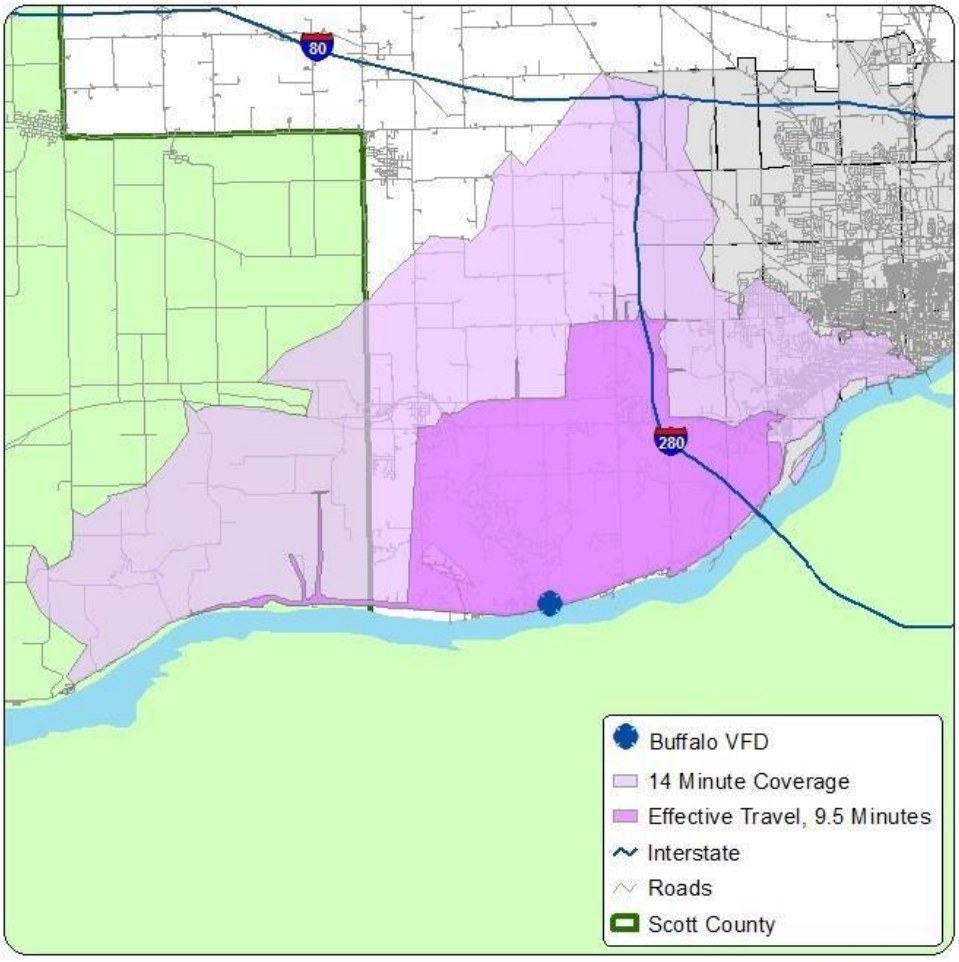


Buffalo Volunteer Fire Department – Buffalo Volunteer Fire Department (BVFD) provides first response and mainly supports Buffalo Ambulance. BVFD responds to an average of 350 emergency calls annually, with 225-240 (64-68%) being EMS related. There are 23 members, with various levels of activity. The City provides support for up to 25 members. There is concern that the number of members, their level of activity, and length of service is starting to dwindle. The average service time for each member is 13.8 years, with the number of younger firefighters moving away to seek employment.

BVFD members are required to be dual role/cross trained in fire and EMS skills. After 2006, new members were required to become certified as Iowa Emergency Medical Responders. Three members are EMTs, one EMT-Intermediate, and one paramedic. Those trained above EMR are employed elsewhere in the EMS system.

Figure 3 shows the 9.5 and 14 minute travel times for the BVFD coverage areas.

Figure 3: Buffalo Volunteer Fire Department Effective Coverage Area



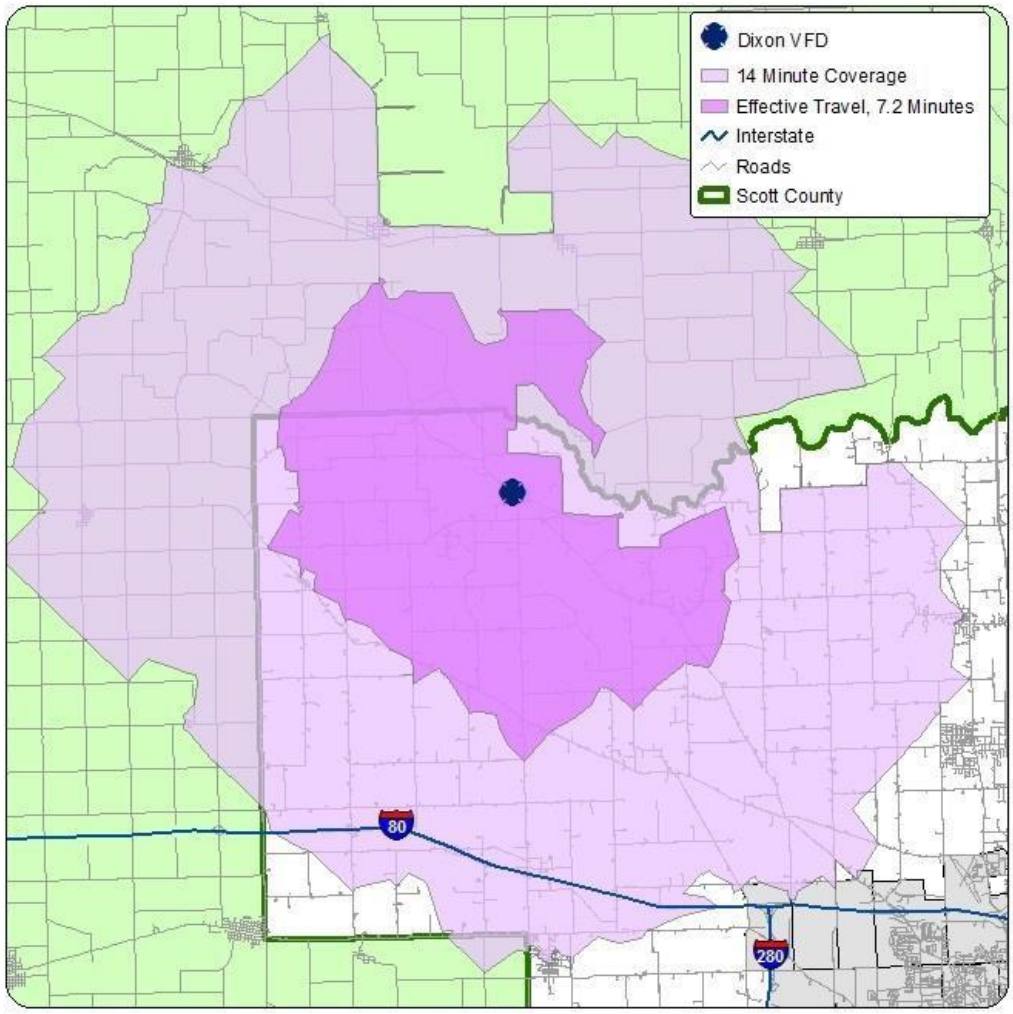
Davenport Fire Department – Davenport Fire Department (DFD) is the largest and only fully paid fire department in Scott County. DFD is accredited by the Center for Public Safety Excellence. It provides paramedic first responder service from eight engine companies and three truck companies. The DFD has a board-certified emergency physician serving as their medical director. The City is concerned that the appropriate number of units are sent to medical incidents. Some political leaders believe that too much equipment is dispatched. The fire chief and MEDIC EMS recently signed an agreement limiting some response by DFD first responders to some medical facilities. While this may be helpful, most officials prefer the formal adoption of medical priority dispatch. There are concerns that dispatch issues are hindering effective analysis of data. This includes the inability to produce a universal incident number, lack of a central data collection and storage system, and the inability for spontaneous first responder and ambulance dispatch.

City officials have varying opinions on the efficiencies of the current EMS structure. Some believe that MEDIC EMS is providing excellent service, while others believe that competition would be beneficial and believe that an agency such as Genesis Health System will offer quality service with better economy. All agree that EMS is an essential public service regardless of how it's provided. At this time, City leadership is not interested in providing EMS transportation. The International Association of Fire Fighters (IAFF) local representing Davenport would like the City to consider EMS transport.

Dixon Volunteer Fire Department – The Town of Dixon has an area of 96 acres and approximately 247 residents. Dixon Volunteer Fire Department (DVFD) has 12 members, 3 of whom are EMT's. DVFD allows EMS-only members. They run a reported 50-60 calls per year, approximately 70% of which are EMS related. Most EMS transports are provided by Wheatland EMS, with MEDIC EMS providing backup.

Figure 4 shows the response area for Dixon, including the seven and 14 minute coverage areas.

Figure 4: Dixon Volunteer Fire Department Effective Coverage Area



Donahue Volunteer Fire Company – The City of Donahue has an area of 225 acres and approximately 346 residents. The Donahue Volunteer Fire Company (DVFC) has 26 members, 8 of whom are EMTs. Membership in the department is capped at 30. The department reports 60-70 runs per year, approximately 70% of which are EMS related.

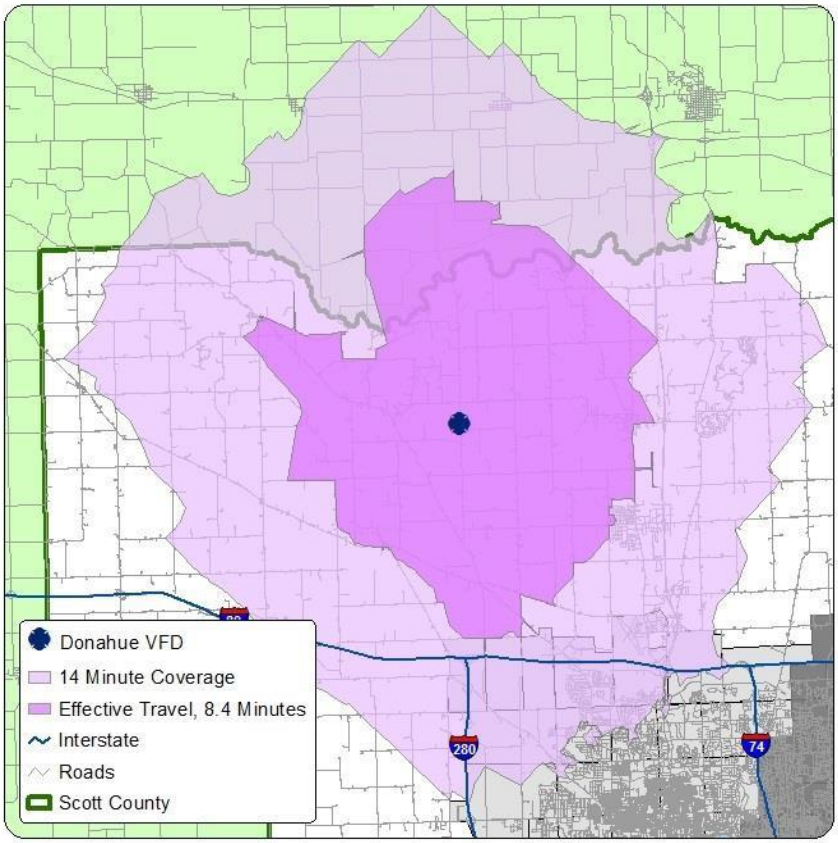
MEDIC EMS provides ambulance service to the Donahue community. Approximately 70% of ambulance service is provided from the Eldridge MEDIC Station, with other MEDIC EMS ambulances providing the remainder of service. DVFC representatives noted some concerns including:

- Difficulty in communicating with EMS units. County policy allows MEDIC to call fire unit by radio, but fire units are not supposed to speak with MEDIC units.
- There is concern as to the County being ready for a Multi-casualty Incident (MCI).
- Scott County should develop a centralized EMS database and provide more assistance with EMS quality management.

EMS training was considered adequate. Personnel believed that the County should consider starting a countywide ambulance service.

Figure 5 shows the 8.4 and 14 minute coverage areas.

Figure 5: Donahue Volunteer Fire Company Effective Coverage Area

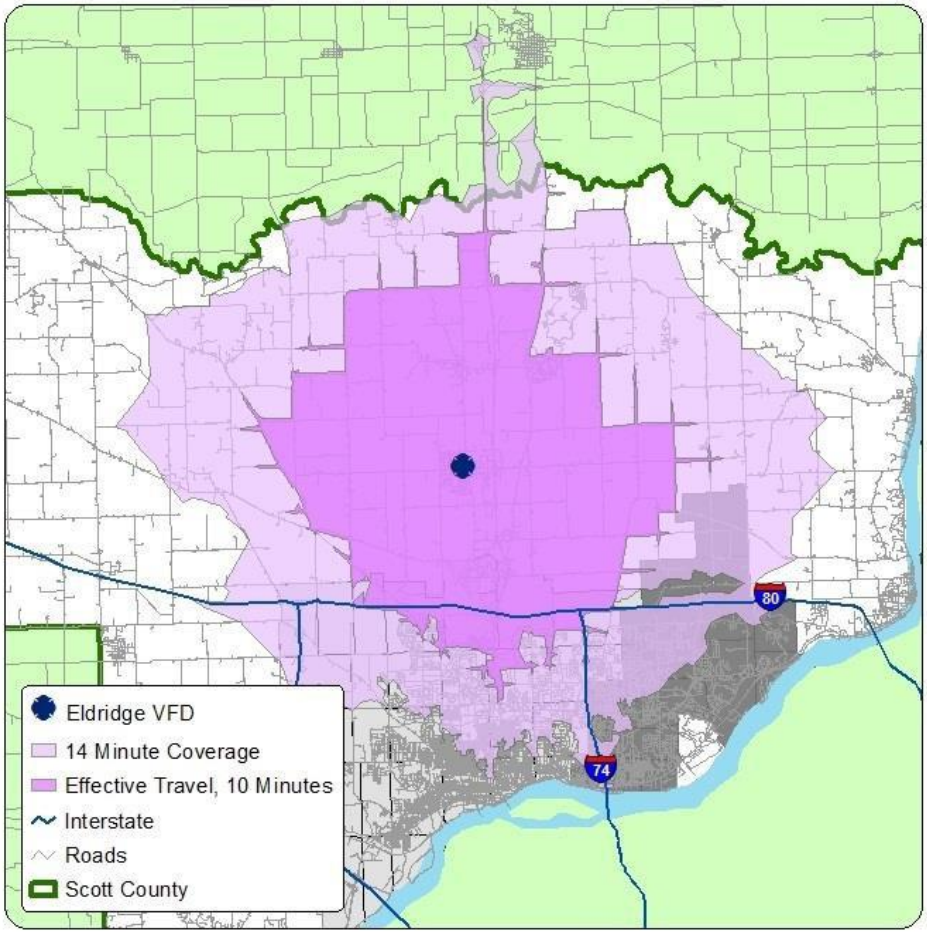


Eldridge Volunteer Fire Company – The City of Eldridge has an area of 9.48 square miles and a population of 5,903. The Eldridge Volunteer Fire Company (EVFC) is licensed as an EMT/Intermediate agency and runs 450 calls per year, approximately 80% of which are EMS in nature. They report a response time (first page to on-scene) of 7 minutes. EMS transportation is provided by a MEDIC EMS Alternate Delivery Model unit assigned to their town. EMS continuing education is provided in-house. Mayor O'Boyle is on the MEDIC EMS Board of Directors representing the smaller communities in Scott County.

There is concern that the number of calls to nursing homes has been steadily increasing, and causing too many first responder calls. This may overtax volunteer members. Members suggested that the implementation of Medical Priority Dispatch would improve service by limiting first response to those medically necessary. The company also supports a countywide ambulance service.

Figure 6 shows the 10 and 14 minute coverage areas for response.

Figure 6: Eldridge Volunteer Fire Company Effective Coverage Area

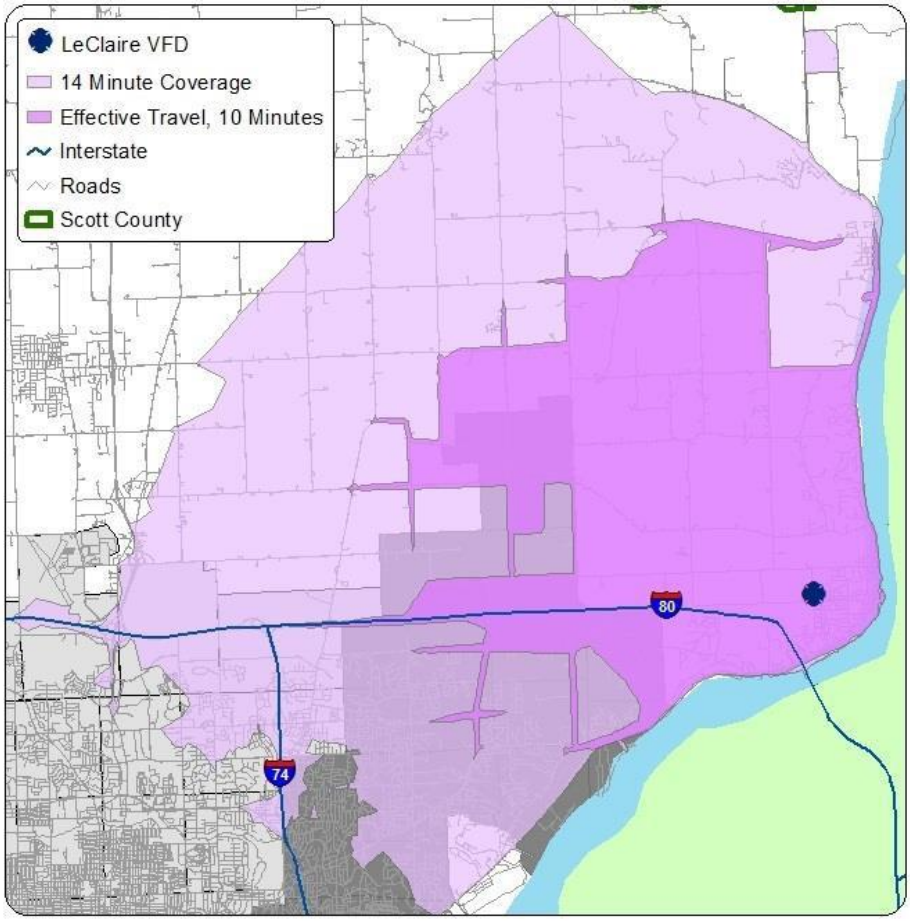


LeClaire Volunteer Fire Department – The LeClaire Volunteer Fire Department (LVFD) provides first response to the City, but would not be interested in providing ambulance service. Ambulance service is provided by MEDIC from an ADM station within the City. The LeClaire Police Department also provides EMS first response including AED service. The community is happy with the complete EMS response in the City. There would be resistance to any attempt to remove the ambulance or place the area on a dynamic redeployment plan.

The LeClaire city administration believes that EMS response is effective. They are considering the strategic issues involving EMS, and feel the County should consider a formal Medical Priority Dispatch program in order to have better control over when first responders are used. One concern is overuse of EMS first response and the ability for volunteers to handle the call load. The City would also consider supporting a countywide ambulance service. Another strategic issue is the demographic change occurring. Within the last decade, there has been a 30-40% population increase in the City. In what was once almost exclusively a retiree community, many new residents including families with adults in their mid-thirties have built or purchased homes. There are also retirees coming to LeClaire earlier in their retirement.

Figure 7 shows the 10 and 14 minute effective coverage area for LVFD.

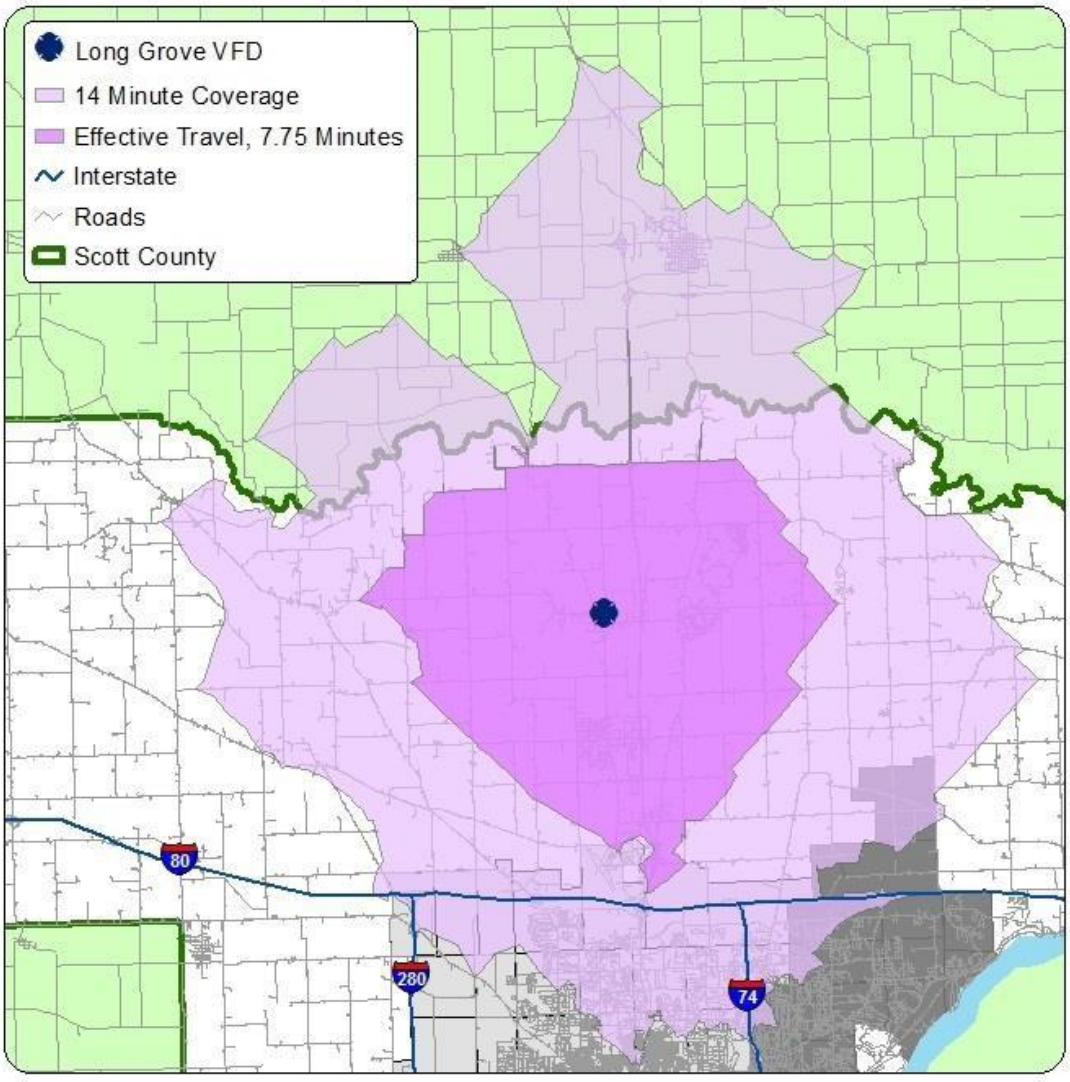
Figure 7: LeClaire Volunteer Fire Department Effective Coverage Area



Long Grove Volunteer Fire Department – Long Grove Volunteer Fire Department (LGVFD) has 18 members who reside within their area. Most members are 18 to 33 years old, and there are nine probationary members. Of 18 members, four members are EMTs and two are EMR/FRs. The LGVFD is an independent agency not officially representing a city.

Figure 8 shows LGVFD's 7.75 and 14 minute effective coverage area.

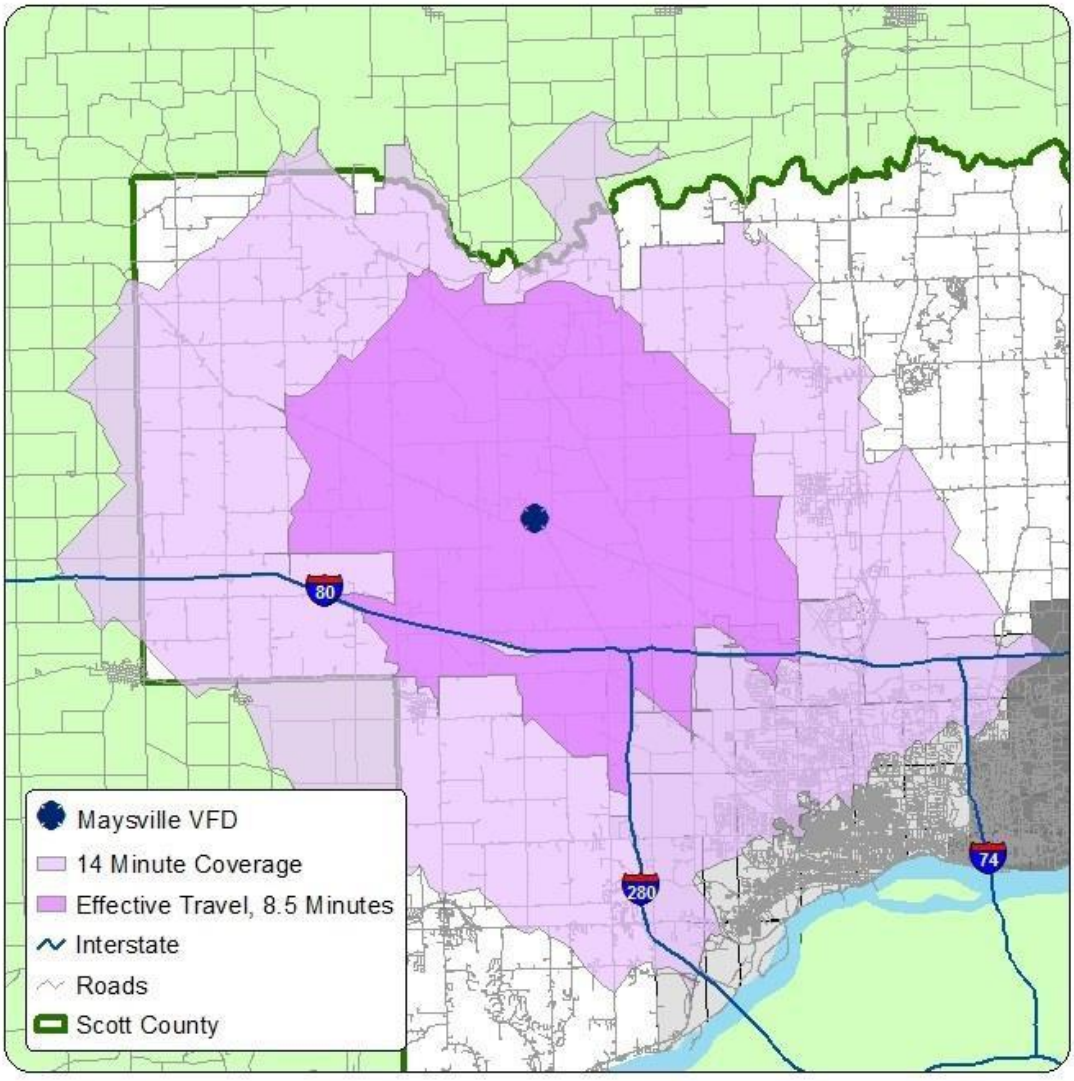
Figure 8: Long Grove Volunteer Fire Department Effective Coverage Area



Maysville Volunteer Fire Department – The city of Maysville has an area of 0.27 square miles, and a population of approximately 176. The Maysville Volunteer Fire Department (Maysville VFD) is a volunteer organization which provides first response service. According to their web site there are 21 active volunteers in the department. EMS Transport is provided by MEDIC EMS. From July 1, 2012 to June 30, 2013, MEDIC EMS responded to 33 calls in Maysville. We were unable to visit or meet with station personnel, but we met with their chief at a County chiefs meeting.

Figure 9 shows the 8.5 and 14 minute effective coverage area for MVFD.

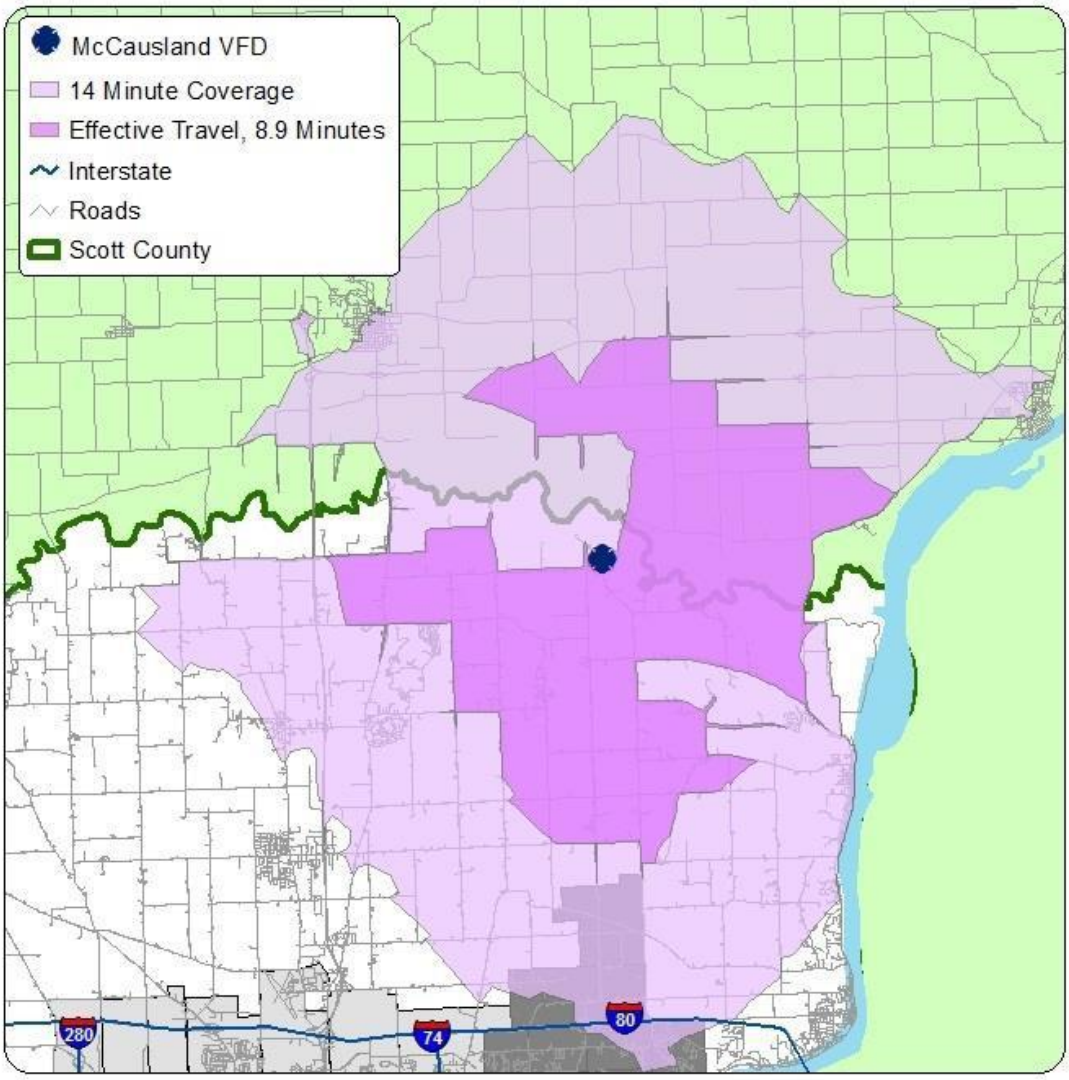
Figure 9: Maysville Volunteer Fire Department Effective Coverage Area



McCausland Volunteer Fire Department – The city of McCausland has an area of 0.56 square miles, and a population of approximately 307. The McCausland Volunteer Fire Department (McCausland VFD) is an all-volunteer organization which provides first responder EMT-B level, service. According to its web site the department currently has 30 active members. EMS Transport is provided by MEDIC EMS. During the period from July 1, 2012 to June 30, 2013, MEDIC EMS responded to 42 calls in the McCausland. We were not able to visit the station or meet with members. We did meet with representatives at a Scott County Fire Chief's meeting.

Figure 10 shows the 8.9 and 14 minute travel times for McCausland VFD's effective coverage area.

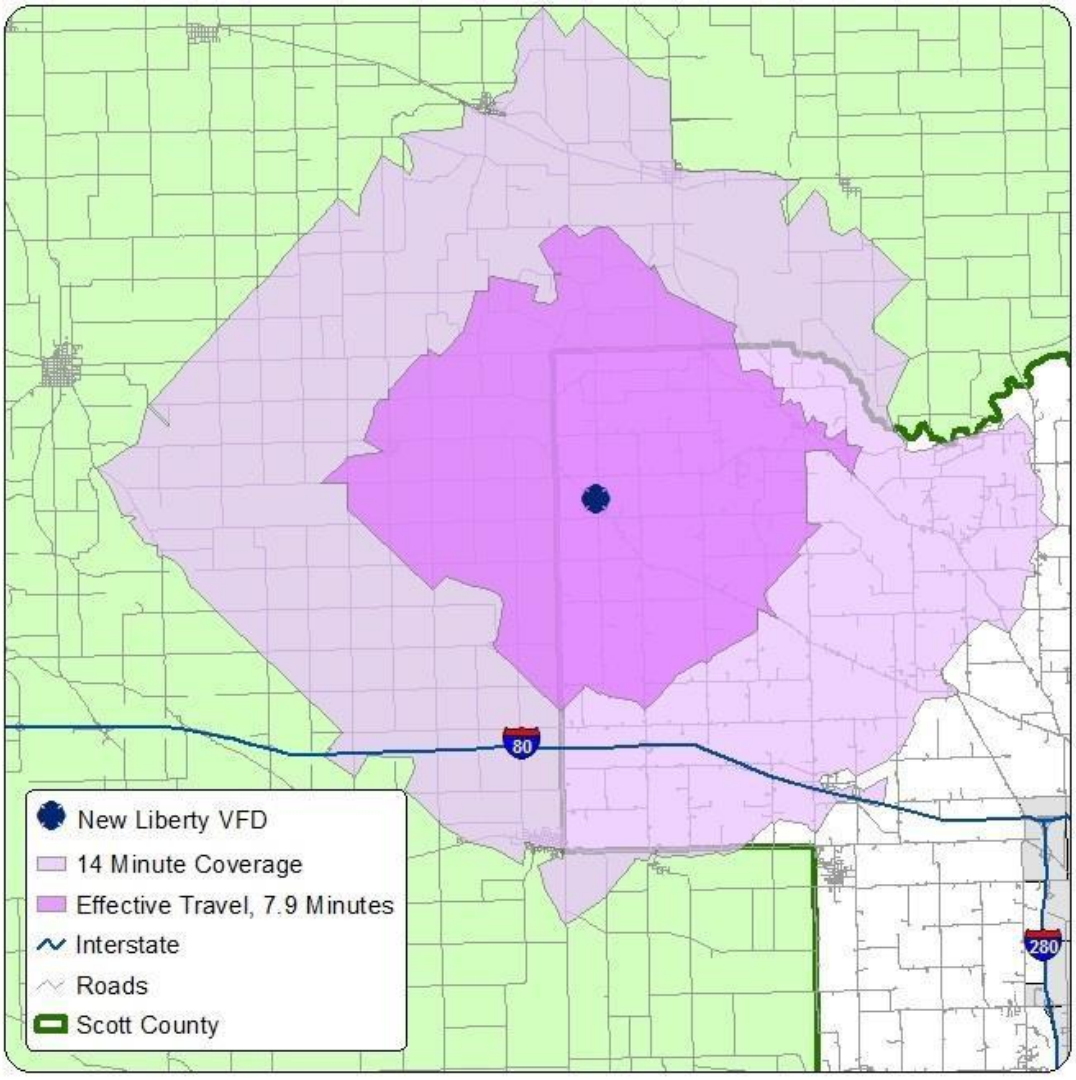
Figure 10: McCausland Volunteer Fire Department Effective Coverage Area



New Liberty Volunteer Fire Department – The department is located in Scott County, but has a close working relationship with Bennett Ambulance that is located in Cedar County. All members of New Liberty Volunteer Fire Department (NLVFD) are members of Bennett Ambulance. The NLVFD has 30 members, 12 to 14 who are EMS certified, mostly as EMTs or EMR/FRs. All members are required to complete fire and EMS training.

Finances are always considered, but things are currently going well. A part-time administrator/training officer has been hired to assist. There are issues with the communications system, with the membership wanting the ability to be on the same initial channel with the responding ambulance. Figure 11 shows the eight and 14 minute coverage area.

Figure 11: New Liberty Volunteer Fire Department Effective Coverage Area



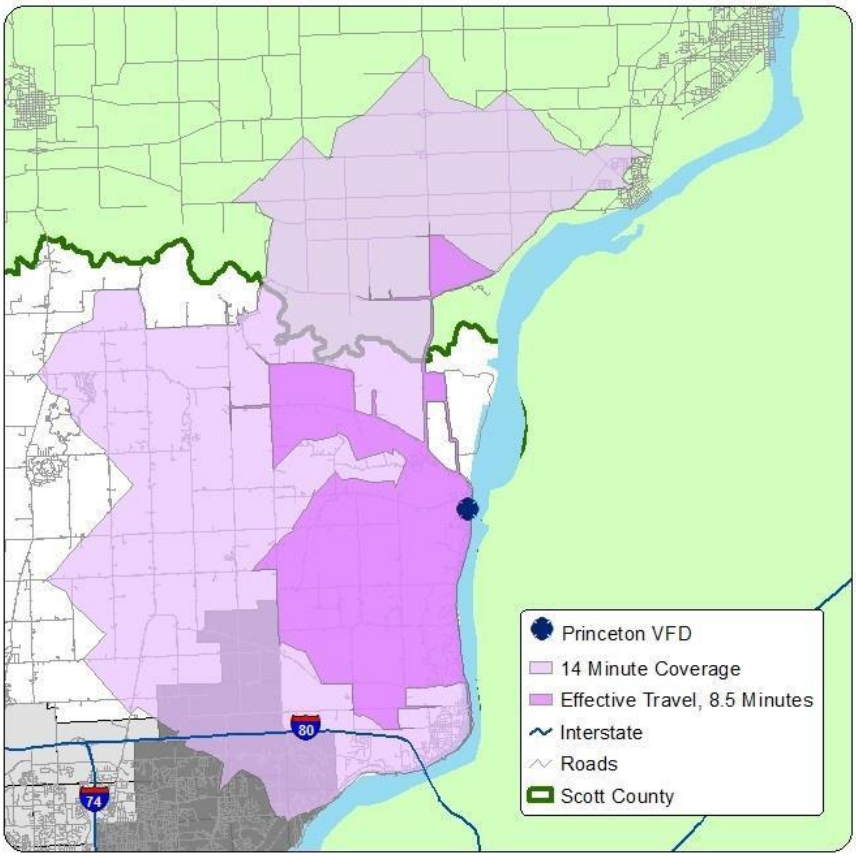
Princeton Volunteer Fire Department – The City of Princeton has an area of 2.56 square miles and approximately 886 residents. The Princeton Volunteer Fire Department (PVFD) has 21 active volunteers, five of whom are EMTs. One EMT will be leaving in the near future, and another is currently in training. Members may join as EMS-only, Fire-only, or both.

In 2012, the department ran 119 calls, 88% of which were EMS-related. As of November 19, 2013 the department had logged 125 total calls, with a similar EMS distribution. EMS responses are supported by the Medic EMS Alternate Delivery Model in LeClaire. Mutual aid is provided by McCausland and LeClaire fire departments. Those interviewed reported a very positive relationship with MEDIC EMS.

The department produces a monthly "Measurable Outcomes Report" for all of their EMS calls. They advise that there are some problems with the SECC paging system, although they report some progress in that regard. They further advise that they are unable to communicate with incoming MEDIC EMS units due to that talk group being locked out on their radios. They feel that the chain of communication between their department and the County regarding CQI could be improved to include clear expectations, although they acknowledge resistance to this from senior department members.

