OFFICE OF THE CITY AUDITOR
City and County of Honolulu
State of Hawai'i

Audit of the City's Ambulance Fleet and Operations

Report No. 12-01/December 2011

Audit of the City's Ambulance Fleet and Operations

A Report to the
Mayor
and the
City Council
of Honolulu

Submitted by

THE CITY AUDITOR
CITY AND COUNTY
OF HONOLULU
STATE OF HAWAI'I

Report No. 12-01
December 2011

OFFICE OF THE CITY AUDITOR
CITY AND COUNTY OF HONOLULU
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EDWIN S.W. YOUNG
CITY AUDITOR

December 2, 2011

The Honorable Ernest Y. Martin, Chair
and Members
Honolulu City Council
530 South King Street, Room 202
Honolulu, Hawai'i 96813

Dear Council Chair Martin:

This audit was conducted pursuant to City Council Resolution 09-86 which requested that the city auditor conduct an audit to determine whether the city's current fleet of ambulances and emergency notification vehicles was sufficient to meet the emergency assistance needs of O'ahu. For this audit, we focused on the ambulance services program operated by the city. The audit was performed in accordance with generally accepted government auditing standards from March 2011 to November 2011.

The State of Hawai'i contracts with the City and County of Honolulu for ambulance services on O'ahu each fiscal year. The original $25.5 million contract was extended each year and was still effective for the fiscal year 2010. The contract requires the city to:

- Meet response time guidelines for emergency ambulance services 90 percent of the time;
- Provide on-call emergency ambulance services 24 hours per day, seven days a week for 16 units; and
- Establish a quality improvement program that measures, maintains, and improves the effectiveness and efficiency of emergency medical services. Best practices include a systemic approach to follow-up patient care and feedback on improvements needed.

The Honolulu Emergency Services Department's (HESD) Emergency Medical Services (EMS) Division provides the ambulance service for O'ahu. In fiscal year 2010, EMS was authorized 277.75 full-time equivalents, had 37 ambulances and 2 rapid response vehicles, and a budget of $31.7 million for operating and capital expenditures related to providing ambulance services. It also used the services of a private ambulance service.

Over 90 percent of Honolulu residents rate the ambulance services as *good* or *excellent*. Our review indicated improvements are still possible. More specifically:

- Only 3 of the 21 ambulance units have met response time guidelines for ambulance services between FY2007-08 and FY2009-10, and did so in only one of the three years. This occurred because program managers were not proactive in working with the State to maximize use of the contract funds. EMS relies on costly overtime to provide the required services and coverage required by the contract. This occurred because of staff vacancies, turnover, staffing shortages, and excessive leave within EMS. As a result, some employees are paid as much as $200,000 per year and are working without breaks over extended periods. The long hours could impact the quality of patient care and could endanger patients who need serious or critical care related to 911 calls. The city is also incurring unfunded liabilities for pensions.

- EMS accumulates a plethora of data, but the data focuses on response times. The data used does not include information on patient care and follow-up that could be used to improve the effectiveness and efficiency of its medical services. Additionally, the city does not hold its subcontractor to comparable ambulance response time standards and did not obtain response time data to properly evaluate the subcontractor performance. These deficiencies exist because program managers are not proactive in collecting such information and do not place a high priority on customer services data. As a result, EMS lacks important data to fully evaluate its services and levels of care related to patient outcomes (including survival rates, health, and required treatments).

We are recommending that EMS program managers:

- Proactively work with the State of Hawai'i to revise the contract terms so that funds can be reprogrammed as needed.

- Maximize the unexpended contract funds to hire, train, and develop staff needed to operate the program.

- Develop a career ladder that could reduce staff shortages and turnover.

- Monitor and reduce excessive overtime and leave within EMS.

- Follow best practices by collecting customer services related data that can be used to improve the quality of services.

- Amend the subcontractor contract to include ambulance response time standards and collect performance data to properly evaluate and improve emergency medical services.

- Use the available data to prepare reports that can be used to develop strategic, long range plans and to improve the quality of the program.

