

# **An Analysis of Emergency Medical Services for the Geary EMS, Blaine County, Oklahoma**



**Oklahoma Cooperative Extension Service,  
Oklahoma State University**

**Oklahoma State Department of Health,  
Office of Rural Health & EMS Division**

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for the Geary EMS, Blaine County, Oklahoma**

Cheryl F. St. Clair - Extension Associate, OSU, Stillwater  
(405) 744-6081

Sarah Trzebiatowski, Student Extension Associate, OSU, Stillwater  
(405) 744-6081

Gerald A. Doeksen - Extension Economist, OSU, Stillwater  
(405) 744-6081

Stan Ralstin, District R. D. Specialist, NW District Extension Office, Enid  
(580) 233-5295

Alvin Woodruff, Blaine County Extension Director, Watonga  
(580) 623-5195

Ronald P. McCummins - Director, EMS Division, OSHD, Oklahoma City  
(405) 271-4027

E. D. Walborn - Field Coordinator, OSHD, Enid  
(580) 234-8991

RURAL DEVELOPMENT  
COOPERATIVE EXTENSION SERVICE  
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## **An Analysis of Emergency Medical Services for the Geary EMS, Blaine County, Oklahoma**

The Geary community and surrounding area are currently being serviced by volunteers and are pursuing options for providing additional services. In order to provide more timely and cost effective service to the Geary EMS service area, an analysis of the Geary EMS is being included in this report. The objectives of the study will include:

- 1) an analysis of the June 1999 through May 2000 EMS calls,
- 2) two different funding alternatives including total capital expenditures and annual capital and operating expenses, and
- 3) an analysis of different revenue options.

Through this analysis, the Cooperative Extension Service is not advocating any of the alternatives presented. This report is not in the form of a recommendation. This report is provided for informational purposes only.

### **An Analysis of the Geary EMS Calls for June 1999 through May 2000**

Data was provided by the Watonga EMS that previously provided EMS services to Geary and the surrounding area. EMS call data is summarized in the next ten tables.

The Geary EMS provider serviced 152 calls from June 1999 – May 2000. Call data has been analyzed for 152 of these calls. Of the 152 calls analyzed, 11 calls did not show the classification of the call, 13 calls or 9% were motor vehicle accident calls, 13 calls or 9% were transfer calls, and the remaining 115 calls or 76% were “other medical calls” (**Table 1**).

**Table 1**  
 Geary EMS Service  
 Type of EMS Calls  
 June 1999 - May 2000

Type of Call	Number of Calls	Percent of Calls
Not Available	11	7%
Motor Vehicle Accident	13	9%
Transfer	13	9%
Other Medical Call	<u>115</u>	<u>76%</u>
Total	<u>152</u>	100%

**Table 2** shows the data by type of call and by month of the year. November 1999 was the month with the most calls with 19 calls or 13% of the total calls. July 1999 was next with 18 calls or 12% of the total calls. October was the month with the least number of calls, 3 calls or 2% of the total calls.

The next table, **Table 3**, shows the calls by day of the week and the time of day. Sunday and Tuesday tied for the day of the week with the most calls with 26 calls each or 17% of the total calls each. Friday was the day of the week with the least number of calls with 16 calls or 11% of the total calls. The time period from midnight to 8 am has the least number of calls with only 17 calls or 11% of the total calls. The time period from 8 am to 8 pm has the majority of the EMS calls with 96 calls or 63% of the total calls.

**Table 4** shows the type of call by the day of week. The “other medical calls” had the most calls on Sundays (20), Tuesdays (19), Thursdays (16), and Saturdays (16). The motor vehicle accidents occurred most frequently on Sundays (4) and Mondays (4). The most transfer calls occurred on Tuesdays (4) and Wednesdays (4).

The type of call by gender is shown in **Table 5**. The number of female patients was higher than males; 72 female calls and 63 male calls, or 48% and 42%, respectively. The “other medical calls” had a higher number of females, with 61 calls female and 47 calls for male. The motor vehicle accident category had a higher number of males, with 10 calls male and only 2 calls female.

**Table 6** shows the “pick-up” location of the patients. The majority of patients were picked up in the towns and their rural areas, 77 calls or 55% of the total calls. The majority of these were picked up from a home or residence, 48 calls or 34%. Another 14 calls or 10% were

**Table 2**  
 Geary EMS Service  
 Type of EMS Call by Month  
 June 1999 - May 2000

Type of Call	Not	1999					2000					Total	Percent		
	Available	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March			April	May
Not Available	1	2	4	0	1	0	0	1	1	0	0	0	1	11	7%
Motor Vehicle	0	1	3	1	0	0	3	1	2	0	1	1	0	13	9%
Transfer	0	1	0	0	0	1	2	0	3	0	3	2	1	13	9%
Other Medical Call	<u>1</u>	<u>11</u>	<u>11</u>	<u>6</u>	<u>8</u>	<u>2</u>	<u>14</u>	<u>8</u>	<u>9</u>	<u>11</u>	<u>9</u>	<u>12</u>	<u>13</u>	<u>115</u>	<u>76%</u>
Totals	2	15	18	7	9	3	19	10	15	11	13	15	15	<u>152</u>	100%
Percent of Total	1%	10%	12%	5%	6%	2%	13%	7%	10%	7%	9%	10%	10%	100%	

**Table 3**  
 Geary EMS Service  
 EMS Calls by Day of Week and Time of Day  
 June 1999 - May 2000

Time of Day	No Report	Day of Week							Total	Percent of Total
		Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday		
No Report	2	1	1	0	2	2	3	3	14	9%
Midnight - 4 a.m.	0	3	0	2	0	1	1	2	9	6%
4 a.m. - 8 a.m.	0	0	1	1	2	1	2	1	8	5%
8 a.m. - Noon	0	3	6	14	4	8	3	3	41	27%
Noon - 4 p.m.	0	5	5	4	5	3	0	3	25	16%
4 p.m. - 8 p.m.	0	7	3	3	6	3	5	3	30	20%
8 p.m. - Midnight	<u>0</u>	<u>7</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	7	<u>25</u>	<u>16%</u>
Totals	2	26	19	26	21	20	16	22	<u>152</u>	100%
Percent of Total	1%	17%	13%	17%	13%	13%	11%	14%	100%	

