



***Special Investigation  
Ems Ambulance Procurement***

***Durham County Internal Audit Department***

***April 22, 2015***



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April 22, 2015

Mr. Wendell Davis,  
County Manager

Dear Mr. Davis:

The Internal Audit Department has completed its Special Investigation of EMS's July 2014 purchase of seven replacement ambulances. During the investigation, Internal Audit identified a control weakness in major purchase processes whereby documentation was not developed and maintained that provided justification for the purchase. Internal audit also identified an instance in which information supporting the purchase was not validated.

We have discussed this report with the Finance Department and its Purchasing Division officials. They have committed to developing a process to strengthen the procurement process regarding specific justification for major purchases.

EMS, the purchasing department, has read this report. The Department's official response is attached as appendix I.

Sincerely,

Richard Edwards,  
Internal Audit Director

CC: Skip Kirkwood, EMS Director  
George Quick, Finance Director  
Lee Worsley, Deputy County Manager  
Audit Oversight Committee  
BOCC

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EXECUTIVE SUMMARY

<p><i>INTRODUCTION</i></p> <p>This report provides an analysis of EMS’s procurement process for its 2014 purchase of seven new ambulances. The report addresses the lack and use of information supporting the purchase. The report does not focus on whether the vehicles purchased for the ambulance was appropriate for the needs of the County considering economy, efficiency, and effectiveness.</p> <p><i>FINDINGS</i></p> <p>Internal audit efforts resulted in finding that:</p> <ul style="list-style-type: none"><li>• EMS did not develop and maintain documentation files showing its decisions or reasoning for selecting the vehicle it purchased for ambulance use.</li><li>• Information used by EMS to support lifecycle, maintenance, and repair costs, was obtained from an EMS operation in Ontario Canada without validating the data or assessing its relevance to conditions in Durham County.</li></ul> <p><i>CAUSE</i></p> <p>EMS officials said they did not develop and maintain documentation because they did not believe it is required by County policy or State Statute. EMS officials also did not validate information because they did believe it is required or mandated by Statute.</p> <p><i>EFFECTS</i></p> <p>The effects of the above findings is that:</p> <ul style="list-style-type: none"><li>• taxpayers or other interested parties could not determine if the vehicle meet the basic ambulance needs of the County considering economy, efficiency and effectiveness, and</li><li>• Decisions were made with less that valid information.</li></ul>	<p><i>RECOMMENDATION</i></p> <p>Internal Audit recommends that user departments provide documentation regarding justification for a specific product or service to the County’s Purchasing Division before implementing a purchase. Documentation should include (1) sound assessment methods to identify needs or requirements, (2) specifications that consider economy, effectiveness, and efficiency that are directed towards the specific need the purchase will satisfy.</p> <p><i>ADDITIONAL INFORMATION</i></p> <p>In response to the investigation, EMS developed information to support the purchase of the specific vehicle. That information is attached to the report as EMS’s response to the investigation findings and recommendations.</p> <p>For further information regarding this report please contact Richard Edwards, Internal Audit Director, at <a href="mailto:rcedwards@dconc.gov">rcedwards@dconc.gov</a>.</p>
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## BACKGROUND

In July 2014, the EMS Department (EMS) ordered seven replacement ambulances for its fleet. The seven ambulances cost \$1,273,412 or \$181,916 each. The ambulance purchase was part of EMS's plan to modernize its fleet in conjunction with its overall plan to improve emergency medical services to the Durham County Community. The seven new ambulances have arrived and EMS officials are pleased with them.

The fire chiefs at the Redwood and Bahama volunteer fire departments made complaints in similar fashion as those made on "fraud hotlines."<sup>1</sup> They told the Internal Auditor they believed the specific ambulances EMS purchased were unnecessarily expensive<sup>2</sup> purchases and they did not believe the maintenance data used to justify the purchase was accurate. One fire chief believed the procurement method was inappropriate because the purchase did not follow established bid procedures.

Internal Audit believes such charges are serious and require a level of review to establish the validity or lack thereof. Internal Audit believes a decision not to review the charges would have been contrary to the transparency desired by County Administrators and the taxpaying community. Internal Audit conducted a review of the process EMS used to procure the vehicles.

## OBJECTIVE

The objective of the review was to answer three specific questions: (1) were the ambulances purchased by appropriate methods, (2) were the ambulances purchase unnecessarily expensive, and (3) was information regarding maintenance, operational, and life cycle costs reliable? This audit did not intend to determine if the vehicles EMS purchased were the best fit for the County's needs, but only to determine if a process was followed that could be understood as reasonable.