Figure 12 shows the PVFD 8.5 and 14 minute coverage areas

Figure 12: Princeton Volunteer Fire Department Effective Coverage Area



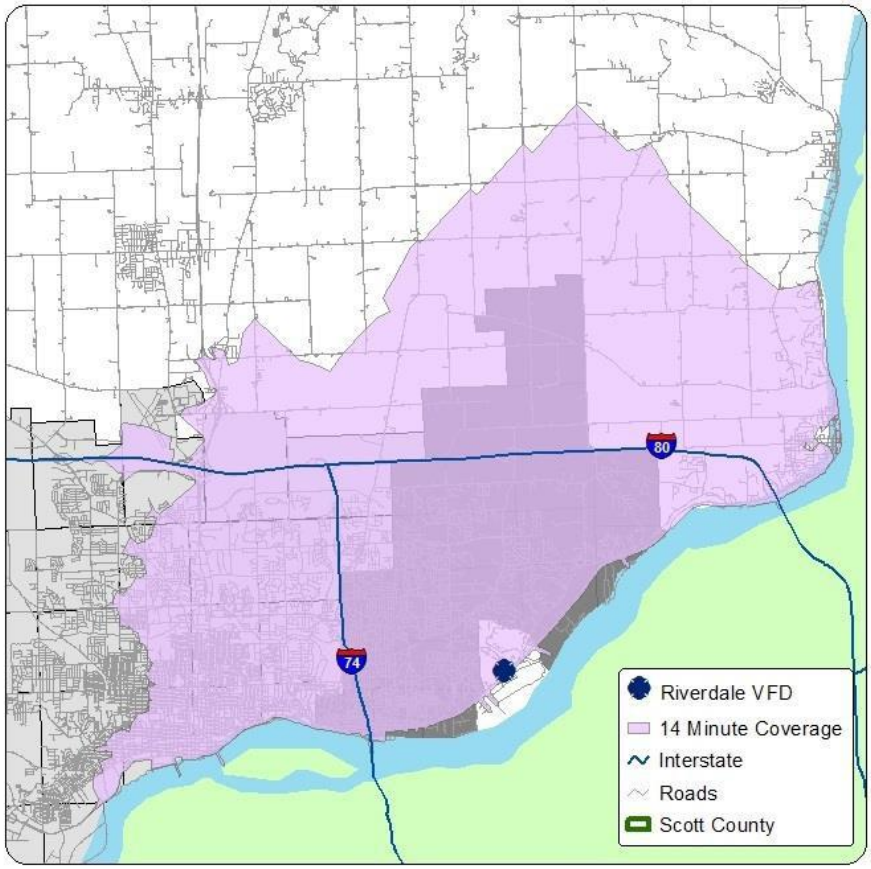
Riverdale Volunteer Fire Department – The City of Riverdale consists of 2.2 square miles and approximately 811 residents. The Riverdale Volunteer Fire Department (RVFD) has 30 members, approximately half of whom are EMS certified. Of these, 3 are paramedics and 1 is an EMT/Intermediate. The rest are EMT or EMR/FR certified. One of their members also works at Medic EMS, while two others work at Genesis Health System EMS. Riverdale FD is licensed as a provisional paramedic service. As of November 17, 2013 they had run 83 calls, 30 of which were medical. They report an average turnout time (first page to en route) of 3.2 minutes, and an average response time (first page to on scene) of 6 minutes.

The station is located across the highway from the massive Alcoa Aluminum plant. The plant has its own first response system, which includes a non-transporting ambulance.

Among their current concerns is the lack of direct reciprocity between Illinois and Iowa regarding paramedic certification. One of their new members is an Illinois paramedic unable to function at any EMS level in Iowa.

Figure 13 shows that RVFD is located in an urban area and its effective travel time of 9.5 minutes and 14 minutes.

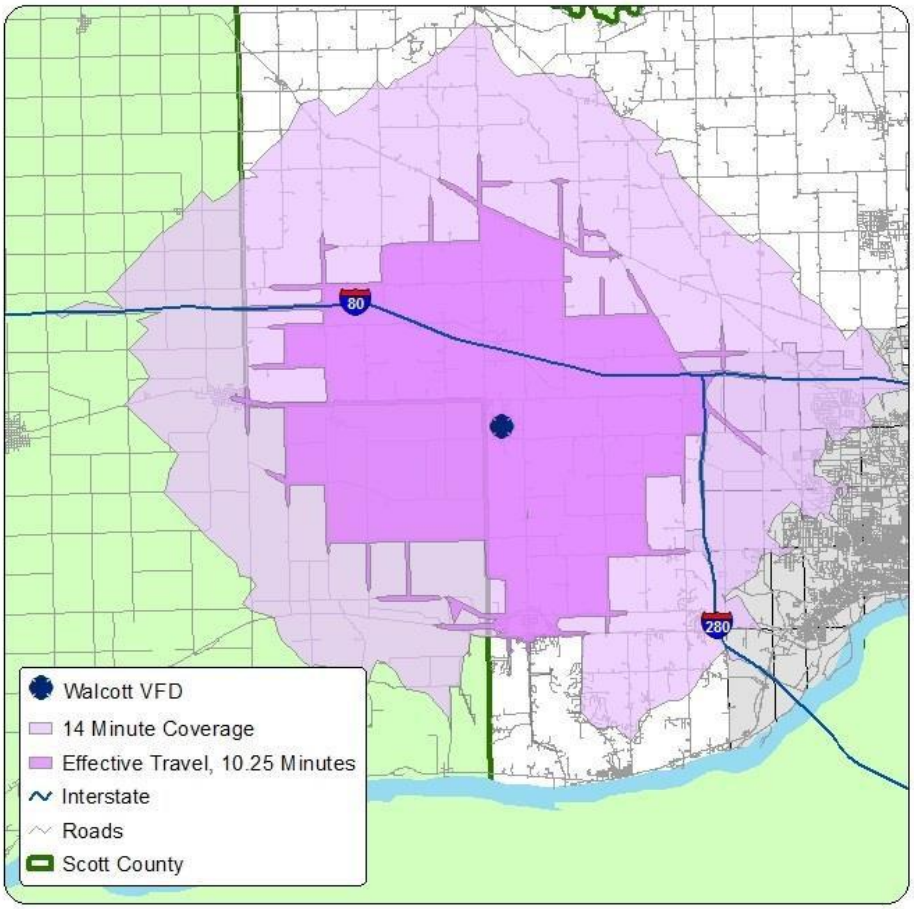
Figure 13: Riverdale Volunteer Fire Department Effective Coverage Area



Walcott Volunteer Fire Department – Walcott Volunteer Fire Department (WVFD) provides first responder service to the City of Walcott and to a large section of I-80. The City serves a population of 2,313 residents within a 62 square mile radius. This includes the I-80 Truck Stop that is considered the largest truck stop in the world. The truck stop and surrounding area businesses cause the actual population served to double. In 2013 WFD logged 303 calls for service, with 209 for EMS, 40 rescue, and 54 fire calls.

EMS transportation is provided by Durant Ambulance service. The relationship between Walcott and Durant is excellent. During our visit, we discovered a problem with ambulance response times into the truck stop. Our investigation revealed that the response time problems were related to dispatch, Walcott or Durant. During our second visit we facilitated a meeting between the Walcott community and Durant Ambulance. A solution was recommended and presented to SECC. The suggested technical fix is in progress (see Appendix A).

Figure 14: Walcott Volunteer Fire Department Effective Coverage Area



Ambulance Transportation

Paramedic care and ambulance transport are provided by 5 agencies in Scott County. Four of these are fully paid services, while one is a volunteer service supplemented by paid personnel. Several areas within Scott County receive emergency EMS ambulance service from a mutual aid service located in Cedar County.

There are two general types of ambulance services provided to Scott County citizens, emergency service (911) and emergency/non-emergency transfers between facilities or from facilities to some type of residency such as private residences; nursing homes; long-term rehabilitation facilities; and similar situations. Some non-ambulatory patients are transferred from their domicile to a physician office, outpatient surgical centers, therapeutic providers, and are usually returned to the point of origin on the same day. Table 1 describes the definitions we use for this report.

Table 1: Types of Ambulance Transportation in Scott County

Ambulance Service	Emergency (911)	Non-emergency (All Transfers)
Advanced Medical Transport	No	Yes
Bennett Ambulance	Yes	Yes
Buffalo Ambulance	Yes	Yes
Durant Ambulance	Yes	Yes
Genesis Health System Health Care	No	No[4]
MedForce (Aeromedical)	Yes	Yes
MEDIC EMS	Yes	Yes
Wheatland Ambulance	Yes	Yes

Table 2: Emergency Ambulance Calls in Scott County, 2013

Service	Emergency Responses
MEDIC EMS	55,230
Buffalo Ambulance	1,320
Durant Ambulance	494
Bennett Ambulance	30
MedForce (Aeromedical)	28
Wheatland	23

[4] Genesis Health System can transport patients into their facilities from out of county.

Advanced Medical Transport (AMT) is sponsored by the Peoria, Illinois Health System. The agency has recently become the contract non-emergency transfer provider for Unity Point - Trinity Hospital. They do not provide 911 service within Scott County. Because of the provisions of Chapter 28 (discussed earlier), they do not anticipate growth within Scott County. The agency is CAAS accredited, and is totally staffed at the paramedic level. In Illinois, the agency is performing wellness checks, and is using Registered Nurses for critical care transports. They indicate a positive working relationship with MEDIC EMS.

Bennett Ambulance is based in Cedar County and responds to between 80 and 100 calls per year, approximately 20% of which are in Scott County. The agency is staffed by 27 volunteer members certified as either Paramedics, EMT-I's or EMT's. The agency operates one ambulance, and responds with ALS capability approximately ½ of the time. When ALS capability is not present, Durant Ambulance provides ALS backup. Bennett Ambulance receives $1,200 from Scott County as part of its $15,000/year budget. Bennett members are paid a $10 stipend per call.

A significant amount of revenue is received from ambulance service fees.

Bennett Ambulance is solvent and well-managed. The Chief is paid a minimal stipend for his duties, but also performs other duties for the City of Bennett. Bennett has an excellent working relationship with Scott County's New Liberty Volunteer Fire Company, where all volunteers hold dual membership.

Like most volunteer services, Bennett is trying to avoid issues with lack of new members and threats to membership sustainability. While enjoying financial solvency, they are conscious of economic threats. Bennett Ambulance is an excellent mutual aid partner with Scott County.

Buffalo Volunteer Ambulance is the oldest ambulance service in Scott County. In spite of its name, it is now a fully paid service, providing care and transport at the ALS level. The department has a staff of 16 full- and 13 part-time providers at both Paramedic and EMT levels. They operate three ALS-capable ambulances. The agency answers 800 911 calls per year, and provides 450 non-emergency transports per year.

Non-Emergency Service: Recently, Buffalo was selected by Specialty Select Hospital to provide non-emergency transports for that facility. This generates a considerable number of calls and the potential for considerable revenue. We were not provided with any financial records to quantify this.

Concern: During our visits we became aware of Internal Revenue Service issues involving Buffalo Ambulance. Also, they have not complied with the financial reporting policies established by the Scott County Board of Health. These issues must be settled without delay.

Recommendation 3: Buffalo Ambulance should be required to comply with all Chapter 28 requirements. The Public Health Officer should provide a final date where if compliance is not achieved, corrective action should be taken including suspension or revocation of their license.

No evidence was provided to us that accused anyone of purposeful misconduct. Strong action is warranted because the public depends on their EMS system. Operating a commercial or non-profit ambulance service is difficult. Lower volume operations are finding it harder to make ends meet. In the interest of the community, Buffalo Ambulance should consider merging with MEDIC EMS. We are also aware that Genesis Health System Health Systems is interested in purchasing Buffalo Ambulance.

Durant Ambulance Service is located in Cedar County, but provides considerable services into Scott County. It is a volunteer agency with 16 EMS providers and five additional members who drive the ambulances. Because it is located in Cedar County, Durant's EMS dispatches require an additional step; specifically, calls are processed through the Scott Emergency Communications Center, which then contacts the Cedar County Communications Center, which then dispatches the ambulance. The exact effect on response time is considerable and is explained in the I-80 Truck Stop section below.

During the project, we conducted a meeting between Scott County EMS, Durant Ambulance, Walcott Volunteer Fire Department, and several elected officials. After the meeting, we gained a better perspective on the response time situation. This was an excellent example of public safety and community officials working together for the betterment of the community. Durant Ambulance was a full and cooperative participant in the process.

Durant Ambulance provided Scott County with extensive financial documentation that included a Generally Accepted Accounting Practices (GAAP) prepared audit and non-audited balance sheets. Durant appears financially stable and is fiscally well-managed. Like other volunteer services, Durant is concerned about membership and sustainability.

Genesis Health System Hospital Ambulance operates primarily in Illinois and Clinton County, Iowa, but is now providing limited transfer service for Genesis Health System Hospital facilities for transports originating outside of Scott County going to Scott County. They are not CAAS accredited, although their representative feels they meet CAAS criteria. Genesis Health System is not happy with the way that non-emergency service is regulated, particularly assignment of calls.

Genesis Health System administrators have taken a proprietary approach to change in Scott County EMS. Evidence indicates that they have sought information to consider purchasing Buffalo Ambulance and MedForce (aeromedical) EMS. They may be under the belief that by purchasing one of these agencies, that they automatically inherit the incumbent's county license. This belief is probably erroneous because Chapter 28 does not automatically assign a current license or privileges to a successor agency.

Part of Genesis Health System approach includes attempts to influence various aspects of the Scott County community to believe that Genesis Health System could provide full-EMS faster and cheaper than MEDIC EMS. No evidence was provided to validate these claims. Genesis Health System has also threatened legal action against Scott County because of Chapter

28. It claims that they are being denied a license to provide non-emergency ambulance service in Scott County, but there is no record of Genesis Health System submitting a recent application.[5] Other representatives advised that they tried to provide free first responder training for Scott County Volunteer agencies, only to be rebuffed by these agencies. The missing part of the claim is that Genesis Health System attempted to provide this training by circumventing the current arrangement with EICC.

MEDIC EMS is the largest ambulance provider in Scott County. It is described as a "private/public entity-partnership" which is governed by a Board of Directors consisting of representatives from Genesis Health System Hospital (8), Unity Point Health - Trinity Hospital (2), and Scott County (Public Representatives) (5).

MEDIC EMS is accredited by the Commission on Accreditation of Ambulance Service (CAAS). Their staff includes 150 employees, including 80 paramedics in the Paramedic Division, along with 12 full-time and 8 part-time employees at the Communications Center (MEDCOM). There are 12 Supervisor/Managers and an "on-call" manager, as well as a Director, Quality Manager, Information Systems Manager and Community Relations/Transportation Manager.

Deployment includes five to eight units in the Metro area (depending on time of day/day of week), two rural units, and one rural transfer truck. The agency uses system status management to manage its field units, with the nearest available unit (based on AVL) sent to each call. Fractal response times are reviewed on a daily basis.

In rural areas where volunteer response is an issue, MEDIC EMS has created an "Alternative Delivery Model" unit. The unit is staffed by a single paramedic, with a volunteer EMT or Paramedic as driver. These volunteers are scheduled for specific shifts. If a volunteer is not available, a provider is detailed or called back to staff the unit. In rare circumstances, the ADM paramedic acts as a first responder unit and the nearest available fully-staffed paramedic unit is sent to back-up the ADM paramedic. This strategy is intended to provide a reasonable response time for first response in these under-served areas. Agency-wide, the Unit Hour Utilization (UHU) goal is 0.38.[6]

MEDIC EMS is recognized by the majority of the stakeholders in Scott County's EMS system as consistently providing high quality service to its customers. One State official described it as one of the "wow" EMS services in Iowa. In addition to its response duties, the agency assists many of the First Responder agencies with continuing education, and is working toward standardizing EMS equipment utilized throughout the County (spine boards, monitor/defibrillators, etc.) MEDIC EMS has been conducting patient surveys continuously since 2011. As mentioned earlier, MEDIC EMS is currently working with the First Responder agencies to develop a standard report form for use by those agencies.

[5] Genesis Health System has a Scott County license for calls handled by their DeWitt units. Genesis Health System may believe that this automatically entitles them to send a Genesis Health System unit anywhere into Scott County

[6] A full assessment of performance is contained in the Risk and Demand chapter.

There is currently a degree of unrest among the employees of MEDIC (as well as among County officials and other stakeholders) due to one hospital voicing an intent to acquire MEDIC EMS and re-brand it as their own service.

A separate section examines MEDIC EMS in detail.

Wheatland EMS is located in Clinton County, and responds to approximately 150 calls each year. It is an all-volunteer department with a roster of 19 EMT's and 10 drivers. It is currently a "Provisional Intermediate" level service; however, it will likely revert to EMT status in the near future. Because of coverage difficulties, the agency experiences periods where they are unable to respond. This situation occurs approximately 40 hours per month. The communications center is notified when coverage will not be available.

Wheatland EMS has a part-time administrator to assist with day to day operations. The administrator is paid a modest salary based on hours worked. To address difficulties in recruitment and retention, Wheatland EMS instituted an innovative program where the agency will provide money toward college tuition in return for the member completing EMT training and providing a defined number of hours service, plus a stipend of $500 and on-call pay. They are also looking into providing a $10,000 life insurance policy for active members. These programs met with moderate success, but long-term results are still unknown.

Wheatland EMS provided several profit and loss documents for review. Wheatland appears to be financially sound, but it still aware that a bad economic year or two could be problematic. While meeting with the administrator, we became very concerned that the company believed they were heading into a staffing crisis. Discussion concerning this situation has appeared to die down.

Recommendation 4: Scott County should continue monitoring Wheatland's ability to provide mutual aid into Scott County.

Aeromedical Services

MedForce is the major provider of EMS aeromedical service for Scott County. Approximately 30% of their EMS activity involves scene flights, with the remainder being inter-facility transfers. MedForce operates two helicopters from bases in Colona, Ill., and Burlington, Iowa. There is a back-up helicopter when a primary is out of service. It serves a 120-mile radius from each location that includes 60 hospitals in 30 counties and 15 medical facilities.

MedForce is a 501c3 organization that operates with a small board of directors, none of whom own any part of the service. Each aircraft is staffed by a pilot, a nurse, and a paramedic. In 2013, MedForce responded to 28 missions in Scott County. It believes that they are underused in Scott County mainly because the system is the most difficult to gain access to. There are times when MedForce believes that they are being censored by MEDCOM. On scene units are requesting aeromedical EMS and dispatchers are delaying or refusing to request the helicopter.

There were accusations that SECC or MEDCOM turned down six helicopter missions. We investigated these cases with several sources, and are unable to confirm any. MedForce also

has a ground ALS unit that it responds only a helicopter is out of service. They are licensed to operate in Scott County, but do not have an Exclusive Service Area (ESA). They can only respond under special circumstances as authorized by MEDCOM.

Hospitals

Genesis Health System Hospital is the largest hospital provider in the Quad Cities area (380 beds); it operates two facilities in Davenport, one in DeWitt, Iowa, and some in Illinois. It receives between 950 and 1,000 patients by ambulance each month in Scott County. Due to the merger of two facilities, Genesis Health System has majority membership on the MEDIC EMS Board. The Genesis Health System Board has discussed the possibility of acquiring MEDIC EMS.

We understand that plans are in progress to move most high-level care to the Davenport-East location, thereby reducing the number of transfers occurring between West and East facilities. The West campus will remain open for specific specialties. Plans are to keep a smaller Emergency Department opened.

Unity Point -Trinity Hospital operates a 139 bed, full-service hospital in Bettendorf, in addition to two facilities in Illinois. As a result of its minority status on the MEDIC EMS Board and the fact that Genesis Health System has a majority membership on the MEDIC EMS board, Unity Point -Trinity has recently negotiated a new contract for non-emergency transfers with Advanced Medical Transport.

Scott County Organizations

Scott County Emergency Management is housed within the County Communications Center. The agency is staffed by a single Director, who oversees planning, training, coordination and resource management. To date there has not been a need to open the Emergency Operations Center. The agency has letters of agreement from several private entities, including Wal-Mart, should emergency supplies be needed. They also have a disaster trailer which contains cots, blankets, etc. With regard to a suggestion by the volunteer fire service that a single photo ID card be created for each member, the Director has indicated he has the equipment and is willing to create the ID's. He also expressed his concern that, as a "one-man-band" operation, he does not have anyone who could readily take his place should he leave the position.

Scott County Board of Health governs the Scott County Health Department. The Board consists of five members who are experienced clinicians and researchers in different areas of healthcare. One physician is former paramedic who practices geriatric medicine. This will be an asset as EMS in the county navigates the Accountable Care Act and similar system changes.

Scott County Department of Health oversees the day-to-day operation of public health within the County. All cities and towns within Scott County rely on the Department of Health to provide their public health services. The director's responsibilities include:

- Public Health, Safety and Services Programs
- Environmental Health Services
- Clinical Services Programs
- Community Relations Information and Planning

Medical direction for the Health Department is provided by an experienced infection control physician who is employed under contract.

The Director, as Public Health Officer is responsible for EMS oversight within the County, including the enforcement of Chapter 28 EMS Standards.

EMS Office: The director appoints an EMS Program Coordinator who provides liaison and support for EMS organizations, oversees licensing and inspection of ambulances, seeks grant funding, serves as liaison to hospitals and SECC, and represents the Scott County at regional, and state EMS events. Administrative assistance is available from the Health Department. Later in this report, we make recommendations for expanding this office.

EMS Medical Direction: EMS Medical Direction for Scott County EMS is provided at several levels. The Physician Advisory Board includes five Medical Directors who provide medical direction for each of the First Responder and Transport Agencies.

Our first meeting in Scott County was with the Physicians' Advisory Board, which included seven physicians representing the specialties of emergency medicine, family practice, and general/trauma surgery. The Scott County Health Director, the Deputy Health Director, the County EMS Manager, and an Aeromedical representative also participated in the meeting. During the meeting, the physicians were in general agreement that the citizens were being provided excellent patient care and that the EMS providers were dedicated, and well educated and trained.

The medical directors identified several concerns about the EMS system, including

- There are instabilities within the state EMS System including lack of permanent bureau leadership, possible dismantling of the State Trauma System, and no State EMS Medical Director. They believe that prehospital trauma care is effective, but system issues may affect care;
- Greater implementation of a formal medical priority dispatch program is needed to reduce call assignment inconsistencies;
- Future development of formal quality management. Especially with new standards promulgated by the Affordable Care Act, the medical community will need to influence the ability to discover out-patient follow-up data, especially seven-days post discharge and readmission data;
- EMS organizations need resources to be involved in illness and injury prevention programs;

- More physician medical oversight is needed for basic life support provision;
- The future of aeromedical EMS must be considered;
- New community paramedicine type programs should be based on standards.

One physician serves as the County EMS Medical Director and is the local medical director for several systems and the Community College Education program. System wide medical direction with a lead medical director should be strengthened. Other physicians should be assigned designated as assistant county EMS medical directors' for the following areas: (a) EMS Dispatch and EMD; (b) EMS Education; and (c) EMS Quality Management. This will help assure medical direction throughout all phases of EMS, and start a succession planning process.

Recommendation 5: Strengthen the EMS Medical Direction program, including the appointment of assistant medical directors for EMS Dispatch and EMD; EMS Education; and EMS Quality Management.

EMS Quality Management

The quality management program, although well-structured and very comprehensive, is hampered by the lack of a uniform data base. Among other problems, this lack of uniformity makes providing feedback to the first responder agencies difficult. There is a County Quality Management Committee that has representatives from all 911 provider agencies.

A CQI Policy Manual and Designated Appointed document identifies the EMS Medical Directors and the services for which they are responsible. It also establishes a Continuous Quality Improvement point of contact for each of the agencies, and a SCEMS QI Committee consisting of physicians, service administrators and providers. In addition to identifying key personnel, the policy manual addresses the scope of practice for the various levels of provider in the system, protocols, establishes an initial orientation process for practitioners, and lists requirements for skill maintenance and continuing education. Also included is a process for conducting written medical audits, including provisions for follow-up and loop closure. When possible, measurable outcomes are provided for both transport services and first responders. The document also addresses maintenance of equipment and supplies, vehicle maintenance, and establishes pharmacy policies and procedures. The system's treatment protocols were most recently revised in April, 2013, and reflect state-of-the-art practice.

Clinical Care – There were no specific clinical issues raised except for the lack of analyzable data. From a quality management perspective, the number of skills used and their contribution to patient care is essential. Currently, the decision on whether to add or subtract EMS skills is based on some scientific background, but not on system needs. This precludes decision-making based on care being provided. The EMS system needs more measurable tools to determine how many units are needed, what level of skill is needed, and how well those skills are being performed.

MEDIC EMS: MEDIC is the main EMS provider for Scott County and as expected, performs the greatest number of ALS and BLS skills.

Other Ambulance and First Responder Services: There is very little clinical data available for other ambulance and first responder services. Measurement is hampered by the inability of SECC to integrate data between first responders and ambulance services. ALS and BLS skills must be measured.

Recommendation 6: Take the administrative and technical steps to allow for measurement and monitoring of ALS and BLS Skills provided by all EMS agencies. This includes recording interventions performed by all providers, including ambulance and first responder unit providers.

CHAPTER 2. SCOTT COUNTY EMS SYSTEM ADMINISTRATION AND MANAGEMENT

There are concerns throughout the EMS system that the structure of EMS in Scott County is vulnerable to instability due to several reasons, some beyond the County's control.

The Changing Structure of EMS at the State Level

The changing structure of EMS in Iowa will likely have significant effect on EMS in Scott County. The Iowa Department of Public Health, Bureau of EMS has become much less hands-on, using a streamlined staff. In 2013, there was a reduction of Regional EMS Managers from six to four. The remaining EMS Regional Managers are each responsible for representing state interests in 25 or more counties. This leaves little time for anyone to provide the same level of liaison service to local EMS.

For the immediate future, the State EMS Office will be concentrating on enforcement of the Iowa Code and Administrative Rules (Chapters 131 and 132), for licensure and certification, medical provider discipline, facilitate EMS data collection and management, the trauma system, and emergency management issues. There is no current Bureau EMS Director and one may not be appointed. There is also no state EMS Medical Director, having lost that position almost 10 years ago.

Lack of state resources has led to reductions in state services. Local medical directors believe that the state trauma system is being dismantled. A high-profile system problem receiving media attention is the lack of a cohesive medical discipline program. There are many EMS providers who are awaiting resolution of licensing and certification actions, some which are suspected of committing serious medical breaches. It appears that local EMS agencies will be required to take on a greater role. The Bureau of EMS also coordinates provider and instructor licensing and certification.

An example of the County's greater role in medical discipline comes from the need to determine and correct patient care issues early, and take the appropriate actions to improve patient care, improve provider skills, and continue building a system of fairness for EMS providers and agencies.

A growing quality management program will allow Scott County to insure that medical discipline is handled correctly, but those challenges that are better addressed by the quality management process be done in that manner. The lines between medical discipline and quality management are not always clear. For some offenses (i.e. conduct involving moral turpitude or conduct specifically governed by law or regulation), quality management is not the answer. For patient care situations, identification of patient care errors is often accompanied by system errors, both needing local attention.

An advantage for an overworked state system is that many violations can be handled at the County level, with reporting often taking the place of formal state-level administrative action. This would not preclude an EMS provider from due process because a provider could still

exercise those rights granted by the certification process. In our experience, state agencies welcome this assistance, by reducing costly administrative procedures.

Effects on Scott County EMS

As with other governmental agencies, many responsibilities usually handled by the state will move to the lower level. Future state regulations are likely to be streamlined, providing only basic guidance, leaving even more specifics to local EMS. EMS protocol and practice, accessing funding sources, coordination of possible scope of practice changes, and data collection and management, and quality management requirements will likely be moved down to the County.

Local Governance Enhancements

Until recently, most of Scott County's EMS role has been supportive and advisory in nature. The EMS Office has one full-time coordinator, and shared administrative personnel. The County recently hired a new public health director who has recognized the need for enhancement and is personally involved in the future of Scott County EMS. Within the past year, the local EMS ordinance has been strengthened, that requires a transition to more of an oversight role. While still strong, volunteer participation in EMS has shown signs of stress, which may require further County involvement in system management, providing further administrative assistance, and enforcement of local legislation.

EMS Medical Direction – As EMS achieves greater sophistication, the level of EMS medical direction must be increased. Several physicians provide medical direction for services throughout Scott County. One physician serves as the County EMS Medical Director, and others serve local career and volunteer EMS providers at various levels. The Physicians' Advisory Board works well to develop and monitor EMS policy at all levels. The changing EMS environment requires that a single medical director have the ability to oversee the County as a whole. With the state EMS system backing off of local oversight, a County EMS physician becomes of greater importance.

EMS Physicians: Besides the usual requirement of directing EMS providers, an EMS Medical Director is also necessary to provide oversight of the medical direction process. Until recently, it was assumed that any physician who wanted to provide EMS medical direction could do so. It wasn't until 1979 that emergency medicine became a recognized medical specialty. In 2010, the American Board of Emergency Medicine recognized Emergency Medical Services as an official sub-specialty of emergency medicine. The first examinations were given in 2013. To be eligible for EMS sub-specialty certification, a physician must complete one of three tracks, and complete a comprehensive examination administered by the American Board of Emergency Medicine.

While we are not recommending that all EMS medical directors achieve Board certification in EMS, the above information is provided to show how EMS medical direction is intensifying. Therefore, it is important that Scott County take this opportunity to begin enhancing their medical direction by formalizing the process. There should continue to be one physician formally designated as the Scott County EMS Medical Director. Other physicians wishing to

provide medical direction for local programs, or assisting with County EMS medical direction would be designated as Deputy EMS Medical Directors.

The qualifications for County EMS Medical Director should include:

1. Current, unrestricted license as a Doctor of Medicine (MD) or Doctor of Osteopathy (DO) in the State of Iowa;
2. Currently certified by the American Board of Emergency Medicine or the American Board of Osteopathic Emergency Medicine in the Specialty of Emergency Medicine. Alternatively, the physician could have board certification in any specialty recognized by the American Board of Medical Specialties or the American Board of Osteopathic Medical Specialties AND, be certified or eligible for certification by the ABEM or ABOEM in the sub-specialty of Emergency Medical Services;
3. Have at least five years of experience as a county or local EMS medical director;
4. Have documented experience providing medical direction in the areas of EMS Medical Priority Dispatch, EMS Education, and EMS Quality Management; and
5. Meet any other Iowa Department of Health Office of EMS requirements.

The Scott County EMS Medical Director should continue to be appointed by the Scott County Board of Health. All of the above recommendations should be considered as a basis for the future of Scott County EMS. We believe that Scott County EMS has several excellent EMS medical directors.

Recommendation 7: Adopt the above recommendations for Scott County EMS Medical Director qualifications.

Physician Advisory Board: The Scott County Physician Advisory Board is the current body that provides medical oversight for the county. It is made up of physicians and other EMS leaders from first responder, ambulance, aeromedical, and governments. This board functions well and should continue with a few changes. As the EMS system matures, the daily involvement of EMS medical direction will increase. In the early days, the oversight by committee structure worked well. As the system grows, consideration should be given to having the Physician Advisory Board function in an advisory capacity to the medical director. This would allow for more convenient daily direction, while preserving system accessibility to the emergency medicine community.

Quality Management – Quality management enhancement will also be necessary. In 2013, the state took disciplinary action against 62 Iowa EMS systems and providers. Penalties imposed included probation, formal citation and reprimand, civil fines, suspension, and revocation.[7] Many of these disciplinary actions may have been better addressed by county quality management procedures with state monitoring. The emerging Scott County EMS Quality Management process could become the agent for this change. Many levels of medical provision

[7] Iowa BPH. (2013).

use quality management as a precursor and possible solution to the overburdened state EMS discipline system.

Medical discipline is but one reason for EMS Quality Management Programs. The demands of evidence-based medicine, cost controls, and outcome-based practices are increasing the demands on EMS systems to provide greater oversight of the level of care performed. It is no longer acceptable to add levels of service, procedures, personnel, equipment, or additional units without basing changes on patient-oriented outcomes. A robust local quality management program is necessary to answer these challenges.

Current Quality Management Standards: Scott County EMS providers from career and volunteer organizations, hospitals, physicians, labor representatives, and county leadership have approved a set of quality management standards. These are based on the Iowa EMS System Standards adopted in 2010.[8] During the adoption period, 28 EMS systems participated in a self-evaluation program. In 2012, several counties participated in a voluntary state evaluation program. The result determined the standards are reasonable for Iowa. While Scott County is not considered a "rural county," several areas within the county may be considered rural. When adopting the State standards, Scott County was sensitive to rural needs.

Part of the Iowa Quality Management Standards includes response times. Overall, county responders are meeting these standards. A full assessment was completed in the Risk and Demand section of this report.

"Chapter 28" – Scott County is ahead of the local standards curve because of local legislation, known as "Chapter 28." Chapter 28 is the ordinance that vests in the Board of Health the authority and responsibility for EMS oversight. The most controversial section of this law is Appendix B that assigns territories to specific ambulance providers. Below is our analysis of Chapter 28 and recommendations for changes. Many changes are cosmetic in nature, while others are considerable.

Section 28-3: Licenses Required and Exceptions: The County should charge a fee for ambulance service licensure application. If a charge is made for other County license applications (construction, business, dog licenses, etc.), it is appropriate to provide for implementation of application and renewal fees within this section. Such fee would assist in defraying the cost of administering the program (see also recommendation below regarding Section 28-15). The only exception should be for a bona fide municipal ambulance service.

Recommendation 8: Revise Section 28-3 to allow the County to institute application and renewal fees for EMS Service Licenses.

Section 28-5 B: System Standards: All Scott County licensed EMS agencies will comply with the minimum standards set in the Iowa EMS System Standards (2010 and later editions). Agencies will provide a compliance report to the Scott County Health Officer by

[8] Iowa BPH. (2010). *What every Iowan can expect from "emergency medical services."* Des Moines, IO: Iowa Bureau of EMS.

March 31 concerning the previous year. The first report will be due on March 31, 2015. The Health Officer may provide a specific form to be used to report compliance.

Section 28-6: Dispatch and Exclusive Service Areas: Paragraphs 2 and 3 of this section very specifically spell out the responsibility of the agency serving a particular Exclusive Service Area (ESA) to perform ALL of the EMS services within that zone, including both emergency and non-emergency transports. It has been deemed enforceable by the County's legal staff.

The end of this section contains the following:

> "Notwithstanding the defined Exclusive Service Areas, dispatch by the Scott Emergency Communications Center according to the system in force at the time of request for services for any call shall constitute compliance with this section."

While we support this section, we suggest and addition to include: "Any agency who knowingly attempts to induce the SECC to violate this provision will be held liable for the violation."

Recommendation 9: Add to Chapter 28-6 "Any agency who knowingly attempts to induce the SECC to violate this provision will be held liable for the violation."

Section 28-7: Standards for Emergency Vehicle Design: This section cites the Federal Specification KKK-A-1822F and subsequent revisions as the standard for ambulance design. This standard expired in October 2013, and will not be reissued. The National Fire Protection Association has published NFPA 1917: Standard for Automotive Ambulances (2013 Edition). This document is currently in the review/revision process. Other national organizations, including the National Association of State EMS Officials (NASEMSO), are also participating in the revision process. It is anticipated that NFPA 1917 will replace FS KKK-A-1822, and that there will be a large number of changes to the NFPA document within the next few years, based largely on improvements concerning the safety of these vehicles.

Recommendation 10: The reference to FS KKK-A-1822F be removed, and that NFPA 1917 be referenced in its place

Section 28-8: Standards for Patient Care Equipment and Supplies: The original ambulance equipment list published by the AAOS-COT has been updated in collaboration with the American College of Emergency Physicians (ACEP), National Association of EMS Physicians (NAEMSP), National Association of State EMS Officials (NASEMSO) and Emergency Medical Services for Children (EMSC).

Recommendation 11: This section should be revised to indicate the updated list identified above.

Section 28-12: Suspension, Revocation of License: This section addresses the ability for the Health Officer to assure ambulance service to an ESA.

There is a public health concern for areas where the ESA holder voluntarily surrenders or whose ESA license is suspended or revoked by the Board of Health. When this occurs, the Health Officer shall have the right to temporarily appoint another currently licensed agency to

take over the open ESA for up to one year, while applications for permanent granting of an ESA license, the ESA license suspension is lifted, or realignment of ESA boundaries are considered. No area of the County can be without proper basic and advanced EMS service. Gaps in these services are considered an *imminent threat to public safety*, leaving no room for extended reassignment procedures.

Recommendation 12: Add to Section 28-2, Subsection C -If a licensed agency voluntarily surrenders its license, has its license suspended, or revoked, the Health Officer shall immediately designate another Scott County licensed agency to temporarily take over the former licensee's area. The temporary take over may last for up to one year while the formal application process for a replacement licensee is in progress.

Section 28-13: Hearings: Prolonged court battles are often expensive and leave conflicting parties unsatisfied, bitter, and often seeking revenge. This is counter-productive and in the case of EMS, be detrimental to the public. Before taking anything to a Court proceeding, parties should be required to attempt resolution by entering into voluntary mediation, with a neutral mediator assisting Scott County and the conflicting party in finding resolution.

The mediator will be selected by consent of the parties. Any costs for mediation services will be bourn equally by the parties. Anything stated in mediation will be considered private and not used by any party in possible subsequent legal or administrative issues. The mediator or mediator's notes taken during mediation will not be subpoenaed into any subsequent legal or administrative procedure. Unless agreed to by all parties, participation in mediation or failure to reach resolution will not affect any party's rights of formal legal or administrative redress.

Recommendation 13: Any party adversely affected by this section will participate in mediation prior to filing further legal or administrative actions.

CHAPTER 3. MEDIC EMS AND EMS IN SCOTT COUNTY

MEDIC EMS is the license holder for the largest area of Scott County that includes the cities of Davenport and Bettendorf. MEDIC EMS provides approximately 90% of EMS within the County and a majority of the non-emergency transports along with other agencies. The total number of employees is 145, including 83 full-time and 35 part-time. There are also 27 volunteers who work with the ADM program. MEDIC also provides emergency communications for EMS in Scott County and has a client in Illinois. MEDIC EMS is an accredited EMS organization by both the Commission on Accreditation of Ambulance Services (CAAS), and the International Academies of Emergency Dispatch (IAED).

Governance

The governance structure of MEDIC is somewhat unique, because it is not a county agency, but is also not a commercial agency. MEDIC EMS is considered a non-profit agency whose purpose is "to operate for charitable, scientific, and educational purposes, as a nonprofit organization…" [9]

Board of Directors – The MEDIC Board of Directors oversees the corporate and operational activities of the organization. The Board consists of 15 members, appointed by designated agencies as assigned by the by-laws. Table 3 identifies members of the Board of Directors.

Table 3: MEDIC EMS Board of Directors

Agency	Representatives	Appointing Authority
Genesis Health System Hospital	8	CEO-Genesis Health System Health System
Unity Point Health - Trinity	2	Vice-President of Operations- Unity Point Health - Trinity Hospital
Public Body Director	1	Mayor-City of Davenport
Public Body Director	1	City Administrator-City of Davenport
Public Body Director	1	Mayor or City Administrator-City of Bettendorf (as directed by Bettendorf City Council
Public Body Director	1	Scott County Administrator or Chair of the Scott County Board of Supervisors (as decided by the Board of Supervisors)
Public Body Director	1	Elected official or fire/EMS member from the outlying ambulance service areas (as decided by the Scott County Board of Supervisors)
Total Membership	**15**	

[9] MEDIC EMS. (2012) Eighth Amended and Restated Bylaws of MEDIC EMS., Article II, Section 1 (a).

The MEDIC EMS Medical Director serves ex-officio as a non-voting member of the Board. Each member is appointed for two years, with one-half of the board standing for reappointment each year. Directors serve without salary except for the reimbursement of reasonable and customary expenses.

Members of the Board can be elected to officer positions including Chairperson, Vice Chairperson, Treasurer, and Secretary. Board members serve for two years and can be reappointed for subsequent terms. Officers are elected on an annual basis.

A major obligation of the Board is to appoint an Executive Director who serves as the administration and operational head of the organization. The Executive Director may appoint a non-voting Assistant Secretary and Assistant Treasurer to assist with board administrative activities.

The salary and compensation of the Executive Director and Medical Director is affixed by the Board. Board involvement does not negate these officials from receiving salary or other compensation.

A Growing Controversy: Membership of the MEDIC EMS Board continues to grow in controversy. Genesis Health System Medical Center now has eight votes on the Board, constituting a majority. This was not always the case. During the 1990's mergers and acquisitions Genesis Health System secured a majority vote on the board. The EMS community is concerned that one hospital holds a majority of the Board. This has become problematic because Genesis Health System owns and operates ambulances across the river in Illinois. Genesis Health System has also indicated an interest in providing EMS in Scott County.