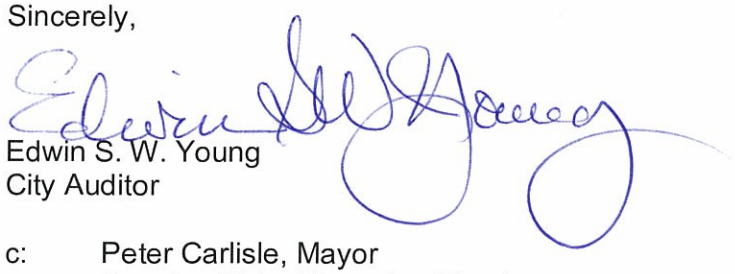
The Managing Director's Office reports it is in accord with the audit recommendations and has implemented or is actively implementing the audit recommendations. Some of the actions taken include:

- Proactively working with the State of Hawai'i to revise the contract terms so that funds can be reprogrammed as needed.
- Setting a goal of a 50 percent vacancy reduction within the next year.
- Changing the 18-month part-time paramedic program at Kapi'olani Community College to a 12-month, full-time program, and working to increase admissions for emergency medical technician training.
- Developing a career ladder by reallocating paramedic positions to district chief positions, reallocating dispatch positions to supervisory positions, and working with the union and the budget and fiscal services department to fill these positions.
- Reducing non-holiday overtime by assigning a district chief to oversee staff assignments with a mandate to prevent unnecessary overtime and leave-taking.
- Using the ambulance call data to analyze current operations and to help in long-range strategic planning. The analysis revealed a need for a peak call-time ambulance for the metropolitan Honolulu area which will be operational in December 2011.
- Reviewing subcontractor use and performance, and expanding the review to include response time analysis.
- Actively pursuing the use of report information to improve ambulance services.

We are available to meet with you and your staff to discuss the review results, provide more information, and to answer any questions. If you have any questions regarding the audit report, please call the auditor-in-charge, Troy Shimasaki, or me at 768-3130.

We wish to express our appreciation for the cooperation and assistance provided to us by the Managing Director, the staffs of the Honolulu Emergency Services Department; its Emergency Medical Services Division; and the Department of Budget and Fiscal Services. We also thank the State of Hawai'i Emergency Medical Services and Injury Prevention System Branch, the American Medical Response staff, and the many others who assisted us during this audit.

Sincerely,



Edwin S. W. Young
City Auditor

c: Peter Carlisle, Mayor
Douglas Chin, Managing Director
Michael Hansen, Director, Department of Budget and Fiscal Services
Dr. James Ireland, Director, Honolulu Emergency Services Department
Van Lee, Deputy City Auditor
Troy Shimasaki, Senior Auditor

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Chapter 1
Introduction

This audit was conducted pursuant to Resolution 09-86 which requested the city auditor to conduct an audit to determine if the city's current fleet of ambulances and emergency notification vehicles was sufficient to meet emergency assistance needs on O'ahu. For this audit, we focused on the ambulance services program operated by the city.

Background

The State of Hawai'i through its Emergency Medical Services and Injury Prevention System Branch is responsible for establishing and maintaining a statewide emergency medical services system, including emergency ambulance service for the island of O'ahu (see Appendices 1 and 2). Since 1978, the State of Hawai'i Health Department has contracted with the City and County of Honolulu to provide ambulance services for the island of O'ahu. In July 2006, the branch awarded the city's Department of Emergency Services (also known as the Honolulu Emergency Services Department, or HESD) a $25.5 million contract for emergency ambulance services. The ambulance service is operated by HESD's Emergency Medical Services (EMS) Division.

The original contract was extended each year and was still in effect for fiscal year 2010. The contract establishes various guidelines and requirements for ambulance service:

- In the contract, the city must meet response time guidelines for emergency ambulance services 90 percent of the time.

- Under the contract, the city must provide on-call advanced life support[1] (ALS) emergency ground ambulance services for 21 ambulance and rapid response units[2]. In 17 of the 21 O'ahu units, emergency ambulance service must be available 24 hours a day, seven days a

[1] Advanced Life Support (ALS) is a higher level of emergency medical care, usually provided by emergency medical technician-intermediates or paramedics. Typically, ALS includes invasive techniques such as IV therapy, intubation, and/or drug administration. In contrast, Basic Life Support (BLS) involves fundamental emergency treatment such as CPR and includes non-emergent hospital-to-hospital transfers.