**Table 4**  
 Geary EMS Service  
 Type of EMS Call by Day of Week  
 June 1999 - May 2000

Type of Call	Not Available	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total	Percent
Not Available	1	1	1	1	2	1	1	3	11	7%
Motor Vehicle	0	4	4	2	0	2	0	1	13	9%
Transfer	0	1	1	4	4	1	0	2	13	9%
Other Medical Call	<u>1</u>	<u>20</u>	<u>13</u>	<u>19</u>	<u>15</u>	<u>16</u>	<u>15</u>	<u>16</u>	<u>115</u>	<u>76%</u>
Totals	2	26	19	26	21	20	16	22	<u>152</u>	100%
Percent of Total	1%	17%	13%	17%	14%	13%	11%	14%	100%	

**Table 5**  
 Geary EMS Service  
 Type of Call by Gender  
 June 1999 - May 2000

Type of Call	Not Available	Male	Female	Total	Percent of Total
Not Available	5	4	0	9	6%
Motor Vehicle	1	10	2	13	9%
Transfer	2	2	9	13	9%
Other Medical Call	<u>7</u>	<u>47</u>	<u>61</u>	<u>115</u>	<u>77%</u>
Totals	15	63	72	<u>150</u>	100%
Percent of Total	10%	42%	48%	100%	

**Table 6**  
 Geary EMS Service  
 Number of Calls by Patient "Pick-Up" Location  
 June 1999 - May 2000

Patient "Pick-Up" Location	Number of Calls	Percent of Calls
<b>Hospital</b>	17	12%
Kingfisher Regional Hospital	3	2%
Watonga Municipal Hospital	14	10%
<b>Nursing Home</b>	47	33%
Geary Nursing Home	47	33%
<b>Towns and their Rural Areas</b>	<u>77</u>	<u>55%</u>
Home/Residence	48	34%
Geary Police Department	14	10%
Rural	11	8%
Scene/Other than residences	<u>4</u>	3%
<b>Total</b>	<u>141</u>	100%

picked up at the Geary Police Department and another 11 calls or 8% were picked up in rural areas. The next largest category of patient “pick-up” locations was nursing homes with 47 calls or 33% of the total calls. The category of hospitals as patient “pick-up” locations had the least number of calls with 17 calls or 12% of the total calls.

The patient “drop-off” locations or final patient destinations are illustrated in **Table 7**. Hospitals were the largest category of patient destinations with 118 calls or 84% of the total calls. The specific hospital with the largest number of patients received was Watonga Municipal Hospital with 78 calls or 61% of the total calls. Parkview was second largest hospital in receipt of patients with 18 calls or 14% of the total calls. Kingfisher and Weatherford Hospitals were next with 8 and 7 calls or 6% each. Nursing homes was the final destination for 15 patients or 11% of the total calls. The “other” category indicated calls that refused service or were not transported.

Time to scene for EMS calls is shown in **Table 8**. Time to scene was 5 minutes or less for 26 calls or 19.1% of the total calls. Time to scene was 10 minutes or less for 50 calls or 36.7% of the total calls. Time to scene was 15 minutes or less for 90 calls or 66.1% of the total calls. Thirty minutes or less time to scene included 123 calls or 90.4%. Over thirty minutes time to scene totalled 13 calls or 9.6% of the total calls. Data was not available for 16 calls. Total time for EMS calls is illustrated in **Table 9**. Complete data was not available for 54 of the 152 reported calls. This data is only for 98 EMS calls. Of these 98 EMS calls, the majority of the calls, 41 calls or 41.8% of total calls, lasted longer than 2 hours. Another 11 calls or 11.2% lasted one hour or less. Between 1 and 2 hours included the remainder of the reported calls, 46 calls or 47% of the total calls.

**Table 7**  
 Geary EMS Service  
 Number of Calls by Patient "Drop-Off" Destination  
 June 1999 - May 2000

Patient Destination	Number of Calls	Percent of Calls
<b>Hospital</b>	118	84%
Watonga Municipal Hospital (Watonga)	78	61%
Parkview Hospital (El Reno)	18	14%
Kingfisher Regional Hospital (Kingfisher)	8	6%
Southwest Regional (Weatherford)	7	6%
Oklahoma City Hospitals	5	3%
Great Plains (Elk City)	2	1%
<b>Nursing Home</b>	15	11%
Geary Nursing Home	15	11%
<b>Other</b>	<u>8</u>	<u>6%</u>
Refused	7	5%
No transport	<u>1</u>	<u>1%</u>
<b>Total</b>	<u><u>141</u></u>	100%

**Table 8**  
 Geary EMS Calls  
 Time to Scene for All Calls  
 June 1999 - May 2000

Elapsed	Number of Calls	Percent of Calls	Cumulative Percent
0 - 5 Minutes	26	19.1%	19.1%
6 - 10 Minutes	24	17.6%	36.7%
11 - 15 Minutes	40	29.4%	66.1%
16 - 20 Minutes	16	11.8%	77.9%
21 - 25 Minutes	9	6.6%	84.5%
26 - 30 Minutes	8	5.9%	90.4%
31 - 35 Minutes	5	3.7%	94.1%
36 - 40 Minutes	2	1.5%	95.6%
41 - 45 Minutes	1	0.7%	96.3%
51 - 55 Minutes	2	1.5%	97.8%
Over 1 Hour	<u>3</u>	<u>2.2%</u>	100.0%
Totals	<u>136</u>	<u>100.0%</u>	
Not Available	16	----	
Total	<u>152</u>	----	

**Table 9**  
 Geary EMS Service  
 Total Time for All Calls  
 June 1999 – May 2000

Time	Number of Calls	Percent of Calls	Cumulative Percent
30 Minutes or Less	2	2.0%	2.0%
31 Minutes to 40 Minutes	1	1.0%	3.0%
41 Minutes to 50 Minutes	4	4.1%	7.1%
51 Minutes to 1 Hour	4	4.1%	11.2%
1 Hour 1 Minute to 1 Hour and	9	9.2%	20.4%
1 Hour 11 Minutes to 1 Hour	10	10.2%	30.6%
1 Hour 21 Minutes to 1 Hour	5	5.1%	35.7%
1 Hour 31 Minutes to 1 Hour	8	8.2%	43.9%
1 Hour 41 Minutes to 1 Hour	5	5.1%	49.0%
1 Hour 51 Minutes to 2 Hours	9	9.2%	58.2%
2 Hours or More	<u>41</u>	<u>41.8%</u>	100.0%
Total	<u>98</u>	<u>100.0%</u>	
-----			
Not	<u>54</u>	----	
Total	<u>152</u>	----	