We too are concerned about lopsided representation on the MEDIC EMS Board. Table 4 shows our suggestion for Board realignment

Table 4: Suggested MEDIC Board Realignment

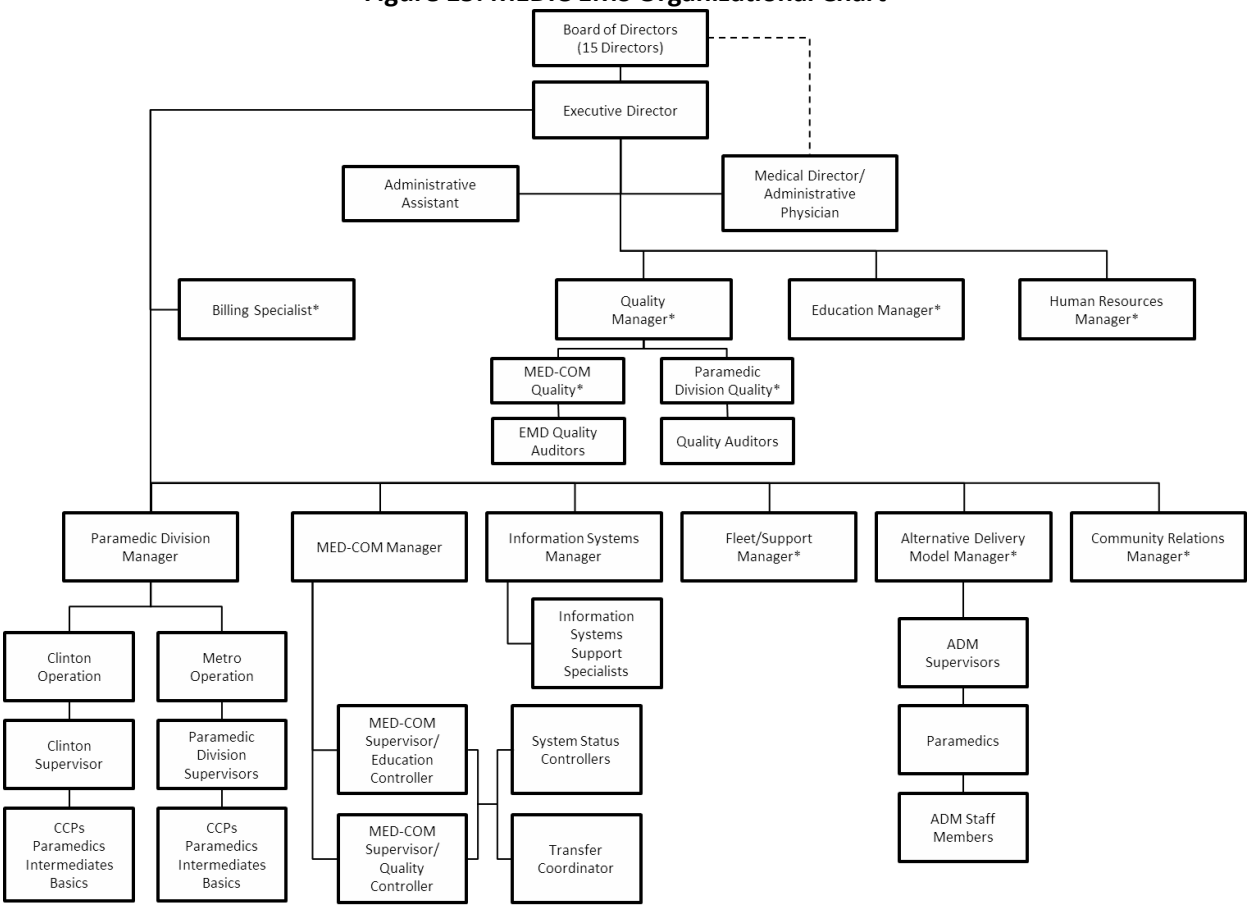
Board Representatives	Number
Genesis Health System	4
Unity Point Health - Trinity	4
Public Directors	5
Citizen Representative (Urban)	1
Citizen Representative (Rural)	1

This set-up equalizes the membership between the two major healthcare facilities within the County. No single organization has a majority of members. Also added are citizen representatives, one chosen from residents of Davenport/Bettendorf, and the other chosen from the remainder of Scott County. These Board Members would be appointed by the Scott County Supervisors.

Recommendation 14: The MEDIC EMS Board should amend its bylaws to adjust the Board composition to include: four representatives from Genesis Health System Health System; four representatives from Unity Point Health - Trinity; five Public Body representatives; one Citizen Representative (Urban); and one Citizen Representative (Rural).

EMS Administration and Operations – MEDIC EMS has a professional staff of administrators, educators, and EMS providers that provide excellent emergency and non-emergency EMS service to the citizens of Scott County. Figure 15 shows the organization and structure of MEDIC EMS.

Figure 15: MEDIC EMS Organizational Chart



Executive Director – The Executive Director oversees the operations and management of day-to-day emergency and non-emergency response. Also, the Executive Director plays an important role as with coordinating Board of Directors activities. There are five divisions within the organization that report to a division manager. Several other work groups report directly to the Executive Director. Figure 15 shows the current organizational chart for MEDIC EMS. There is some misalignment with the chart and the actual structure.

Paramedic Division: The Paramedic Division is the operational component of MEDIC EMS and is charged with overseeing day to day clinical operations. The Division operates 18 ambulances, four command cars, a mass casualty unit, and a bicycle team. Units are staffed as needed. Four to eight ALS ambulances are staffed in the urban/ suburban areas, and two

Alternative Delivery Medics (ADM) are placed in Eldridge and LeClaire, small cities bordering the suburban/rural areas of Scott County that are seeing growth and generate much of the rural transports.

MEDIC EMS is providing efficient service within its area of responsibility. They work well with first responder fire departments within the City and in rural areas. Many MEDIC EMS employees are members of local volunteer fire departments, bringing their time and experience to these agencies. Our evaluation of response times (See Risk and Demand Chapter) show that MEDIC EMS complies with its response time requirements in their assigned areas. They are also able to respond within reasonable time to most areas outside their first due zone.

The ADM concept is very progressive because it combines guaranteed coverage in a lower volume area, combining the use of career and volunteer personnel. Each unit is staffed by one career MEDIC EMS paramedic (most are critical care paramedics) and one volunteer EMT from the community. The volunteers work assigned shifts and must be within five minute of the station. If no volunteers are available, another career paramedic is assigned for the shift.

The ADM concept is futuristic and should help MEDIC EMS prepare for any transition that may occur in the EMS scope of practice (also known as Community Paramedicine or Mobile Healthcare). Even though the response numbers are lower than urban/suburban units, the on-duty paramedics have expanded roles. Paramedics assigned to ADMs are usually senior providers with several years of clinical experience. They are responsible for building relationships with the business community, reaching out to the citizens of the area, being involved with community health and safety, and promoting EMS education to the public (CPR classes, etc.). These positions will allow for a natural transition into an expanded scope of service.

ADM's serve a purpose that transcends the profit oriented goals of EMS transportation. These units will never be "profitable" cash wise, but as EMS grows, their ability to align with healthcare organizations to prevent mortality and morbidity will represent profitability.

Non-Emergency Service – About 30-40% of MEDIC EMS' service is for non-emergency transportation between medical facilities to other medical facilities or patient homes. All units respond to emergency and non-emergency calls as needed. Units available for emergency response may also be used for scheduled or unscheduled non-emergencies. MEDIC EMS has done a nice job integrating these services to meet their emergency mandates, while providing timely non-emergency services.

Political and financial issues have recently affected MEDIC EMS. The loss of contracts from Unity Point Health - Trinity Hospital, and the local rehabilitation facility have reduced the number of non-emergency calls handled by MEDIC EMS. Also until the "Iowa Care" program ended on December 31, 2013, MEDIC EMS was required to transport certain patients to Iowa City with no compensation offered by the state. These issues led to a significant revenue loss and are affecting the future of system sustainability. This is addressed further in Chapter 4.

One issue deserving of mention here concerns the contract loss from the local advanced rehabilitation facility, Specialty Select Hospital. This facility provides long-term chronic care for patients needing skilled services, including ventilators and similar situations. It generates many

non-emergency transports between facilities and for medical appointments. Until recently, MEDIC EMS had the exclusive contract for these transports. Recently, the facility changed their primary vendor to Buffalo Ambulance. Facility personnel advised that MEDIC EMS' customer service had slipped, especially the ability to make transportation arrangements without complicated processes. We were not advised if there was a financial component to this change.

Recommendation 15: MEDIC EMS and Scott County should continue to support the ADM concept and assure its continuation.

Quality Management/Training – The Quality Management/Training Division actively seeks to insure that EMS response, administration and management, and clinical care are provided in an environment that is always measuring outcomes and insuring continuous improvement. Division personnel work closely with the medical director to enhance the development of evidence-based medicine in EMS.

Clinical Outcomes: We examined several clinical outcomes including the management of cardiac arrest patients, and specific provider-based skills whose success are usually dependent on provider skill levels.

Cardiac Arrest – MEDIC EMS has significant data concerning cardiac arrest and successful resuscitation rates. Cardiac arrest is only a small portion of the number of the annual EMS responses. By gathering data on cardiac arrest resuscitation performance, important skills are measured and a data collection procedure is formed. MEDIC EMS measures six data points. Table 5 compares the data for 2012 and 2013, including tests for significant differences.

Table 5: Summary of Cardiac Arrest Data Points

Data Pont	2012 (compliance/patients)	2013 (compliance/patients)	Significance
Bystander CPR	32/98 (33%)	26/89 (29%)	NS
Dispatcher Provided CPR Instructions	38/91 (42%)	62/66 (94%)	p = .0001
Post Arrest Hypothermia Induced	85/99 (86%)	86/95 (91%)	p < .05
Return of Spontaneous Circulation (ROSC)	33/109 (30%)	30/109 (27%)	NS
Discharged Alive	19/107 (18%)	14/109 (14%)	NS
Discharged Alive Post Ventricular Fibrillation/Pulseless Ventricular Tachycardia	7/15 (47%)	11/30 (37%)	NS

Definitions and Background – To evaluate the practical implications of the data, we provide definitions and background information on the data variables.

Bystander CPR: Bystander CPR is defined as a non-EMS provider attempting CPR prior to EMS arrival. This includes citizen bystanders or medical providers. A large cardiac arrest study found that 33% of patients had bystander CPR.[10] This is comparable to the rates noted by MEDIC EMS (29-33%). Bystander CPR has been found to be one of five clinical predictors of cardiac arrest survival.[11] This makes bystander CPR training for the community an important investment for MEDIC EMS.

Dispatcher Provided CPR Instruction: CPR Instructions given by dispatchers has been found as efficacious in encouraging bystanders to start CPR. The American Heart Association has recognized the importance of dispatcher-instructed CPR as a variable in the chain of survival.[12] This was the most improved variable of those studied. Between 2012 and 2013, dispatcher instructed CPR rates improved from 42% to 94% (p=.0001).

Post-Arrest Induced Hypothermia: Some studies indicate that induced mild hypothermia post cardiac arrest leads to improved survival.[13] MEDIC EMS provides post-resuscitation hypothermia as a resuscitation skill. Between 2012 and 2013, the compliance with the induced hypothermia protocol improved from 86% to 91% ($p < .05$). We could not determine whether this intervention influenced patient outcomes.

Return of Spontaneous Circulation (ROSC): ROSC means that the patient regained a pulse during EMS resuscitation attempts and was delivered to the emergency department with a palpable pulse. ROSC prior to hospital arrival is an essential variable for patient survival. A recent study determined that only 0.69% of patients arriving at the hospital without a pulse were discharged alive. No patient who presented to the emergency department in asystole (flat line) survived.[14] MEDIC EMS achieved ROSC on between 27-30% of patients, which is comparable to many quality EMS systems.

Discharged Alive: This is a difficult variable to measure because it does not distinguish quality of life. It can mean anything from discharged with a pulse on a ventilator, discharge with a pulse and spontaneous respirations but in a vegetative state, or discharge with minimal neurological dysfunction, or anything in between. The American Heart Association data

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[10] McNally, B., Robb, R., Mheta, M., et. Al. (2011). *Out-of-Hospital Cardiac Arrest Surveillance --- Cardiac Arrest Registry to Enhance Survival (CARES), United States, October 1, 2005--December 31, 2010. Surveillance Summaries*, 60(SS08), 1-19.

[11] Sasson, C., et al., (2009). Predictors of Survival From Out-of-Hospital Cardiac Arrest: A Systematic Review and Meta-Analysis. *Circulation: Cardiovascular Quality and Outcomes.* 3, **63-81.**

[12] Lerner, E.B., et al. (2012). Emergency Medical Service Dispatch Cardiopulmonary Resuscitation Prearrival Instructions to Improve Survival From Out-of-Hospital Cardiac Arrest. *Circulation,125*, 645-658.

[13] Candroni, C., et al., Therapeutic hypothermia: is it effective for non-VF/VT cardiac arrest? *Critical Care*, 17, 215. doi:10.1186/cc12524

[14] Wampler, D.A., et al. Cardiac arrest survival is rare without return of spontaneous circulation. Prehospital Emergency Care, 16(4), 451-5.

indicates a nationwide out of hospital cardiac arrest survival rate of 9.5% in 2013 and 11.4% in 2012.[15] This compares to 14% in 2013 and 18% in 2012 for MEDIC EMS. MEDIC EMS 2012 higher survival rate was statistically significant (p = .03), was not in 2013.

Discharged Alive Post Ventricular Fibrillation/Pulseless Ventricular Tachycardia: Patients whose out of hospital cardiac arrest presents with a cardiac rhythm of VF/pulseless VT usually have a better chance of survival than all cardiac arrest patients. Survival to discharge rates are between 14 and 23%.[16] Between 2012 and 2013, MEDIC EMS survival rate from VF/VT was 37-47%.

Overall, MEDIC EMS appears to be at or above the national average for successful cardiac arrest resuscitation. Additional data collection refinement and statistical analysis would provide for advanced analysis.

Clinical Skills –We measured three specific clinical skills that greatly depend on operator skill for successful completion: Intraosseous Access, Intravenous Access, and Endotracheal Intubation.

Intravenous (IV) Access: We do not have precise data for IV success data, but our anecdotal evidence indicates an average nationwide success rate of 75% for EMS providers. For MEDIC EMS, covering 2012 and 2013, there were 19,142 IV attempts, with 14,741 successes (77.01%). We believe that this is at the national average. We are unable to compare types of patients, IV catheter size, or number of attempts made.

Intraosseous (IO) Access: Accessing the peripheral circulation is an old intervention that has re-emerged in emergency medicine. At first the skill was limited to pediatric patients, but use in adults is increasing. This is usually a secondary skill, reserved for critical patients in whom IV access is not quickly attainable. EMS providers have additional sites they can use to perform IO access. Originally, IO was limited to the lower leg, but can now be used in the upper arm or chest.

We compared the IO success rate with a national sample. MEDIC EMS had a 94.96% success rate versus an 82.04% for the national sample. These results were statistically significant (p = .0006). With newer IO technology (EZ-IO, IO Drills), greater indications for use, and increased experience, IO success rates are rapidly improving and are expected to achieve close to 100% nationwide.

[15] AHA. (2013). Cardiac Arrest Statistics, December 13, 2013, retrieved from https://www.heart.org/HEARTORG/General/Cardiac-Arrest-Statistics_UCM_448311_Article.jsp

[16] Sasson, C., et al., (2009). Predictors of Survival From Out-of-Hospital Cardiac Arrest: A Systematic Review and Meta-Analysis. *Circulation: Cardiovascular Quality and Outcomes.* 3, **63-81.**

Table 6: IO Success Rate

Study	Attempts	Success	Percent Success
Banargee, et al.[17]	30	30	100%
Glaeser, et. al.[18]	152	116	76%
Macnab, et. al.[19]	50	41	84%
Nijssen-Jordan [20]	42	36	86%
Portland Fire Rescue[21]	4	1	25%
Estero[22]	10	9	90%
Alameda, CA[23]	20	17	85%
Palo Alto[24]	15	15	100%
Total	**323**	**265**	**82.04%**
MEDIC EMS	**119**	**113**	**94.96% (p = .0006)**

ET Intubation: Within the last decade, the utility of this advanced airway procedure in with EMS settings has become controversial. Some believe that this remains the airway of choice for critically ill patients, while others feel that there are safer and equally effective back-up rescue airway devices. Still others believe that comparatively low success rates, and possible complications are an indication that too many EMS providers at multiple levels are being trained use this skill. ET intubation is even being used less in hospital settings. Safer anesthesia, better technology for procedures, and less "exploratory" surgery are reducing the need for ET use.

Table 7 compared ET success rates between a national sample and MEDIC EMS data. . The MEDIC EMS success rate for ETI was 76.92, compared to 77.09 for the national data. The results were not statistically significance. This data will allow MEDIC EMS to design its continuing education program based on data collected by the quality management staff. MEDIC EMS is also investigating the use of technology to improve ETI success including, the gum

[17] Banerjee, S., Singhi, S.C., Singh, S., & Singh, M. (1994). The intraosseous route is a suitable alternative to intravenous route for fluid resuscitation in severely dehydrated children. Indian. Pediatrics 31(12), 1511-20.

[18] Glaesner, P.W., Hellmich, T.R., Szewczuga, D., Losek, J.D., & Smith, D.S. (1993). Five-year experience in prehospital intraosseous infusion in children and adults. Annals of Emergency Medicine 22(7), 1119-24.

[19] Macnab, A., Christenson, J., Findlay, J., Horwood, B., Johnson, D., Jones, L., Phillips, K., Pollack, C., Jr., Robinson, D.J., Rumball, C., Stair, T., Tiffany, B., & Whelan, M. (2000). A new system for sternal infusion in adults. Prehospital Emergency Care 4(2), 173-7.

[20] Nijssen-Jordan, C. (2000). Emergency department utilization and success rates for intraosseous influsion in pediatric resuscitation. Canadian Journal of Emergency Medicine 2(1) 1-7.

[21] SPC/TriData. (2006). Comprehensive Assessment of the Portland, OR Fire and Rescue. Arlington, VA: SPC/TriData Corporation

[22] SPC/TriData. (2009). Assessment and Five-Year Plan for Estero Fire-Rescue. Arlington, VA: SPC/TriData

[23] SPC/TriData. (2010). *Assessment of EMS for the City of Alameda*, CA. Arlington, VA: SPC/TriData

[24] SPC/TriData. (2011). Assessment of EMS in Palo Alto, CA. Arlington, VA: SPC/TriData

bouge device, and video-assisted ET intubation programs. Recent literature suggests that a certain level of practice is needed to maintain proficiency.[25]

Paramedics also have the ability to use a supraglottic airway device as a back-up rescue airway. During 2012 and 2013, there were 67 attempts with 63 (94.03%) successful placements. The rescue airway appears to be an appropriate back-up device for use by MEDIC EMS personnel.

Table 7: ET Intubation Success Rates

Source	Attempts	Success	Percent Success
Nova Scotia[26]	112	103	94.3%
Cady, C & Pirrallo, R.[27]	2,144	1,969	91.6%
Colwell, C.B., Et.al.[28]	124	120	96.7%
Garza, Et. al.[29]	1,066	909	85.3%
Wang, Et al.[30]	783	680	86.8%
Deakin, Et. al.[31]	52	35	71.2%
Gerich, Et. al.[32]	383	373	97.4%
Guire, Et. al.[33]	263	223	84.8%
El Dorado County EMS[34]	63	57	90.0%
Saint Paul[35]	103	89	86.4%
Ohio EMS[36]	3,686	2,531	68.67%

[25] Wang HE, Yealy DM. *Out-of-hospital endotracheal intubation: where are we?* Ann Emerg Med. 2006;47(6):532-541.

[26] Nova Scotia Emergency Health Services. (2005). Medical Quality Performance Measure Report. Unavailable: [On-line].

[27] Cady, C.E. & Pirrallo, R.G. (2005). The effect of Combitube use on paramedic experience in orotracheal intubation. American Journal of Emergency Medicine, 23(7), 868-71.

[28] Colwell, C.B., McVaney, K.E., Haukoos, J.S., Wiebe, D.P., Gravitz, C.S., Dunn, W.W. & Bryan, T (2005). An evaluation of out-of-hospital advanced airway management in an urban setting. Academic Emergency Medicine 12(5), 417-22.

[29] Garza, A.G., Gratton, M.C., Coontz, D., Noble, E. & Ma, O.J. (2003). Effect of paramedic experience on orotracheal intubation success rates. Journal of Emergency Medicine 25(2), 251-6.

[30] Wang, H.E., Kupas, D.F., Paris, P.M., Bates, R.R., & Yealy, D.M. (2003). Resuscitation 58(1), 49-58.

[31] Deakin, C.D., Peters, R., Tomlinson, P., & Cassidy, M. (2005). Securing the prehospital airway: A comparison of laryngeal mask insertion and endotracheal intubation by UK paramedics. Emergency Medicine Journal 22, 64-67.

[32] Gerich, T.G., Schmidt, U., Hubrich, V., Lobenhoffer, H.P., & Tscherne, H. (1998). Prehospital airway management in the acutely injured patient: The role of surgical cricothyrotomy revisited. Journal of Trauma 45(2), 312-314.

[33] McGuire, T. (2001, February). EMS News: Alameda County Emergency Medical Services Agency Newsletter 16(1). Available: [On-line.], p. 1.

[34] El Dorado County EMS (2004). EMS quality management data. Unpublished Data.

[35] SPC/TriData (2007). Comprehensive Management Study of the Saint Paul Fire & Safety Services Department. Arlington, VA: SPC/TriData Corporation.

Source	Attempts	Success	Percent Success
Portland, OR Fire[37]	370	336	90.8%
Alameda, CA[38]	99	57	57.58%
Palo Alto, CA[39]	**24**	**11**	**45.83%**
Overall	**9,169**	**7,068**	**77.09%**
MEDIC EMS	**156**	**120**	**76.92% (ns)**

MEDIC EMS has demonstrated an advanced skills success rate equal to or better than the national average. The interpretation of these data may not be completely accurate, because EMS systems who measure skills proficiency are likely to have better proficiency. MEDIC EMS quality management program appear ahead of many other places in the nation.

Recommendation 16: MEDIC EMS should continue to monitor cardiac arrest, and skills proficiency rates, while expanding into assessing other ALS or BLS skills.

Additional quality management efforts will be needed in the dispatch area because expansion of dispatch services and the full adoption of MPDS throughout the SECC will require these services. MEDIC EMS has taken a key role in leading the Scott County Quality Management Program. Being the largest EMS provider in Scott County, all county first responders benefit from the MEDIC EMS experience and staff. This effort should continue.

Education and Training – MEDIC EMS has developed an excellent relationship with Eastern Iowa Community College (EICC), who provides all of the primary EMS licensure and certification training for Scott County. The EICC Paramedic program is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org) upon the recommendation of the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP). Effective this year, in order to take the National Registry of EMTs Paramedic Examination, all candidates must graduate from an accredited program. They have also established a Critical Care Paramedic program for those in the critical care transport industry and those preparing for expanding the EMS scope of practice. EICC also provides EMT and EMR training to paid and volunteer organizations within the Scott County and surrounding areas. Training occurs at various fire and ambulance services throughout the County. EICC also provides several conferences for EMS providers, and is a major supporter of the Iowa EMS Association Annual Leadership Conference.

[36] OEMS. (2003). The Run Report: Bringing you information from EMSIRS. Ohio Division of Public Safety. www.ohiopublicsafety.com

[37] SPC/TriData. (2006). Comprehensive Assessment of the Portland, OR Fire and Rescue. Arlington, VA: SPC/TriData Corporation.

[38] SPC/TriData. (2010). *Assessment of EMS for the City of Alameda*, CA. Arlington, VA: SPC/TriData

[39] SPC/TriData. (2011). *Assessment of EMS in Palo Alto, CA*. Arlington, VA: SPC/TriData.

MEDIC EMS provides a clinical site for paramedic students to complete the field clinical portion of their training. In addition, MEDIC EMS provides basic orientation training for new employees and continuing education for veteran employees. They are also working collaboratively with EICC to teach refresher courses within Scott County.

Local MEDIC EMS continuing education includes nine continuing education programs covering basic and advanced EMS practice. This is augmented by EMS/EMD combined case studies that occur six times per year. One of the challenges many EMS systems have is aligning EMS dispatch with EMS care. These case reviews are an excellent way to help overcome these weaknesses in continuity.

EMS Communications and Information Services – Another major division of MEDIC EMS is their EMS Communications (MEDCOM) and Information Services. The SECC fire and EMS section is divided into three areas, call takers, fire dispatch, law enforcement dispatch. The call takers answer calls to 911, gather information and transfer calls to fire, law enforcement or EMS. EMS dispatch is administered by MEDCOM, which is responsible for alerting ambulance agencies, and providing communications throughout the calls. Their dispatchers are also trained in medical priority dispatch and providing pre-arrival instructions to callers. If a first responder is needed, MEDCOM notifies fire dispatch which initiates a first responder call. In addition to MEDIC EMS in Scott County, MEDCOM also provides dispatch and pre-arrival instructions for Genesis Health System EMS in Illinois.

MEDCOM performs 28,000 dispatches annually, with 70% being for 911-emergencies. Of 22,000 transports, 60% are emergency and 40% are routine transports.

Training: MEDIC EMS dispatchers complete a comprehensive training program and preceptor program. Required training includes:

- CPR for Healthcare Providers;
- Complete a 40 hour basic telecommunicator course; and
- Complete Emergency Medical Dispatch training from MPDS; and complete a six-month preceptor program.

There is no EMD certification in Iowa, but all dispatchers must be Illinois EMD certified to dispatch calls for Genesis Health System - Silvis. Dispatcher must complete the required MPDS continuing education. In addition, they annually participate in six case reviews with field EMS providers.

Innovation: MEDCOM EMS dispatchers are participating in a new program that allows dispatchers to quickly identify possible stroke patients, and begin the process of notifying a local designated stroke hospital to ready their stroke team for activation. This is predicted to save approximately 16 minutes in hospitals being ready for service. When patients suffer an acute stroke, there is a short window of time (three to six minutes from symptom onset) to where the patient can receive medication on surgical intervention to reverse the stroke process. If not treated within this window, patients only qualify for rehabilitation care that may return function, but not reverse the process. No outcome data were provided.

Staffing: MEDCOM is staffed by a supervisor and three dispatchers until 9:00 PM, when staffing drops to two dispatchers. If the communications manager is not present, there is always an on-call manager to step in.

Concern: System wide concerns were addressed earlier in this report. One concern is the alternative seven-digit telephone access number available for non-emergency requests. An alternative number is appropriate for non-emergency transport requests. We are aware that some medical facilities use this line for emergencies to avoid the dispatch of first responder units. Some of these facilities attempt to avoid first responder response for cosmetic or social reasons.

We cannot assume that because someone is at a medical facility, that the appropriate first responder care is being provided. When anyone, even someone from a medical facility calls 911, they are acknowledging that they are unable to provide the level of patient care needed. Therefore, the 911 system must provide the level of service based on medically directed procedures. Another danger is that other services may employ a seven-digit number, allowing facilities to circumvent the EMS system completely. These types of activities threaten to return EMS back to the pre-911 1960's where competition for patient control could lead to unfortunate consequences.

The 911 system is for emergency use only. Therefore, we cannot advocate calling 911 for non-emergencies. One way to properly balance the use of 911 and the seven-digit phone number is for the SECC and MEDIC EMS to strictly follow the medical priority dispatch protocols. Calls that do not require first responders would be filtered by medically-direct protocols and quality management. For example, using MPDS, "A," "B," and many "C" level calls would not require first responders. The system can also be designed that those communities that wish to respond on every EMS call in their area could do so.

Recommendation 17: Avoid allowing medical facilities and other callers to use the seven-digit access number to circumvent the 911 system during medical emergencies. Strict compliance with the MPDS protocol could alleviate unnecessary sending of first responder units.

Information Systems – MEDIC EMS has a well-integrated information management system within their service. It has fully adopted E-PCR using tablet technology to properly collect, store, and retrieve EMS data. Automatic Vehicle Locator (AVL) systems are available to in-place to assure closest unit response and to employ the most beneficial use of dynamic unit deployment.

MEDIC EMS uses the Zoll data system for CAD and data management. Unfortunately, this is not compatible with SECC's CAD system. System incompatibilities have led to delays at dispatching first responders, and the inability to properly examine data. This is further explained in the SECC section.

Recommendation 18: SECC and MEDIC EMS data compatibility must be a top priority for both organizations. Vendors should be required to assist Scott County agencies with assuring that technological compatibility is achieved.

Human Resources – MEDIC EMS has a robust human resources management program that is responsible for all human resources issues. Unlike municipal EMS systems, MEDIC EMS is totally responsible for all human resources areas including compensation, benefits, employee relations, fair practices, and federal, state, and local regulatory issues. Hiring practices, employee discipline, and health and safety are also key components of responsibility.

The human resources division pays close attention to changes in community dynamics. Younger families are moving into peripheral area such as Eldridge and Le Claire. This is a primary reason that MEDIC EMS continues to invest in the ADM units. Employee turnover is always a consideration when relying on non-municipal vendors for 911 services. Traditionally, employee turnover rates in municipal EMS systems are much lower than in commercial or non-municipal services. Turnover at MEDIC EMS has been comparable to municipal services. In 2010-2011, only one full-time paramedic left. In 2011-2012, five paramedics left. This may be attributable to the rumors concerning Genesis Health System taking over EMS in the area. Others leave for employment with fire departments and some don't find a good fit

MEDIC EMS conducts a salary survey every year to determine comparable compensation for its employees. They pay higher than most comparable EMS systems, but admittedly not as high as fire departments. For those vested into the program and who work 1,000 hours per year, the company will contribute to a 403-b. MEDIC EMS offers health insurance to full-time employees with rates and benefits comparable to local health care agencies. Very soon, MEDIC EMS expects to have its first employee to service retire, meaning that employee will have worked a full career at MEDIC EMS.

Community Relations/Fleet Manager: One manager is responsible for Community Relations and the care and maintenance of vehicles. Community relations should continue to grow, especially with the introduction of the Affordable Care Act, the ADM program, and the burgeoning expanded scope of service. Community relations includes community health and safety, CPR training, career days at local schools, and supporting hospitals and other medical facilities.

Fleet Management is important in assuring vehicles are ready for service and kept on the road. Having road ready vehicles allows MEDIC EMS to meet its response time obligations to the community. MEDIC EMS has a preventive maintenance program, a safe driving program, and similar programs needed to keep people safe and extend road life of vehicles.

Finances

We were not provided a complete financial report by MEDIC EMS, but there are some things that we noticed that deserve mention.

Loss of Contracts – Until recently, MEDIC EMS was the exclusive provider for Unity Point Health - Trinity Hospital and Select Specialty Hospital. Within the past two years, Unity Point Health - Trinity contracted with AMT ambulance service to handle transports from their facility. This costs MEDIC EMS approximately $265,000 annually. The loss of contracts from Select costs up to $150,000 annually. As mentioned, the unreimbursed services provided under

the Iowa Care program likely created a $600,000 yearly liability. In addition, increasing numbers of behavioral health transports presents over $60,000 of unreimbursed annual cost, as well as increased wear and tear on vehicles due to the locations of facilities. Our understanding is that Unity Point Health - Trinity negotiated a contract with AMT because they were concerned that representation inequities on the MEDIC EMS Board could have led to adverse effects on their ability to transport their patients. They did not want medical transportation to be under Genesis Health System control. There was no evidence that MEDIC EMS was under-performing. While we understand the situation, this move may have been premature.

Iowa Care required patients desiring treatment under this act to be transferred to an Iowa Care facility. Patients transferred were transported by ambulance, but no transportation cost coverage was provided. Transport payment was not guaranteed for those who were not eligible for Medicaid or not covered by insurance.

The lack of payment for "Iowa Care" transportation is bothersome. We know that Iowa Care advised that the individual is not covered for ambulance transport to Iowa City. But, an ED arranges a transfer for a patient strictly for financial reasons. A receiving hospital physician accepts the patient, and the sending hospital summons an ambulance. By accepting the patient, and ordering ambulance transport, there may be an implied contract formed between the hospital and the ambulance service. Technically, a sending or receiving hospital could be liable for ambulance transfer costs to MEDIC EMS. At this point, no request has been made. The MEDIC EMS Board should seek compensation for these transports from either the sending, receiving, or oversight agencies.

Recommendation 19: MEDIC EMS should seek to recover transport dollars lost from providing service to the "Iowa Care" program.

On December 31, 2013, the "Iowa Care" program ended. The program successor program does cover ambulance transport fees at the Medicaid rate. While lower than other reimbursements, it represents some compensation for ambulance providers willing to take these calls. The exact rules for this reimbursement have not yet been enacted.

Community Partnership: This could be considered another demonstration of questionable community partnership by local hospitals. Most of the transports originated from Genesis Health System, who has steadfastly refused to claim responsibility for any costs. Healthcare systems whose true allegiance to the community is part of their mission would have helped to mitigate this situation. The transfer of these patients to Iowa City clearly reduced local hospitals likelihood of further uncompensated care. They should not have passed on this uncompensated care to local ambulance services.

Recommendation 20: Local emergency departments who used MEDIC EMS to transport patients to Iowa City during the Iowa Care coverage period should provide MEDIC EMS some compensation for services rendered.

Medicaid: Some of MEDIC EMS' funding is derived from Medicaid payments. Patient eligible for Medicaid are lower income, usually at or close to the poverty level. Medicaid reimbursement rates vary by state, with Iowa having a low reimbursement rate. Medicaid ambulance reimbursement for Iowa is between $69.98 for BLS and $113.29 for ALS transports. Loaded mileage is reimbursed at $2.16 per mile, $10.79 of oxygen, and $4.32 for disposables.[40] Even with the 10% increase effective July 1, 2013, these reimbursement rates are still very low and leave little chance for profit.

[40] Vermeer, J. *Medicaid Ambulance Programs*. Presented November 6, 2013 to the EMS Study Committee.

CHAPTER 4. PLANNING FOR THE FUTURE OF EMS IN SCOTT COUNTY

The citizens of Scott County should feel fortunate that they have an EMS system that is functional and providing good care to its patients. There are several challenges that should be answered in order for the EMS system to continue to thrive. Throughout this report, we identified challenges and made recommendations for the future. Additional information is included to provide system direction.

During our interviews we heard from various constituents about the need for a county EMS system. This can be defined in many ways. Does this mean a full-service county provider, greater oversight, or just more money? A county-wide EMS operation would be very costly to the citizens. We offer recommendations that include increased oversight and support without a new provider-based organization.

The Scott County EMS System

Scott County Oversight – The current system of oversight provided by the Scott County Board of Health and the Department of Health is effective and should remain the oversight agency for EMS. The EMS administrative staff should be further developed to enhance system wide oversight and continue their supportive role with the volunteer system. Additional oversight will be necessary due to changes in the overall regulation of EMS in Iowa. The State EMS system is being resized in order to place system obligations within the role of regions and counties. These system dynamics in addition to the added complexities of the EMS delivery system will increase challenges to local agencies. Changes in the EMS scope of practice, the influence of the Affordable Care Act, technological advances, and the challenges of sustaining human and financial capital, call for greater oversight.

The Department of Health EMS office should include three dedicated EMS positions, including EMS Manager, EMS Quality Manager, and an EMS Administrative Specialist. The EMS Manager's role would add some regulatory functions to the current position, especially in the implementation and oversight of Chapter 28. Roles that are currently being handled involving liaison, volunteer support, EMS community representation, MCI/Disaster planning, and system facilitation would continue.

The EMS Quality Manager position was espoused by the volunteer service as an essential liaison and technical assistant for the implementation of Scott County's EMS quality management program. A county EMS quality manager could also greatly influence quality management between SECC and MEDIC EMS.

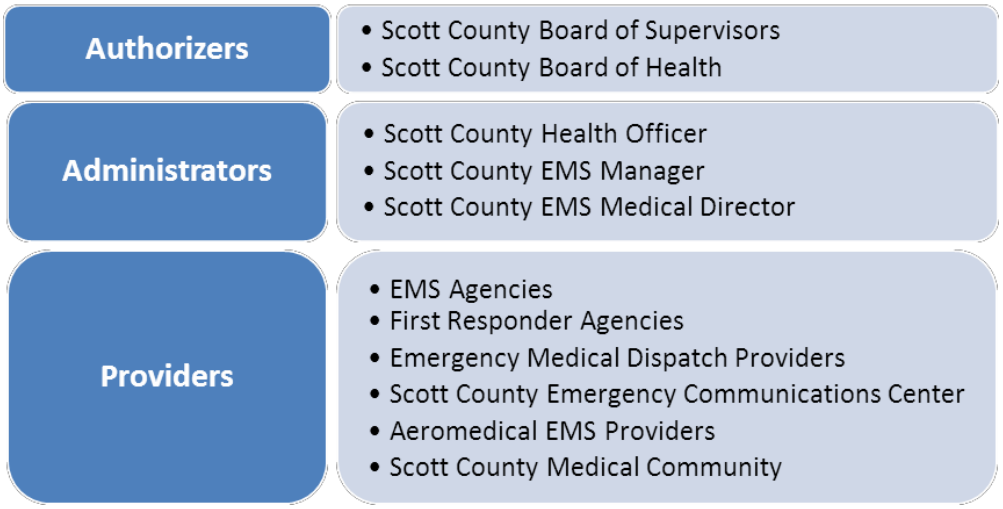
An EMS Administrative Specialist would provide administrative assistance to the above personnel, the County EMS Medical Director, and would be charged with finding and applying for grants.

Recommendation 21: Expand the current Department of Health EMS office to include an EMS Manager, EMS Quality Manager, and EMS Administrative Specialist.

Global Governance Structure-Global governance of EMS should be expanded to assure that all EMS areas are provided oversight, without losing the self-governance structure of local providers. For example, a global governance structure does not negate the oversight structure built into the first responder system.

The Scott County EMS organizational relationships appear complex and confusing, but when observed in the proper context are workable. We recommend that some additional oversight and organization occur as depicted in Figure 16.

Figure 16: Scott County EMS Oversight



Alternative Structures: Another possible future structure would involve MEDIC EMS being the sole emergency provider for the County. This could be a solution, but it may not be economical. At this time, Durant Ambulance, Bennett Ambulance, and Wheatland EMS provide service to areas in rural Scott County. Although the number of dispatches is small, these services are essential, because MEDIC EMS or any EMS organization could not position ambulances to provide emergency coverage within that coverage area.

Meeting the Iowa State EMS Standards: A goal of this project is to show how the Scott County EMS Governance Structure meets or exceeds the Iowa State EMS Standards (2010).

1.1 System Administration: EMS System Structure – The County will meet this standard by having a governance structure that includes oversight by elected officials, governmental agencies, hospitals, ambulance services, fire and rescue services and other agencies.

1.2 System Administration: EMS System Mission – Scott County already has a vision and mission statement that is reviewed annually. A traditional formal chart is difficult to construct due to the complexity of the system. A tiered level approach is provided above. Daily oversight of EMS would be delegated to a County EMS Manager. The County EMS Manager's oversight will extend to

emergency ambulance services, non-emergency ambulance services, and non-transport EMS first response.

1.3 **System Administration: Public Impact** – The public has many avenues to assure input. There is public access via the authorizer level through the Scott County Board of Supervisors and the Scott County Board of Health. These agencies are independent of each other and have identified pathways for public input. We also suggested that the MEDIC EMS Board be reorganized to include two public representatives, one from the urban/suburban area, and one from rural areas. Another addition would be the appointment of a formal County EMS Manager. Some duties of the County EMS Manager those involving assuring a communications pathway between the public and EMS provider organizations.

1.4 **System Administration: Medical Director/Medical Direction** – Scott County is fortunate to have experienced EMS physicians involved with many aspects of EMS. We offer suggestions in response to the increasing complexities of the EMS system. We recommended that Scott County have one EMS Medical Director who directly reports to the Health Officer and has complete oversight over the medical component of EMS. Deputy Medical Directors should be appointed for EMS Dispatch and Medical Priority Dispatch, EMS Quality Management, and EMS Education and Training. All local medical directors would be system Deputy Medical Directors. The EMS Medical Director, County EMS Manager, and the Physicians' Advisory Board would by consensus determine the requirements for local medical directors. The County EMS Medical Director would be the final authority on local EMS protocols, including the assurance that Scott County providers function within the state scope of practice and any state protocols. The County EMS Medical Director, with the Deputy Medical Directors, would review EMS practice as necessary, including the issuance of standing orders and the need for online medical direction. EMS medical direction will extend to emergency ambulance services, non-emergency ambulance services, and non-transport EMS first response.