## SCOPE AND METHODOLOGY

To answer those objective questions, the Internal Auditor requested EMS's files documenting its decision to purchase the Mercedes Sprinter. Internal Audit believes such a file would have included information regarding the justification and need as well as maintenance and life cycle cost data that was provided to the BOCC at budget hearings. Such documentation was not maintained by EMS; however, EMS officials verbally communicated to Internal Audit the reasons why it chose the specific vehicle. The Deputy EMS Director, a member of the selection team, provided a letter detailing the selection process.

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<sup>1</sup> Fraud hotlines are methods by which employees, citizens or others may communicate what they see as fraud and abuse. Such complaints are investigated to determine the complaint's validity.

<sup>2</sup> Auditor's interpretation of "they didn't need a Mercedes."

## FINDINGS AND CONCLUSION

The process utilized by EMS to purchase its newest ambulances revealed a flaw in the County's process for major purchases. EMS did not maintain documents regarding the procurement. The lack of information and audit trail surrounding the procurement created questions regarding justification for the specific vehicle that was purchased and if that vehicle was fit for the ambulance needs of the County when considering, economy, efficiency, and effectiveness. However, the auditor did not find that the specific vehicle was inappropriate. Data was not available to make such a determination, therefore this report addresses the lack of documentation and the accompanying effects.

The need for additional ambulances was widely known and plans were in place to purchase new ones; however, a documented justification or selection process that demonstrates the conduct of an assessment of the type of vehicle required to fit the needs of the County is not available. For example, if conditions existed in the County that required a smaller, more agile vehicle, etc., documenting that condition, and how a specific vehicle would satisfy the need would have provided a level of assurance that the right vehicle was purchased. This type of analysis was not conducted because EMS did not believe there was a requirement for documenting such decisions. Such documentation is not required by the Purchasing Division under the current structure. Statute requirements regarding documentation are discussed below.

Currently, for large purchases over \$90,000, departments are responsible for providing the justification of need and obtaining approval from the Board of County Commissioner (BOCC) to make capital equipment and vehicle purchases. They are not required to seek the assistance of the Purchasing Division (Purchasing) to develop their needs assessment or specification documents. However, Purchasing will provide guidance regarding the costs if requested. For example, a department wanting to buy a specific item, a vehicle for example, may ask Purchasing for pricing information. Purchasing can query its systems to determine if such a vehicle was purchased and if so, provide pricing information based upon purchasing history. That information can then be used by the buying department in the documentation used for budget hearings. Upon approval by the BOCC, the Finance Department will allocate the funds to execute the purchase. At that point, Purchasing does not question or review the process for determining the need for the purchase.

EMS purchased the ambulances through legally established procedures established by State statutes which did not require a local bid process. Internal Audit could not determine if the purchase was unnecessarily expensive because of the lack of data. Also, Internal Audit could not verify maintenance and life cycle costs presented in budget discussions.

### The Purchase Was Conducted Properly

EMS purchased the vehicles through the North Central Emergency Medical Service Cooperative (NCEMSC). North Carolina statutes allow for purchases through cooperatives if the cooperative is set up to obtain bids in accordance with State statutes requiring competition etc. As a member of the cooperative, the Purchasing only has to review the documentation to verify a legitimate competitive bid process and a valid contract award and make the purchase. That process is relatively simple only requiring EMS to select the optional items it prefers for the vehicle.

### Information Not Available To Determine If Purchase Was Unnecessarily Expensive

Internal audit did not have enough information to determine if the ambulance chosen was unnecessarily expensive or was the best selection considering economy, efficiency, and effectiveness. Other Type III ambulances were available but a comparison is impossible without information regarding the County's needs and how the specific vehicle satisfied those needs. Documentation showing the needs of the County and the need for a specific type of vehicle would help a reviewer in making this decision. For example, if the County needed short range transportation versus transportation for longer trips, documentation of that need along with specifications of a vehicle to solve that requirement would help policy makers, citizens, or other interested parties understand how the selected vehicle was appropriate for the needs of the County.

During the course of the audit, EMS officials compiled information regarding the vehicle price as well as reasons for choosing the specific vehicle. According to the EMS Director, there have been three options for the Type III ambulances, the type historically used by the County. He further stated that changes in the industry have narrowed the available choices and when considering the choices available, the vehicle chosen was priced more economically favorable.

Such information is valuable in communicating to taxpayers and others that purchases are reasonable and do not represent unnecessarily expensive purchases. Internal audit believes such information should be documented and maintained in the purchasing files.

### Fuel Consumption, Maintenance, and Life Cycle Costs Were Not Validated

EMS obtained fuel cost comparisons, life cycle cost data, and parts replacement data from its Canadian counterparts who were using the sprinter in its fleet of ambulances. EMS accepted and reported the data in its budget hearings without verifying the reliability of the data, however; they reported the source of the data in the budget presentation.