The median elapsed times of responses represented in minutes is shown in **Table 10**. The median elapsed time for receipt of the call was 9.9 minutes. The median elapsed time to scene of the call was 6.6 minutes. The median elapsed time at the scene of the call was 20.6 minutes. The median elapsed time from scene to destination was 27.2 minutes. The median elapsed time from destination to return to service was 49.7 minutes. The time to scene or actual response time was 16.1 minutes. The total median time per call was 117.9 minutes.

In summary, the Geary EMS service provided service to approximately 152 total EMS calls during the period from June 1999 through May 2000. It has been estimated that of the total 152 calls, approximately 88 calls were emergency calls, 50 calls were non-emergency, and another 14 calls were non-billable. The mileage for these calls has been estimated to be 8,000 total miles. This is an average of 52.6 miles per call. These numbers will be utilized in the budget and revenue analysis in the rest of this report.

**Table 10**  
 Geary EMS Service  
 Response Times  
 June 1999 – May 2000

Response	Median Elapsed Times (Minutes)
Received	9.9
To Scene	6.6
At Scene	20.6
To Destination	27.2
Return to Service	49.7
Time to Scene (Response Time)	16.1
Median Time Per Call	117.9

## Estimated Costs of Funding Alternative Delivery Systems

Two alternative Geary EMS systems will be illustrated. The first alternative (**Alternative 1**) is based on basic EMS service provided 24 hours per day, 365 days per year. **Alternative 1** will include a Type I ambulance vehicle and ambulance equipment designed for providing basic life support service. The second alternative (**Alternative 2**) is based on an advanced life support EMS service provided 24 hours per day, 365 days per year. A Type III ambulance vehicle equipped with advanced life support equipment is assumed for **Alternative 2**. Also, for both alternatives, dispatch service is being provided through the local law enforcement and no costs are included for a base communications system. A third column (**Alternative 3**) is left blank for the convenience of the decision-makers to add another budget alternative, if desired. These alternatives are not recommendations but rather an informational analysis of different methods for funding the Geary EMS system.

Capital and operating budgets are developed based on information derived from Sloggett et al. (1988) [1] and information derived from Kleinholz et al. (1990) [2]. Capital and operating costs are based on the average known replacement or operating costs. Annual capital costs are defined as the annual depreciation of the capital equipment (ambulance, radios, equipment, buildings, etc.). These annual capital costs are important since they act as a sinking fund to replace worn capital items and are needed to purchase additional capital items in the future. Annual operating costs are the day-to-day expenses of operating the EMS system (salaries, benefits, fuel, oil, maintenance, supplies, insurance, etc.).

### **Alternative 1 - Geary Basic Life Support EMS System (Type I Vehicle)**

**Alternative 1** is based on estimated costs for an EMS system that would provide basic level service, 24 hours a day, 365 days per year. Costs are based on research [1,2]. **Table 11** shows the estimated capital costs.

The capital equipment items needed for a basic life support service are included under **Alternative 1** of **Table 11**. Again, no costs will be included for base communications cost; the local community law enforcement is providing dispatch services to the Geary EMS service at this time. The ambulance vehicle will include one Type I vehicle at \$80,000. The vehicle will be equipped with basic life support equipment, at a cost of \$15,000. The basic life support equipment necessary to equip an ambulance is listed in **Appendix A**. The EMS service may desire to contract with a neighboring EMS service for backup support since only one vehicle is available. A vehicle radio will be needed for an estimated cost of \$1,000. Oxygen sets will be stocked and at a cost of \$1,000 each, a total of \$2,000 would be spent to stock two sets for the vehicle. Communications between the dispatcher and the EMS staff are of utmost importance; portable radios/phones will be needed to facilitate these communications and it is estimated that 4 portable radios/phones will be needed. At a cost of \$250 each, the total cost would be \$1,000. The EMS service currently owns a building and the value is estimated to be \$40,000. The total capital costs for **Alternative 1** are approximately \$139,000.

A sinking fund or capital equipment replacement fund is necessary to provide for the long-term needs of an EMS system. For **Alternative 1**, the annual capital costs (or annual replacement costs or depreciation) are shown in **Table 12**. According to Sloggett [1], ambulance vehicles are depreciated based on 75,000 miles or seven years, whichever comes first. The annual depreciation cost for the ambulance

**Table 11**  
**Geary EMS Service**  
**Estimated Capital Expenditures**

Capital Items	Alternative 1			Alternative 2			Alternative 3		
	Unit		Total	Unit		Total	Unit		Total
	Cost	No.	Capital Costs	Cost	No.	Capital Costs	Cost	No.	Capital Costs
Vehicle - Type I	80,000	1	\$80,000						
Vehicle - Type III				75,000	1	\$75,000			
Vehicle Basic Equip.	15,000	1	\$15,000						
Vehicle ALS Equipment				47,000	1	\$47,000			
Vehicle Radios	1,000	1	\$1,000	1,000	1	\$1,000			
Oxygen Sets	1,000	2	\$2,000	1,000	2	\$2,000			
Portable Radios/Phones	250	4	\$1,000	250	4	\$1,000			
Building	40,000	1	\$40,000	40,000	1	\$40,000			
<b>Total Capital Costs</b>			<b>\$139,000</b>			<b>\$166,000</b>			<b>-</b>