1.5 **System Administration: Development & Review Plan –** The Scott County EMS Director (as proposed) and staff will be responsible for updating any Scott County Emergency Medical Services plan, and for assuring that the plan remains current. The EMS Manager will annually update the County Health Officer on plan compliance and provide recommendations for any remedial actions that must be taken. The EMS Manager and the EMS Quality Manager will be responsible for the oversight of the quality management program, including the establishment and maintenance of the quality management plan. Upon approval of the County Health Officer, the EMS Manager will submit the annual plan to the Iowa Department of Health EMS Office.

1.6 **System Administration: Advanced Life Support (ALS) –** The Scott County EMS Manager and EMS Medical Director, with the assistance of their staff and

advisory groups, oversee and administer all ALS services. Within a modern EMS system the oversight of ALS plan is no longer separate and distinct from other EMS clinical service. Therefore, any plans or programs will be included within the larger plan for services.

1.7 System Administration: Inventory of Resources – The County EMS Officer will annually provide the Scott County Health Officer and the Scott County Emergency Manager a report containing lists of all assets that can be used to provide EMS. The EMS Manager will also notify these personnel when resources may be inadequate to provide any aspect of EMS to the citizens of Scott County

Our plan will allow Scott County to meet the System Administration requirements of the Iowa State EMS Standards (2010). We believe that the public/private system configuration, with the additional suggested oversight, is the best method for Scott County to meet this challenge.

Chapter 28 – Chapter 28 is the appropriate regulation needed to properly oversee EMS in Scott County. We offered some amendments for consideration. The most controversial part of Chapter 28, 28-6, provides the citizens with the protection needed to assure quality EMS care. We believe that this section of Chapter 28 will hold up to legal challenges such as restraint of trade or eminent domain.

Chapter 28 and First Responders: Just as all of EMS is becoming more sophisticated, so are first responder services. Until recently, most EMS trained first responders were trained to the EMR or EMT level. More are now trained as paramedics and first responder companies are considering which level of service to provide. As EMS is the practice of medicine outside the hospital, quality management, medical direction, and administrative oversight become more essential.

The current Chapter 28 neither includes nor excludes the need for non-transporting first responders to be licensed by Scott County. For clarity, we suggest that all agencies be licensed as per the rules in Chapter 28.

Recommendation 22: Amend Chapter 28-3, Licenses, Required and Exceptions.

Now reads: A. Licenses Required: No person either as owner, agent or otherwise shall furnish, operate, conduct, maintain, advertise, otherwise be engaged in or profess to be engaged in the business or service of the transportation of patients upon the highways, streets, alleys, public ways or places within Scott County, unless such person holds a currently valid Emergency Medical Service license issued pursuant to this Chapter.

Change to read: A. Licenses Required: No person either as owner, agent or otherwise shall furnish, operate, conduct, maintain, advertise, otherwise be engaged in or profess to be engaged in the business or service of the EMS first response to or transportation of patients upon the highways, streets, alleys, public ways or places within Scott County, unless such person holds a currently valid Emergency Medical Service license issued pursuant to this Chapter.

Add C5: No license shall be required for static first responder services such as those provided at athletic events, crowd venues, schools, and similar places providing first aid services.

Add E: Those agencies approved to provide medical first responder services by the Scott County Volunteer Fire and EMS Association are not required to comply with Section D of this ordinance. The service must be in compliance with Scott County Association rules.

MEDIC EMS – MEDIC EMS is an excellent EMS provider and should continue to be relied upon to provide primary EMS emergency and non-emergency response to its prescribed area. The organization is well managed, provides prompt and efficient service, has an excellent quality management program, proper medical oversight, and most of all, exemplar employees. It has earned CAAS and NAEMD accreditation and in 2012 was selected the Iowa State EMS System of the Year.

We suggested that the MEDIC EMS Board be reorganized to prevent one organization from having a majority of voting members. The current members have remained loyal to their roles, and when needed have done the right thing. Unfortunately, we sense growing pressure from the Genesis Health System Health System administration to influence their representatives' votes for Genesis Health System corporate gain. Steps must be taken to reduce the effects of these actions. A balanced board would alleviate the potential of undue influence.

From an operational perspective, there is a possibility that one local ambulance company may not survive the year. The Health Officer must be able to take action to alleviate this problem. We suggest that MEDIC EMS and Buffalo Volunteer Ambulance Service work out a merger plan that would establish the creation of a MEDIC EMS-Buffalo Ambulance Division. When we mentioned this idea, we were given positive feedback from those agencies affected. MEDIC EMS could quickly institute this plan as needed. Both organizations would have to agree on an assumption of debt plan and transfer of assets. This would be a great opportunity for system constituents to work together and provide the best care for its citizens.

Recommendation 23: If there becomes a need, Buffalo Volunteer Ambulance should merge with MEDIC EMS to form MEDIC EMS Buffalo Division. TriData would be happy to provide mediation services to assist with the process.

EMS and Hospitals – EMS is the practice of medicine outside of the hospital. It requires well educated and trained professionals, proper medical oversight, and a place within the healthcare system. The best way to assure that is with mutual alignment leading to the best care for patients.

The requirements of the Affordable Care Act will mandate a spirit of alignment and cooperation between community healthcare systems. Over aggressive proprietary behavior, or lack of cooperation from any agency could threaten the ability of the EMS community to provide the appropriate levels of first response, emergency ambulance service, and non-emergency ambulance services. We urge the Scott County Board of Supervisors not to accept or reward divisive behaviors. We urge all medical system entities to be part of the solution to challenges that will take every bit of talent available to master.

Scott County's current EMS delivery model is effective and further splintering will be counterproductive and unnecessary. We do not wish to interfere with free-market competition

because is a backbone of our society. We also strongly believe that local government has the obligation to assure that their citizens have access to essential public safety services.

Scott County Emergency Communications Center – An aspect of the EMS system that needs close attention is the Scott County Emergency Communications Center (SECC). The SECC/MEDIC EMS public/private partnership is acceptable and will likely continue to be successful. The SECC will have to make a commitment to upgrade technology in order to create a data management system that facilitates the collection, storage and evaluation of EMS data. Every effort must be made by CAD vendors to find a solution to the current mismatch between SECC and MEDIC EMS.

EMS First Response – Scott County has an excellent fire-based first responder system that provides prompt service. This greatly supports the citizens and the EMS community. Career EMS systems are concerned with overuse of services for unnecessary calls, while volunteers are concerned that overuse of first response will affect time availability. The safest and most effective way to control this is to implement the medical priority dispatch system. This protocol driven, medically validated process will choose which equipment is sent based upon a scripted program. MEDIC EMS advised that they are ready to implement the MPDS program.

Recommendation 24: SECC and MEDIC EMS should fully implement the MPDS program. When a caller identifies a medical emergency, the call can be switched to MEDCOM for priority dispatch coding, dispatch, and pre-arrival instructions. This would save Scott County money by not requiring SECC dispatchers to be trained in priority dispatch.

Volunteer Sustainability – Questions concerning sustainability of first responder services are asked nationwide. The National Volunteer Fire Council reported that volunteer fire and EMS participation is reducing by eight percent each decade since 1990. There does not appear to be any impending financial crisis among Scott County volunteers. If a crisis would occur, it would involve human capital.

EMS Membership: There are steps that volunteer fire departments in Scott County could take to assist with first responder sustainability. Some first responder agencies require members to be qualified as firefighters and EMS first responders. A well-rounded first responder is very advantageous to have, but requiring dual role/cross trained personnel may be an unaffordable luxury. Some companies have taken the step of allowing members to be EMS members. These are members who only ride on specific EMS equipment (i.e. multi-purpose vehicle, van, SUV etc.) who are qualified as EMR/FRs or EMTs, but not firefighters. They are only required to have EMS training and some locally controlled awareness/operations level training.

Since EMS has become over 80% of most fire department responses, EMS members would have the qualifications needed for the greatest liability. EMS membership would also increase diversity because more women (or even men) that cannot physically qualify for firefighting could qualify for EMS. Those who are retired or don't work during the day could assist with daytime response.

Recommendation 25: All volunteer fire companies in Scott County should create an EMS membership classification to increase first responder coverage.

Membership Limits: We noticed that some companies, especially those that are City-based, are limited in the number of personnel carried on their roster. When cities began to sponsor local fire departments, this step was likely taken to control costs. We are not sure if this limitation is worth keeping. EMS members would be less costly to outfit because they don't need the firefighter's level of gear, and similar costs. We believe that departments that limit membership to a specific number should reconsider their approach.

Recommendation 26: Scott County volunteer fire departments should consider removing any maximum number of members limits. Alternatively, they could limit the number of firefighter members, but still accept EMS members.

EMS and the Affordable Care Act

The current delivery system of out of hospital patient care in Scott County is a well-functioning model of many different stakeholders delivering excellent patient care.

The request for proposal includes recommendations to prepare Scott County for multiple contingencies to ensure that the quality of out of hospital care continues to be the best for the citizens.

The enactment of the Affordable Care Act has triggered the most significant changes in delivery and payment structures for the entire healthcare system which is approximately 1/6 of the GDP.

The ACA report has caused consternation with both providers and payors. As of this time, significant changes often occur daily. The basis of this law is to ensure that there is healthcare coverage for all Americans. At this point the ability to procure coverage through ACA has proven to be difficult, and there has been an unintended reverse effect of tremendous loss of healthcare coverage, and increased costs to the consumer for legacy plans.

One area that has been made very clear through this legislation as well as CMS changes over the last few years is that there is a strong focus on promoting excellence while simultaneously demonstrating cost containment.

Accountable Care Organizations (ACOs) are groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to their Medicare patients. The goal of coordinated care is to ensure that patients, especially the chronically ill, get the right care at the right time, while avoiding unnecessary duplication of services and preventing medical errors.

When an ACO succeeds delivering high-quality care and spending health care dollars more wisely, it will share in the savings it achieves for the Medicare program.

Medicare offers several ACO programs:

- *Medicare Shared Savings Program* – A program that helps a Medicare fee-for-service program providers become an ACO.

- *Advance Payment ACO Model* – A supplementary incentive program for selected participants in the Shared Savings Program.
- *Pioneer ACO Model* – A program designed for early adopters of coordinated care. It is no longer accepting applications. Organizations across the country have already transformed the way they deliver care, in ways similar to the ACOs that Medicare supports.

ACAs, ACOs, and EMS – Citizens expect that when 911 is called for a medical emergency, that trained professionals will arrive in a reasonable amount of time and transport the patient to a hospital. Through this transition period in the American healthcare system, there are many questions regarding payment models for EMS services. For example, will EMS continue to be reimbursed solely as a transportation entity, or will a new model appear that will be driven through the ACO? A model that potentially may pay for the EMS system as it is currently configured, but could include additional funding for EMS providers who participate in programs to improve quality and cost containment in coordination with the hospital systems, is Community Paramedicine.

Some areas of the country use EMS in an expanded role. These programs are referred to as "Community Paramedicine" (CP), "Advanced Practice Paramedics" (APP), "Public Health Associates", mobile health care, etc. EMS providers supplement the local healthcare community with hospital discharge visits, follow-up on chronically ill patients (CHF, fall risk), chronically inebriated, etc. The vision of these programs is to sustain the health of the at-risk population with a goal of finding the right resources to prevent hospitalization (or re-hospitalization). Currently, a program that reduces transports actually is a financially negative proposition for EMS agencies that rely on transports for their funding. These expanded services programs have relied mainly on governmental grants with no sustainable funding for broader implementation.

A scholarly review of community paramedicine from Kizer, et al, from University of California Davis was prepared for the California EMS Authority (Grant #17119). This paper focused on three aspects:

1. More appropriate use of emergency care services. "Perhaps the best demonstrated benefit of CP programs has been in getting persons who have accessed the EMS system, but do not have a medically emergency condition, to more appropriate destinations than a hospital ED. This may yield financial savings, and, in some cases, improve the coordination and continuity of care." This statement has been an obvious issue that has historically not been address due the legacy of "you call and we haul" mentality. EMS has been historically reimbursed by a transport only model, medical directors and hospital stakeholders have not embraced empowerment of alternatives disposition.
2. Increased access to primary care for medically underserved populations. "Some CP programs have provided solutions to primary care problems that were not being well addressed. For example, some of the CP programs provide short term (e.g.) within 72 hours of discharge) follow-up visits for patients who have just been discharged from a

hospital or ED until other providers are able to provide the home visits or other follow-up care. Such follow-up care may help prevent ED or hospital readmissions." A recent pilot program sponsored by United Healthcare provided an RN home visit upon discharge of the Medicare replacement plan customers. There was nearly 100% confusion on discharge instructions (medication reconciliation, follow-up PCP / specialist appointments, wound care), there was significant return visits and re-admissions due to these issues that could have been rectified by simple oversight by a paramedic or RN. The second benefit in reduction of readmissions is that the ACO model provides for a penalty for patients with certain diagnoses (e.g., CHF).

3. Enhanced opportunities for EMS personnel skills development and maintenance. "CP programs aimed at providing primary care for medically underserved population may also provide opportunities for EMS personnel in low-call-volume settings (e.g. rural area) to further develop patient assessment skills, as well as more frequently utilize their basic skills. This helps them maintain their skills and expand their clinical experience. "Scott County has three distinct population subsets (rural, suburban, and urban). Each of these groups has issues that need addressing regarding comprehensive medical care and access to CP programs. Rural areas are typically not busy enough to sustain the cost of personnel and equipment based solely on transport revenue, and urban areas could possibly be too busy handling the 911 and inter-facility call volume with current staffing.

Hospital Needs: Hospital systems have a significant stake in Paramedicine type programs. In 2013, CMS rules now hold hospitals responsible for readmissions. If certain patients are readmitted for the same condition within 30 days of discharge, hospitals may not be paid for the subsequent admission. Hospitals and physicians cannot try to recover this money from patients. Post-discharge compliance would prevent uncompensated readmissions, especially secondary to expensive episodic care that comes with congestive heart failure, diabetes, and infections.

Future Challenges

Urban/Suburban: Medic EMS does an excellent job providing both 911 and transport service for essentially the entire urban area of Scott County. There are obvious sensitivities regarding the overall superstructure of this agency within the next few years. There is also the possibility, albeit small, of the urban fire departments (Davenport/Bettendorf) assuming transport roles for 911 calls. There is high call volume, with many low acuity calls consuming tremendous resources.

Rural: There are many volunteer agencies providing excellent first responder response for 911 calls. The issue is the limited number of transport ALS units assigned to the rural area. This often results in longer response times for the transport units, and due to the small overall call volume the revenue from those calls are not enough to financially justify additional transport units. Currently the Alternative Delivery Medic (ADM) units are an acceptable option (Paramedic with volunteer driver); however, they are not financially profitable. The public has

an expectation for timely service, however under the ACA legislation there will be strains to continue to offer this service under the current model.

Potential Future Solutions – A multi-disciplinary group involving hospital systems , EMS, public health, and other affected organizations should begin to develop an out of hospital service line. Multidisciplinary teams would include the following members

1. Emergency Department physicians / nurses
2. EMS service medical director
3. Hospital Case Management (discharge planner)
4. Scott County EMS director
5. Skilled Home Health provider
6. Hospice Providers
7. Local EMS agencies (ambulance and first response)

The intention of this service line is to identify high acuity, fragile chronically ill patients that have or have the potential of frequent 911 calls resulting in readmissions. The revenue savings from prevention of ACO / CMS penalties realized through this committee can be used to fund CP programs. Demonstration projects have produced limited data to support this concept. The return on investment for the hospital providers to support chronic care, and well visits could benefit the overall financial reimbursement by reducing the risk of penalty for readmission failures.

SECC and MEDIC EMS 911 call data can be mined to identify patients that might not be on the radar screen of an individual facility, but due to multiple hospitals and health care systems this meta-data could potentially be helpful. To be effective, significant improvements must be made in database management, system accessibility, and interoperability.

There is a close association between fire departments and emergency medical services. The fire services are credited with creating prevention models, and today through code enforcement, smoke detectors, etc. there are demonstrably fewer fires. Utilizing EMS providers for primary health prevention programs can potentially reduce the number of cardiac arrests or STEMI's. A well-executed primary health prevention program could also result in tremendous health care savings. The actual cost savings would be difficult to calculate since it potentially could increase the number of cardiac stress tests and cardiac catheterizations, but could potentially lower the number of STEMI's and sudden cardiac death.

Taking Cautious Steps Forward – ACOs and the ACA have the potential to dramatically change healthcare by improving quality and cost controls. EMS can potentially be a great contributor to growth and change. For EMS, sustainability of these programs is still questionable. For example, there are still two changes that CMS must make before a successful, sustainable program can be achieved.

- CMS must agree to pay for non-transport situations or transportation to places other than an emergency department. At this point, if the patient is not transported, CMS will not pay (with very few exceptions). While some patients with reversible on scene emergencies (i.e. hypoglycemia) do not warrant ED transport, even after life-saving treatment is provided, no payment is authorized. Many patients could be treated at satellite facilities, or at physician offices. Transportation for these patients is not covered except to an ED. There is no provision for payment of a patient assessment and triage fee.
- EMS scope of practice and field protocols must allow EMS providers (especially paramedics) the opportunity to select alternative destinations and means of transport for their patients. With a strict EMS Quality Management program in place, or in some cases, online medical direction, paramedics would be able to carry out these decision-making processes.

If the above challenges are not answered, sustainability of an expanded scope of service program is not likely to survive.

Some claim that hospitals will invest money into the EMS system in order to finance Community Paramedicine. That possibility exists, but is already on the local hospitals goals. Control of the EMS system would be a financial boost or protection for hospitals. The recent debacle with EMS transports and Iowa Care should send a message of caution within EMS. The Community Paramedicine must emphasize community. CP programs must be community ventures and not just the purview of one or two hospitals. If done properly, Scott County, its healthcare system, and its citizens could be the beneficiaries.

CHAPTER 5. STATION LOCATION AND APPARATUS DEPLOYMENT

This chapter discusses the deployment of fire and rescue stations and emergency response apparatus in Scott County. As discussed in the previous chapters, there are many factors that should be taken into account when determining the appropriate number of stations, including demand for services, population, density of demand and population, size of the jurisdiction, and desired response times. This chapter applies these factors to the current and future situation of Scott County.

Methodology

Before any analysis took place, project team members gathered and reviewed information related to properly locating fire stations, including:

1. Current apparatus deployment
2. National response time standards
3. Current Iowa response time standards
4. Current and projected population
5. Current and projected demand and workload

Actual incident data for April 5, 2011 through September 27, 2013 (4/11-9/13) was collected from SECC and incident data for July 1, 2010 through June 30, 2013 (7/10-6/13) was gathered from the MEDIC EMS computer aided dispatch (CAD) system.

Data included addresses for geocoding, type of incident, units responding, and overall response times.[41] Geographic information system (GIS) files used for the analysis were provided by Scott County and the State of Iowa. TIGER road centerline data from the US Census Bureau was also utilized.

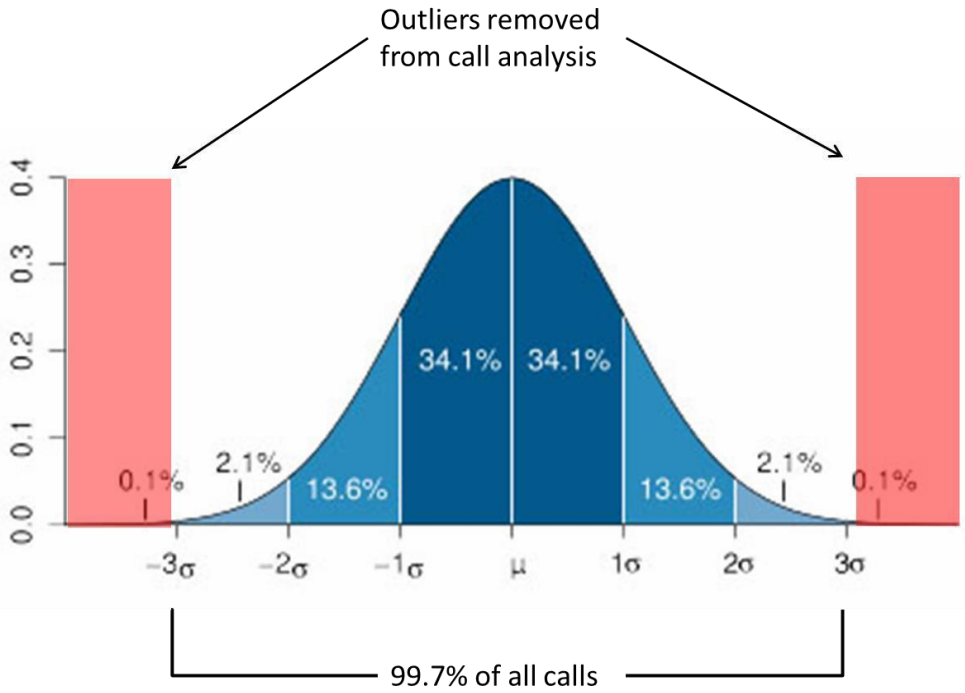
Current Response Times

The first step in the deployment analysis is a review of department-wide response times. Response time is the total amount of time elapsing between an individual calling 911 and emergency service personnel arriving at the scene. Response time can be broken down into multiple segments for analysis (call processing, dispatch, turnout, and travel time). Of these time segments, travel time is the most difficult to improve as it is dependent on the physical location of facilities.

[41] Geocoding is a process by which the street address of an emergency incident is translated into latitude and longitude so that it can be placed onto a map.

The analysis of response times focused on emergency medical incidents. For all time segments, CAD data from the respective dispatching agency was used. In some cases, there were invalid entries (did not have a time recorded) or obvious errors (unit arrived before the call came in) that were excluded from the dataset. Finally, to eliminate outliers that may distort the response statistics, times that were more than three standard deviations from the mean were also excluded. If travel times have a normal distribution, 99.7% of incidents are expected to fall within three standard deviations. The removed 0.3% of incidents usually contains errors that can distort the analysis results. Figure 17 shows a normal distribution or "Bell Curve" and how it impacts call analysis.

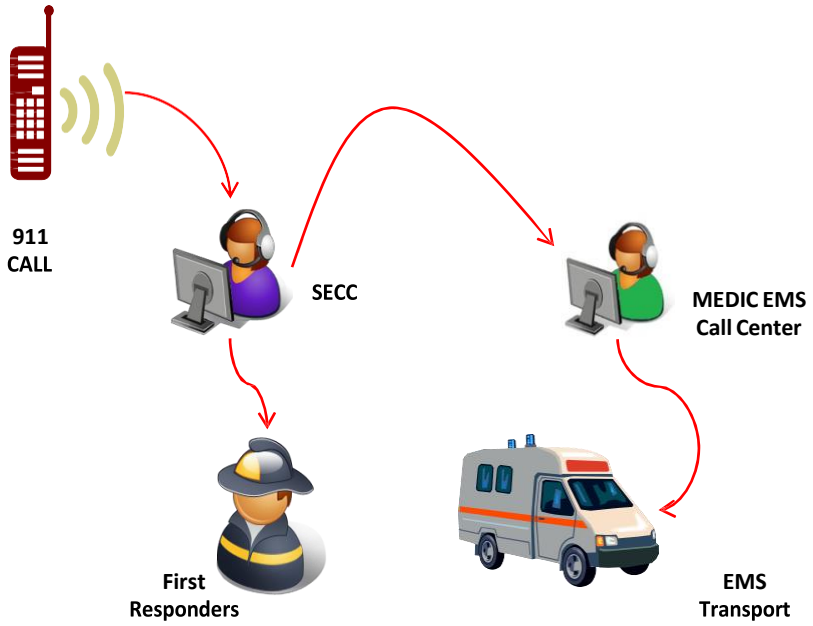
Figure 17: Normal Data Distribution Curve



Call Processing and Dispatch – Call processing time includes both call processing (taking down necessary information) and dispatch (notifying the appropriate units). Some CAD systems track each time segment separately; most do not. Throughout this section call processing time includes dispatch time. Call processing and dispatching for Scott County is performed by two different agencies. SECC acts as the Public Safety Answering Point (PSAP) and is responsible for dispatching first responders. If the call is medical in nature, the SECC dispatcher will transfer the call to a MEDIC EMS dispatcher. The MEDIC EMS call center is co-located in SECC and acts as a secondary PSAP. The MEDIC EMS dispatcher will then identify and dispatch a transport unit. Although not adopted by Scott County and not a regulation, NFPA standard 1221 recommends that emergency calls are processed within 60 seconds, 80% of the time. MEDIC EMS also performs emergency medical dispatch (EMD) on some of its calls. EMD allows dispatchers to gain better awareness on the emergency and identify the proper unit to respond. For medical calls that require emergency medical dispatch (EMD) questioning, NFPA

1221 recommends that 90% of calls are processed within 90 seconds. Figure 18 shows the process from 9-1-1 call to first responder and EMS transport units being dispatched.

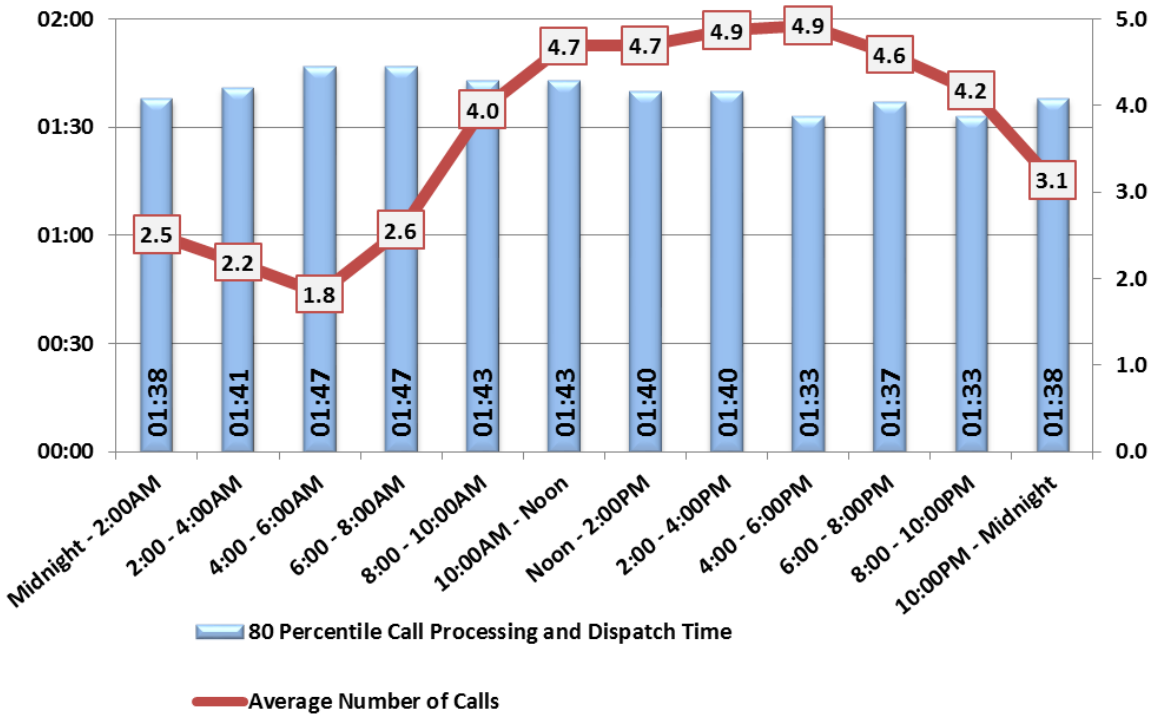
Figure 18: Process from 9-1-1 Call to First Responder and EMS Transport Units



Scott County Emergency Communications Center – From 4/11-9/13, call processing times for dispatching the first responder units by Scott County Emergency Communications Center (SECC) averaged 00:49 with an 80th percentile time of 01:39. This dataset measures only career departments (Davenport and Bettendorf) and the initial notification to the volunteer departments.

Some variation can be expected by time of day to correspond with heavier or lighter call volumes. Figure 19 depicts the variation in 80th percentile call processing time by time of day for EMS calls (blue column). Call processing times ranged from a low of 01:33 between 4:00 p.m. and 6:00 p.m. to a high of 01:47 between 4:00 a.m. and 8:00 a.m. Average call volume for that time segment is shown as the red line in Figure 19. Call processing times are the inverse of the average call volume throughout the day, with call processing times peaking when call volumes are at their lowest levels. Call volumes rise throughout the day, while call processing times decrease.

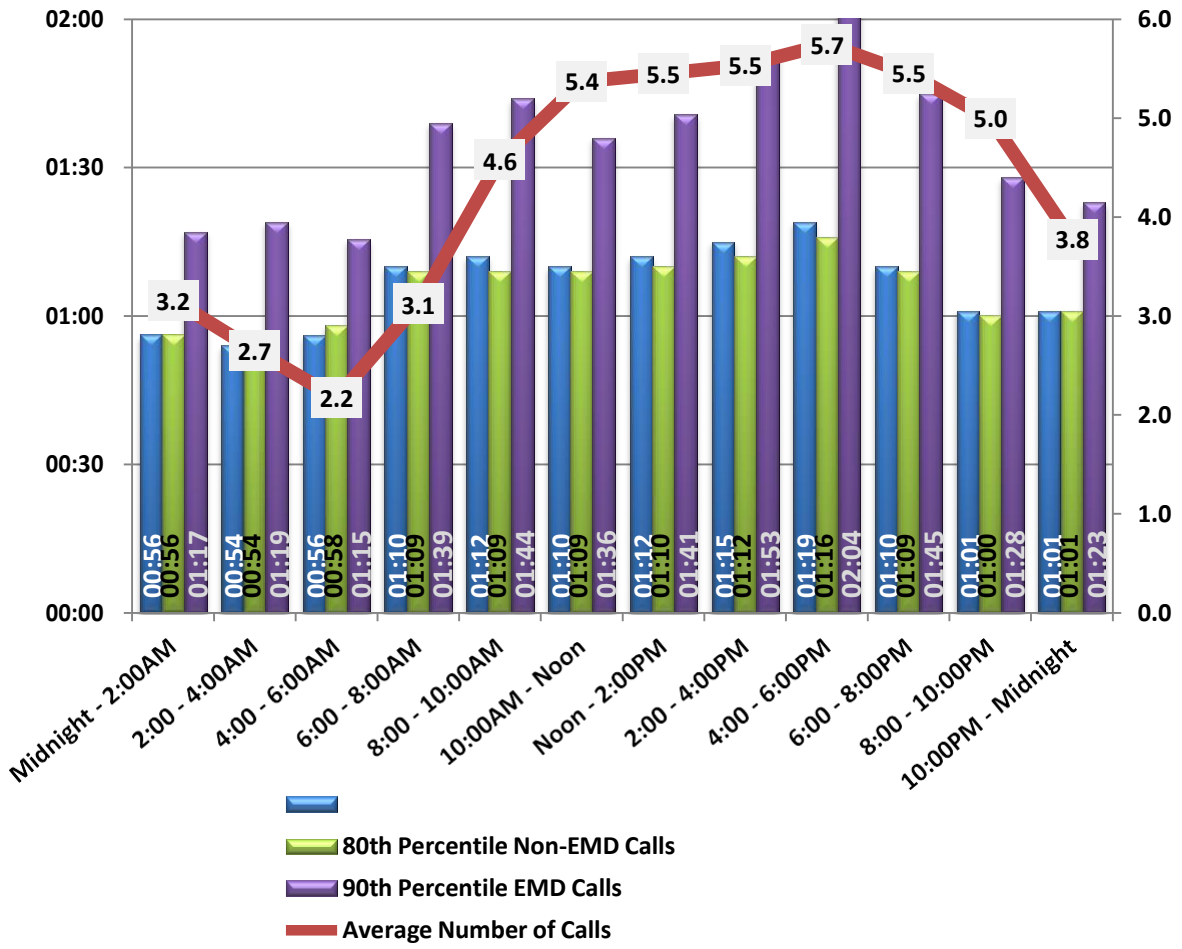
Figure 19: 80th Percentile Call Processing Times and Average Number of Calls by Time of Day for SECC, 4/11-9/13



MEDIC EMS Dispatch – There is a not a unique incident number that ties the SECC CAD data to MEDIC EMS CAD data. This does not allow for a complete picture of the response and for analysis of how the handoff between the agencies impacts overall response time. The review of MEDIC EMS call processing and dispatch only constitutes the time from when they receive notification of the incident until a transport unit has been dispatched. For 7/10-6/13, call processing times for MEDIC EMS averaged 00:51 with an 80th percentile time of 01:08, only 8 seconds over the NFPA 1221 recommendation. Again, this time segment only represents MEDIC EMS' handling of the call and does not include time from the initial 9-1-1 call until they are notified. For calls that require emergency medical dispatch (EMD), 90% of those calls are processed in 01:39, or 9 seconds over the recommendation.

Similar to SECC, call processing times vary over the day. Figure 20 depicts the variation in 80th percentile call processing time for all calls (blue column), the 80th percentile call processing time for EMS calls with no emergency medical dispatch questions (green column) and 90th percentile call processing for calls with the EMD protocol by time of day. Average call volume for that time segment is shown as the red line in Figure 20. Between midnight and 6:00 a.m. all call types are below their recommended standards. Outside of that period, call processing times for all types rise slowly throughout the day, as do the average number of calls.

Figure 20: Call Processing Times and Average Number of Calls by Time of Day for MEDIC EMS, 7/10-6/13



Recommendation 27: Institute a unique incident number that is used for only one incident and is shared between SECC and MEDIC EMS Dispatch Center.

Recommendation 28: Add a time marker (in both CAD records) that measures when a call is forwarded from SECC to MEDIC EMS or from MEDIC EMS to SECC.

Turnout and Travel (Response Time) – Turnout time is measured from when the alarm is received by operations personnel to when the apparatus begins driving to the incident scene. Travel or drive time is the time it takes to go from the station, or wherever the unit is, to the emergency incident. Together these segments represent the response time. National standards, such as NFPA 1710, suggest a response time of five minutes; one minute for turnout and four minutes for travel time. The IOWA EMS Standard 2010 measures a response time from dispatch to arrival at the scene, using the 80th percentile, and adjusts the time depending on the population density of the area. This study will balance the two standards with the understanding that higher turnout times effectively decrease the range responders can travel. Travel and turnout will be analyzed individually since that is how they are recorded.

Table 8 lists the 80th percentile turnout time for all responders in Scott County (including mutual aid departments listed in the CAD records) and the average number of EMS calls per day they responded to. As expected the volunteer departments, both first responder and ambulance services, have high turnout times due to the additional process of notifying volunteer members and having them respond to the station. The impact of turnout times will be shown in the **Travel time** and **Analysis of Station Location** sections. Neither Bennett nor Wheatland Ambulance Service had enough responses in the CAD record to be statistically relevant.

Table 8: 80th Percentile Turnout Times for All Scott County Responders

Department	80th Percentile Turnout Time	Average Calls Per Day
Volunteer First Responders		
Blue Grass VFD	05:11	0.85
Buffalo VFD	05:12	0.64
Dixon VFD	07:48	0.06
Donahue VFD	06:21	0.13
Eldridge VFD	04:59	0.96
LeClaire VFD	04:53	0.79
Long Grove VFD	07:14	0.42
Maysville VFD	06:34	0.09
McCausland VFD	06:08	0.11
New Liberty VFD	07:04	0.05
Princeton VFD	06:29	0.26
Riverdale VFD	05:35	0.10
Walcott VFD	04:43	0.64
Career First Responders		
Bettendorf Fire Department (See footnote 42)	00:13	7.24
Davenport Fire Department	01:19	35.66
Volunteer Transport Units		
Bennett Ambulance	Not enough data for a sample size	0.02
Durant Ambulance	07:42	0.41
Wheatland Ambulance	Not enough data for a sample size	0.02
Career Transport Units		
Buffalo Ambulance	01:01	1.19
MEDIC EMS	01:16	50.35

For the career departments that have personnel in the station (or on a unit) at all times, turnout times are very near the NFPA 1710 recommendation of 60 seconds. BFD's 80th percentile turnout time of 00:13 is commendable, however administration should review when units mark that they are en route to ensure accurate data is being recorded.

Of the different segments of response time (call processing, turnout, and travel) it is easier and less costly to improve call processing and turnout times. Travel time is typically much more difficult and the most expensive to improve (e.g., new/more stations, new roads, or traffic signal interruption devices). Reducing the first two times will reduce total response times. Reduction in call processing and turnout time also permits longer travel times without increasing total response times; thus, stations can typically serve larger areas and still meet response time goals. The critical time is to dispatch the first unit; further call processing can occur simultaneously (i.e., talking more to the caller to obtain details).

Travel (drive) time is measured from the station, or wherever the unit is, to the emergency incident. Station and apparatus placement has the biggest impact on travel time, (though apparatus are not always in the station when dispatched.) Additional factors influencing travel time include traffic, weather, traffic limiting devices (stop lights, speed bumps, etc.), and driver familiarity with the area. Traffic congestion and weather are beyond the department and city's control; however, traffic limiting devices and driver knowledge are not.

Scott County is geographically and demographically diverse. The Iowa EMS System Standards 2010 designated response zones that reflect that diversity and create response standards based upon population density. Table 9 shows the Iowa EMS System Standards for response times for 80% of emergent calls.

Table 9: Iowa EMS System Standards, 2010

Response Times for First Responders	
Urban	5 Minutes
Rural	15 Minutes
Frontier	As quickly as possible
Response Time for Ambulances (not functioning as a first responder)	
Urban	8 Minutes
Rural	20 Minutes
Frontier	As quickly as possible
Response Time for Advanced Life Support	
Urban	8 Minutes
Rural	20 Minutes
Frontier	As quickly as possible

Travel time represents the majority of the response time. Table 10 shows the 80th percentile travel times for the emergency agencies in Scott County and what percent of their response time is spent on travel.

Table 10: 80th Percentile Travel Times for all Scott County Responders and Percent of Response Time Standard Spent on Travel

Department	80th Percentile Travel Time	Percent of Time in Travel
Rural First Responders (15 Minute Response Time)		
Blue Grass VFD	06:46	45.1%
Buffalo VFD	04:34	30.4%
Dixon VFD	04:11	27.8%
Donahue VFD	07:26	49.5%
Eldridge VFD	03:32	23.6%
LeClaire VFD	04:38	30.9%
Long Grove VFD	05:22	35.8%
Maysville VFD	05:12	34.6%
McCausland VFD	05:58	39.8%
New Liberty VFD	04:45	31.7%
Princeton VFD	05:45	38.3%
Walcott VFD	04:58	33.1%
Urban First Responders (5 Minute Response Time)[42]		
Bettendorf Fire Department	05:44	71.7%
Engine 1	06:07	76.5%
Engine 2	05:22	67.1%
Engine 3	06:35	82.3%
Engine 4	06:36	82.5%
Truck 2	05:33	69.4%
Davenport Fire Department	03:45	25.0%
Engine 1	02:42	18.0%
Engine 2	02:45	18.3%
Engine 3	03:40	24.4%
Engine 4	03:22	22.4%
Engine 5	03:32	23.6%
Engine 6	03:50	25.6%

[42] Those items in red reveal that greater than 75% of response time is spent in travel. This can reflect one of two main things. First, these cases occur exclusively in Bettendorf. Bettendorf units call responding very quickly, so their actual travel time could include response preparation. Second, there are some areas in Bettendorf that have some extended travel times.

Department	80th Percentile Travel Time	Percent of Time in Travel
Engine 7	04:53	32.6%
Engine 8	04:31	30.1%
Riverdale VFD	03:15	21.7%
Rural Ambulance Service (20 Minute Response Time)		
Bennett Ambulance	Not enough data for a sample size	
Durant Ambulance	10:34	52.5%
Wheatland Ambulance	Not enough data for a sample size	
Buffalo Ambulance	10:15	50.1%
Urban Ambulance Service (8 Minute Response Time)[43]		
MEDIC EMS	05:59	75.0%
Unit 1	05:50	72.9%
Unit 2	06:14	78.0%
Unit 3	05:48	72.5%
Unit 4	05:55	74.0%
Unit 6	05:57	74.4%
Unit 7	05:54	73.7%
Unit 8	06:09	76.9%
Unit 9	06:07	76.5%
Unit 10	06:02	75.4%
Unit 11	06:02	75.4%
Unit 12	05:34	69.7%
Unit 15	05:43	71.4%
Unit 16	07:08	89.2%
Unit 17	07:06	88.7%
Unit 18	05:47	72.3%

With the exception of Bettendorf Engines 1, 3, and 4, the first responder units are spending less than 75% of their total response time on travel. For the ambulance services, MEDIC EMS has several units that are traveling 6 or more minutes to reach their call. This can be attributed to their high call volume, large service area, units not being in their response zone when dispatched, and traffic conditions. Call location analysis will be further analyzed in the **Analysis of Station Location** section.