According to the EMS Director, Niagara Falls Ontario Regional EMS developed the data using experience unique to its EMS operation. It is unclear if this data is representative of what the experience would be in Durham County's EMS. Internal Audit attempted to independently verify the data and found EMS Association published reports confirming that fuel consumption was in line with findings of the Niagara Regional EMS in Ontario. Internal Audit could not identify data referencing similar life cycle or parts costs as those reported in budget hearings, although some association material address claims that the sprinter's advanced features result in maintenance and repair savings.

Internal Audit believes information should be vetted to establish reliability before it is used. The EMS Director said he accepted and reported the information because he believed the source was trustworthy. We believe that in the future, information used to make critical decisions should be tested to determine its reliability.

### Statutes, Administrative Rules, and County Policy Do Not Require Documentation

EMS management said it was unaware that documentation of their decisions regarding selection of a specific vehicle was required. The Director cited the lack of a specific statute,

rule, or policy in this regards. The Internal Auditor agrees that the State’s procurement statutes do not address documentation of the justification of need. However, according to the introduction to the purchasing section by UNC’s School of Government’s *County and Municipal Government in North Carolina*, contracting procedures must be designed to “avoid the appearance of impropriety in contracting decisions.” Implicit in this statement is the requirement that some form of procedure be designed and documented that can be referred to as necessary. Otherwise, a question arises as to how it can be determined that the procedure avoids the appearance of impropriety if it is not recorded in a form that can be reviewed by persons not involved in the process. EMS representatives argue that the statement regarding the appearance of impropriety is applicable only if the County conducted its own bidding process. However, Internal Audit believes this statement is applicable to purchasing regardless of the procurement process. Documenting the process, including the justified need is a simple solution. Therefore, we believe the procurement process should have included information documenting the need for a specific product as a matter of prudence, if not for the sake of legal correctness. That information should explain the need the proposed product will satisfy as well as how one product serves the county better, especially if there are options and price differences.

## RECOMMENDATIONS

Departments that engage in acquisitions should strive to assure that their acquisitions are not subject to suspicions of unnecessary expenses or wastefulness. If such suspicions are expressed, the departments should be able to easily defend its acquisition with records and documents that provide insight into the process and pertinent decisions made to justify the acquisition. Implementing a purchase plan or procedure that mitigates the risk of creating questions regarding the appropriateness of the process requires designing the process in a manner that reviewers can determine why the good or service is required and how the specific good or service will satisfy the requirement. For future large purchases, Internal Audit recommends that user departments provide documentation regarding the need and justification for a specific product or service to the County’s Purchasing Division. That documentation should include (1) sound assessment methods to identify needs or requirements, (2) specifications that consider economy, effectiveness, and efficiency that are directed towards the identified needs and requirements. To facilitate this effort, Internal Audit recommends that Purchasing provide the necessary guidance to departments to implement the above steps.



Appendix 1  
Investigation Response – Skip Kirkwood, EMS Director



Emergency  
Medical Services

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(919) 560-8206

**Skip Kirkwood, M.S., J.D., EMT-P**  
Director • Chief Paramedic

April 16, 2015

Richard Edwards, Internal Auditor  
Durham County, North Carolina  
200 E. Main Street, 4<sup>th</sup> Floor  
Durham, NC 27701

Dear Mr. Edwards:

This letter is in reply to the report of the Special Investigation – EMS Ambulance Procurement, prepared by the Internal Audit Department and dated April XX, 2015.

In general terms, the EMS Department accepts the report. However, there are a number of points that require additional information and clarification so that those who will rely on this report will have a full and complete understanding of the matters being discussed.

Throughout this procurement process, we were mindful of Durham County's Strategic Plan, particularly goals 2 (health and well-being for all), goal 3 (safe and secure community), goal 4 (environmental stewardship, particularly the reduction of vehicle emissions), and goal 5 (accountable, efficient, and visionary government). Our overall goal was a safer, more durable, easier to maintain ambulance, with better fuel economy, for the same or not much more cost than the existing ambulance fleet." We believed that we have achieved this goal beyond our expectations. Specific features that support the county strategic goal as well as our departmental goals include

- A smaller, more aerodynamic vehicle
- 80-100% increase in fuel mileage
- An ambulance that is more crashworthy than previous ambulances, having been tested to the most advanced standards available
- Greater preventative maintenance intervals (10,000 miles versus 4,000 miles, using 26 quarts less oil per truck per year)
- On-board driver performance and system monitoring, that alerts supervisors when speed or other safety parameters are exceeded.