**Table 12**  
**Geary EMS Service**  
**Estimated Annual Capital Expenses**

Capital Items	Alternative 1		Alternative 2		Alternative 3	
	Yrs.	Annual Capital Costs	Yrs.	Annual Capital Costs	Yrs.	Annual Capital Costs
Vehicle - Type I	7	\$11,429				
Vehicle - Type III			7	\$10,714		
Vehicle Basic Equip.	7	\$2,143				
Vehicle ALS Equip.			7	\$6,714		
Vehicle Radios	5	\$200	5	\$200		
Oxygen Sets	5	\$400	5	\$400		
Portable Radios/Phones	5	\$200	5	\$200		
Building	20	\$2,000	20	\$2,000		
Total Annual Capital Costs	-	\$16,371		\$20,229	-	

vehicle is based on annual total miles of 8,000. Over a seven year period, the total miles driven will be approximately 56,000. Therefore, the vehicle will be depreciated over 7 years, based on the maximum of 7 years. This results in an estimated annual replacement cost of \$11,429 for the Type I ambulance vehicle. The basic life support equipment is depreciated over a seven-year period, resulting in an annual replacement cost of \$2,143. The vehicle radio, oxygen sets, and portable radios/phones are all depreciated over five years, resulting in annual replacement costs of \$200, \$400, and \$200, respectively. The building is depreciated over 20 years, for an annual cost of \$2,000. The estimated total annual capital costs for **Alternative 1** are \$16,371.

Annual operating costs are the day-to-day expenses of operating the EMS system (salaries, benefits, fuel, oil, maintenance, supplies, insurance, etc.). The annual operating costs for **Alternative 1** are shown in **Table 13**. Building expenses include maintenance and repairs of \$50 per month, for an annual total of \$600. Building insurance is estimated at \$500 per year and building utilities are estimated at \$250 per month, for a yearly cost of \$3,000. Communications costs include a telephone monthly bill of \$125, for a yearly cost of \$1,500, and the pagers monthly bill of \$115 per month, for a yearly cost of \$1,380. Vehicle expenses include gas at \$1.50/gallon. The total mileage is estimated at 8,000 miles. Based on 8 mpg, the total gallons are estimated to be 1,000 ( $8,000/8 = 1,000$ ), for an annual cost of \$1,500 for gas. Gasoline may be obtained at a lower cost from local government officials if local arrangements can be made. The vehicle maintenance, repairs, and inspections are estimated to cost \$1,439. Maintenance and repair expenses include tires, oil, filters, and lubrications, vehicle licensing, and all other maintenance and repairs on the vehicle. The vehicle insurance is estimated at \$2,100 per year. Insurance may be

**Table 13**

**Geary EMS Service - Estimated Annual Operating Expenses & Total Expenses**

Operating Expense Items	Alternative 1			Alternative 2			Alternative 3		
	Unit Cost	No.	Operating Costs	Unit Cost	Yrs.	Operating Costs	Unit Cost	Yrs.	Operating Costs
<b>Building Expenses</b>									
Maint/Repairs	\$50	12	\$600	\$50	12	\$600			
Insurance	\$550	1	\$550	\$550	1	\$550			
Utilities	\$250	12	\$3,000	\$250	12	\$3,000			
<b>Communications</b>									
Telephone	\$125	12	\$1,500	\$125	12	\$1,500			
Pagers	\$115	12	\$1,380	\$115	12	\$1,380			
<b>Vehicle Expenses</b>									
Gas	\$1.50	1,000	\$1,500	\$1.50	1,000	\$1,500			
Maint/Repairs/Insp.			\$1,439			\$1,440			
Insurance	\$2,100	1	\$2,100	\$2,100	1	\$2,100			
Billing Expense	\$5	152	\$760	\$5	152	\$760			
Vehicle Radios	\$60	1	\$60	\$60	1	\$60			
Portable Radios/Phones	\$40	4	\$160	\$40	4	\$160			
Licensing Expense			\$260			\$440			
Medical Supply Exp.			\$2,293			\$3,949			
Labor Costs			\$33,016			\$33,579			
Office Supplies	\$50	12	\$600	\$50	12	\$600			
Training Expense			\$5,741			\$6,703			
Wrkrs Cmp/ Ins/Bens			\$9,500			\$12,500			
Miscellaneous	\$5,000	1	\$5,000	\$5,000	1	\$5,000			
<b>Total Operating Costs</b>			<b>\$62,430</b>			<b>\$68,791</b>			
<b>Total Annual Capital &amp; Operating Costs</b>			<b>\$78,801</b>			<b>\$89,020</b>			
<b>Cost Per Call</b>			<b>\$518.43</b>			<b>\$585.66</b>			

acquired at a lower cost by checking with appropriate insurance carriers or by contacting the Director of the EMS Division, Oklahoma State Department of Health, at (405) 271-4027.

The billing expenses for **Alternative 1** are estimated to be \$760 per year. This is based on a billing fee of \$5 per call for the total 152 calls at Geary. Equipment maintenance and repairs are important for effective communications and the vehicle radio is estimated to cost \$60 per year to maintain. The portable radios/phones are estimated to cost \$40 each per year to maintain, for an annual total of \$160. Licensing expenses are estimated to be \$260 per year. The medical supply expenses are based on a cost of \$3.50 per call for all 152 calls (\$532) and a cost of \$20.00 per call for emergency calls of 88 (\$1,761), for a combined total of \$2,293 yearly.

The labor costs for **Alternative 1** are detailed in **Table 14**. Geary EMS is basically a volunteer service with call pay and call-in pay on weekdays and a separate weekend pay for weekends. During the week, crews cover 12-hour shifts from 8 am – 8 pm and 8 pm – 8 am Monday through Friday. Each crew will consist of one EMT Basic or Intermediate and the second crew member an EMT Basic or Intermediate or First Responder. Call pay is \$10 per 12-hour shift, for an annual cost of \$10,400 for call pay during weekdays. If the crew is called in on an EMS call, each crew member will be paid an hourly wage for the hours worked. Based on an average wage rate of \$8.03, for an estimated 113 calls during the weekdays and estimating 3 hours per call, the call-in pay is estimated at \$5,444 annually.