[43] Extended travel time is likely for MEDIC EMS because they are often on the street when called, thereby making their response immediate, but travel time longer.

There are a number of factors that play into these response times including station location, proximity to incidents, and call volumes. It should be noted that responding units in Scott County are not always in the station when dispatched. Furthermore, units often respond outside of their first-duty area when closer units are unavailable, which also increases travel times.

Total Response Time – For mathematical reasons, one cannot simply add the 80th percentile call processing and dispatch time segment to the 80th percentile turnout and travel time segment to reach the total 80th percentile response time. This section will look at both the "Response" time as defined in the Iowa EMS System Standard and the total response time from the 9-1-1 call until a unit arrives, as most individuals in need of emergency service will not differentiate between the call handling and response agencies.

Similar to travel time, responders were measured against their service area (urban, rural, frontier). Figure 21 shows the 80th percentile response time (dispatch to on-scene) in the blue column with white text and the 80th percentile total time (call initiated to on-scene) in the green column with black text for the first responders in the rural response zones.

Figure 21: 80th Percentile Response Times and 80th Percentile Total Times for First Responders in the Rural Response Zones

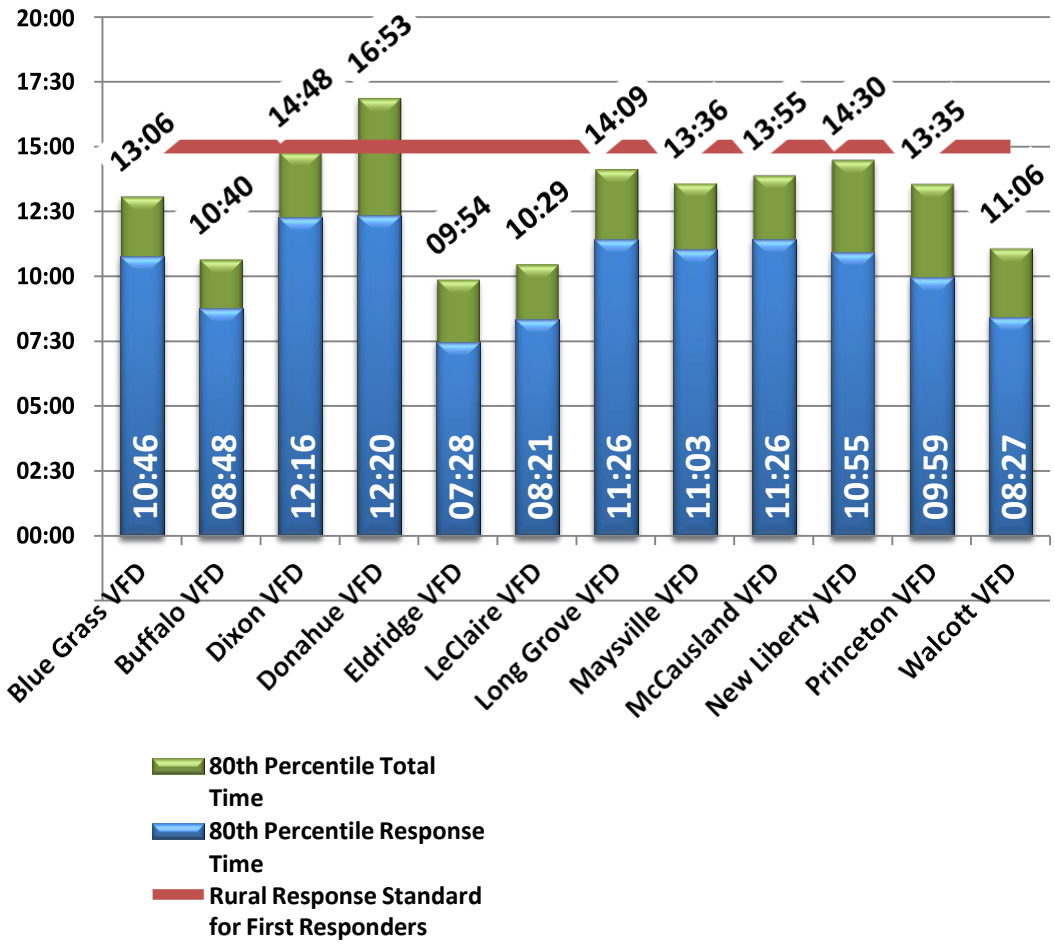
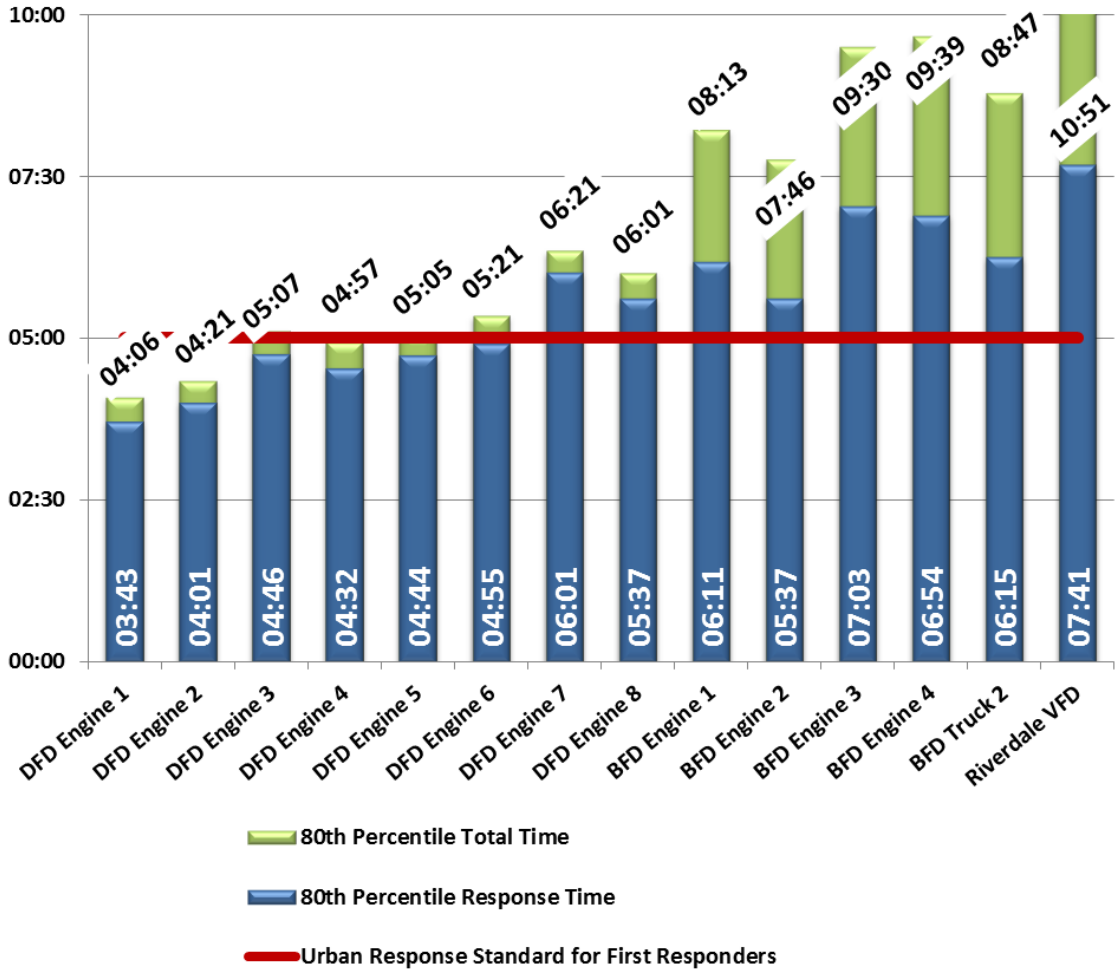


Figure 22 shows the 80th percentile response time (dispatch to on-scene) in the blue column with white text and the 80th percentile total time (call initiated to on-scene) in the green column with black text for the first responders in the urban response zones. For career departments Davenport and Bettendorf, the units that were the primary responders for EMS calls (over 100 calls) were listed to provide a better picture of response times in their first due area.

Figure 22: 80th Percentile Response Times and 80th Percentile Total Times for First Responders in the Urban Response Zones

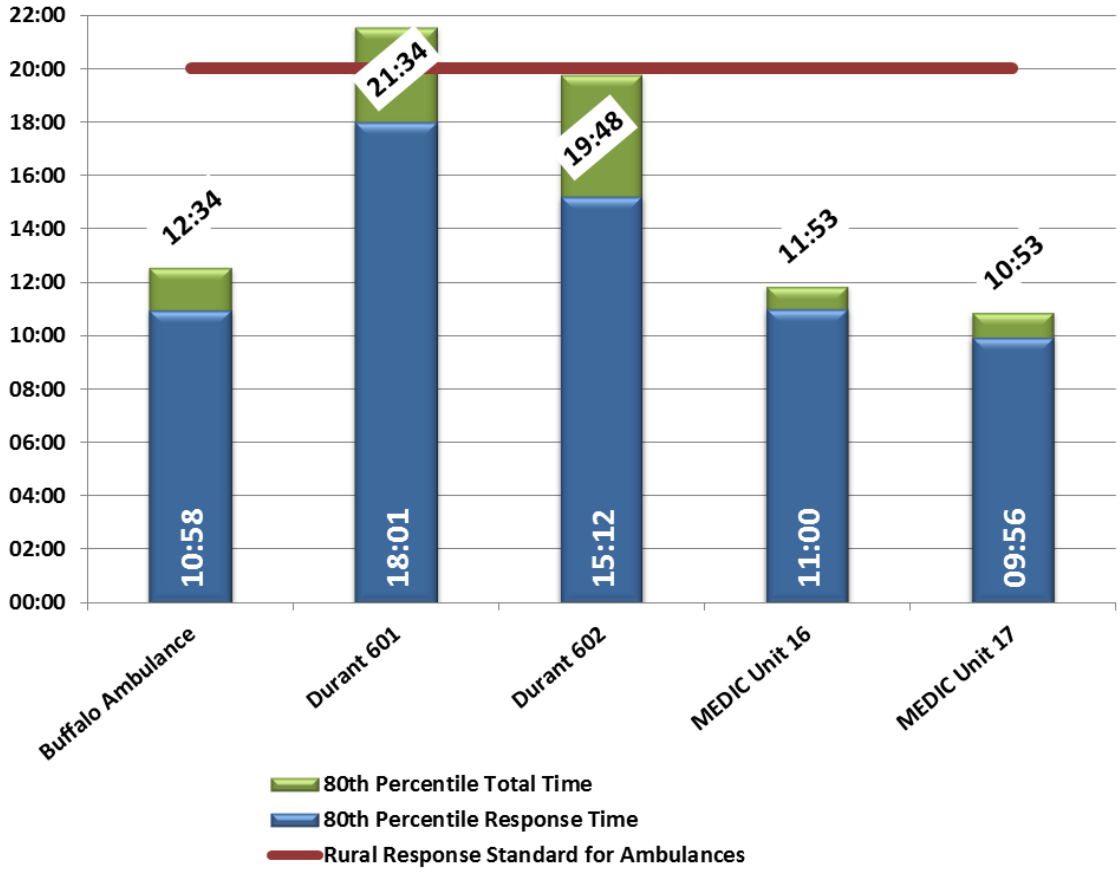


Davenport Engines 1-6 are under the 5 minute response standard at the 80th percentile. As expected, Riverdale VFD has the highest response time out of the group, but it is only 02:41 beyond the standard. However, the call handling process constitutes around 30 percent of the total time for Bettendorf and Riverdale, while only constituting around 10 percent for Davenport. SECC should review call handling procedures with BFD and the volunteer fire departments to minimize the amount of time it takes to dispatch a first responder unit.

Recommendation 29: Review call handling process for volunteer departments and BFD to identify opportunities for decreasing time to dispatch a unit. This includes determining call time intervals including: time received at 911, time sent to fire dispatch, and time the call is dispatched.

Figure 23 shows the 80th percentile response time (dispatch to on-scene) in the blue column with white text and the 80th percentile total time (call initiated to on-scene) in the green column with black text for the ambulance service in the rural response zones.

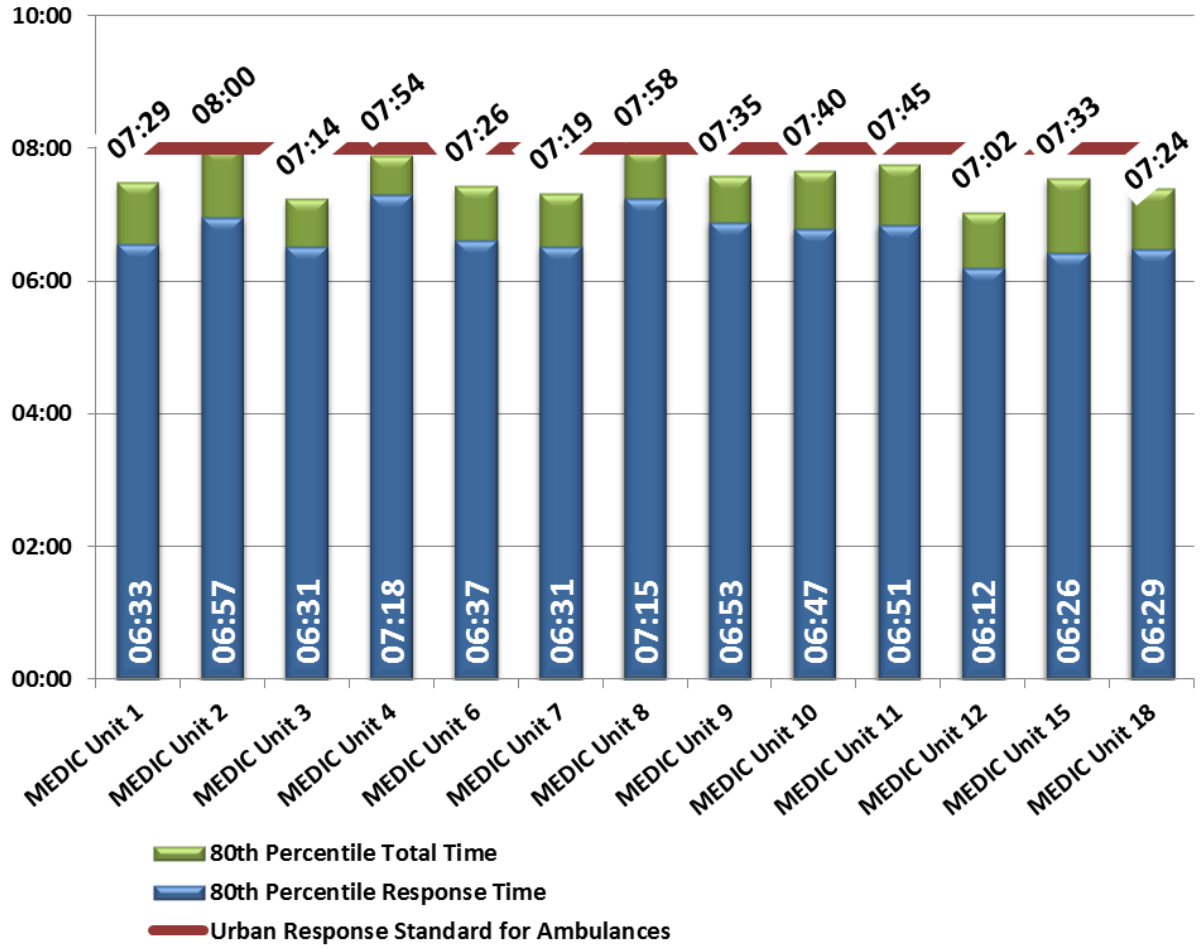
Figure 23: 80th Percentile Response Times and 80th Percentile Total Times for Ambulance Service in the Rural Response Zones



Buffalo and Durant ambulance services are below the standard for response time in rural response zones. As noted previously, the call handling process from MEDIC EMS CAD does not account for the transfer time from SECC or surrounding county emergency communication centers, so the Total Time (green column) does not reflect that measurement. Most of the responses for MEDIC EMS Units 16 and 17 occur in the rural response zones north and east of Davenport. These units are well within the standard for response.

Figure 24 shows the 80th percentile response time (dispatch to on-scene) in the blue column with white text and the 80th percentile total time (call initiated to on-scene) in the green column with black text for the ambulance service in the urban response zones.

Figure 24: 80th Percentile Response Times and 80th Percentile Total Times for Ambulance Service in the Urban Response Zones



All ambulance service in the urban response zones of Davenport and Bettendorf are provided by MEDIC EMS. At the 80th percentile, all units are below the standard of 08:00 for response.

Given that the population density is highest in and around the city of Davenport, Davenport Fire Department and MEDIC EMS handle most of the call volume for Scott County. Figure 25 and Figure 26 shows the average daily EMS call volume for fire department (career and volunteer) and ambulance services, respectively.

Figure 25: Average Daily EMS Call Volume for Fire Departments, 4/11-9/13

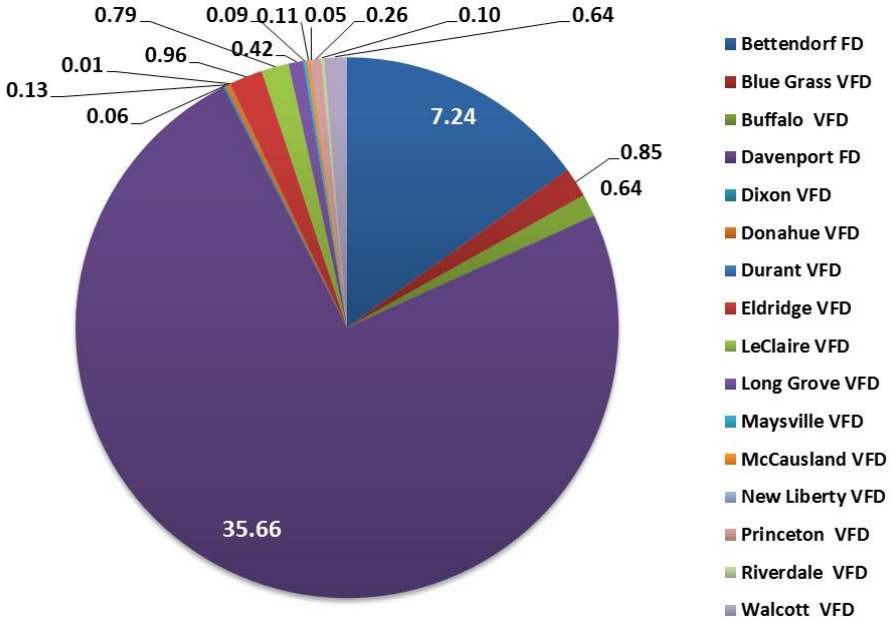
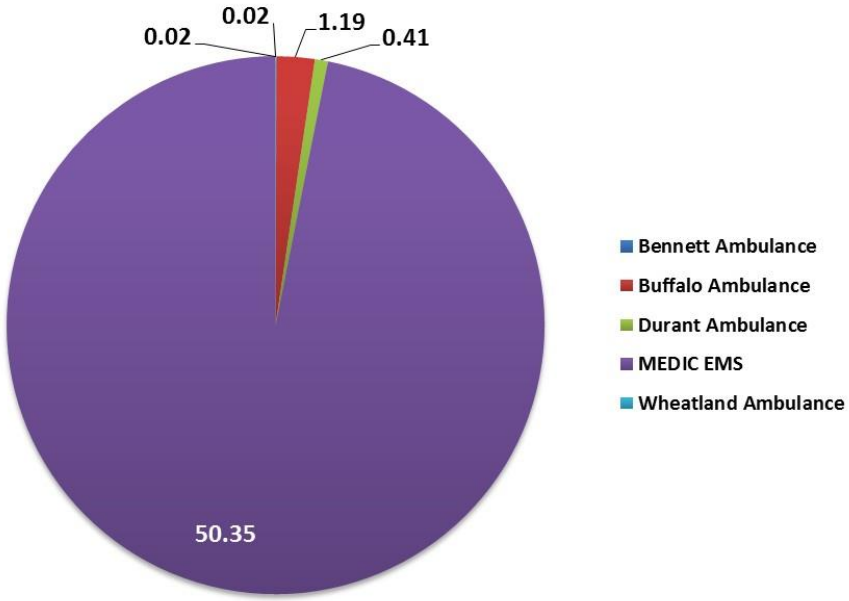


Figure 26: Average Daily EMS Call Volume for Ambulance Services, 7/10-6/13



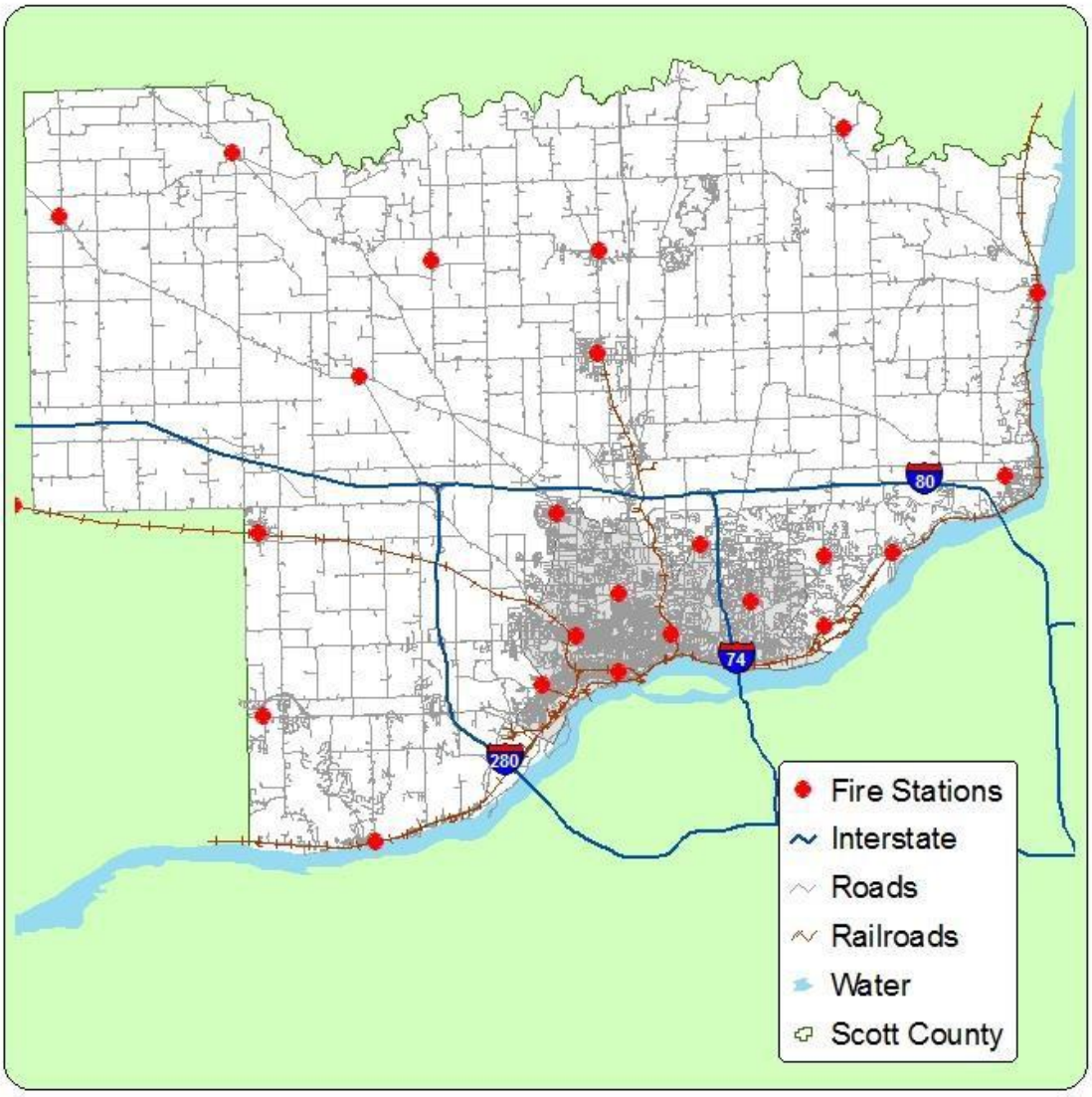
Overall, EMS response times in Scott County are below targets set in the Iowa EMS System Standards. As expected, volunteer departments acting as first responders have higher turnout times because they might not be in the station and may have to wait on personnel to respond. This does not, however, decrease the need for rapid medical care during an emergency for an individual who lives in these response zones. Staffing opportunities or augmenting staffing with full time personnel may help to decrease response times in these rural areas.

Analysis of Station and Apparatus Locations

This section provides an in-depth look at station location and apparatus placement. The primary objective is to determine what areas, if any, are in need of additional resources and how resources can be distributed to serve the city more efficiently.

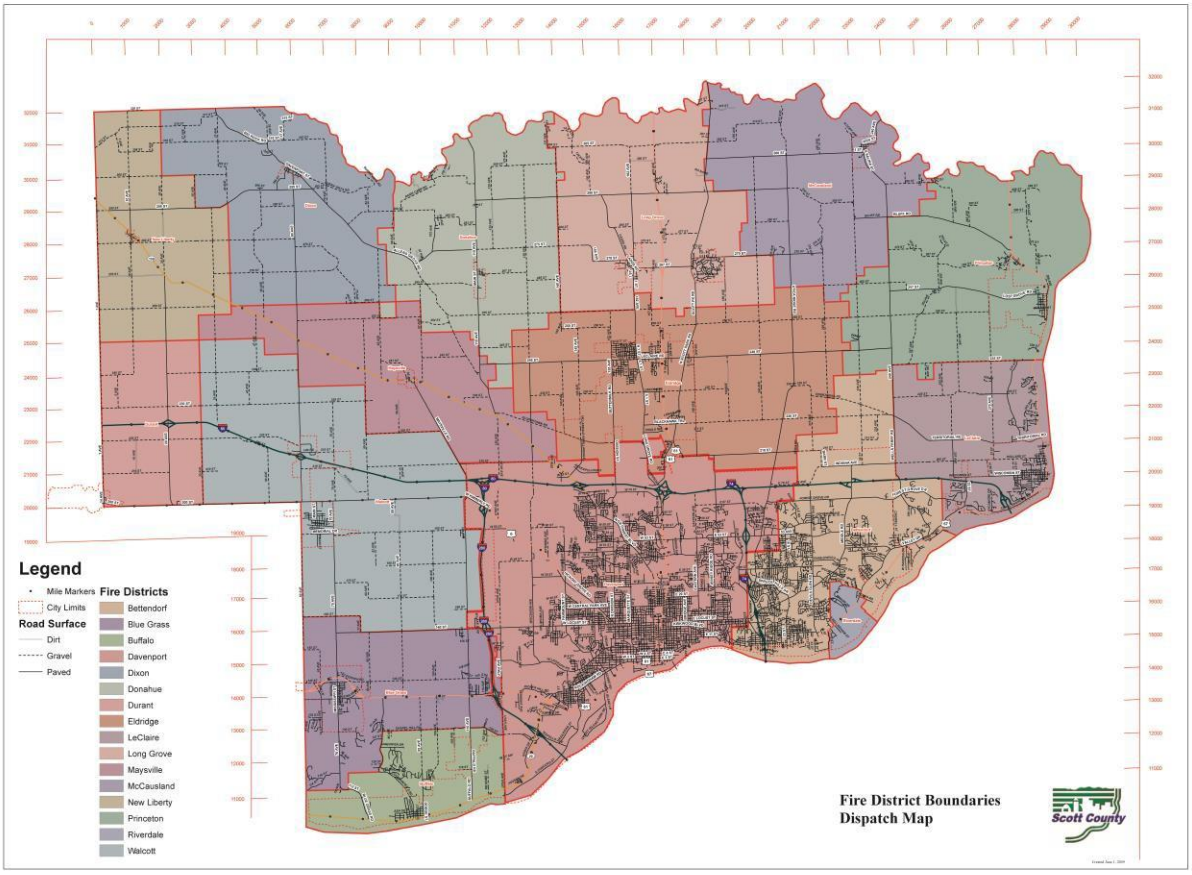
Maps are included to show theoretical response reaches based upon the current station and apparatus locations. These theoretical response reaches are based on the length of road segments and speed limit attributes contained in road centerline data from Scott County and the State of Iowa. TIGER road centerline data was combined with county provided data to ensure adequate coverage of roads and information such as speed limits and one-way routes. Figure 27 provides an overview of fire station locations in Scott County.

Figure 27: Scott County Fire Station Locations



Scott County is divided into response zones that act as the primary service area for the response agencies. Figure 28 shows the response zones for the fire departments in Scott County.

Figure 28: Scott County Fire Department Response Zones



Emergency medical transport is handled by separate agencies in Scott County. Figure 29 shows the locations of the EMS posts or stations in Scott County.

Figure 29: Scott County EMS Posts

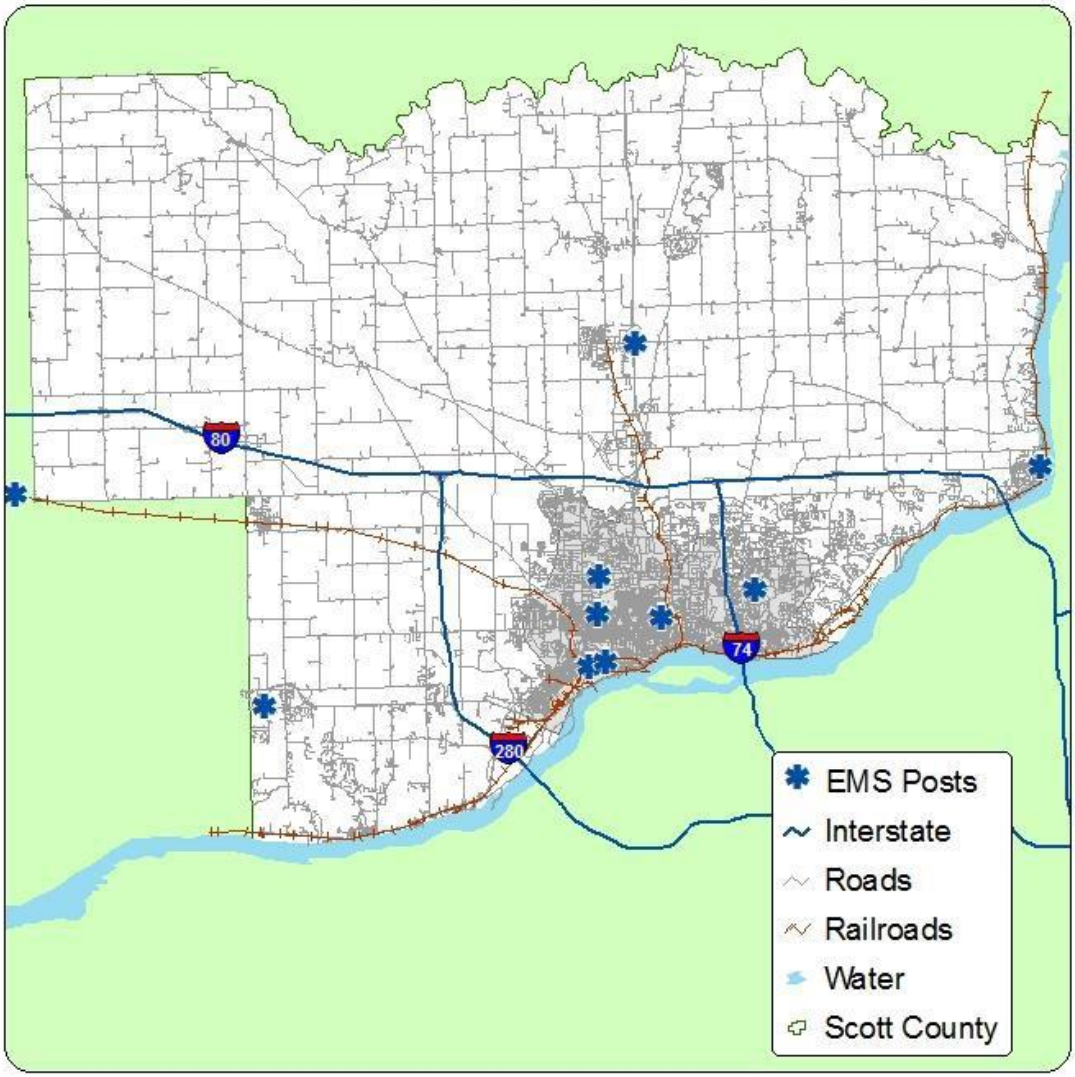
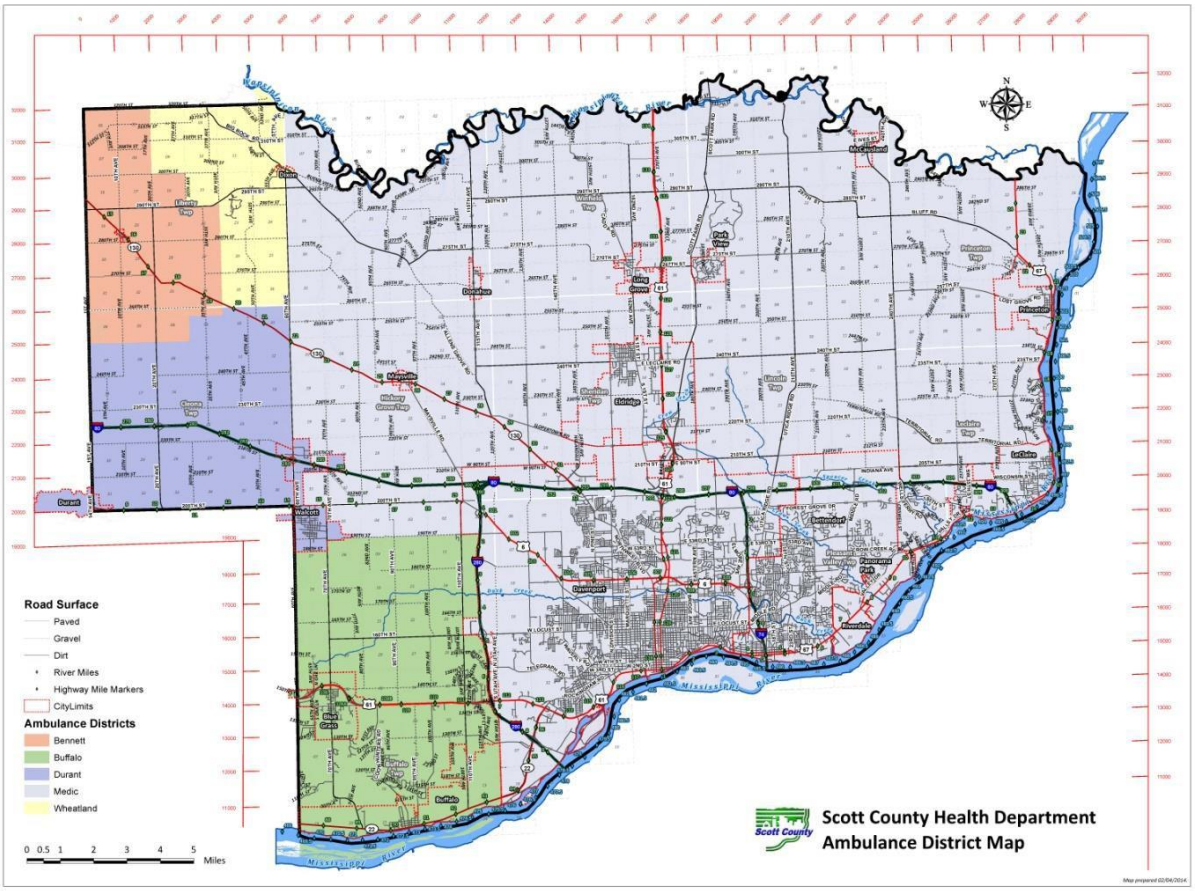


Figure 30 shows the primary service areas for each service.

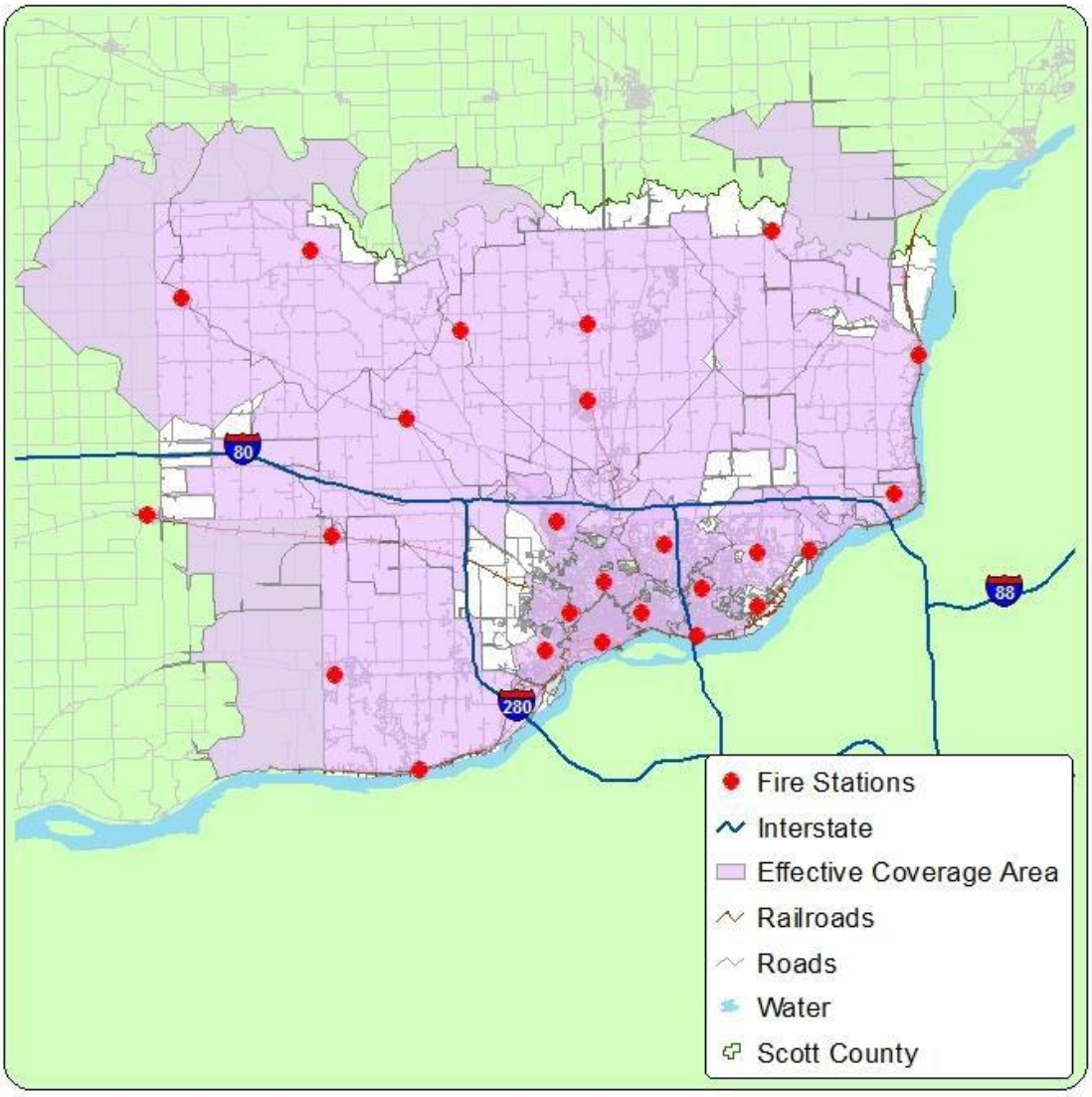
Figure 30: Scott County EMS Response Zones



Instead of using the NFPA 1710 response standards, we used the Iowa EMS System Standards to develop coverage areas and effective coverage areas. The Iowa EMS times prescribe a response time that measures from time of dispatch to the unit arriving on scene. Discounting 60 seconds for turnout, travel areas were built by role (first responder or ambulance) and response zone (urban or rural). An effective travel area was created by removing the 80% turnout time for the agency from the recommend response time for the area. For example, Davenport Fire Department acts as a first responder in an urban response zone and should respond to all EMS calls within 5 minutes, 80% of the time. Their turnout time at the 80th percentile for EMS calls was 01:19, leaving them 03:41 to reach the scene within the standard. This is their effective travel.