[2] The city established the 21st unit at Waipi'o in January 2008.

week. In 2 of the 21 units, the city must provide on-call ALS emergency ambulance service 16 hours per day, seven days a week. In the remaining 2 units, the city must provide on-call ALS rapid response vehicle services seven days a week (see Appendix 3).

- The contract further specifies the city must establish a quality improvement program that measures, maintains, and improves the effectiveness and efficiency of emergency medical services. Best practices for quality improvement programs recommend a systemic approach to follow-up patient care and feedback on improvements needed.

- In the contract, the city must provide 26 ambulances (1 at each of the 19 ambulance units and 7 spares) and 2 non-transport, rapid response vehicles, for a total of 28 vehicles.

In fiscal year 2010, EMS was authorized 277.75[3] full time equivalents (FTEs) and had a budget of $31.7 million for operating and capital expenditures related to providing ambulance services. EMS had 39 vehicles including 19 ambulances, 18 back-up (spare) ambulances, and 2 non-transport rapid response vehicles. The total vehicles exceeded contract requirements.

Each of the 19 ambulances have at least two crew members, one of which is a paramedic (Mobile Emergency Care Specialist) who is trained and authorized to perform invasive techniques. Each of the two rapid response units is staffed with at least one paramedic.

The following exhibit lists the location of the EMS ambulances units and rapid response districts on O'ahu.

[3] The 277.75 FTE positions do not include 3 authorized contract FTE positions.

Exhibit 1.1
EMS Ambulance Units

	Unit No.	*Unit*
1	01	Charlie 1 (Metro Honolulu)
2	02	Metro 1 (Metro Honolulu)
3	03	Kailua
4	04	Kane‘ohe
5	05	Pawa‘a 1 (Waikiki)
6	06	Waialua
7	07	Wai‘anae
8	08	Wailupe
9	09	Waimanalo
10	10	Waipahu
11	11	Baker 1 (Metro Honolulu)
12	12	Wahiawa
13	13	Kahuku
14	14	‘Aiea
15	15	Hawai‘i Kai
16	16	Makakilo
17	18	Rapid Response 1 (Central O‘ahu)
18	19	Rapid Response 2 (Ka‘a‘awa)
19	20	Makiki
20	21	Nanakuli
21	22	Waipi‘o[4]

Note: Unit No. 17 is vacant

Source: Emergency Medical Services Division

[4] The Waipi‘o unit was activated in January 2008.

A photo of Rapid Response 1 is shown below. Rapid Response 1, which was based at Hawai'i Medical Center West in Ewa, served as back up to communities in Leeward and Central O'ahu. In July 2011, Rapid Response 1 was relocated to Kuakini Medical Center to serve urban Honolulu. Rapid Response 2 is stationed at Ka'a'awa and serves as back up to Kahuku and Kane'ohe.

Exhibit 1.2
Photo of Rapid Response Vehicle

Rapid Response 1, stationed at the Kuakini Medical Center, is one of two non-ambulance, non-transport vehicles that the state requires the city to operate. These vehicles are staffed with a paramedic.

Source: Office of the City Auditor

Between FY 2008 and FY 2010, EMS received over 231,000 calls for ambulance service. Those calls resulted in 132,633 hospital transports. Exhibit 1.3 provides key EMS operational statistics for FY 2008 to FY 2010.

Exhibit 1.3
EMS Performance Data (FY 2008 to FY 2010)

	FY 2008	FY 2009	FY 2010	Total
No. of EMS Arrival at Scene/Dispatch	64,344	60,412	60,946	185,702
No. of EMS Transports	45,289	43,768	43,576	132,633
No. of 911 Calls Received	74,250	79,493	77,323	231,066

Source: Executive Program and Budget, Fiscal Years 2008, 2009, and 2010

City maintains a contract with AMR to provide supplemental ambulance service

In addition to operating and staffing a fleet of ambulances, the city's EMS division maintains a contract with American Medical Response (AMR) to provide supplemental ambulance service. The contract requires AMR to provide emergency ambulance services on an as-needed or on-call basis with at least one ambulance available. If EMS is unable to respond to an emergency call, EMS will contact AMR to provide ambulance services. The city's EMS division utilizes AMR to respond to advanced life support calls when its ambulances are out on other calls or are unable to respond[5]. EMS pays AMR $576 for each transport and seeks reimbursement from the state for AMR services.