Weekend pay is a flat \$37.50 per 12-hour shift with no additional call-in pay. For four 12-hour shifts per weekend, the annual cost would be \$15,600. The total of call pay, call-in pay, and weekend pay for **Alternative 1** is \$31,444. Overtime pay is estimated at \$1,572 to cover any additional personnel costs. The total cost of personnel is estimated at \$33,016. Benefits are included; workers' compensation is estimated at \$600 per year for ten persons for an annual cost

**Table 14**  
**Geary EMS Service**  
**ALTERNATIVE 1 - LABOR COSTS**

Based on Providing BASIC Service, 24 hours/day, 365 days/year,  
with a 2-Person Crew (One EMT Basic or Intermediate  
and One EMT Basic or Intermediate or First Responder)

Description	Labor Costs
To cover <b>Weekdays</b> , 12-hour Shifts, 8 am - 8 pm & 8 pm - 8 am M - F)	
<b>Call Pay</b>	
\$10 Per Shift (\$10/shift, 2 persons, 2 shifts/day, 5 days/wk, 52 wks/yr)	\$10,400
<b>Call-In Pay</b>	
\$8.03/hr WTD. AVE. (\$8.03/hr, 2 persons, 3 hrs/call, 113 calls)	\$5,444
(Based on hourly rates for EMT-Basics, \$7.50 & Paramedics, \$10.13)	
(Weighted Ave based on staffing of 80% EMT-Basics & 20% Paramedics)	
To cover <b>Weekends</b> , 12-hour shifts, 8 am - 8 pm & 8 pm - 8 am Sat & Sun)	
<b>Weekend Pay</b>	
\$37.50/shift (\$37.50/shift, 2 persons, 4 shifts/weekend, 52/yr)	\$15,600
(Includes total pay for weekend for an estimated 39 calls)	
<b>TOTAL BASE SALARIES</b>	<b>\$31,444</b>
<b>Overtime Pay</b>	<b>\$1,572</b>
<b>TOTAL BASE SALARIES AND OVERTIME</b>	<b>\$33,016</b>
<b>Benefits</b>	
Workers Compensation (\$600/person, ten persons)	\$6,000
Liability Insurance (\$350/person, ten persons)	\$3,500
<b>BENEFITS</b>	<b>\$9,500</b>
<b>TOTAL LABOR COSTS FOR ALTERNATIVE 1</b>	<b>\$42,516</b>

of \$6,000 and liability insurance is estimated at \$350 per year for ten persons for an annual cost of \$3,500. The total benefits cost is \$9,500 and the total labor costs for **Alternative 1** are \$42,516.

Returning to **Table 13**, the total of base salaries and overtime of \$33,016 (\$31,444 + \$1,572 = \$33,016) are included under labor costs and the benefits (\$9,500) are included under workers' compensation/insurance/benefits. Office supplies are estimated at \$50 per month, for an annual total of \$600 for **Alternative 1**. Training expenses are estimated at an annual total of \$5,741. A miscellaneous category has been included to cover any other unexpected costs; the annual estimated miscellaneous cost is \$5,000. The total annual operating costs for **Alternative 1** are estimated to be \$62,430. The total annual capital and operating costs for **Alternative 1** are estimated to be \$78,801, representing a cost of \$518.43 per EMS call for the Geary EMS service.

### **Alternative 2 - Geary Advanced Life Support EMS Service – (Type III Vehicle)**

The second funding alternative (**Alternative 2**) would provide advanced life support service, 24 hours a day, seven days a week. Only the differences between **Alternative 1** and **Alternative 2** will be discussed in the text.

In **Table 11** the estimated capital equipment items for **Alternative 2** are shown. For **Alternative 2**, it is assumed that a Type III ambulance vehicle will be utilized for an annual cost of \$75,000. To equip the ambulance with advanced life support equipment will cost an estimated \$47,000. The remaining capital expenditures for **Alternative 2** are the same as **Alternative 1** and will not be listed in detail again. The total annual capital costs for **Alternative 2** are estimated to be \$166,000 for the Geary EMS service.

The estimated annual capital costs for **Alternative 2** are shown in **Table 12**. The depreciation on the vehicle is based on the same method as **Alternative 1**. The vehicle will need to be replaced every 7 years; the annual replacement cost for the Type III vehicle will be \$10,714 annually. The advanced life support equipment is depreciated over 7 years based on a straight line depreciation methodology, for an annual cost of \$6,714. The annual capital costs for **Alternative 2** are estimated to be \$20,229 for the Geary EMS service.

The annual operating costs for **Alternative 2** are illustrated in **Table 13**. Again, only the differences between **Alternative 1** and **Alternative 2** will be discussed in the text. The costs for building expenses, communications, vehicle expenses, billing expenses, and communication maintenance contracts are the same for both alternatives. The licensing expense for an ALS system is estimated to be \$440 per year. The medical supply expense for an ALS system will be much higher. The total medical supply expense is estimated to be \$3,949 per year. The base cost of medical supplies is \$11.50 per call for all 152 calls (\$7,748) and an additional cost of \$25 is estimated for emergency calls of 88 calls (\$2,201), for a combined total of \$3,949.

Labor costs and benefits for **Alternative 2** are shown in detail in **Table 15**. The 2-person crew under an advanced life support will include a Paramedic as the first crew member and either a Paramedic or an EMT Basic or Intermediate could be the second crew member. The only difference between **Alternative 1** and **Alternative 2** is that the hourly rate for call-in pay would be higher; the hourly rate for the personnel under an advanced life support system is an average of \$8.82 per hour. Again, assuming 113 calls would be received during the weekdays, the annual cost for call-in pay is estimated to be \$5,980. The total of call pay, call-in pay, and weekend pay for **Alternative 2** is \$31,980. Overtime pay is estimated at \$1,599 to cover any additional or unexpected personnel costs. The total cost of personnel is estimated at \$33,579. Benefits are

also included; workers' compensation is estimated at \$750 per year for ten persons for an annual cost of \$7,500 and liability insurance is estimated at \$500 per year for ten persons for an annual

**Table 15**  
**Geary EMS Service**  
**ALTERNATIVE 2 - LABOR COSTS**

Based on Providing ADVANCED LIFE SUPPORT Service, 24 hours/day, 365 days/year  
with a 2-Person Crew (One Paramedic and One EMT Basic or Intermediate)