Figure 31 shows the overall effective travel for first responders in Scott County. While most of Scott County is covered, sections just to the east of Interstate 280 fall outside of the standard. Most of this area is undeveloped, but any suburban development may warrant the addition of a new station in the future.

Figure 31: Effective Coverage Area for First Responders in Scott County



Since Davenport and Bettendorf fire departments handle most of the call volume for first response and MEDIC EMS handles most of the transport. Their service areas are looked at in greater detail. The other Fire Departments and Ambulance Services and their recommended (light pink) and effective travel (dark pink) areas are shown in Appendix A.

Figure 32 shows the location of Davenport Fire Department (DFD) stations.

Figure 32: Davenport Fire Department Stations

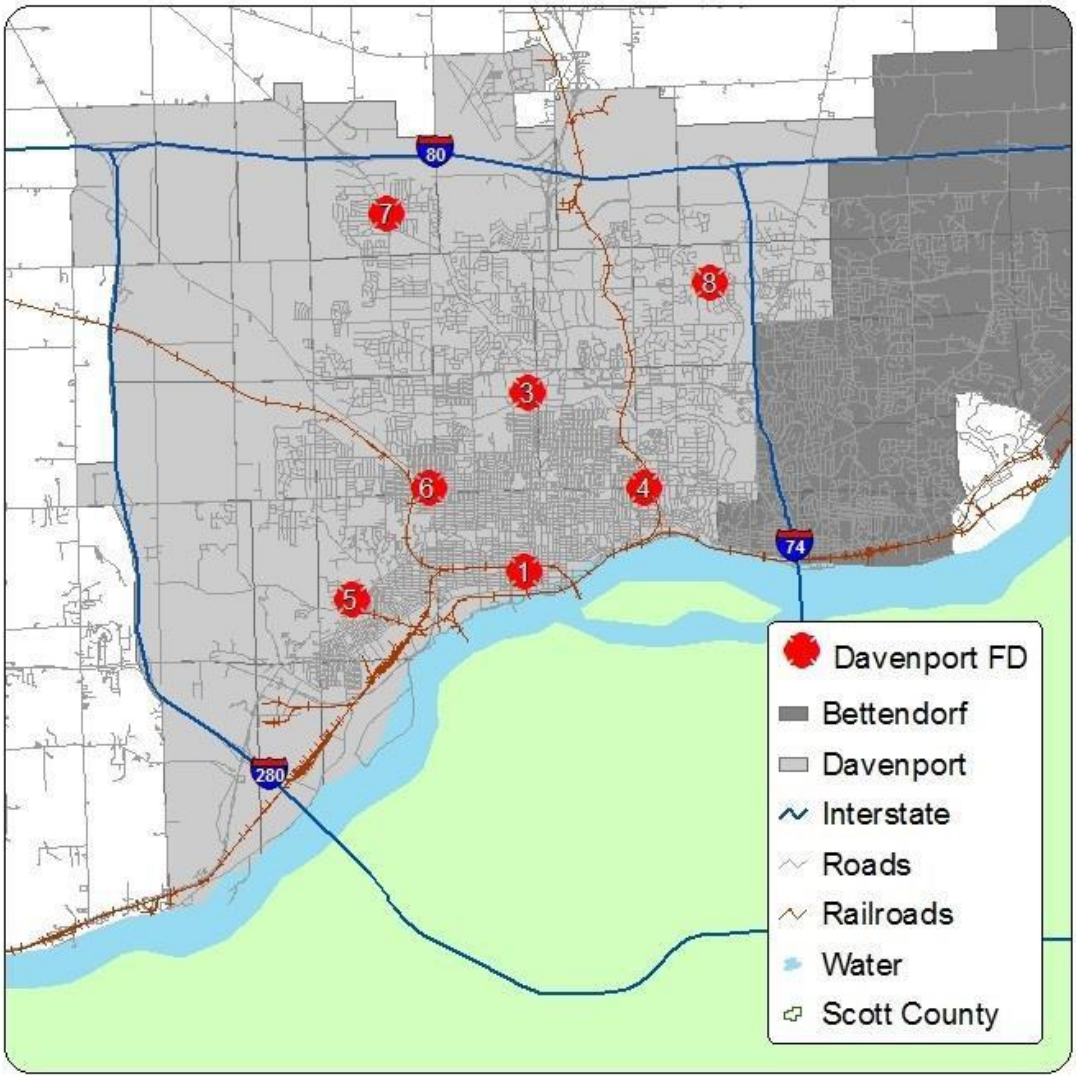


Figure 33 shows a greater detailed look at DFD's recommended travel area of 4 minutes (light pink) and their effective coverage of 3.6 minutes (dark pink).

Figure 33: Effective Coverage Area for Davenport Fire Department

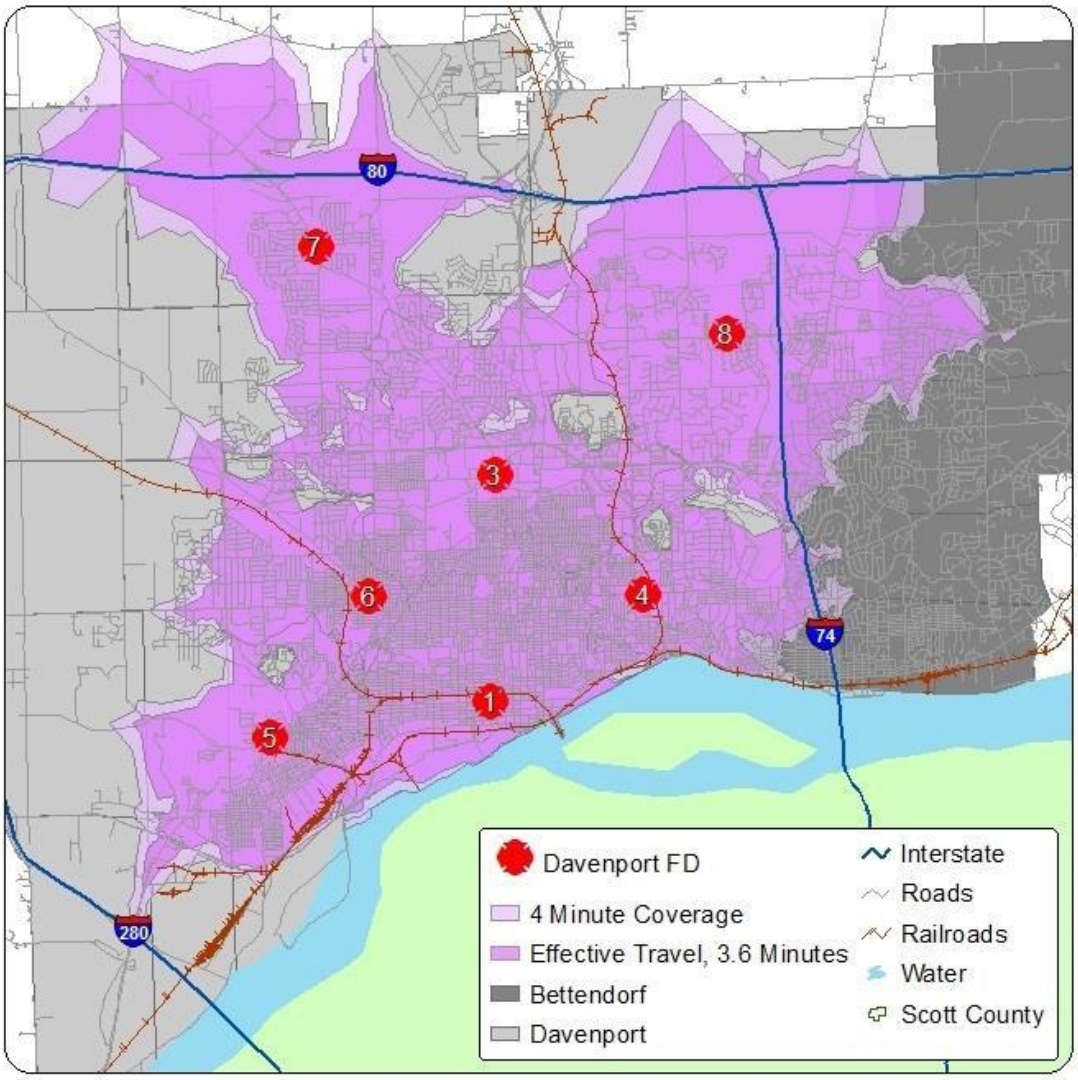
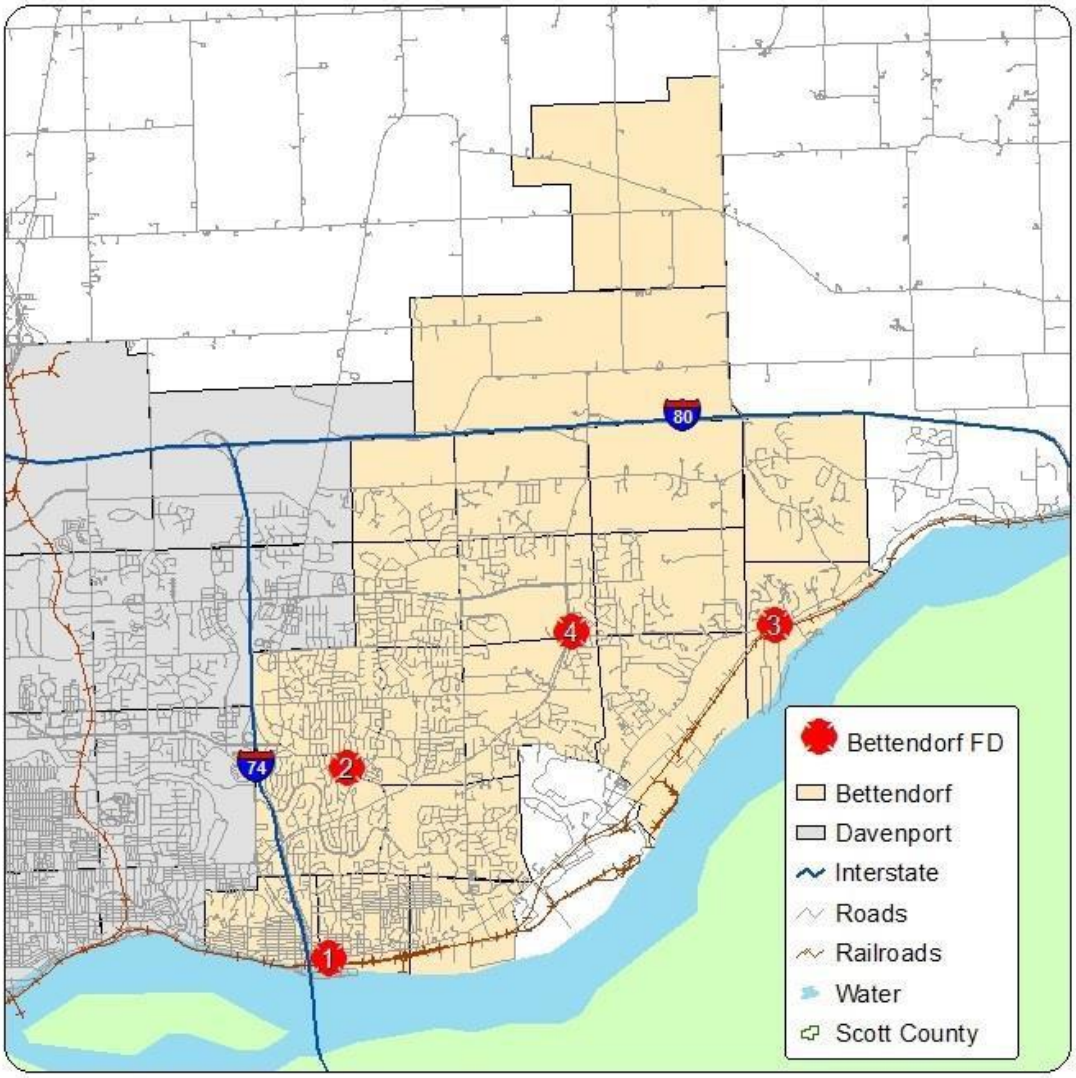


Figure 34 shows the location of BFD stations.

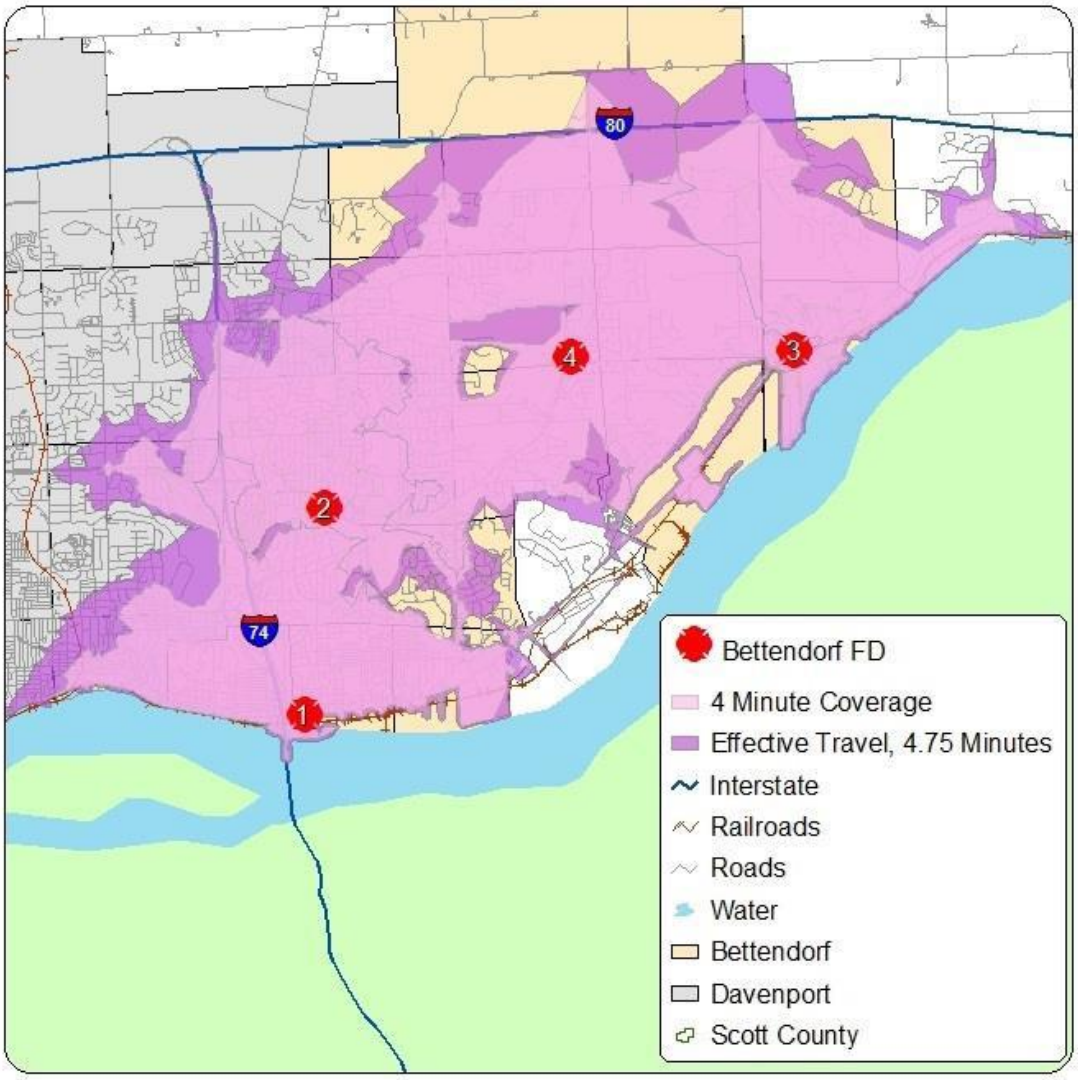
Figure 34: Bettendorf Fire Department Stations[44]



[44] During daytime hours, most responses are from Station 2. During evening hours, most responses are from Station 4. The on-duty chief usually responds from Station 1. Station 3 is inactive.

Figure 35 shows a greater detailed look at BFD's recommended travel area of 4 minutes (light pink) and their effective coverage of 4.75 minutes (dark pink).

Figure 35: Effective Coverage Area for Bettendorf Fire Department



MEDIC EMS handles most of the transport volume in Scott County. Figure 36 shows the MEDIC EMS Posts in Scott County.

Figure 36: MEDIC EMS Posts in Scott County

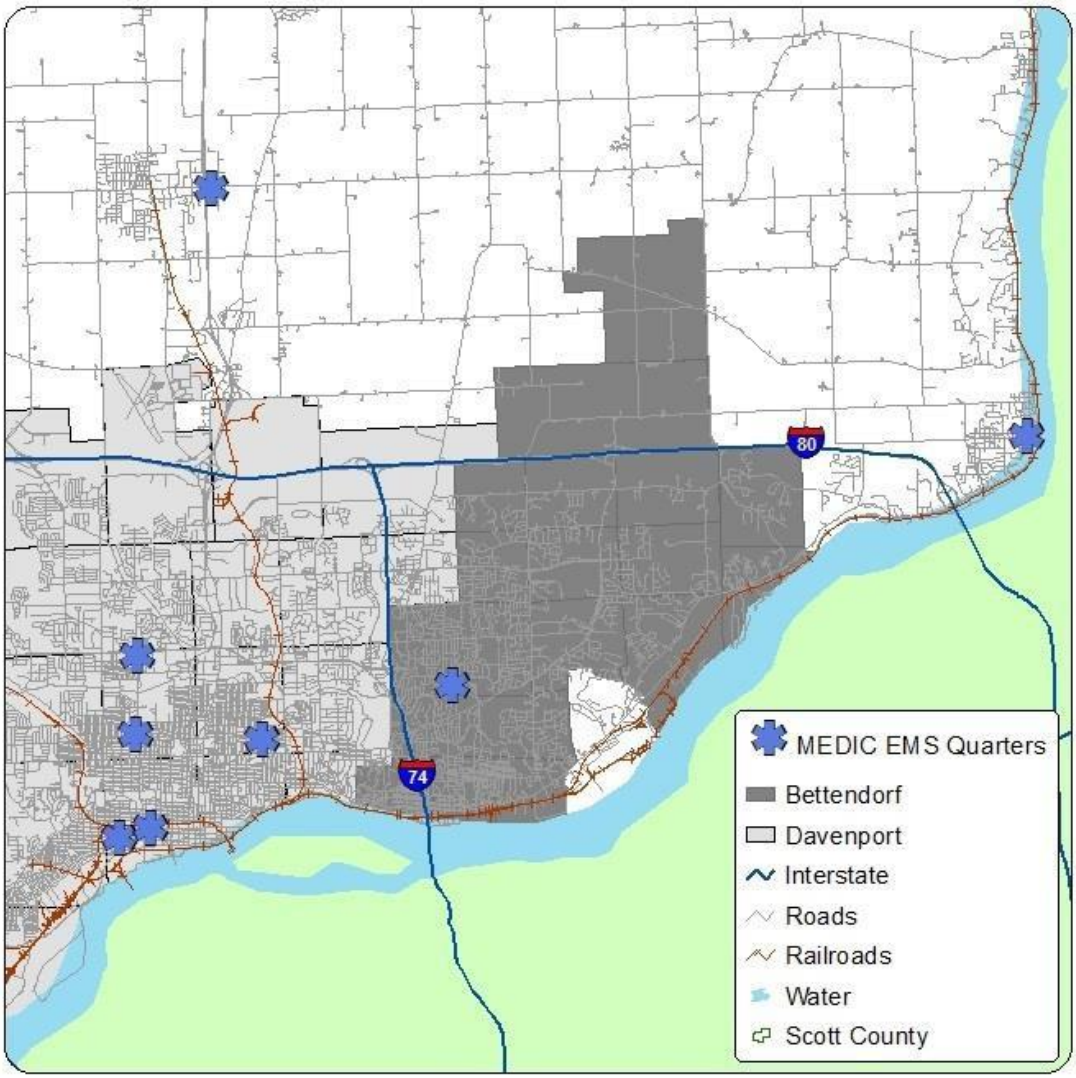


Figure 37 shows the recommended travel area of 7 minutes (light pink) and their effective coverage of 6.75 minutes (dark pink).

Figure 37: Effective Coverage Area for MEDIC EMS

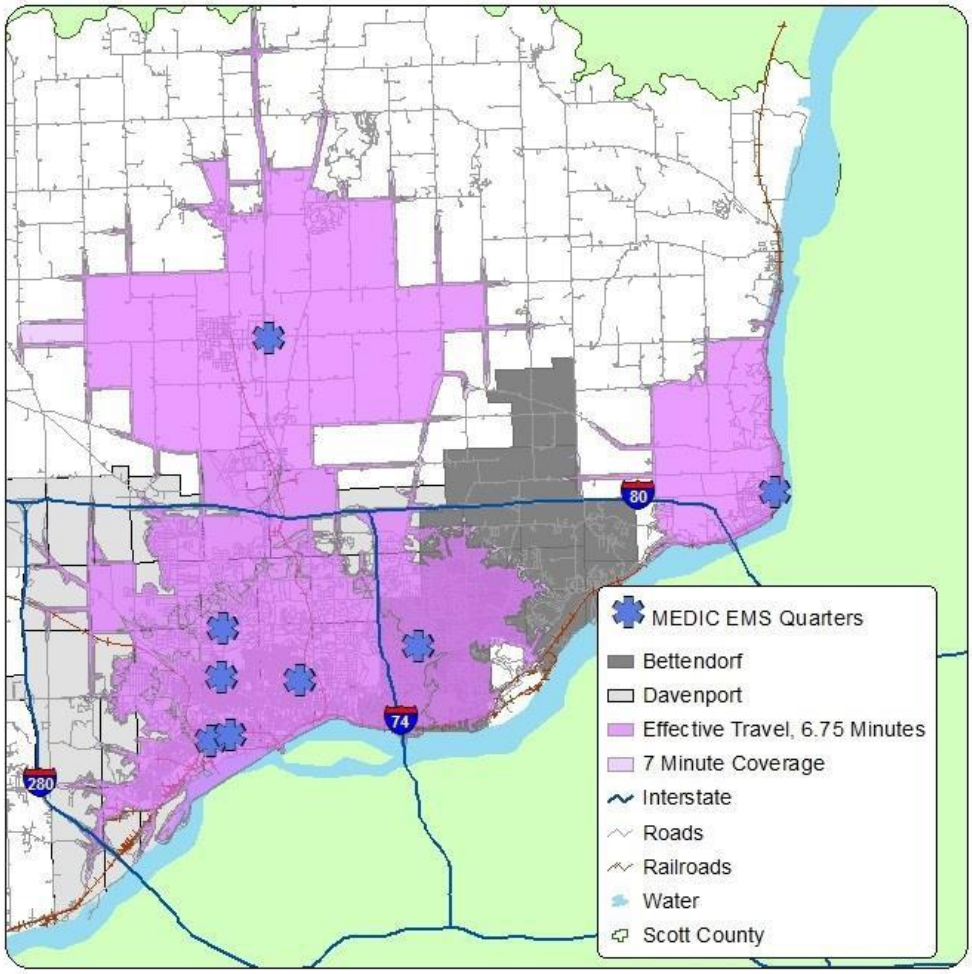
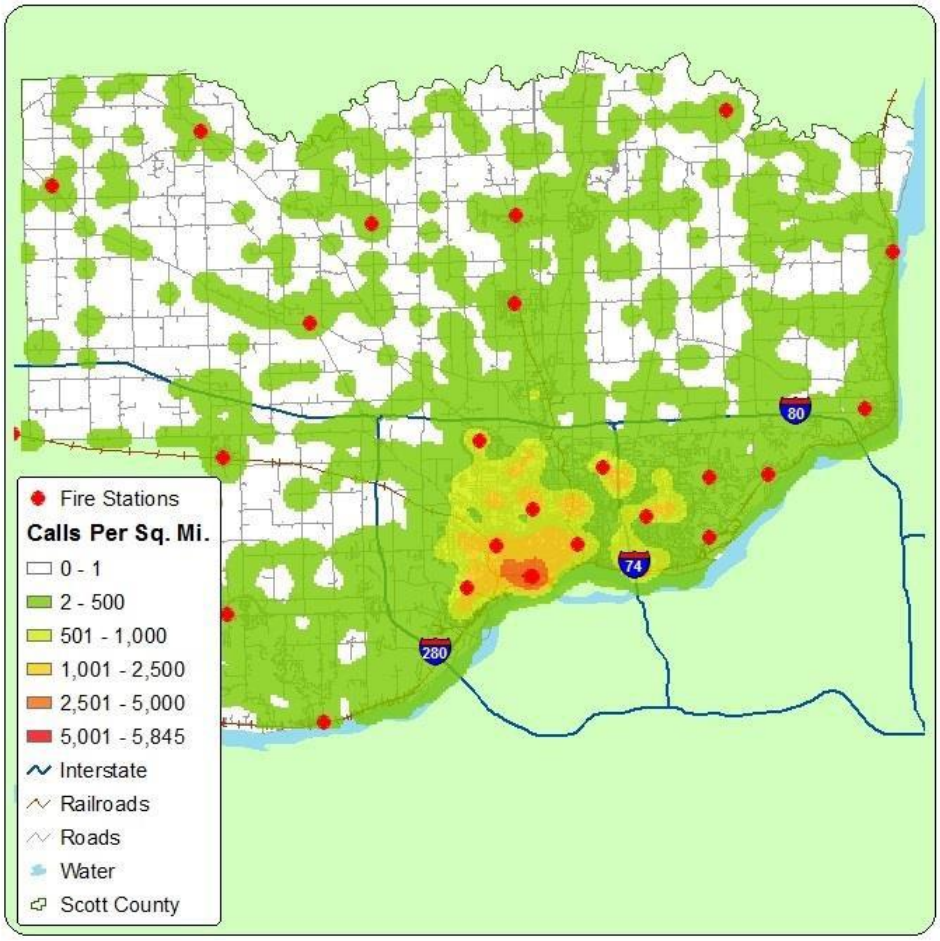


Figure 37 also shows that they are able to reach most of their coverage area within the recommended time. There is a large portion of Bettendorf that is outside of the area. Most of this area is undeveloped, but EMS calls in this area would have a higher than desired response time for a transport unit.

Knowing where incidents are occurring is one of the most important considerations when looking at station and apparatus location. Therefore, this analysis also takes into account geocoded incidents and resulting incident density. The 4/11-9/13 CAD from SECC data included 48,357 unique medical emergency incidents, of which 43,805 (90%) geocoded. Using a density surface derived from the geocoded incidents, Figure 38 shows the density of emergency medical incidents per square mile and their relation to fire stations.

Figure 38: Scott County First Responders and Emergency Medical Calls Per Square Mile, 4/11-9/13



As expected, most of the call volume occurs in the higher population areas of Davenport and Bettendorf. The same density was run on calls in the MEDIC EMS database (7/10-6/13), with 56,818 out of the 57,125 calls (99%) geocoding (calls in the MEDIC EMS database included the latitude and longitude of the call making it easier to place on a map).

Figure 39 shows the calls per square mile that included the dispatch of an ambulance.

Figure 39: MEDIC EMS Emergency Medical Calls Per Square Mile, 7/10-6/13

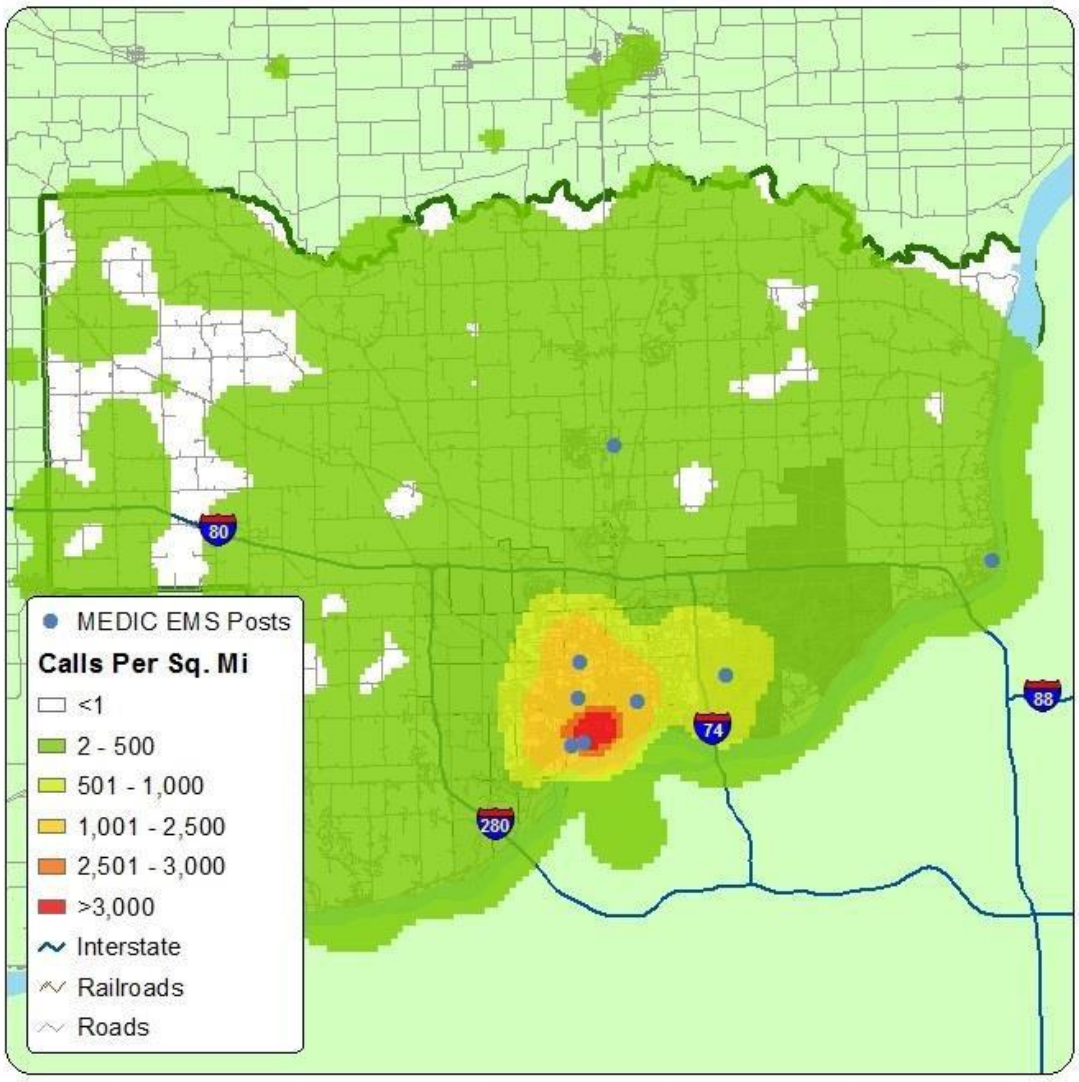
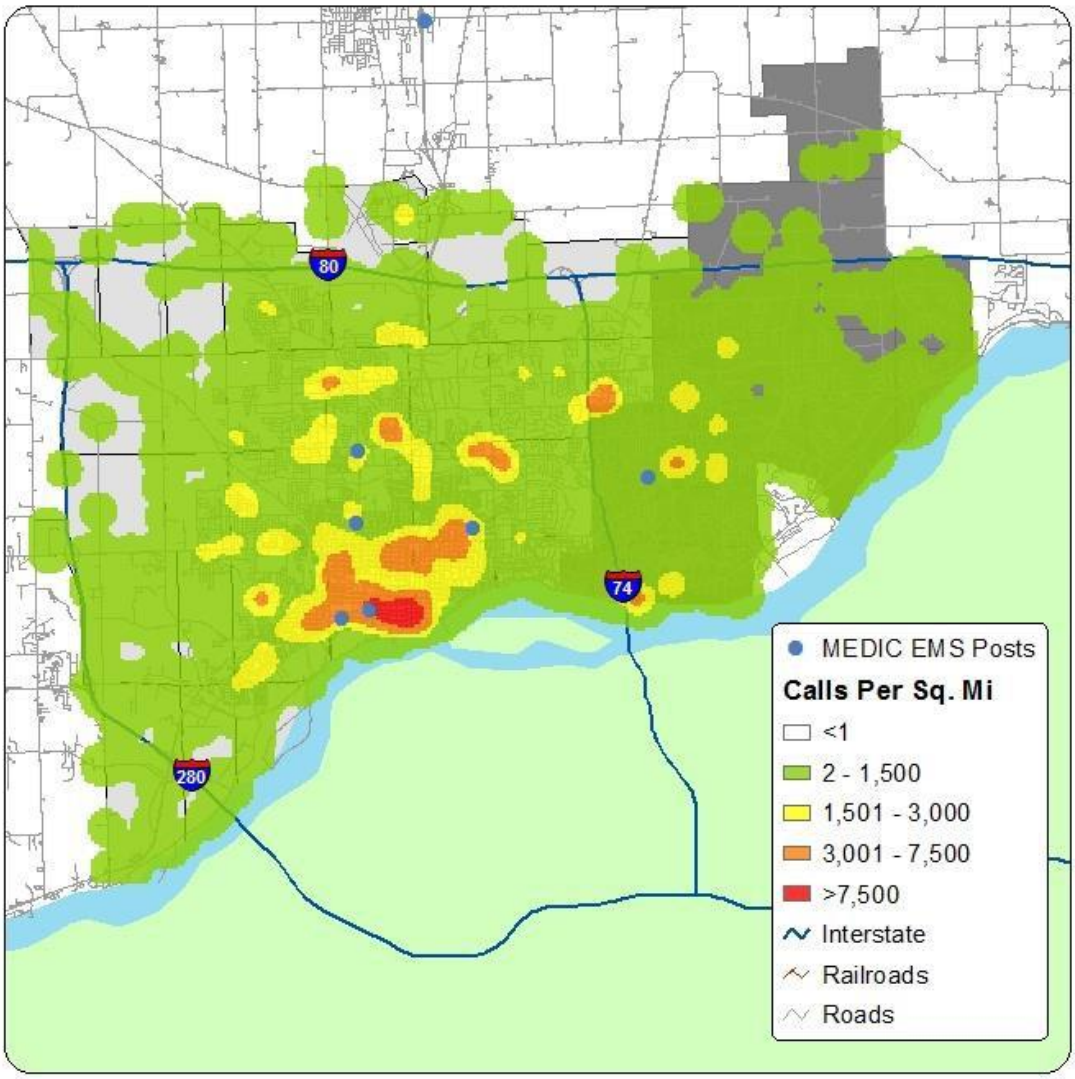


Figure 40 filtered calls within Davenport or Bettendorf response zones to provide better detail of where incidents are occurring in the urban area of Scott County. Most incidents are occurring in downtown Davenport with pockets in the population clusters like apartment buildings and non-acute care medical facilities.

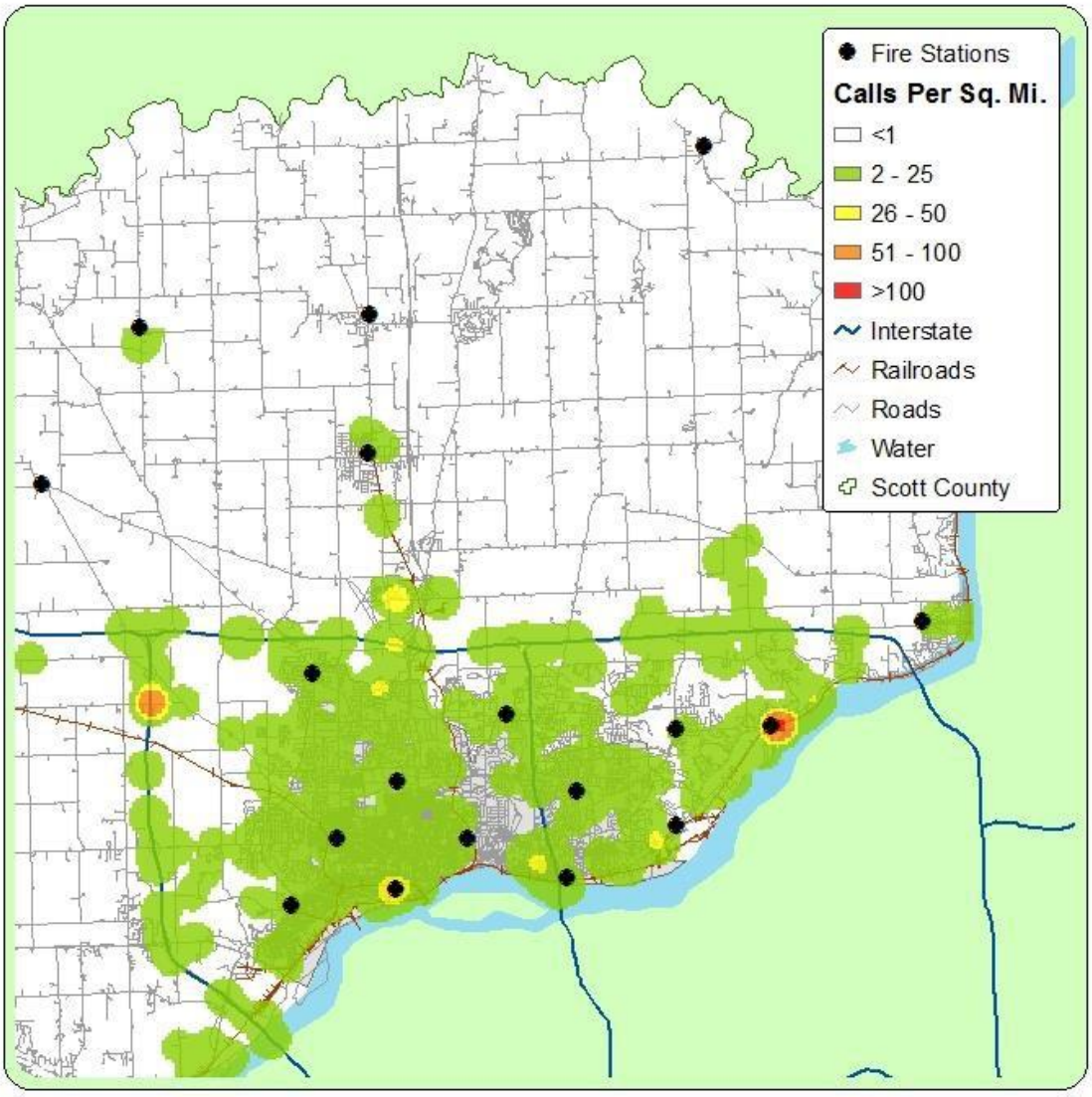
Figure 40: EMS Calls Per Square Mile in Davenport and Bettendorf, 7/10-6/13



Based on call densities, apparatus are well placed to quickly respond and reach medical calls within the standards designated in the Iowa EMS System Standards. In order to identify areas of concern, calls with travel times of over 8 minutes were geocoded (547 calls) and a density derived. For the fire departments, 547 calls were over 8 minutes of travel.

Figure 41 shows that most calls with travel of over 8 minutes occur in Riverview Manor, a small neighborhood next to Bettendorf Station 3. The neighborhood can only be accessed by crossing train tracks or by rerouting several miles around if the road is blocked. Also, whether response is from Station 2 or Station 4 may account for the high travel time.