With those thoughts in mind, we submit the following responses to the Special Investigation.

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1. ***The process utilized by EMS to purchase its newest ambulances revealed a flaw in the process the county uses for major purchases.***

The EMS Department takes great pains to comply with all legal, regulatory, and administrative policy requirements. When we see an indication of the need for consultation, we immediately consult with whomever is the appropriate authority. However, because the process we utilized leading up to the Sprinter purchase decision was the same as the process used in prior years, and the same as those utilized throughout Durham County government and other county governments, no “red flags” were raised that suggested we should do anything different or consult with any other person or department. We do not feel that the process is flawed in any way.

- a. **Consultations with the UNC School of Government:** The EMS Department reached out to the School of Government for advice as to any requirements for “formal process” to support decisions leading to release of a bid specification or making the decision to purchase off of a cooperative agreement per N.C.G.S. 143-129(e)(3). Professors Frayda Blustein and Norma Houston, both authorities on local government law and procurement issues, advised that there was no requirement that there be a “process” leading up to a purchasing decision, and that there are no statutory requirements that guide or dictate how the unit determines whether it wishes to use an exception to the competitive bidding requirement.
- b. **Historical purchasing practices for ambulances in Durham County:** Durham County EMS historically utilized a vehicle committee to advise management about vehicle specifications – consisting essentially of the same members and positions as are currently utilized. For many years, specifications were developed and a formal bidding process utilized. Approximately five years ago, the Purchasing Department approved purchases off of two different cooperatives, as authorized by the statute – the North Central EMS Cooperative and the Florida State Sheriff’s Association contract. These purchases were made in the same manner that the current purchase was made – a base unit plus enhancements selected by the department, based on the needs as determined by the vehicle committee and management staff (Director (ret.) Mike Smith and Major Brandon Mitchell).
- c. **Historical purchasing practices for other Durham County departments:** We contacted other Durham County departments that are involved with similar purchases to discuss their formal or informal processes for deciding which vehicles to purchase.
  - i. **Sheriff’s Office:** The Sheriff’s Office, like EMS, *utilizes an informal process and managerial discretion to select which vehicles it will buy for particular*

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*purposes. The total budget per vehicle includes vehicle cost, emergency equipment, plus “up-fitting” (installation of graphics, radio, emergency warning equipment). Those responsible utilize their experience and professional expertise to determine which of the available vehicles are most appropriate for their departmental needs (Captain Will Oakley).*

- ii. *General Services: The initial process of evaluating a need for a new vehicle or piece of equipment is oral discussion with the requesting department supervisor, Director, Asst. Director and myself. Because there is no written criteria to determine the specific make, model and options, these matters are discussed using the experience of our personnel and whatever research is necessary to make an informed decision. Utilizing the aforementioned and past experience associated with our current need helps develop the criteria submitted to vendors whom will be bidding on the item to be purchased (Peter Shambo, Fleet Management/Inventory Coordinator, General Services).*
- iii. *Public Health: We write the specification (concerning the Tooth Fairy vehicle), based on what we know that we need. There was no formal process (Gayle Harris, Director of Public Health).*

d. **Consultations with other counties concerning ambulance procurement:** In order to respond to the auditor’s inquiries, nearby county EMS Directors were contacted and asked to provide any “formal processes” that they use to document the decisions to purchase particular ambulances. A copy of the query and responses are attached. They are summarized as follows:

- i. *Catawba County: Catawba utilizes professional expertise, expertise of staff, best available data, past history, managerial discretion, etc. (Bryan Blanton, Director, Emergency Services).*
- ii. *Johnston County: We do not utilize a formal process or have a specific policy on this subject. We use feedback from our providers, input from our managers and previous experience to determine our needs, along with current industry standards (Josh Holloman, Chief, EMS Division).*
- iii. *Wake County: We've been purchasing ambulances since 1976. We've gone in several directions over the years, but each year we chart a direction based on our professional expertise and feedback from the users of the vehicles. This is not a documented practice from a formal perspective (Jon Olson, Deputy Director).*

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- iv. Orange County: The Director of Emergency Services (not an EMS executive) provided guidance to an employee committee. *The formal recommendation was simply providing the three quotes from the final vendors, discussing the pros and cons of each unit/vendor compared to each other, and hearing the subcommittees recommendation as to why they made their final decision. The final recommendation was made to me in an email (Jim Groves, Director of Emergency Services).*

In sum, we question whether there is any flaw in the process utilized to select these particular ambulances, or whether the process is appropriate and reasonable, using the current practices of both Durham County Government departments and those of nearby counties. We do not see any rationale for the creation of additional process requirements for purchases such as these, which occur regularly in a market where minor conditions change frequently, but the annual process remains much the same.