Audit Objectives, Scope, and Methodology

As requested by City Council Resolution 09-86, the audit objective was to determine whether the city's current fleet of ambulances and emergency notification vehicles was sufficient to meet the emergency assistance needs of O'ahu. For this audit, we focused on the ambulance services program operated by the city. More specifically, we assessed EMS management of its ambulance services operation, particularly the adequacy of fleet size, overtime costs, and effective use of budgeted dollars. Although the state is responsible for administering the emergency medical services program, we focused this audit on the city's operations as it pertains to its contract with the state health department.

As part of our audit work we interviewed the State Department of Health's State Emergency Medical Services and Injury Prevention System Branch administrators, reviewed State of Hawai'i data, and reviewed State of Hawai'i policies and procedures. We also interviewed the EMS sub-contractor for ambulance services, American Medical Response (AMR). We reviewed the State Department of Health and AMR contracts and analyzed data provided by them.

[5] EMS will frequently use AMR services to respond to *non-emergency* type calls, or Basic Life Support (BLS), such as hospital-to-hospital transfers. For BLS transports, AMR is allowed to bill patients directly because the state does not have jurisdiction over BLS services. From FY 2008 to FY 2010, the number of BLS calls handled by AMR increased from 5 to 645. By doing so, the city is able to keep its ambulance crews available to respond to more critical emergencies.

Our review covered EMS operations from FY 2008 to FY 2010. We interviewed various EMS staff and administrators, examined EMS budget documents and management reports to determine how state funds were used, and analyzed ambulance response-time data to determine if the city complied with state contract guidelines. We also examined EMS personnel, payroll, and overtime data to assess its impact on EMS and the city. We reviewed operational data and other reports to determine performance efficiency and consulted Department of Budget and Fiscal Services staff regarding budget procedures. We compared EMS performance with other jurisdictions and reviewed best practices from the National Association of State EMS Officials, National Association of EMS Physicians, and the International Fire Chiefs Association.

The audit was performed in accordance with generally accepted governmental audit standards from March 2011 to November 2011. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. To our knowledge, no previous analyses of the departments' organizational structure have been performed.

Audit Results

The State of Hawai'i contract for ambulance services requires the city to meet response time guidelines for emergency ambulance services 90 percent of the time, provide on-call emergency ambulance services 24 hours per day, seven days a week for 16 units, and establish a quality improvement program that measures, maintains, and improves the effectiveness and efficiency of emergency medical services. Best practices include a systemic approach to follow-up patient care and feedback on improvements needed.

Although over 90 percent of Honolulu residents rate the ambulance services as good or excellent, our review indicated improvements are still possible. More specifically, only 3 of the 21 city units met the response time guidelines for ambulance services over the last three years. In addition to contract changes with its subcontractor, we are recommending that city program managers work proactively with the state to maximize use of the contract funds so that unused funds totaling over $1.4 million can be used to improve city performance. The contract between EMS

and its subcontractor does not include comparable response time standards, nor does EMS collect response time data to determine adequacy of service.

EMS relies on costly overtime to provide the required services and coverage required by the contract because of staff vacancies, turnover, staffing shortages, and excessive leave within the division. As a result, some employees are paid as much as $200,000 per year and are working without breaks over extended periods. The long hours could impact the quality of patient care and could endanger patients who need serious or critical care related to 911 calls. The overtime costs may also expose the city to potential unfunded liabilities for pensions.

EMS accumulates a plethora of data, but the data focuses on response times and lacks information recommended by best practices to fully evaluate and improve the effectiveness and efficiency of its services. We recommend that EMS monitor and use sub-contractor performance data to augment and improve the EMS program statistics. We further recommend that EMS use available data to develop strategic, long range plans that can be used to improve the quality of the program.

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Chapter 2

State of Hawai‘i Response Time Guidelines Are Usually Not Attained by EMS

The ambulance services contract requires the city to meet response time guidelines for emergency ambulance services 90 percent of the time. O‘ahu residents are very satisfied with the city's ambulance service although only 3 of the 21 city units met the response time guidelines between FY 2008 and FY 2010, and did so in only one of the three years. If city program managers were proactive and negotiated changes to the State of Hawai‘i contract terms to allow unused funds to be used for other purposes, the Emergency Medical Services (EMS) Division could have had about $4.7 million more to improve the timeliness of ambulance services.