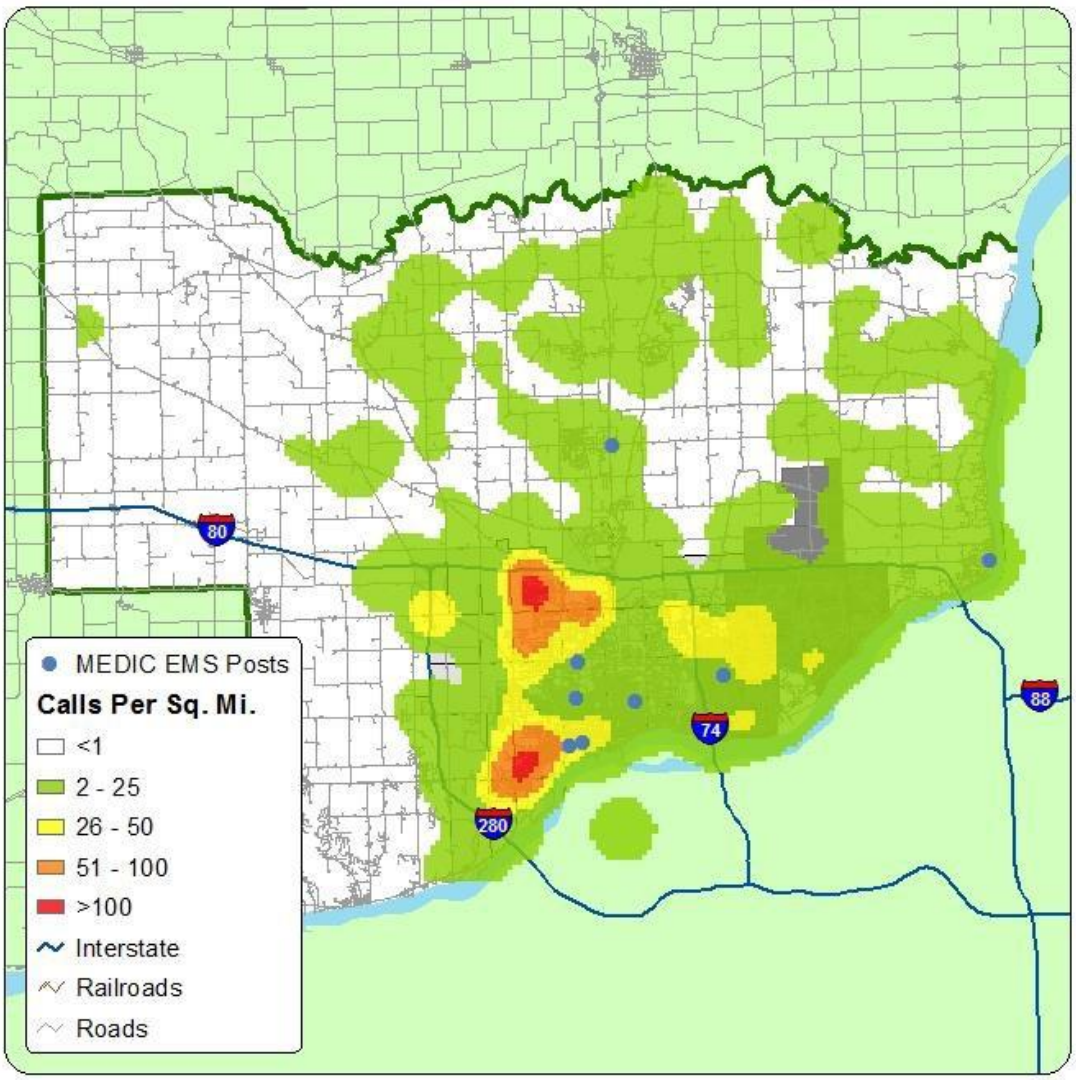
Figure 41: Calls Per Square Mile with Travel Times of Over 8 Minutes for First Responders, 4/11-9/13



Calls to MEDIC EMS with travel times of over 8 minutes were also geocoded to find any areas of concern. Of the 57125 calls, only 2631 (5%) had travel times over 8 minutes.

Figure 42 shows clusters of high travel times around a neighborhood off of Rockingham and Indian Roads and Northwest Boulevard and West 67th Street.

Figure 42: Calls Per Square Mile with Travel Times of Over 8 Minutes for MEDIC EMS, 4/11-9/13



Summary of Current Capabilities

Overall, the responders in Scott County are providing timely and efficient emergency medical service to Scott County residents; however there are obvious areas of concern in the handling of call processing and tracking the handoff between SECC and MEDIC EMS. Methods to reduce the dispatch and turnout times should be evaluated and implemented. This will help offset high travel times that are affected by a number of external factors, such as traffic, calming devices and residential speed limits. Current volume and response times do not warrant additional stations in Scott County, but this need should be constantly evaluated as the neighborhoods surrounding Davenport and Bettendorf grow and cannot be effectively handled by only volunteer responders.

I-80 Truck Stop – One area of concern from Walcott residents is EMS at the Walcott Truck Stop. The Walcott Truck Stop is billed as the "world's largest truck stop" and is actually a collection of several business including restaurants and lodging for travelers. Walcott Truck Stop is located at the intersection of 60th Avenue and Interstate 80 (exit 284). The truck stop is served by Walcott Volunteer Fire Department (WVFD) and Durant Ambulance Service. From June 2010 through July 2013, there was less than 1 call per week in the truck stop area (both north and south of Interstate 80). For that time, WVFD had a response time (dispatch to on-scene) within 09:18, 80% of the time and a total time (including call processing from SECC) of 11:25. This is within the Iowa EMS Standard of 15:00 minutes (80 percentile) for first responders in rural areas. Durant Ambulance had a response time of 16:03 at the 80th percentile, within the standard of 20 minutes for ambulance service in rural areas. Durant Ambulance's total time (including call handling) did exceed the standard at 21:08, but not by much and the standard does not account for call handling. Based on call volume and response time, the decision to add services should be made by the residents and taxpayers.

Figure 43 shows the location of Walcott Truck Stop, the locations of Durant Ambulance Service and WVFD and their effective travel areas. The purple overlap shows where both WVFD and Durant are within their effective coverage areas, I-80 Truck Stop is in that area.

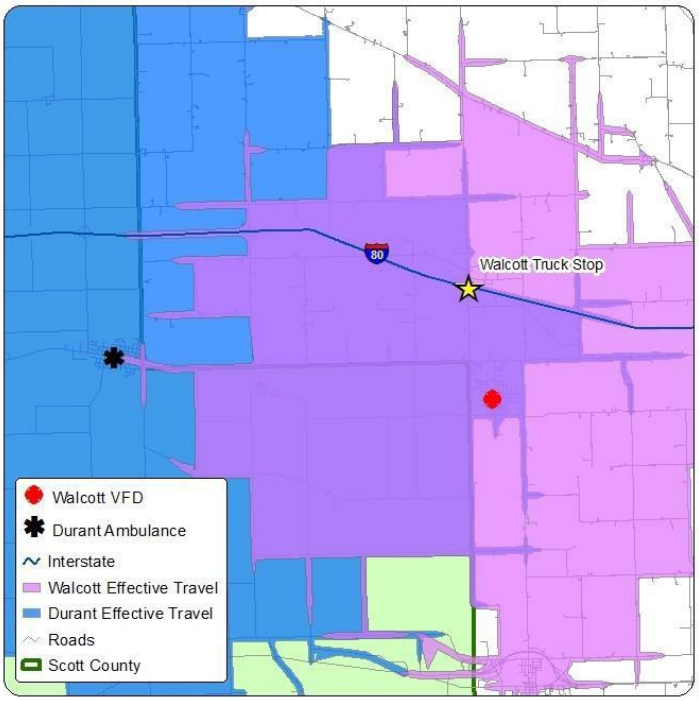
Meeting with I-80 Business Leadership: During our initial visit we met with business leaders from the I-80 Truck Stop to address their concerns about EMS coverage to their area. We also discussed community partnerships that could be realized and mutually beneficial. These included providing training to employees, employees becoming members of the fire department, assistance from property-based medical providers, and similar ideas.

Our investigation revealed that some concerns brought up by the business leaders may be valid. There were examples of long response times for ambulance service. The long response times are likely due to technical problems at SECC and Cedar County and could be handled with minor technical enhancements.

Walcott Community Leadership Meeting: During our follow-up visit, we met with leaders of the Walcott community, fire service leaders including the medical director, concerned citizens, and Durant Ambulance leadership. Appendix A shows the results of a community leadership meeting held between Walcott and Durant ambulance. The meeting was very

productive and included a consensus on which direction to proceed. Durant Ambulance wants to continue providing primary ambulance service to Walcott. SECC, the EMS Office, and Cedar County are finalizing plans to provide the technical fix needed.

Figure 43: Walcott Volunteer Fire Department and Durant Ambulance Service Effective Travel Areas



CHAPTER 6: LIST OF RECOMMENDATIONS

Recommendation	Pg. No.
1. Continue with public/private partnership between SECC and MEDIC EMS for EMS dispatch services. Any commercial service using SECC, MEDCOM, or first responder services should pay an access or user fee.	5
2. Scott County should work toward issuing those providing EMS skills a uniformed ID. There are obviously many challenges needing to be addressed, but the ability to do this is within grasp.	7
3. Buffalo Ambulance should be required to comply with all Chapter 28 requirements. The Public Health Officer should provide a final date where if compliance is not achieved, corrective action should be taken including suspension or revocation of their license.	24
4. Scott County should continue monitoring Wheatland's ability to provide mutual aid into Scott County.	27
5. Strengthen the EMS Medical Direction program, including the appointment of assistant medical directors for EMS Dispatch and EMD; EMS Education; and EMS Quality Management.	30
6. Take the administrative and technical steps to allow for measurement and monitoring of ALS and BLS Skills provided by all EMS agencies. This includes recording interventions performed by all providers, including ambulance and first responder unit providers.	31
7. Adopt listed recommendations for Scott County EMS Medical Director qualifications.	34
8. Revise Section 28-3 to allow the County to institute application and renewal fees for EMS Service Licenses.	35
9. Add to Chapter 28-6 "Any agency who knowingly attempts to induce the SECC to violate this provision will be held liable for the violation."	36
10. The reference to FS KKK-A-1822F be removed, and that NFPA 1917 be referenced in its place	36
11. This section should be revised to indicate the updated list identified above.	36
12. Add to Section 28-2, Subsection C -If a licensed agency voluntarily surrenders its license, has its license suspended, or revoked, the Health Officer shall immediately designate another Scott County licensed agency to temporarily take over the former licensee's area. The temporary take over may last for up to one year while the formal application process for a replacement licensee is in progress.	37
13. Any party adversely affected by this section will participate in mediation prior to filing further legal or administrative actions.	37
14. The MEDIC EMS Board should amend its bylaws to adjust the Board composition to include: four representatives from Genesis Health System Health System; four representatives from Unity Point Health - Trinity; five Public Body representatives; one Citizen Representative (Urban); and one Citizen Representative (Rural).	40
15. MEDIC EMS and Scott County should continue to support the ADM concept and assure its continuation.	42

Recommendation	Pg. No.
16. MEDIC EMS should continue to monitor cardiac arrest, and skills proficiency rates, while expanding into assessing other ALS or BLS skills.	47
17. Avoid allowing medical facilities and other callers to use the seven-digit access number to circumvent the 911 system during medical emergencies. Strict compliance with the MPDS protocol could alleviate unnecessary sending of first responder units.	49
18. SECC and MEDIC EMS data compatibility must be a top priority for both organizations. Vendors should be required to assist Scott County agencies with assuring that technological compatibility is achieved.	49
19. MEDIC EMS should seek to recover transport dollars lost from providing service to the "Iowa Care" program.	51
20. Local emergency departments who used MEDIC EMS to transport patients to Iowa City during the Iowa Care coverage period should provide MEDIC EMS some compensation for services rendered.	51
21. Expand the current Department of Health EMS office to include an EMS Manager, EMS Quality Manager, and EMS Administrative Specialist.	53
22. Amend Chapter 28-3, Licenses, Required and Exceptions. Now reads: A. Licenses Required: No person either as owner, agent or otherwise shall furnish, operate, conduct, maintain, advertise, otherwise be engaged in or profess to be engaged in the business or service of the transportation of patients upon the highways, streets, alleys, public ways or places within Scott County, unless such person holds a currently valid Emergency Medical Service license issued pursuant to this Chapter. Change to read: A. Licenses Required: No person either as owner, agent or otherwise shall furnish, operate, conduct, maintain, advertise, otherwise be engaged in or profess to be engaged in the business or service of the EMS first response to or transportation of patients upon the highways, streets, alleys, public ways or places within Scott County, unless such person holds a currently valid Emergency Medical Service license issued pursuant to this Chapter. Add C5: No license shall be required for static first responder services such as those provided at athletic events, crowd venues, schools, and similar places providing first aid services. Add E: Those agencies approved to provide medical first responder services by the Scott County Volunteer Fire and EMS Association are not required to comply with Section D of this ordinance. The service must be in compliance with Scott County Association rules.	56
23. If there becomes a need, Buffalo Volunteer Ambulance should merge with MEDIC EMS to form MEDIC EMS Buffalo Division. TriData would be happy to provide mediation services to assist with the process.	57
24. SECC and MEDIC EMS should fully implement the MPDS program. When a caller identifies a medical emergency, the call can be switched to MEDCOM for priority dispatch coding, dispatch, and pre-arrival instructions. This would save Scott County money by not requiring SECC dispatchers to be trained in priority dispatch.	58
25. All volunteer fire companies in Scott County should create an EMS membership classification to increase first responder coverage.	58

Recommendation	Pg. No.
26. Scott County volunteer fire departments should consider removing any maximum number of members limits. Alternatively, they could limit the number of firefighter members, but still accept EMS members.	59
27. Institute a unique incident number that is used for only one incident and is shared between SECC and MEDIC EMS Dispatch Center.	68
28. Add a time marker (in both CAD records) that measures when a call is forwarded from SECC to MEDIC EMS or from MEDIC EMS to SECC.	68
29. Review call handling process for volunteer departments and BFD to identify opportunities for decreasing time to dispatch a unit. This includes determining call time intervals including: time received at 911, time sent to fire dispatch, and time the call is dispatched.	74

APPENDIX A. WALCOTT FIRE/DURANT AMBULANCE MEETING

SYSTEM PLANNING CORPORATION
TriData Division
3601 Wilson Boulevard, Arlington, Virginia 22201-2362 • (703) 351-8300 • (703) 351-8383 fax • www.sysplan.com/TriData

Edward Rivers, Director
Scott County Health Department
600 W. 4th Street, 4th Floor
Davenport, IA 52801

Dear Mr. Rivers:

It was wonderful seeing everyone this week. Glenn and I believe that we accomplished a great deal. The EMS community continues to generously donate their time and expertise to ensure that TriData is able to provide a study that has value to the citizens of Scott County.

As agreed, TriData would immediately report any problem that could be considered of a critical nature. Based on inquiry by the I-80 Truck Stop management, anecdotal reports from police and fire responders, and a review of MEDIC data, we noticed a situation that requires immediate attention.

***Problem* –** Data indicate that response times for Durant Ambulance, a mutual aid provider from Cedar County, are too long. While anecdotal reports confirmed this, data analysis was able to localize the specific problem. While some were quick to blame Durant Ambulance, it is not the source of the extended response. A review of 147 station dispatches, and 113 ambulance requests into the I-80 Truck Stop revealed the following information:

Walcott Volunteer Fire Department
Response Times (85th Percentile)
Dispatch to Response- 4:46
Response until Arrival on Scene-5:22
Total Time-11:37 (times above will not add up due to data spread)
These times are within the expected first response time of 12:00 for areas that border on rural/suburban.

Durant Ambulance
Response Times (85th Percentile)
Dispatch to Response – 9:01 (Dispatch by Scott County to Cedar County, alerting, and response of Durant)
Response until Arrival on Scene – 10:33
Total Time – 22:57 (these times will not add up due to data spread).
These times exceed the expected ambulance response time of 15:00 for areas that border on rural/suburban.

After discovering the above, we determined that for all ambulance responses by Durant Ambulance into Scott County, the 90th percentile response time for Dispatch to Response was 10:07.

The above discovery should be of concern and should warrant immediate attention.

EMS Community Meeting – On November 20, 2013, the TriData team and Scott County EMS Coordinator Denny Coon conducted a problem solving meeting with representatives from the Walcott EMS Community. A wide range of community members participated including: the Walcott Mayor, a City Council Member, Walcott Fire Chief, Walcott Police Chief, the Walcott Fire EMS Medical Director, Durant Ambulance Management Staff, and representatives from these organizations.

After TriData presented the data and answered questions, discussion occurred that lead to an informal consensus was reached to begin solving the problem.

- Ambulance response times by Durant Ambulance into Walcott are too long.
- Durant Ambulance stated that they wish to continue providing mutual aid ambulance service into Scott County. Their data does not indicate an extended en route time after being dispatched by Cedar County.
- MEDIC data indicates that the above delay is likely due to delays in the dispatch process. While specific interval data is not available, overall data shows that the delay is likely between the time that MEDCOM notifies Cedar County and the time that Cedar County dispatches Durant Ambulance.
- All participants agreed that this situation warranted immediate action.

Proposed Solutions – After further discussion, the participants offered the following solutions for consideration.

- Ask the SECC, MEDCOM, and Cedar County to determine if a technical solution could be quickly implemented. Suggestions included: (a) the possible simulcast of dispatch between Scott and Cedar Counties; (b) the addition of a dispatch tone between Scott and Cedar County; or Scott County directly dispatching Durant Ambulance.
- If unsuccessful, revise dispatch rules to read that if there is no response from Cedar County within an agreed number of minutes, MEDCOM will dispatch the next due ambulance.

EMS Quality Management Committee – On November 19, a summary of the situation was presented to the Scott County EMS Quality Management Committee. Committee members will monitor the situation and follow up with EMS Coordinator Coon. Scott County EMS Medical Director, Dr. Richard Vermeer was present and will follow-up on the situation.

Thank you for allowing Glenn and I to assist with the Scott County quality management process. We really were able to experience the quality within the EMS system and the cooperative effort shown by system constituents for the betterment of patient care. Please advise us if further information is needed.

Yours truly,

Harold

Harold C. Cohen, Ph.D., FACHE, NRP
Project Manager

APPENDIX B. COVERAGE MAPS FOR SCOTT COUNTY

Figure B-1: Blue Grass VFD Effective Coverage Area

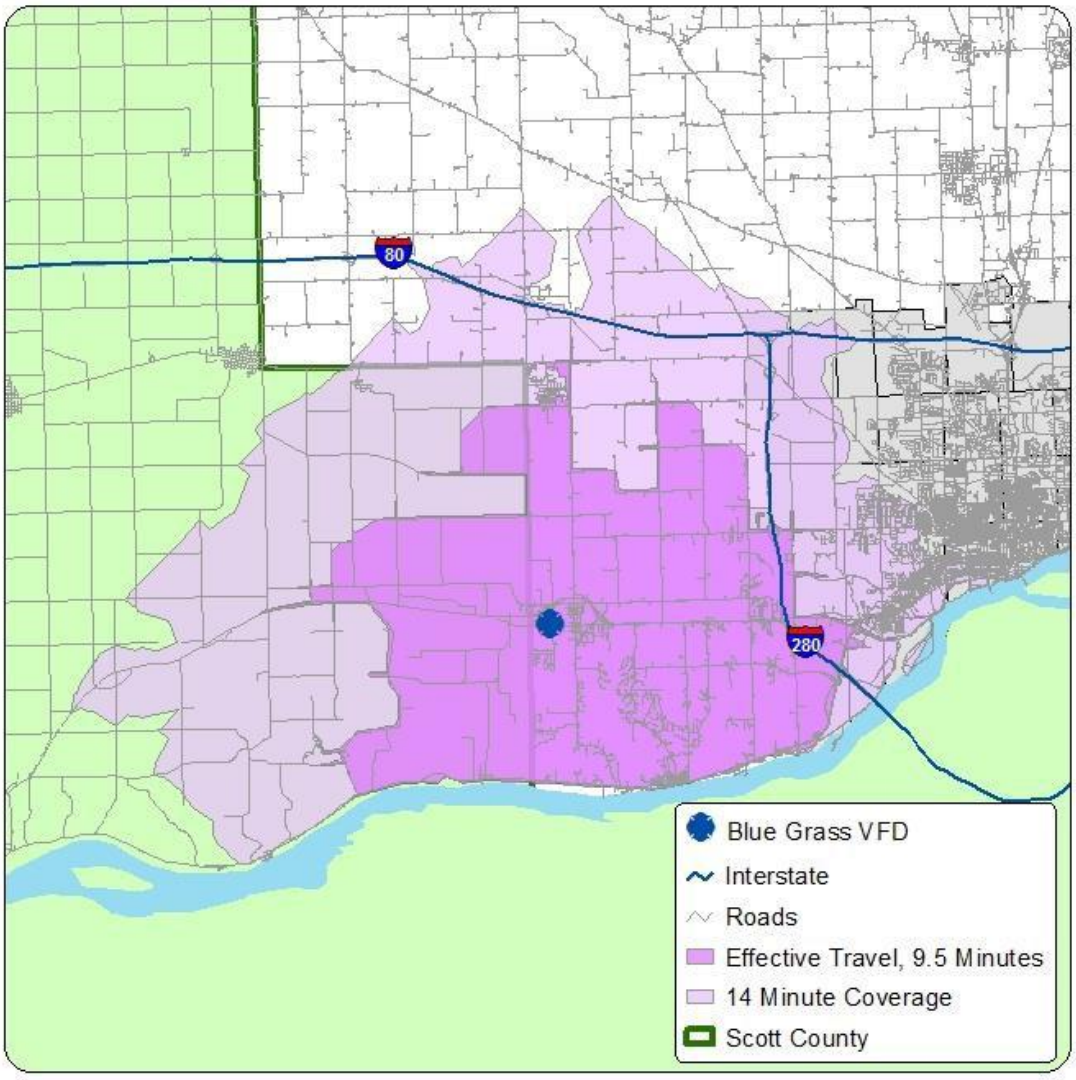
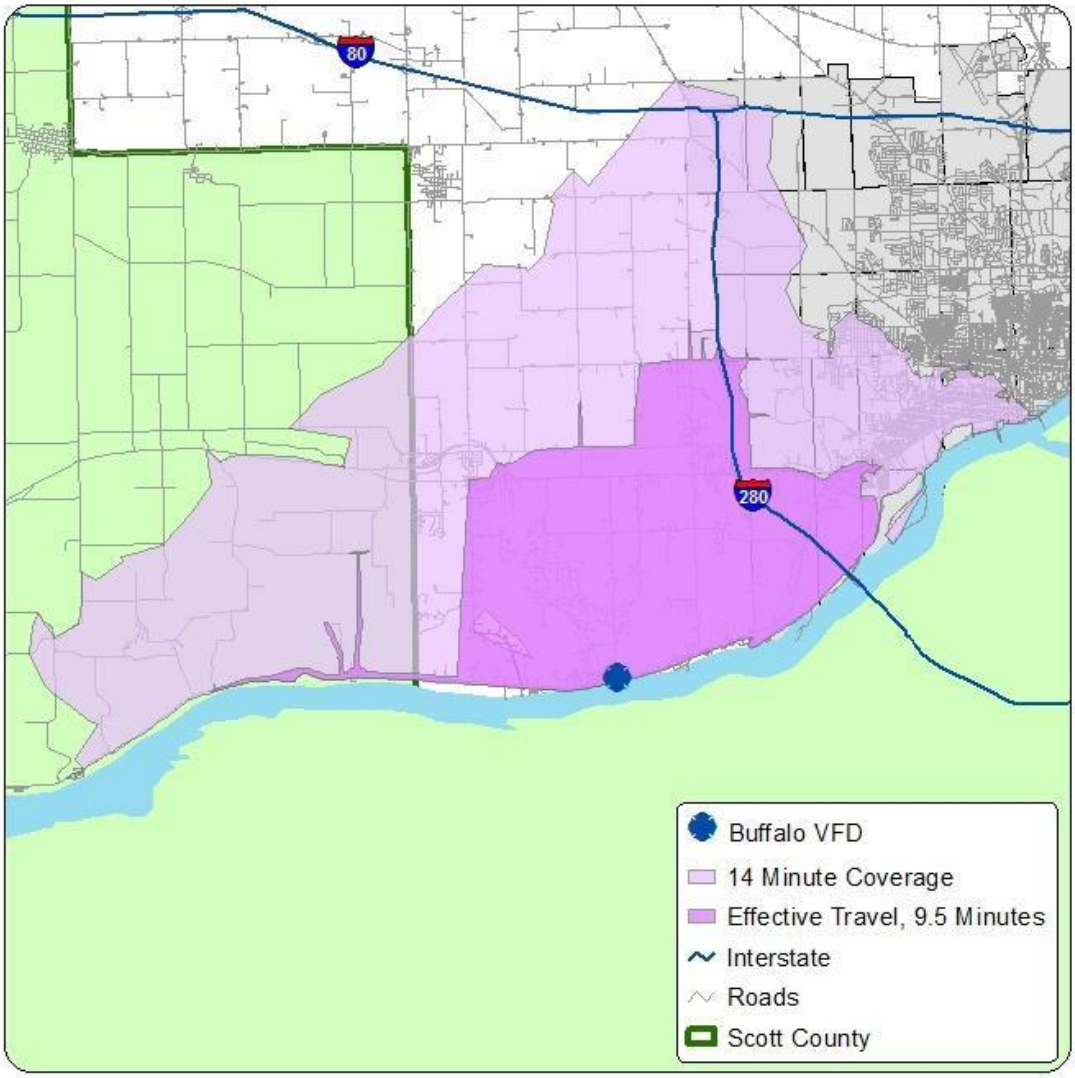