**2. *We agree with the Internal Auditor's findings that the purchase was properly conducted.***

**3. *Information Not Available to Determine if Purchase was Unnecessarily Expensive.***

We disagree with the auditor's conclusion that "information was not available to determine if purchase was unnecessarily expensive." This information has always been available, but it was never directly requested by the auditor. It appears to us that the auditor expected to find certain information some sort of "procurement file," which is not required by county policy, state statute, or regulation, but which was easily assembled by EMS staff and is thus presented in this response.

Footnote (1) in the Internal Audit report indicated that the auditor interpreted the referenced fire chief's remark about "they don't need a Mercedes" as suggesting that the purchase of these ambulances was "unnecessarily expensive." The evidence will show that the ambulances were procured at a reasonable price, much more reasonable than a comparably equipped ambulance from other manufacturers and vendors, which will provide great value to the citizens of Durham County.

The question of "unnecessarily expensive" is easily addressed by comparison of the total purchase price per ambulance paid by Durham County, compared to the total purchase price of past new ambulance purchases, or by comparison with recent new ambulance purchases by other nearby North Carolina counties. The notion that simply because a vehicle chassis is sold by Mercedes Benz it is "unnecessarily expensive" is unsupported on its face. Over the last five years, the Sprinter cutaway van chassis, manufactured in South Carolina, has been sold under the corporate names of Dodge, Freightliner, and Mercedes Benz. It is an ordinary work van chassis, displaying no "extravagant" characteristics (for

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example, seat controls are manual rather than power). These chassis can be found all around Durham County, being utilized by plumbers, electricians, other tradesmen, and delivery services. This chassis is also utilized by county EMS agencies in Nash County and Iredell County, as well as by North State Medical Transport (a local private ambulance company) and WakeMed Hospitals Mobile Care. It is also the standard for much of the English-speaking world. Photos of those vehicles are included as on attachment 1.

1. Since the issue seems to be centered on the choice of a Mercedes Benz chassis, the following discusses chassis selection.

- a. Lowest cost:

Durham County's ambulance fleet, for at least 10 years, has consisted of USDOT Type III ambulances (modular box on a cutaway chassis). Historically, there have been three chassis options for type 3 ambulances – the Ford E series, the Chevy 45 series, and the Sprinter 3500. Ford has made the decision to vacate the E series and replace it with the Transit series of vans, which are not available certified for ambulance conversion. There are no diesel E-series Ford van chassis available, and the gasoline chassis performance at Durham County and elsewhere has been unsatisfactory. However, the price of the gas chassis is included for comparison. The cost of an ambulance conversion kit was provided by Mr. Eric Vogl at Peachstate Ambulance Company (an ambulance vendor).

Sprinter 3500 series	\$37,995
Ford E450 series	\$33,280 (diesel not avail; gas not acceptable)
Chevy 45 series	\$44,110

Based on these prices, and the greatly-improved fuel economy expected from this choice, it should be clear that the base chassis selected for our 2014 ambulance purchase was, in fact, it the lowest cost chassis.

- b. Compliance with Durham County policies:

Moreover, even if the Sprinter chassis had cost more than the other options, the purchase would have been justified, based on Office of the County Manager policy entitled ***Environmental Responsibility Expectations for Employees*** (September 4, 2009), §5.2, which provides that "Employees shall take all reasonable efforts to reduce the amount of energy used in county facilities and vehicles." The nearly 50% improvement in fuel economy of the Sprinter chassis as compared to Durham County's current Ford/Chevy fleet adheres to both the letter and the spirit of this policy.

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Furthermore, Durham County's *Environmentally Preferred Purchasing Policy*, Finance Department/Purchasing Division Purchasing Manual #4130-5, (September 4, 2009), provides that "products purchased shall be...energy and water efficient, as long as those items meet or exceed specifications and required quality levels set forth by the County." Section 5-D provides in relevant part, "Even when not purchasing alternative fuel vehicles, departments *shall* purchase "greener" vehicles by specifying good fuel economy and environmental performance. In addition to the improved fuel economy described above, these vehicles incorporate and environmentally-friendly ECO™ system to limit vehicle idling and reduce toxic emissions. Far from a violation of an unwritten policy or standard, a reasonable person could interpret this policy as commanding the purchase of the Sprinter chassis over the other available option, even if the Sprinter had cost more than other options (which, we have shown, it did not).

Last, the ECO™ system complies with the intent of Office of the County Manager policy (undated, not numberd, signed by Michael M. Ruffin) entitled *Idle Reduction in County Vehicles*.