Description	Labor Costs
To cover <b>Weekdays</b> , 12-hour Shifts, 8 am - 8 pm & 8 pm - 8 am M - F)	
<b>Call Pay</b>	
\$10 Per Shift (\$10/shift, 2 persons, 2 shifts/day, 5 days/wk, 52 wks/yr)	\$10,400
<b>Call-In Pay</b>	
\$8.82/hr WTD. AVE. (\$8.82/hr, 2 persons, 3 hrs/call, 113 calls)	\$5,980
(Based on hourly rates for EMT-Basics, \$7.50 & Paramedics, \$10.13)	
(Weighted Ave based on staffing of 50% EMT-Basics & 50% Paramedics)	
To cover <b>Weekends</b> , 12-hour shifts, 8 am - 8 pm & 8 pm - 8 am Sat & Sun)	
<b>Weekend Pay</b>	
\$37.50/shift (\$37.50/shift, 2 persons, 4 shifts/weekend, 52/yr)	\$15,600
(Includes total pay for weekend for an estimated 39 calls)	
<b>TOTAL BASE SALARIES</b>	<b>\$31,980</b>
<b>Overtime Pay</b>	<b>\$1,599</b>
<b>TOTAL BASE SALARIES AND OVERTIME</b>	<b>\$33,579</b>
<b>Benefits</b>	
Workers Compensation (\$750/person, ten persons)	\$7,500
Liability Insurance (\$500/person, ten persons)	\$5,000
<b>BENEFITS</b>	<b>\$12,500</b>
<b>TOTAL LABOR COSTS FOR ALTERNATIVE 2</b>	<b>\$46,079</b>

cost of \$5,000. The total benefits cost is \$12,500 and the total labor costs for **Alternative 2** are \$46,079.

Referring back to **Table 13**, the base salaries and overtime (\$33,579) are included as labor costs and benefits (\$12,500) are included as Workers Compensation/Insurance/Benefits under **Alternative 2**. An annual total of \$6,703 is also included for training expenses. The total annual operating expenses are estimated to be \$68,791, with the total annual capital and operating expenses estimated to be \$89,020, representing a cost of \$585.66 per call for **Alternative 2**.

### **Alternative 3 - Blank**

A blank column is available in **Tables 11, 12, and 13** for the local decision-makers to build their own funding alternative; blank forms are also included in **Appendix B**.

## **An Analysis of Alternative Revenue Sources**

Decision makers for the Geary EMS service have several ways to raise revenues. Some of these ways, like community fund-raisers, are commendable but not reliable. More reliable sources are user fees, sales taxes, subscription/membership fees, third party reimbursement, fee collected on local utility bill, and special taxation districts.

User fees are generally charged for EMS services; however, these fees generally do not cover costs and have not kept up with EMS costs and inflation. Thus, they are often supplemented with other forms of revenues. For this study, user fees, millage levies from formation of a special taxation district, mileage fees, sales tax, and fee per utility bill are presented in **Tables 16a - 16e**.

**Table 16a**  
**Geary EMS District**  
**Emergency and Non-Emergency User Fees Per Call**

Total Calls	152	Emergency	88
Total Miles	8,000	Non-Emerg	50
Ave. Miles/Call	52.6	Non-Billable	14
		Total Calls	152

**EMERGENCY CALLS**

		Estimated User Fee Per Call								
		\$300	\$350	\$400	\$450	\$500	\$550	\$600	\$650	\$700
Emergency Calls	88	\$26,415	\$30,817	\$35,220	\$39,622	\$44,024	\$48,427	\$52,829	\$57,232	\$61,634
90% Collections	90%	\$23,773	\$27,735	\$31,698	\$35,660	\$39,622	\$43,584	\$47,546	\$51,509	\$55,471
80% Collections	80%	21,132	24,654	28,176	31,698	35,220	38,741	42,263	45,785	49,307
70% Collections	70%	18,490	21,572	24,654	27,735	30,817	33,899	36,980	40,062	43,144
60% Collections	60%	15,849	18,490	21,132	23,773	26,415	29,056	31,698	34,339	36,980
50% Collections	50%	13,207	15,409	17,610	19,811	22,012	24,213	26,415	28,616	30,817

**NON-EMERGENCY CALLS**

		Estimated User Fee Per Call								
		\$300	\$350	\$400	\$450	\$500	\$550	\$600	\$650	\$700
Non-Emerg. Calls	50	\$15,000	\$17,500	\$20,000	\$22,500	\$25,000	\$27,500	\$30,000	\$32,500	\$35,000
90% Collections	90%	\$13,500	\$15,750	\$18,000	\$20,250	\$22,500	\$24,750	\$27,000	\$29,250	\$31,500
80% Collections	80%	\$12,000	\$14,000	\$16,000	\$18,000	\$20,000	\$22,000	\$24,000	\$26,000	\$28,000
70% Collections	70%	\$10,500	\$12,250	\$14,000	\$15,750	\$17,500	\$19,250	\$21,000	\$22,750	\$24,500
60% Collections	60%	\$9,000	\$10,500	\$12,000	\$13,500	\$15,000	\$16,500	\$18,000	\$19,500	\$21,000
50% Collections	50%	\$7,500	\$8,750	\$10,000	\$11,250	\$12,500	\$13,750	\$15,000	\$16,250	\$17,500

**Table 16b**  
**Geary EMS District**  
**Estimated Revenues - Millage Levies**

	TOTAL NET VALUATION*	THREE MILLS	TWO MILLS	ONE MILL
FY 1999 Geary School District	\$11,934,500	<u><b>\$35,804</b></u>	<u>\$23,869</u>	<u>\$11,935</u>

\* Based on Total Net Valuation of \$12,562,632 which includes personal, real, and public property, LESS 5% adjustment for collections. Information received from Blaine & Canadian County Assessor's Office.