Figure B-2: Buffalo VFD Effective Coverage Area



F Figure B-3: Dixon VFD Effective Coverage Area

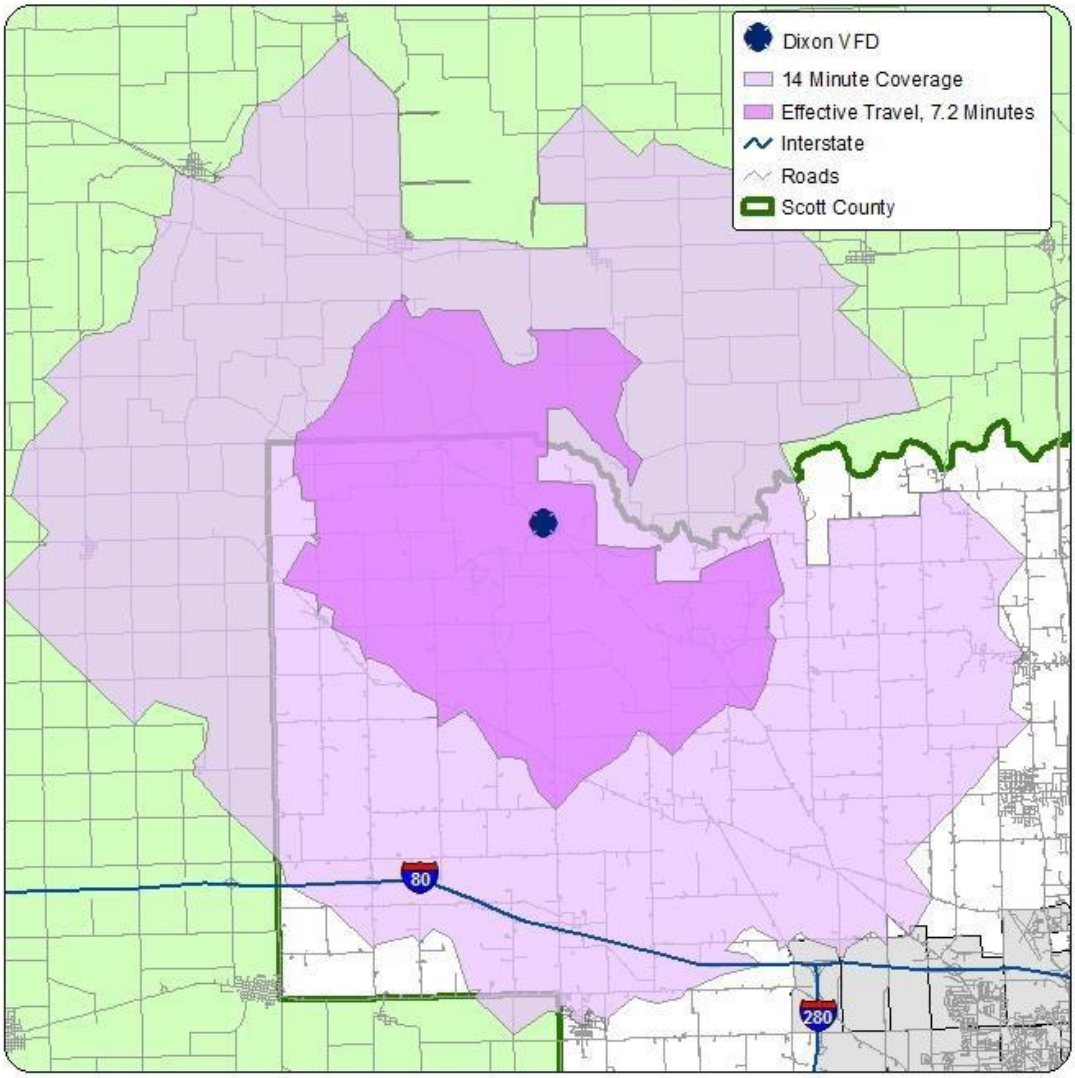


Figure B-4: Donahue VFD Effective Coverage Area

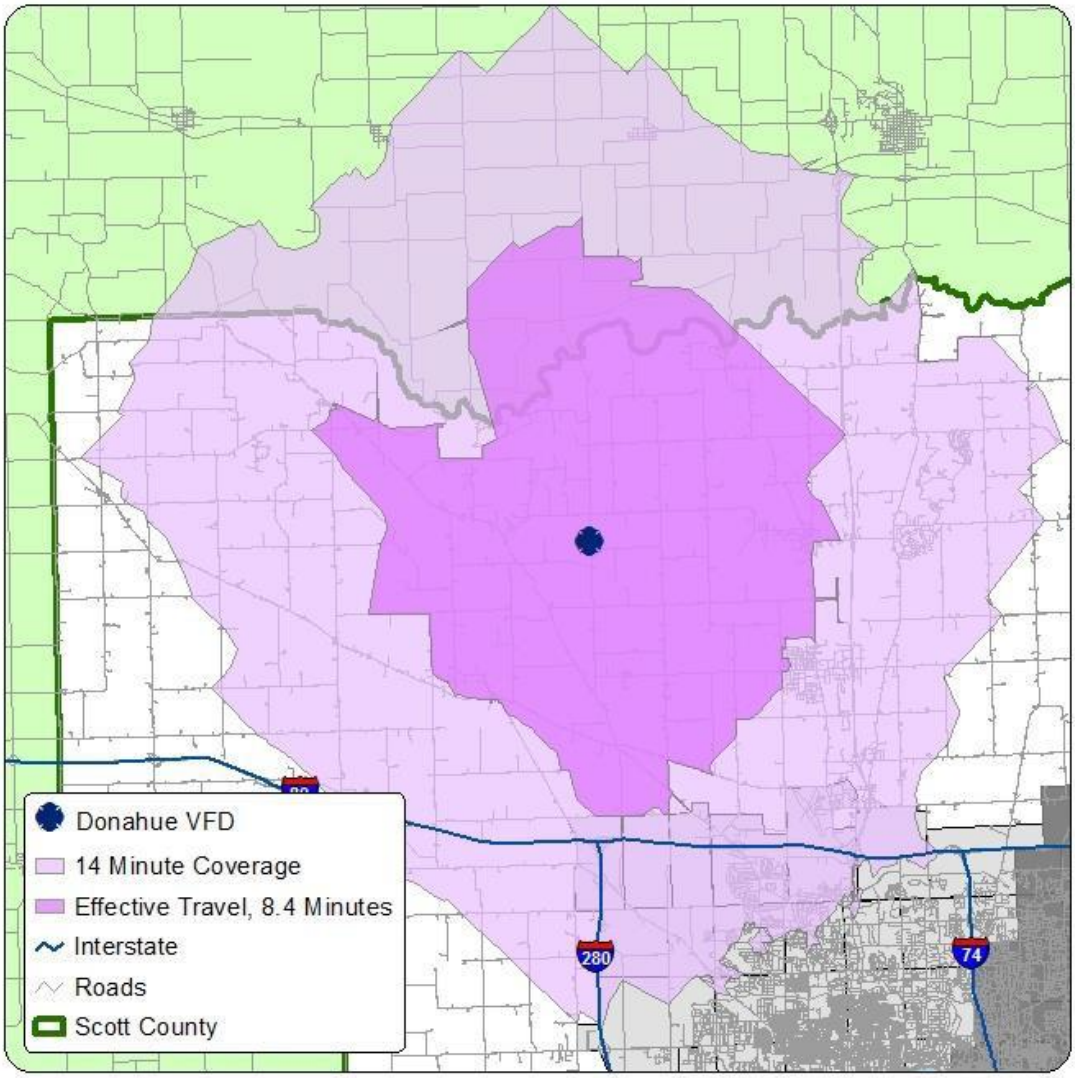


Figure B-5: Eldridge VFD Effective Coverage Area

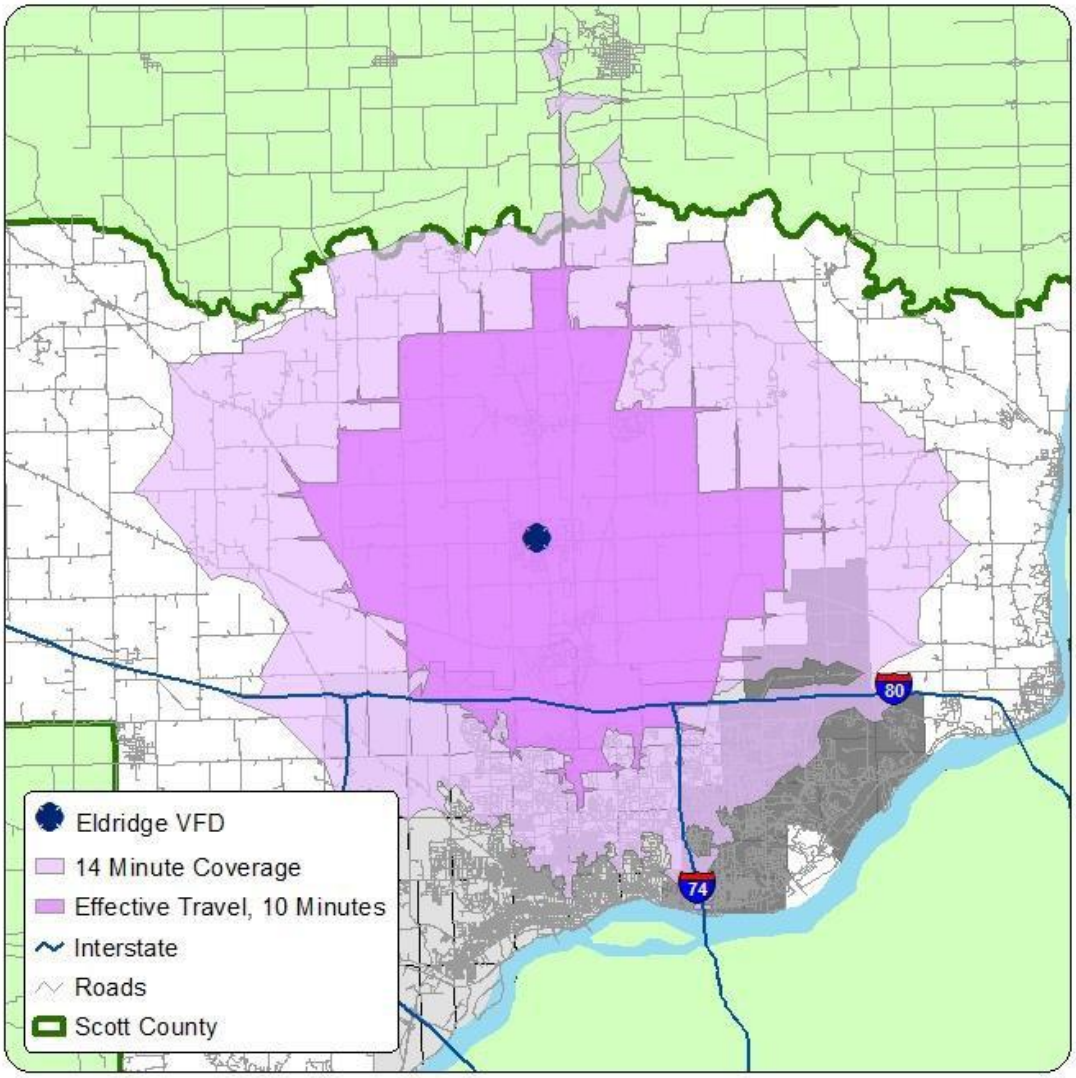


Figure B-6: LeClaire VFD Effective Coverage Area

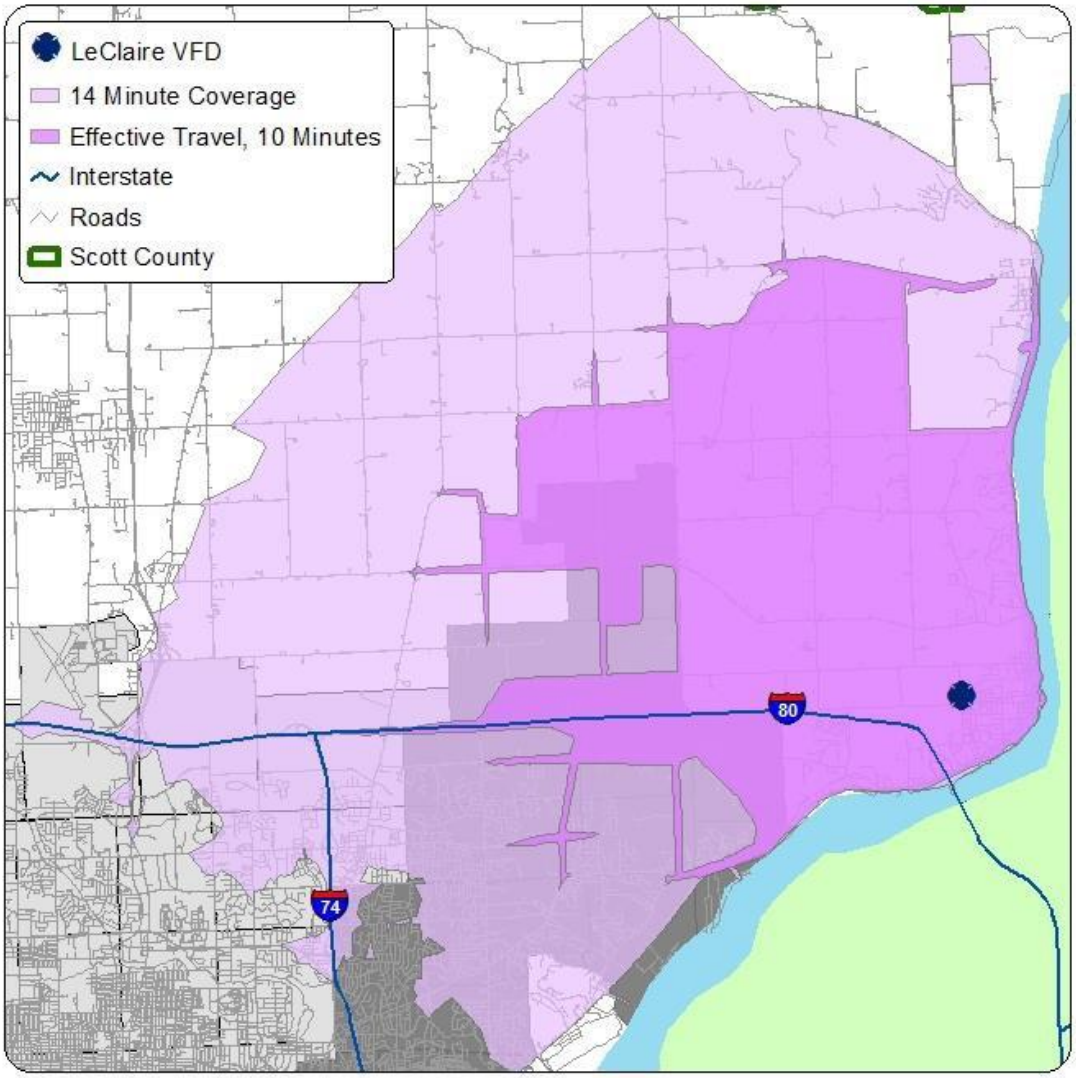


Figure B-7: Long Grove VFD Effective Coverage Area

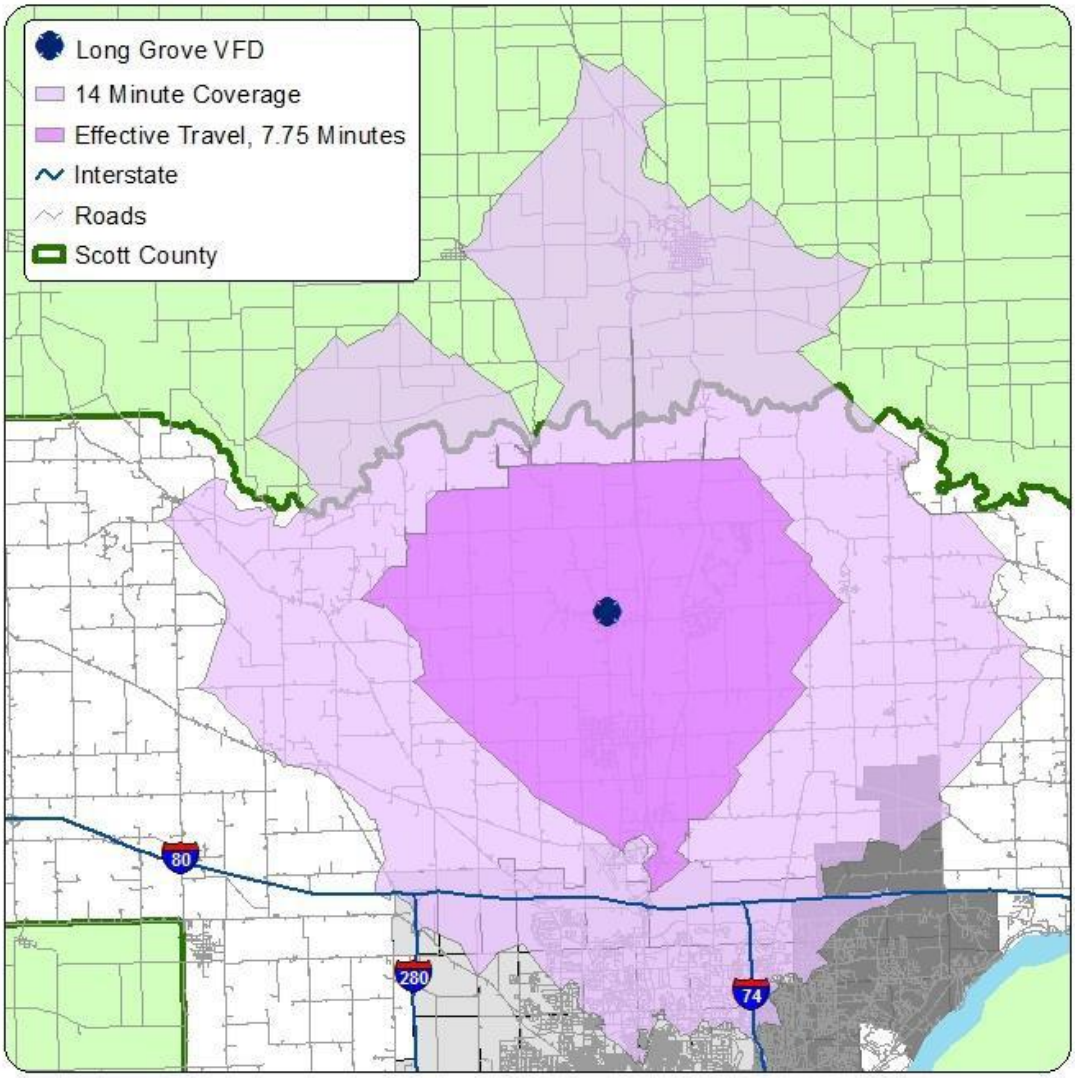


Figure B-8: Maysville VFD Effective Coverage Area

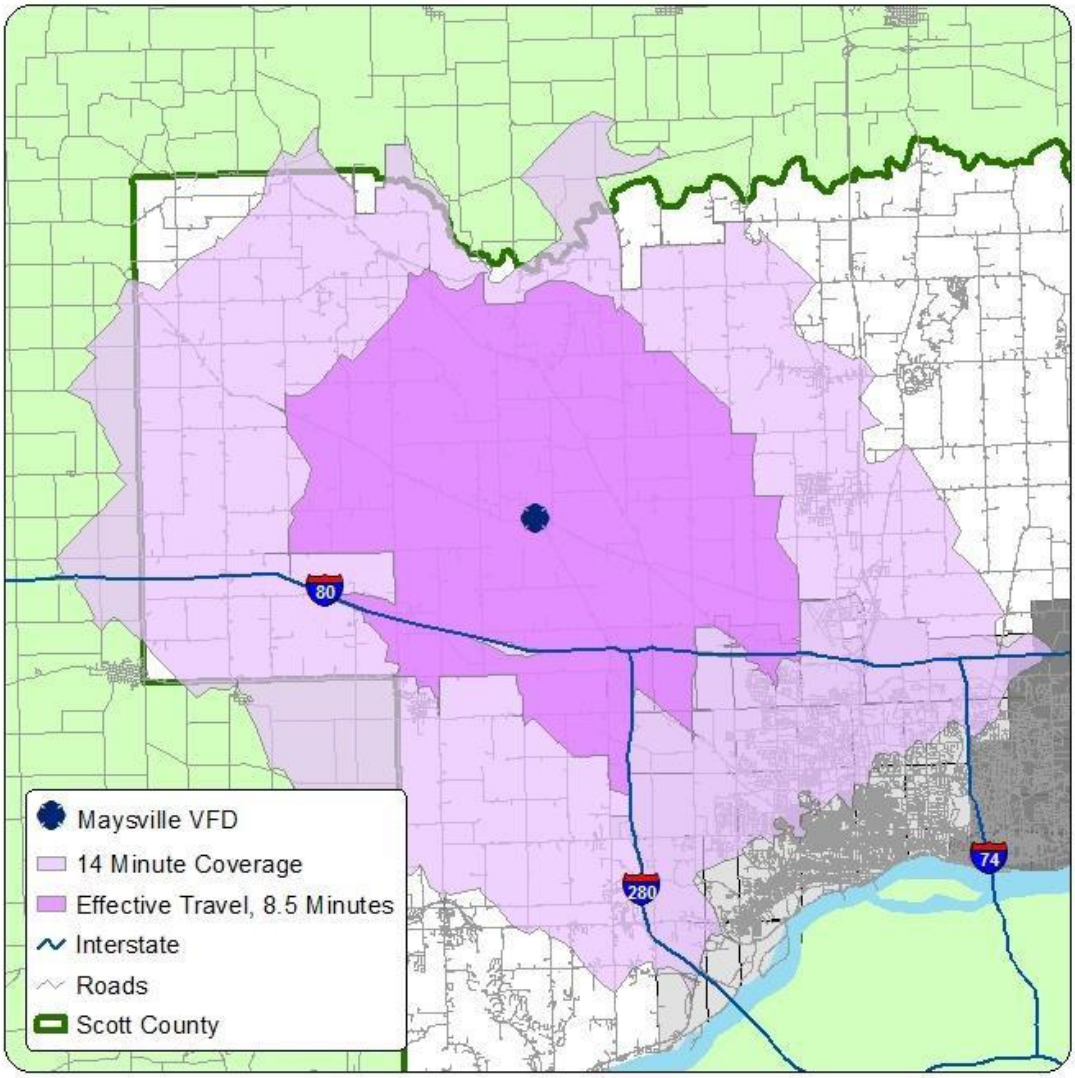


Figure B-9: McCausland VFD Effective Coverage Area

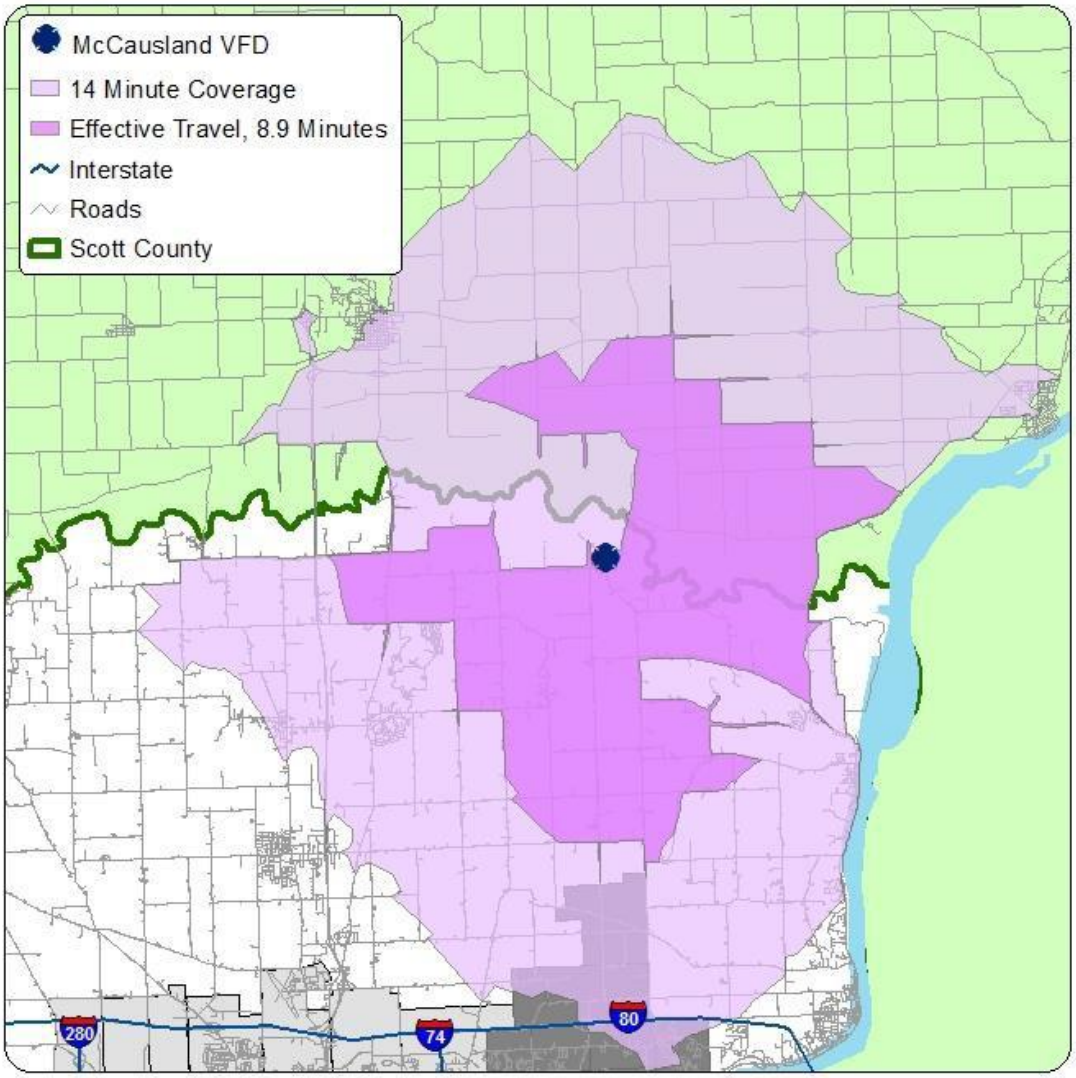


Figure B-10: New Liberty VFD Effective Coverage Area

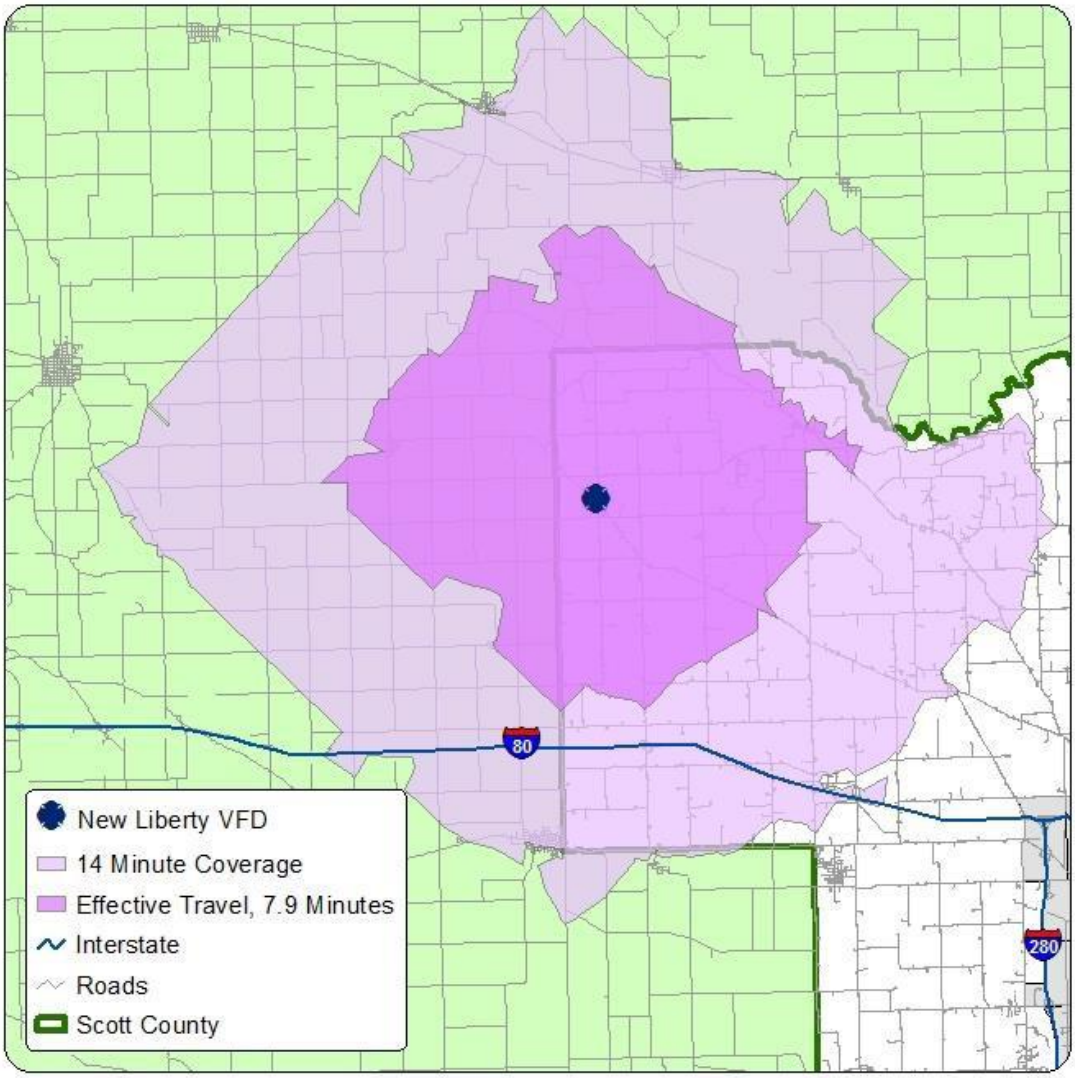


Figure B-11: Princeton VFD Effective Coverage Area

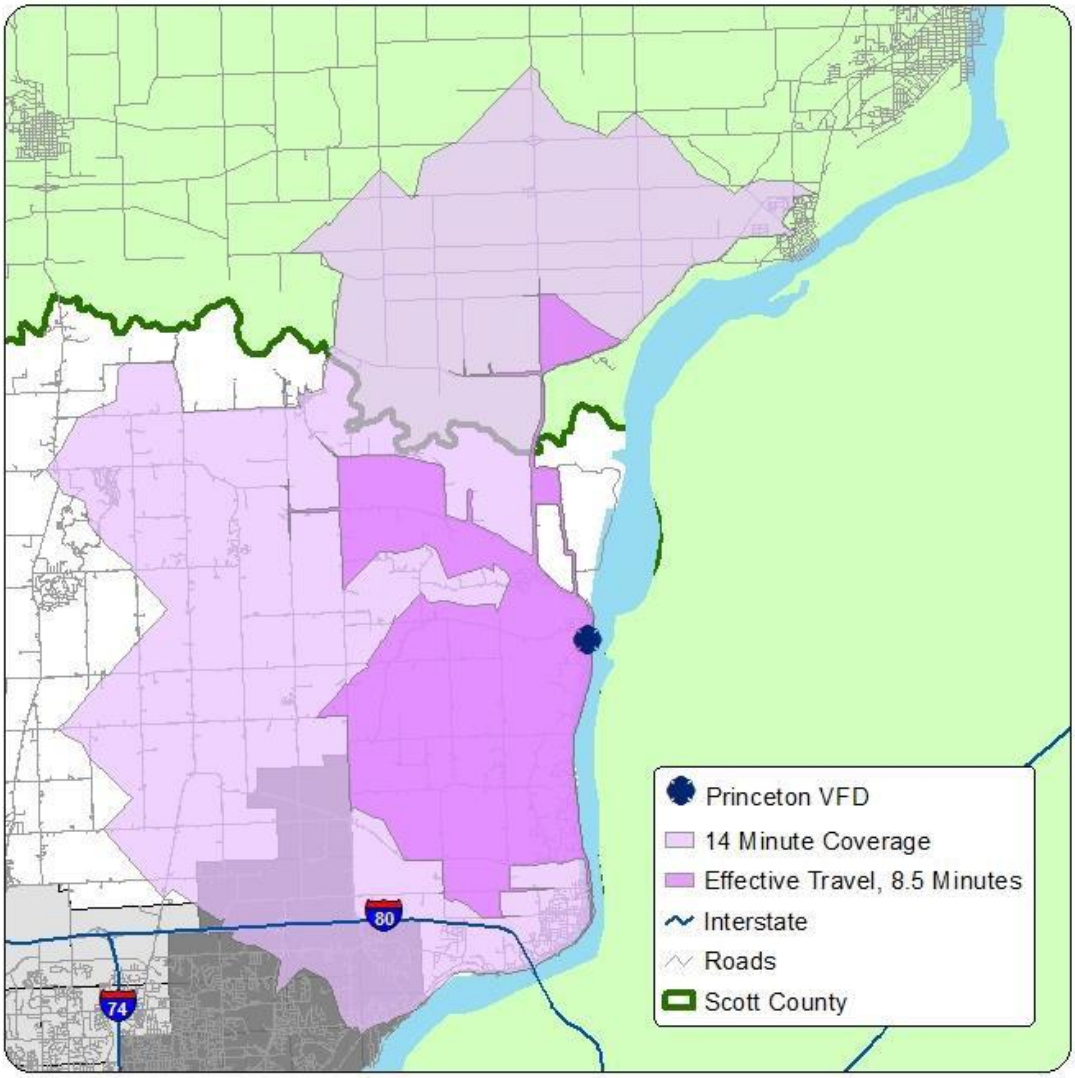
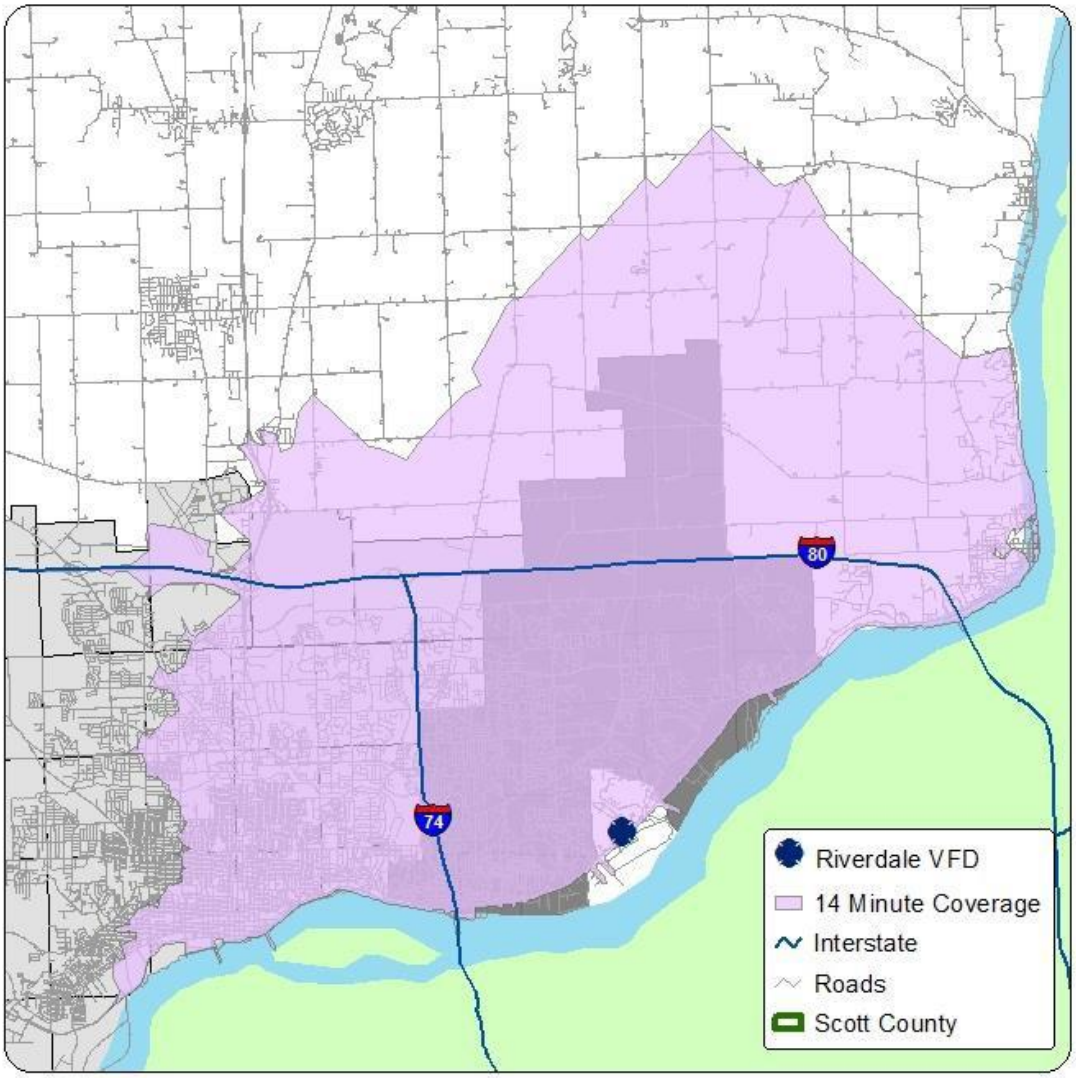


Figure B-12: Riverdale VFD Effective Coverage Area



*Riverdale VFD is located in an urban area and its effective travel time of 9.5 minutes exceeds the recommended response of 05:00.

Figure B-13: Walcott Volunteer Fire Department Effective Coverage Area

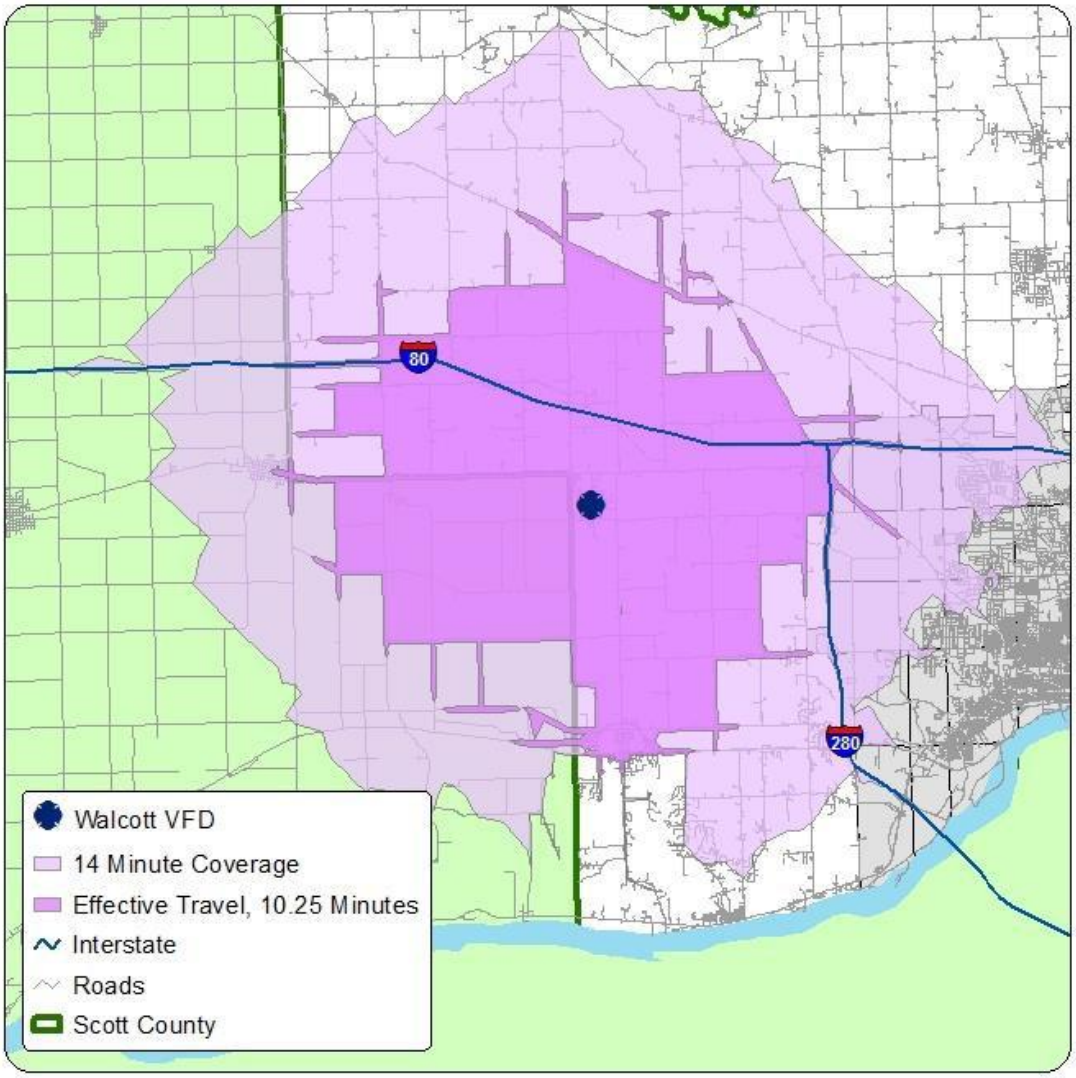


Figure B-14: Buffalo Ambulance Service Effective Coverage Area

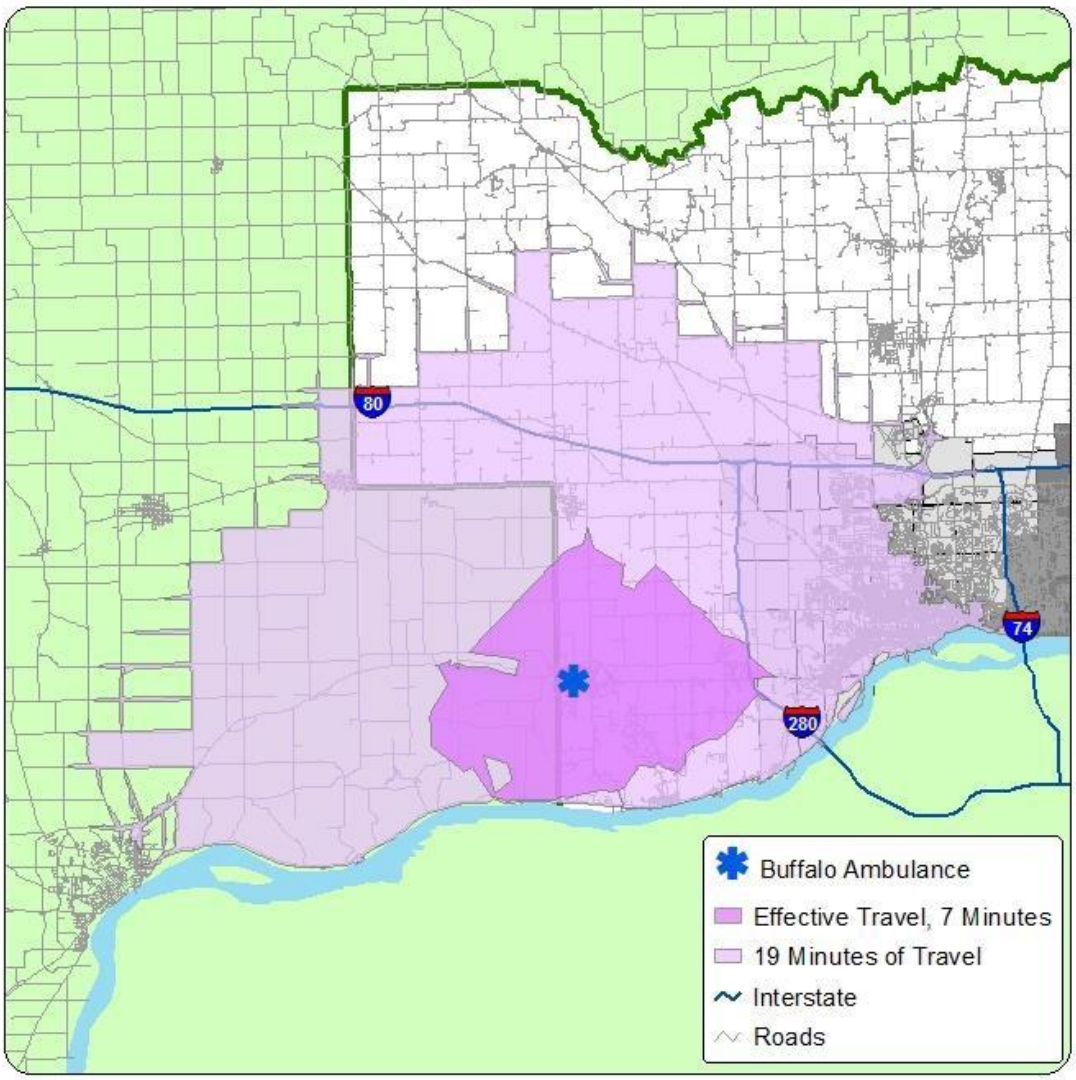


Figure B-15: Durant Ambulance Service Effective Coverage Area

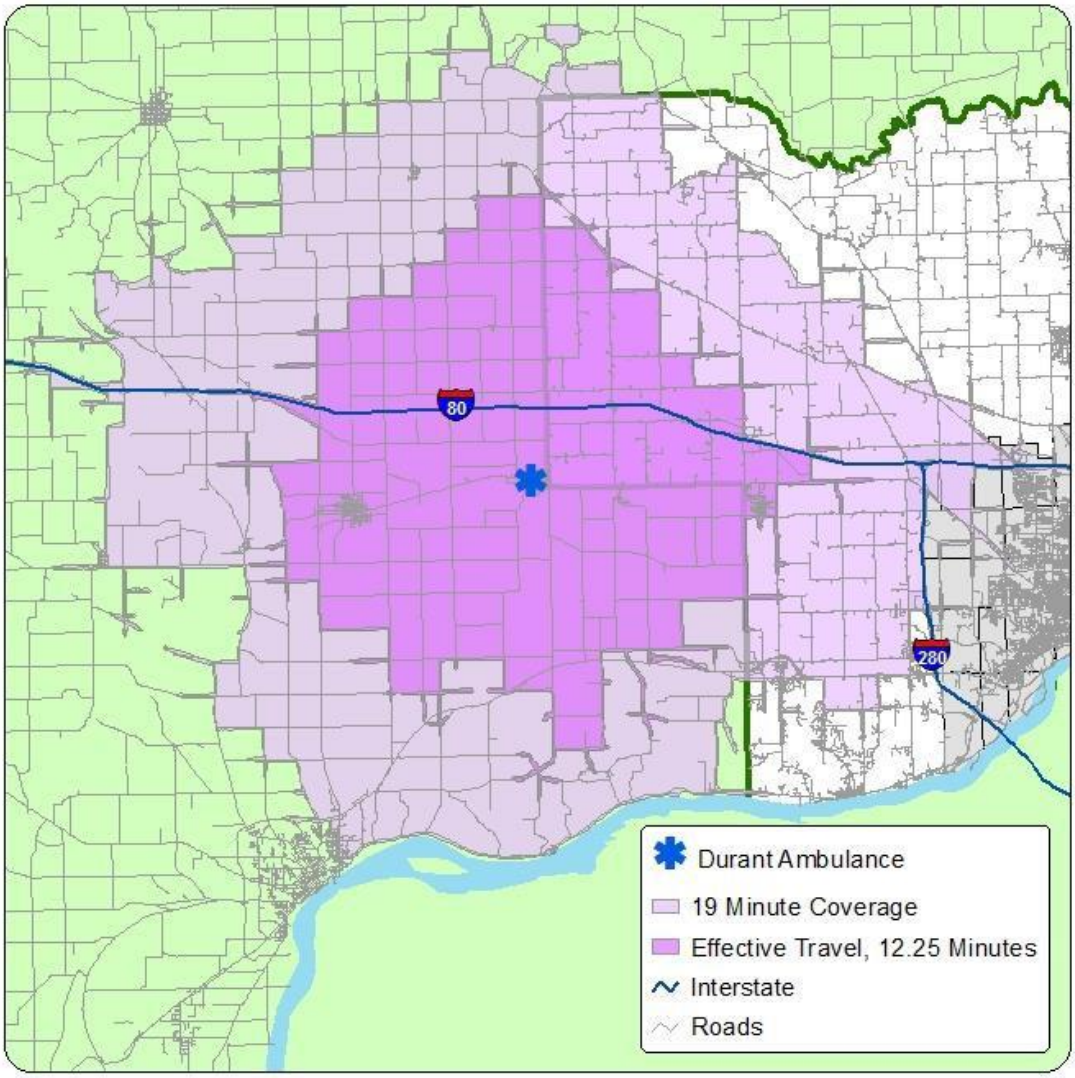
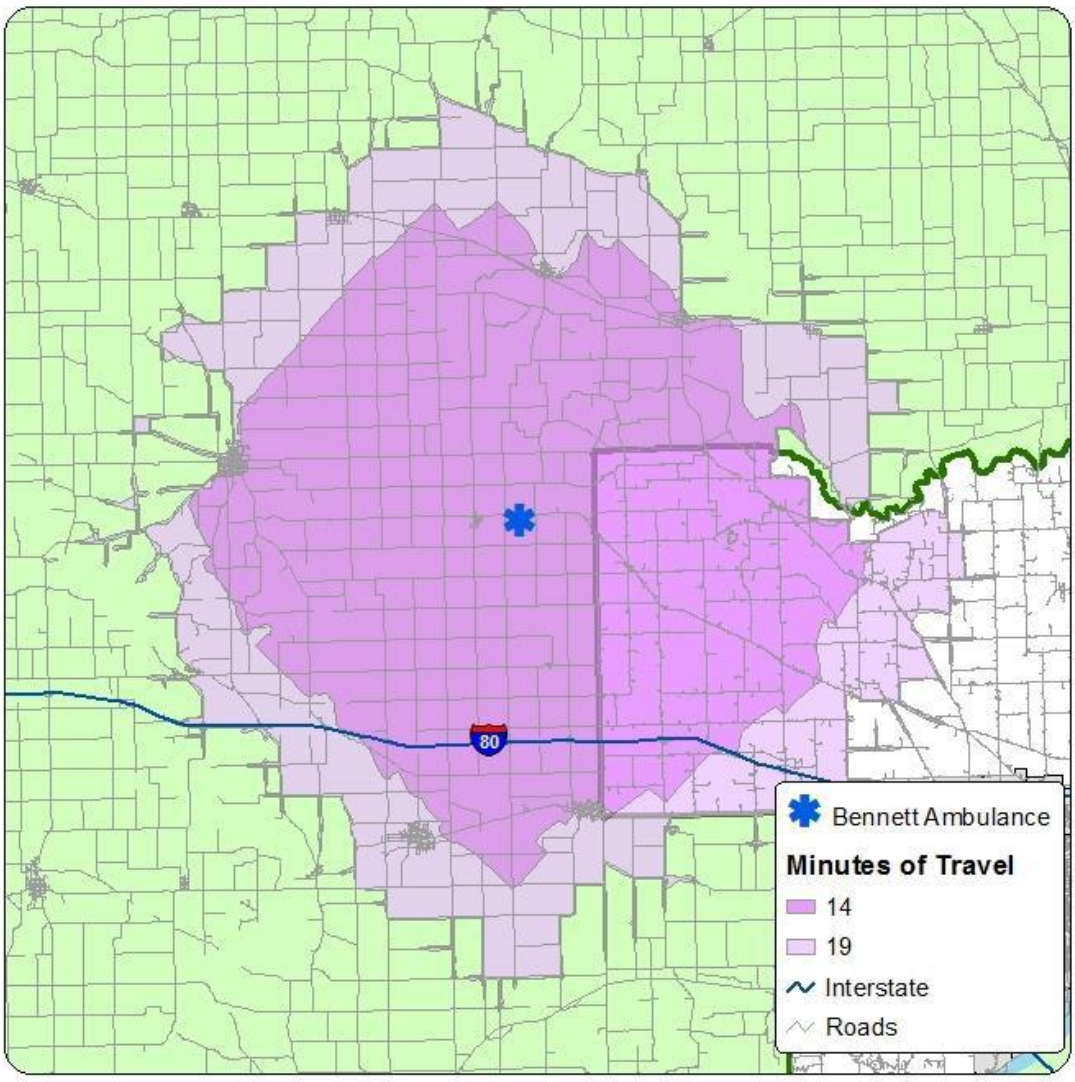
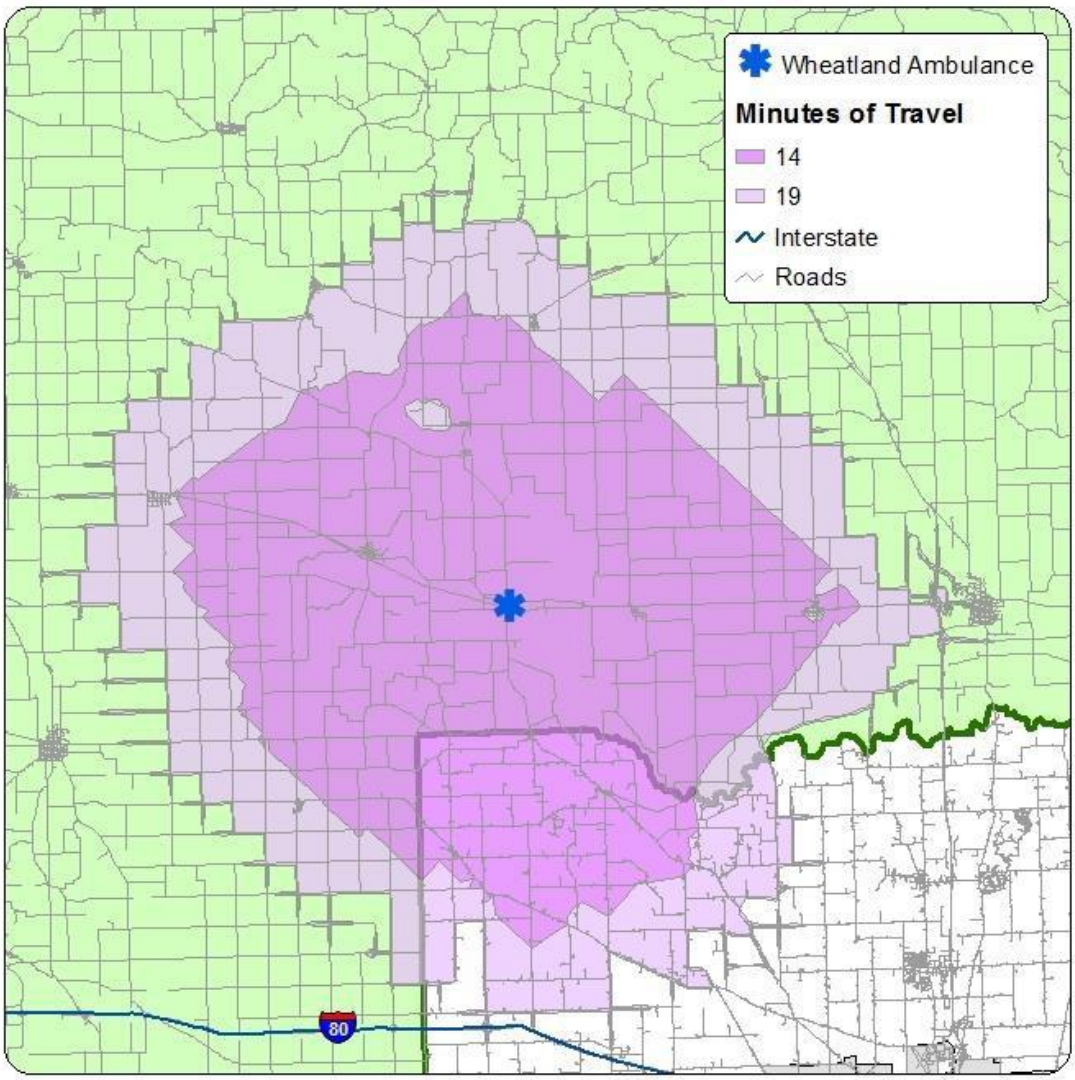


Figure B-16: Bennett Ambulance Service Effective Coverage Area



Bennett Ambulance did not have a large enough sample size to determine an effective travel area, 14 and 19 minutes of travel are shown to reflect what area could be covered as a first responder or as a transport unit.

Figure B-17: Wheatland Ambulance Service Effective Coverage Area



Wheatland Ambulance did not have a large enough sample size to determine an effective travel area, 14 and 19 minutes of travel are shown to reflect what area could be covered as a first responder or as a transport unit.