We have submitted this vehicle performance data to Tobin Freid, Sustainability Manager, City – County Office of Sustainability. Ms. Freid estimates that each vehicle, operating 20,000 miles per year, will save 1,303 gallons of fuel per year, and will reduce greenhouse gas emissions by 14 tons per vehicle per year. The initial 7 vehicles will save 9,121 gallons of fuel per year (\$18,242 approximately), and nearly 100 tons. A complete fleet conversion will save 4-5 times that amount (45,606 gallons of fuel and 500 tons of greenhouse gases, \$91,210 in fuel cost per year).

Accordingly, we submit that the discussion of "unnecessarily expensive" arising from the selection of the Mercedes Benz Sprinter chassis should end here.

However, as ambulances are complex vehicles, consisting of a chassis and a patient care module, both with many optional features, further discussion is provided.

2. The base price of the Demers MX152 Type III ambulance selected from the North Central EMS Cooperative was \$122,494. Comparable<sup>1</sup> ambulances on this cooperative purchasing agreement ranged from \$112,200 (McCoy Miller Type III) to \$129,909 (Road Rescue UltraMedic III). The base ambulance conversion was a "middle of the pack" decision based on our judgment of which of the available vehicles best met the needs of Durham County EMS, considering county policies and

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<sup>1</sup> There is a TaylorMade ambulance shown at a base price of \$81,000.00 This company was disqualified as a bidder by Durham County years ago, due to quality, production, and support deficiencies. They would not be considered any acceptable bidder or source of cooperative purchase.

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preferences.

3. Options and custom items selected are detailed in the attached buyer specification from Demers. They include things like computer mounts, safety lighting, airbags, etc. Reasons for the inclusion of any particular option can be provided if desired. It is not clear to what level the Auditor would like us to be able to “drill down” to the individual components that make up an ambulance. Those items would have been added to the base price of the vehicle, regardless of manufacturer or chassis choice.
4. Comparison of new ambulance purchases by surrounding EMS counties: The cost of ambulances purchased by Durham County was reasonable in comparison to the prices most recently paid by other nearby counties: When this question arose, Major Brandon Mitchell prepared a side-by-side comparison of ambulances recently purchased by Wake, Durham, and Person counties. He also obtained quotations from two ambulance vendors for identically-equipped ambulances.

Precise side-by-side comparisons are challenging, in that no two EMS agencies purchase identical vehicles. For example, Durham County has historically included OnSpot Roto-chains on their vehicles, to assure driveability in winter conditions, while other counties do not consider this enhancement necessary (Orange County, for example, opts for larger, heavier vehicles that they believe can handle the snow without the use of chains). Moreover, this year we added a vehicle telematics and driver supervision system, intended to improve safety and vehicle wear-and-tear, and several other safety-enhancing options. In any case, the Sprinter ambulances were priced “middle of the pack” in terms of nearby counties, and well below the quoted price for comparably equipped vehicles from the two vendors providing quotations. Major Mitchell’s report and supporting documents are attached as attachment 2.

### ***Fuel Consumption, Maintenance, and Life Cycle Costs.***

In discussion, the Internal Auditor suggested that we should have used data from “better” sources, such as industry associations. To the best of the collective knowledge of the people involved in this process, there are no other sources for this type of data save individual studies by individual EMS agencies. I fully understand that I may be held accountable if the projections made during the budget process do not pan out. However, this is clearly a case of “doing the best job possible with available data.” The source for all data relied upon was disclosed to the County Manager, Budget Staff, and to the Board of County Commissioners when it was utilized.

Moreover, there is no policy, standard, or other guidance that specifies quality of data relied upon. We would be happy to comply with any such standard adopted by any competent authority having jurisdiction.

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However, in an effort to assure the “local accuracy” of our data, we have compared the fuel economy of our Sprinters to our existing fleet of Ford and Chevy ambulances. Our existing fleet provides an average fuel economy of 7.9 mpg (see attachment 3), while our Sprinters are averaging 13.8 mpg. This data corresponds with that received from the Municipal Region of Niagara.

In addition, we replicated the “market basket” study (see attachment 4) of parts and services that we obtained from our Canadian colleagues during the last budget process. The conclusions are the same using local data as they were using the Municipal Region of Niagara data.

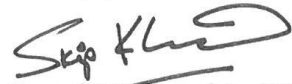
**CONCLUSION**

For the foregoing reasons, we disagree with conclusions #1, 2 and 4, while we agree with conclusion #3.