**Table16c**  
**Geary EMS District**  
**Estimated Revenues - Mileage Fees**

		Mileage Fees								
		\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00	\$8.50	\$9.00	\$9.50
For One-Way Miles	3,200	\$17,600	\$19,200	\$20,800	\$22,400	\$24,000	\$25,600	\$27,200	\$28,800	\$30,400
90% Collections	0.9	15,840	\$17,280	18,720	\$20,160	21,600	\$23,040	24,480	\$25,920	\$27,360
80% Collections	0.8	14,080	\$15,360	16,640	\$17,920	19,200	\$20,480	21,760	\$23,040	\$24,320
70% Collections	0.7	12,320	\$13,440	14,560	\$15,680	16,800	\$17,920	19,040	\$20,160	\$21,280
60% Collections	0.6	10,560	\$11,520	12,480	\$13,440	14,400	\$15,360	16,320	\$17,280	\$18,240
50% Collections	0.5	8,800	\$9,600	10,400	\$11,200	12,000	\$12,800	13,600	\$14,400	\$15,200

**Table 16d**  
**Geary EMS District**  
**Estimated Revenues - Sales Tax**

	Sales Subject to Sales Tax*	1/4¢ Sales Tax	1/2¢ Sales Tax	3/4¢ Sales Tax	1¢ Sales Tax	1 1/2¢ Sales Tax	2¢ Sales Tax
Geary (FY 2000)	\$4,064,967	<u>\$10,162</u>	<u>\$20,325</u>	<u>\$30,487</u>	<u>\$40,650</u>	<u>\$60,975</u>	<u>\$81,299</u>

\* Based on 2000 Fairfax Sales Tax of 3% and Sales Tax Collections of \$121,949, from Oklahoma Tax Commission, 2000.

**Table 16e**  
**Geary EMS District**  
**Estimated Revenues - Fee per Utility Billing**

Fee/Month		\$2.00	\$3.00	\$4.00	\$5.00	\$6.00	\$8.00	\$10.00	
Fee/Year		\$24	\$36	\$48	\$60	\$72	\$96	\$120	
Households*									
667									
Total Utility Fees		\$16,008	\$24,012	\$32,016	\$40,020	\$48,024	\$64,032	\$80,040	
	Utilization of	95%	\$15,208	\$22,811	\$30,415	\$38,019	\$45,623	\$60,830	\$76,038
	Utilization of	90%	\$14,407	\$21,611	\$28,814	\$36,018	\$43,222	\$57,629	\$72,036
	Utilization of	85%	\$13,607	\$20,410	\$27,214	\$34,017	\$40,820	\$54,427	\$68,034

\* Local data received from City of Geary

**Table 16a** shows the revenues possible for user fees with alternative collection rates. Base rates for ambulance user fees, starting at \$300, and continuing with \$350, \$400, \$450, \$500, \$550, \$600, \$650, and ending with \$700, are shown. These are shown based on emergency calls and non-emergency calls, so that an EMS service could charge different rates for these two types of calls. Alternative collection rates are shown: 90%, 80%, 70%, 60%, and 50%. For the Geary EMS service, approximately 14 calls were non-billable; of the remaining calls, 88 were considered emergency calls and 50 were considered non-emergency calls.

**Table 16b** illustrates the estimated revenues that would be generated from millage levies through the creation of a special taxation district. The total net property valuation for all Geary school districts for FY 1999 was \$11,934,500. Three mills would generate \$35,804, two mills \$23,869, and one mill \$11,935.

Mileage charges (**Table 16c**) are shown for \$5.50 per mile, \$6.00 per mile, \$6.50 per mile, \$7.00 per mile, \$7.50 per mile, \$8.00 per mile, \$8.50 per mile, \$9.00 per mile, and \$9.50 per mile for one-way (loaded) miles. For Geary, one-way miles are approximately 40% of the total miles, for a total of 3,200 miles ( $8,000 \times 40\% = 3,200$  miles one-way). Calculations are shown on how much revenue could be generated if 50, 60, 70, 80, or 90 percent of the total fees are collected.

Another revenue option is to pass an additional sales tax (**Table 16d**). If a \$0.0025 sales tax or \$0.0050 were passed in Geary, the amounts of \$10,162 and \$20,325 are estimated to be generated, respectively. The table illustrates further that \$30,487 would be generated from a  $3/4\text{¢}$  sales tax, \$40,650 from a  $1\text{¢}$  sales tax, \$60,975 from a  $1\frac{1}{2}\text{¢}$  sales tax, and \$81,299 from a  $2\text{¢}$  sales tax.

**Table 16e** illustrates the revenue from a fee per utility billing. The table shows the revenues resulting from a \$2.00 per month utility fee up to a \$10 per month utility fee. If a \$2.00 per month utility fee were initiated, each household would pay a total of \$24 per year. With an estimated total 667 households in Geary, the annual resulting revenues are estimated to be \$16,008, assuming 100% of the households are currently paying utilities. The table illustrates the annual total revenues based on 95%, 90%, and 85% utility usage.

To illustrate how to utilize the revenue tables, **Alternative 1 (Table 17a)** would need an estimated \$78,801 for total annual capital and operating expenses. One method to fund **Alternative 1** is to charge a mileage fee of \$8 (70% collections) to generate \$17,920, to charge a non-emergency call fee of \$600 (70% collections) to generate \$21,000, and to charge an emergency call fee of \$650 (70% collections) to generate \$40,062. The total of these three fees is \$78,982, which leaves a surplus of \$181 (**Table 17a, Alternative 1, Funding Option #1**).

Another method to fund **Alternative 1** would be to create a special taxation district. **Table 17a, Alternative 1, Funding Option #2** shows that \$35,804 would be generated from creating a special taxation district with 3 mills, \$14,560 from a \$6.50 mileage fee (70% collections), \$10,500 from a \$300 non-emergency call fee (70% collections), and \$18,490 from a \$300 emergency call fee (70% collections). These four fees total \$79,354, which covers the total annual capital and operating costs of \$78,801 for **Alternative 1**, leaving a small surplus of \$553 (**Table 17a, Alternative 1, Funding Option #2**).

To fund **Alternative 2, Table 17b, Alternative 2, Funding Option #1** illustrates one methodology to cover the total annual capital and operating expenses of \$89,020. Assuming 70% collections, a mileage fee of \$7.50 would generate \$16,800, a non-emergency fee of \$350 would generate \$12,250, an emergency fee of \$400 would generate \$24,654, and the creation of a

special taxation district at 3 mills would bring in \$35,804. Total revenues equal \$89,508, leaving a surplus of \$488 (Table 17b, Alternative 2, Funding Option #1).