O‘ahu Residents Rated Ambulance Service Favorably in the 2010 National Citizen Survey ™

The 2010 National Citizen Survey found that 90 percent of respondents rated ambulance or emergency medical service as *excellent* or *good* and was identified as a *core*[6] service in Honolulu. The 2010 survey also asked recipients to indicate to what degree they would support or oppose the city continuing to fund upgrading the city’s emergency services facilities, even if it involved raising taxes. A total of 93 percent either *strongly* or *somewhat* supported funding the emergency services upgrades.

EMS Ambulance Units Rarely Met Ambulance Response Time Guidelines

The State of Hawai‘i Health Department contract for ambulance services establishes response time guidelines for EMS ambulance service. The response times are 10 minutes for urban calls, 15 minutes for urban/rural calls, and 20 minutes for rural calls. The contract requires EMS to make every effort to meet these guidelines 90 percent of the time within specific geographical boundaries (see Appendix 3). EMS did not meet the response time guidelines 90 percent of the time. Exhibit 2.1 shows the actual response time rates achieved by each EMS unit over the last three fiscal years.

[6] *Core* services are defined as government services related to public health and safety.

Exhibit 2.1
EMS Response Time Compliance Rates (FY 2008 to FY 2010)

Unit No.	*Ambulance Unit*	*Type*	*DOH [7] Standard Response Time[8] (Minutes)*	*Percent of Transports Meeting DOH Response Time Standard (FY 2008)*	*Percent of Transports Meeting DOH Response Time Standard (FY 2009)*	*Percent of Transports Meeting DOH Response Time Standard (FY 2010)*
01	Charlie 1	Urban	10	40%	44%	51%
02	Metro 1	Urban	10	56%	50%	53%
03	Kailua	Urban/Rural	15	79%	79%	85%
04	Kane'ohe	Urban/Rural	15	85%	87%	92%
05	Pawa'a 1	Urban	10	55%	62%	65%
06	Waialua	Urban/Rural	15	64%	62%	65%
07	Wai'anae	Urban/Rural	15	89%	86%	89%
08	Wailupe	Urban/Rural	15	76%	79%	78%
09	Waimanalo	Urban/Rural	15	70%	78%	83%
10	Waipahu	Urban/Rural	15	76%	82%	82%
11	Baker 1	Urban	10	52%	54%	60%
12	Wahiawa	Urban/Rural	15	84%	82%	80%
13	Kahuku	Rural	20	85%	87%	90%
14	'Aiea	Urban/Rural	15	75%	79%	85%
15	Hawai'i Kai	Urban/Rural	15	78%	84%	85%
16	Makakilo	Urban/Rural	15	63%	66%	73%
18	Rapid Response 1[9]	Urban/Rural	15	58%	73%	80%
19	Rapid Response 2[10]	Rural	20	86%	87%	93%
20	Makiki	Urban	10	55%	53%	62%
21	Nanakuli	Urban/Rural	15	69%	72%	71%
22	Waipi'o[11]	Urban/Rural	15	70%	73%	67%

Source: Emergency Medical Services Division

[7] DOH – Department of Health, State of Hawai'i.
[8] Response Time Standard should be met at the 90th percentile.
[9] Rapid Response 1 was based out of the Hawai'i Medical Center West in Ewa and served as back up for Leeward and Central O'ahu units. Effective July 2011, Rapid Response 1 was relocated to serve urban Honolulu.
[10] Rapid Response 2 is based out of Kaaawa and serves as back up for Kahuku and Kane'ohe.
[11] The new Waipi'o unit was activated in January 2008.

Only 3 of the 21 EMS ambulance and rapid response units met the standard in FY 2010.