In closing, I reiterate that the EMS Department will gladly comply with any written policy, ordinance, regulation or statute that can provide guidance to our processes. However, simple transparency requires that we be provided with such guidance prior to our undertaking work that is essential to doing the business of serving the citizens of Durham County, or to having our good faith work characterized as “unnecessarily expensive”. We do not believe that a policy that requires process for the sake of process, or as a substitute for the professional expertise of county managers, is necessary or desirable, particularly as the county moves in the direction of “Managing For Results,” including greater autonomy and accountability for outcome measures rather than process measures.

Please feel free to contact me if you require additional information.

Sincerely yours,



Howard A. Kirkwood, Jr., M.S., J.D., NREMT-P  
Director • Chief Paramedic



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ATTACHMENT 1

LOCAL USERS OF SPRINTER UTILITY AND AMBULANCE CHASSIS



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Emergency  
Medical Services

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Brandon Mitchell, MPA, NCEMT-P  
Administration & Finance • Asst. Chief Paramedic

**ATTACHMENT 2**

**COMPARISON OF ACTUAL AND QUOTED PURCHASE PRICES FOR COMPARABLE AMBULANCES**

**TO:** Chief S. Kirkwood  
**SUBJECT:** Medic Unit Comparison  
**DATE:** March 16, 2015

The following medic units were used in a side-by-side comparison to evaluate the cost of Durham County EMS's new Demers Sprinter MX152. Durham compared Wake and Person County's current FY medic unit purchases along with quotes from two different manufacturers (Wheeled Coach or McCoy Miller) using Durham's spec. Individual counties require different specs from other counties to meet the needs of the community being served. The attached spreadsheet compiles the specs and cost to provide a comparison of cost to place medic units into service. The numbers reflected in this report are the final cost of putting the medic unit into service.

Durham has selected the PRAN multiplexed system; multiplexing is a method by which multiple analog message signals or digital data streams are combined into one signal over a shared medium. This means reducing wiring while increasing complexity and possibilities, such as better systems control, the share of more information and it facilitates the creation of links between different systems. Multiplexing can also add on to the safety and reliability. The system makes it possible to track and monitor parameters from the vehicle without the need to install several new devices and additional wires. PRAN allows extracting all necessary information regarding the conversion of the vehicle as well, like some engine and transmission data: RPM, speed, odometer, fuel consumption (m/g). The display supports and manages the four cameras on the vehicle. The cameras provide backup and blindside views during the operations of the medic unit. PRAN also provides asset management preventing loss equipment. The PRAN system cost \$8,090 per unit. Systems equivalent to the PRAN monitoring system were not purchased in the Wake and Person County medic units. FERNO's ACE Tech system which provide vehicle tracking, but no equipment monitoring shows quoted in the Wheeled Coach and McCoy Miller spec.

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**Unit Purchase Cost**

Wake County	147,000.00
Durham County	181,916.00
Person County	201,400.00
McCoy Miller (Vendor Quote)	233,790.00
Wheeled Coach (Vendor Quote)	237,036.00

**Total Implementation Cost**

Wake County	161,000.00
Durham County	200,741.00
Person County	218,400.00
McCoy Miller (Vendor Quote)	233,790.00
Wheeled Coach (Vendor Quote)	237,036.00

The information from Wake County did not provide a fully itemized breakdown of the cost and options purchased in their units. The current Wake County units do not have OnSpot chains or stretcher mounting system (StacTrac/PowerLoad). Durham integrated several safety standards into the design to ensure the safety of the patient and employees. Person County had a vehicle trade in reducing the cost of the truck \$22,605.00 not reflecting in the analysis. EMS recommendation for the county is to allow for vehicle trade in to reduce the total cost of the medic unit. During the current FY, EMS was informed trading in of vehicles was not permitted by the county, and medic trucks have to be surplus to govdeals.com. Jacqueline Boyce as informed EMS that EMS should have been allowed to trade in the old units and during this next FY units will be traded to reduce the medic unit total cost.

I have contacted three (3) dealerships to determine common maintenance and repairs cost facing a medic unit fleet. The Sprinter 3500 requires an oil change every 10,000 miles where both Ford and Chevy require 4,000 miles. The Chevy requires oil changes 2.5 times more than the Sprinters. Currently, Durham medic units accumulate 20 thousand miles per year resulting in five (5) oil changes for the Chevy and two (2) for the Sprinters (\$120.00 savings per year). The larger impact is not the financial savings but environmental reduction in oil consumption by 26 quarts a truck per year.

(see attachment 4 for this chart)

The evaluation of standard maintenance and repair of medic units reflects the cost in maintaining the Sprinter will result in lower operational cost. The total cost reflects the cost of maintenance and repairs cost and not oil changes.