**Table 17a**  
**Geary EMS District**  
**Possible Funding Options**

ALTERNATIVE 1 Funding Option #1		ALTERNATIVE 3 Funding Option #1	
Costs:		Costs:	
Total Annual Capital & Operating Expenses	\$78,801	Total Annual Capital & Operating Expenses	
Revenues:		Revenues:	
Mileage Fee, \$8.00, 70%	\$17,920		
Non-ER Fee, \$600, 70%	\$21,000		
ER Fee, \$650, 70%	\$40,062		
Total Revenues	\$78,982	Total Revenues	
Difference	\$181	Difference	
ALTERNATIVE 1 Funding Option #2		ALTERNATIVE 3 Funding Option #2	
Costs:		Costs:	
Total Annual Capital & Operating Expenses	\$78,801	Total Annual Capital & Operating Expenses	
Revenues:		Revenues:	
Mileage Fee, \$6.50, 70%	14,560		
Non-ER Fee, \$300, 70%	\$10,500		
ER Fee, \$300, 70%	18,490		
EMS District, 3 mills	\$35,804		
Total Revenues	\$79,354	Total Revenues	
Difference	\$553	Difference	

**Table 17b**  
**Geary EMS District**  
**Possible Funding Options**

ALTERNATIVE 2 Funding Option #1		ALTERNATIVE 3 Funding Option #1	
Costs:		Costs:	
Total Annual Capital & Operating Expenses	\$89,020	Total Annual Capital & Operating Expenses	
Revenues:		Revenues:	
Mileage Fee, \$7.50, 70%	\$16,800		
Non-ER Fee, \$350, 70%	\$12,250		
ER Fee, \$400, 70%	\$24,654		
EMS District, 3 mills	\$35,804		
Total Revenues	\$89,508	Total Revenues	
Difference	\$488	Difference	
ALTERNATIVE 2 Funding Option #2		ALTERNATIVE 3 Funding Option #2	
Costs:		Costs:	
Total Annual Capital & Operating Expenses	\$89,020	Total Annual Capital & Operating Expenses	
Revenues:		Revenues:	
Mileage Fee, \$8.00, 70%	\$17,920		
Non-ER Fee, \$500, 70%	\$17,500		
ER Fee, \$550, 70%	\$33,899		
Sales Tax, 1/2¢	\$20,325		
Total Revenues	\$89,644	Total Revenues	
Difference	\$624	Difference	

Another method to fund **Alternative 2** would be to vote a 1/2¢ sales tax, in addition to charging user fees and a mileage fee, to cover the total annual capital and operating expenses. A 1/2¢ sales tax would bring in \$20,325. With an assumed 70% collection rate, a mileage rate of \$8 would bring in \$17,920, a non-emergency user fee of \$500 would bring in \$17,500, and an emergency fee of \$550 would bring in \$33,899. This would generate a grand total of \$89,644 in revenues to cover the total annual capital and operating expenses of \$89,020, leaving a surplus of \$624. (**Table 17b, Alternative 2, Funding Option #2**).

#### The Creation of an EMS District

The State of Oklahoma allows for the formation of a special EMS District for the purpose of raising funds to support EMS. **Table 18** outlines the procedures involved in creating an EMS District and the powers and responsibilities of its Board of Trustees. In brief, the County Commissioners must call for a special election to create the district. The district may encompass one or more counties, incorporated cities, a township, school districts, or parts of a school district that lie within the borders of a county. The district may assess up to three mills of ad valorem taxes to support the operation of the EMS system. The total net assessed valuation for the Geary School Districts for FY 1999 was \$11,934,500. For a more up-to-date valuation, decision-makers should contact the Blaine and Canadian County Assessors' Offices. If an EMS District were created, a three mill tax levy (**Table 16b**) for the Geary school districts would raise \$35,804 annually ( $\$11,934,500 \times .003$ ), a two mill tax levy, \$23,869, and a one mill tax levy, \$11,935.

## TABLE 18

### A SUMMARY OF THE PROCEDURES TO CREATE AN EMS DISTRICT AND THE POWERS AND RESPONSIBILITIES OF ITS BOARD OF TRUSTEES <sup>1</sup>

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#### I. Creation of a District

- A. Special election called by the County Commissioners or through them as called for by a petition of greater than 10 percent of the registered voters of the affected area.

#### II. Affected Area

- A. One or more counties or portions of counties (must follow school district lines).
- B. Incorporated cities.

#### III. The Election and Ad Valorem Tax Levy

- A. Both capital and operational millage levy must be approved by a majority of the voters.
- B. The operational millage levy cannot exceed three mills and the capital millage levy cannot exceed three mills.
- C. The operational millage levy continues until voters change it; the capital millage levy is in effect until bonds are completely repaid.

#### IV. The Board of Trustees

- A. Appointed by the County Commissioners.
  - B. Powers and Responsibilities:
    - 1. Make necessary rules, procedures, and contracts.
    - 2. Hire appropriate personnel.
    - 3. Issue bonds upon approval by a majority of the voters at a special election. Bonds are paid for out of the capital millage levy.
    - 4. Responsible for the economical expenditure of funds.
    - 5. Can charge additional fees for services.
    - 6. Can sue and be sued.
-

## **Conclusion**

The analysis of the Geary EMS service presented in this paper is designed to aid local decision makers as they determine the kind of EMS system best suited to the Geary area. Through this analysis, the Cooperative Extension Service is not advocating any of the alternatives presented. This report is not in the form of a recommendation. If further analysis is desired, contact your County Extension Director. Personnel in the EMS Division of the Oklahoma State Health Department and Office of Highway Safety are also willing to help in any way they can.

## References

- [1] Sloggett, Gordon R., Doeksen, Gerald A., Hays, Marvin, and Larsen, Sam. "A Community Development Guide for Emergency Medical Services: A Systematic Approach to Funding and Administration." EMS Division, State Health Department; Oklahoma Highway Safety Office; Oklahoma Cooperative Extension Service, Oklahoma State University, MP-126, July 1988.
- [2] Kleinholz, Sharon, Doeksen, Gerald, Henderson, Ed, Bullard, Vernon, et.al. "A Guidebook for Rural Fire Protection Services." Oklahoma Cooperative Extension Service, Oklahoma State University, MP-131, November 1990.