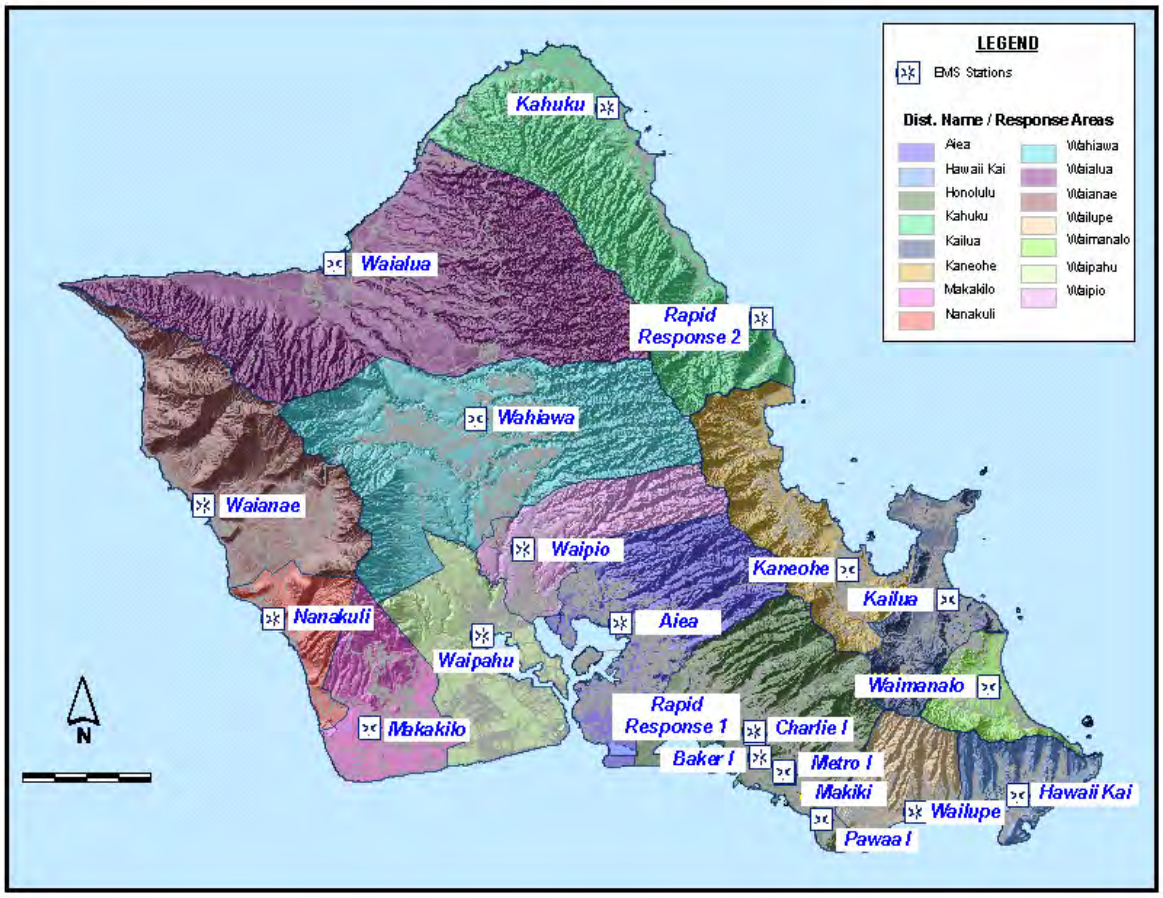
- Both of the 2 rural units met the standard in fiscal year 2010.
- None of the 5 urban area units met the response standard.
- Only 1 of the 14 urban/rural units achieved the standard in fiscal year 2010.
- None of the units attained the 90th percentile in FY 2008 and FY 2009 (see Appendix 4).

Rationale for Substandard Response Times in Honolulu Urban District

The Honolulu District, representing the urban core, covers the area bounded on the north by the Ko'olau Range; on the south by Mamala Bay; on the west along an imaginary line from the Ko'olau Range, south along the Ewa-Honolulu district boundary, dropping along the ewa side of the Moanalua Golf Course, down the Honolulu side of the Navy Marine Golf Course to Elliott Street, following Elliott Street south to its end on and on the east by Palolo Avenue south to Alohea Avenue to Fort Ruger Military Reserve to the ocean.

Compared to the rural and urban/rural areas, response times in the urban core performed the poorest. The map in Exhibit 2.2 shows the locations of the EMS units on O'ahu.