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In conclusion, the purchasing price of the Demers MX152 falls within the middle of the price range of comparative units. Comparing medic units purchased by different EMS agencies can prove difficult because of the different options requested by departments. In this report, I have worked to extract the information that reflects the actual cost of purchasing medic units. The vendors producing medic units have different standard options that are included as an upgrade with another vendor. The maintenance and repair comparison shows the long-term maintenance of the Sprinters will result in cost savings for Durham County.



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**ATTACHMENT 3**

**DURHAM COUNTY EMERGENCY MEDICAL SERVICES**  
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Vehicle Fuel Economy

Vehicle Number	Type	Fuel Type	Average MPG
DC-7	Ambulance	Diesel	9.7
DC-8	Ambulance	Diesel	8.5
DC-10	Ambulance	Diesel	7.6
DC-11	Ambulance	Diesel	6.8
DC-12	Ambulance	Diesel	8.9
DC-15	Ambulance	Diesel	8.4
DC-17	Ambulance	Diesel	6.8
DC-20	Ambulance	Diesel	9.5
DC-30	Ambulance	Diesel	7.1
DC-31	Ambulance	Diesel	6.8
DC-33	Ambulance	Diesel	7.4
DC-34	Ambulance	Diesel	8.2
DC-36	Ambulance	Diesel	8.7
DC-40	Ambulance	Diesel	8.8
DC-41	Ambulance	Diesel	7.5
2011 Ford	Ambulance	Unleaded	7.9
2012 Ford	Ambulance	Unleaded	5.7
2012 Ford	Ambulance	Diesel	7.9
2014 Chevy	Ambulance	Diesel	7.9
Ford/Chevy Fleet Average			7.9

DC-56	Sprinter	Diesel	15.0
DC-57	Sprinter	Diesel	13.5
DC-59	Sprinter	Diesel	13.2
(only 3 Sprinters currently in service)			
Sprinter Fleet Average			13.9

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**ATTACHMENT 4**

**PARTS AND SERVICE "MARKET BASKET" FROM LOCAL FORD, CHEVY, SPRINTER DEALERS**

Maintenance & Repair of Current EMS Units			
	Ford E450 (Gas)	Chevy 4500 Diesel	Sprinter 3500 Diesel
OIL CHANGE	\$90.00	\$100.00	\$190.00
OIL QTS REQUIRED	7	10	14
OIL CHANGE RECOMMENDED FREQUENCY	4,000	4,000	10,000
FRONT BUMPER	\$661.65	\$359.13	\$276.80
FRONT GRILLE	\$473.23	\$550.03	\$540.00
FRONT FENDER	\$304.95	\$359.13	\$156.80
RADIATOR	\$308.10	\$498.00	\$440.00
RADIATOR SUPPORT	\$929.09	\$409.82	\$85.60
HOOD	\$750.37	\$312.83	\$420.00
FRONT HEAD LAMP	\$260.74	\$279.58	\$408.00
FRONT BRAKES (PADS, ROTORS, SENSORS)	\$399.00	\$646.00	\$238.00
REAR BRAKES (PADS, ROTORS, SENSORS)	\$390.00	\$712.00	\$176.80
INJECTORS	\$56.30	\$4,198.00	\$448.00
TURBO	\$5,608.00	\$1,338.34	\$1,077.60
TRANSMISSION (PLUSE CORE RETURN)	\$4,608.00	\$4,608.00	\$2,492.00
<b>Total</b>	<b>\$14,749.43</b>	<b>\$14,270.86</b>	<b>\$6,759.60</b>

Appendix 2  
Internal Audit Response to EMS Director's Comments

This Special Investigation report of EMS's Ambulance Procurement made five primary points. They were:

- EMS did not document its assessment of the needs for the specific vehicle, therefore the process was not available and open for review,
- The Auditor, or other interested parties, could not determine if the specific vehicles purchased by EMS was appropriate for the County's ambulance needs because data was not sufficient to support how vehicles met the specific needs of the County,
- EMS did not validate lifecycle, repair, and maintenance costs before presenting those costs to the BOCC during budget hearings,
- Without appropriate information and data there is no basis to determine if procurements are appropriate and meets the State Statute standard that "...plans were developed to avoid the appearance of impropriety", and
- Controls in the County's procurement system needs to be strengthened to provide better assurance that user departments can defend their procurements by documenting and maintaining on file, justification for major purchases.

The Auditor believes these points are relevant and valid based upon the facts and data available at the time of the investigation. Additionally, the Auditor believes that in the spirit of openness, prudence, and good government, major procurements should not be rendered questionable because data is unavailable or not verified and validated. The recommendation, when implemented by the Finance Department and its Purchasing Division, will provide additional controls necessary to reasonably insure that major purchases are conducted in a manner that supports good business practices.