Exhibit 2.2
Map of EMS Units on O'ahu



Source: Emergency Medical Services Division

Over the last three fiscal years, the five urban ambulance units met their response time of 10 minutes only 51 percent (FY 2008), 53 percent (FY 2009), and 58 percent (FY 2010) of the time. This means people in need of ambulance service in the Honolulu urban core would receive ambulance service within 10 minutes only about half the time.

EMS officials provided several reasons for the substandard responses among urban units. More specifically:

- High call volume for emergency services in the urban district contributed to the substandard response times. For example, in FY 2010, the 5 ambulance units that serve the Honolulu District had a median of 4,730 transports per

unit (23,193 total transports). By comparison, in the same fiscal year, the 14 ambulance units that served the urban/ rural areas had a median of 2,220 transports (30,357 total transports) and the 2 ambulance units serving the rural communities averaged 564 transports per unit (1,127 total transports).

- Urban units are sometimes called to respond to service calls outside their district. For instance, a Kailua-based ambulance may be transporting a patient to Queen's Medical Center from Kailua when another call may come through for ambulance service in Kailua. Since the Kailua-based ambulance is already in transit to town, the dispatcher may assign a town-based unit to respond to the Kailua request. Even though the urban, town-based unit is directed to respond to a call outside of its geographical boundaries, the urban unit response time standard is still 10 minutes.

- Ambulances are not always at their base location when it receives a call. Ambulance units may be in transit with a patient when it receives another call. For example, Charlie 1 may receive a call for ambulance service in Kalihi. From its base station in Kuakini Hospital, there is a reasonably good chance that it can make it to the scene within 10 minutes. However, if Charlie 1 just pulled into Queen's Medical Center downtown to drop off a patient and another call is received, the urban ambulance may not get to the new scene within 10 minutes.

EMS does not separately track or document calls that are outside of an ambulance unit's assigned service area so these scenarios cannot be verified. However, EMS administrators state the Honolulu urban core could use an additional ambulance unit to improve the response times.

To improve service and response times, EMS transferred Rapid Response 1, which served as back up for Leeward and Central O'ahu from its base at Hawai'i Medical Center West in Ewa, to Kuakini Hospital in July 2011 where it presently serves Honolulu's urban core. The transfer increased the number of urban emergency response vehicles units to six, but reduced back up service to Leeward and Central O'ahu. The transfer may affect the response times of Leeward and Central O'ahu ambulance units, none of which met their response time standard during our three-year review period.

Exhibit 2.3
Photo of EMS Ambulances

EMS ambulance units Baker 1 and Kane'ohe pull into The Queen's Medical Center emergency loading bay to drop off transports. Honolulu unit Baker 1 achieved the 10-minute response time at the 90th percentile less than 61 percent of the time between FY 2008 and FY 2010. The Kan'eohe unit met the 15-minute response time 92 percent of the time in FY 2010.

Source: Office of the City Auditor

Honolulu Response Time Guidelines Are Longer than Others

The National Fire Protection Association (NFPA 1710) establishes a response time standard of eight minutes at the 90th percentile.[12] The eight-minute standard for response to critical medical calls was established by the American Heart Association in 1987 when it issued guidelines for Advanced Cardiac Life Support. The guidelines indicated the best chances for survival for a cardiac arrest patient was ideally between four and eight minutes before cardio-pulmonary resuscitation and definitive care was needed. The guidelines for patients with cardiac arrest were incorporated into the NFPA 1710 standard.

[12] The 2010 *Journal of Emergency Medical Services* survey of 98 first responders report approximately 71 percent of the respondents used the NFPA 1710 standard and 29 percent reported not using the standard. The standards are not mandatory as national or generally-accepted standards for ambulance response times.

Exhibit 2.4 displays established Advanced Life Support (ALS) response time standards used by various jurisdictions around the country and shows Honolulu response time standards are longer than other jurisdictions.

Exhibit 2.4
ALS Response Time Standards from Other Jurisdictions

Municipality	*Minimum ALS Transport Response Time*
Multnomah County, OR	8 minutes
Boise City, ID	< 9 minutes*
Kansas City, MO	< 9 minutes
Richmond, VA	< 9 minutes
Phoenix, AZ	10 minutes
City and County of Honolulu	**10-20 minutes***
San Diego, CA	12 minutes*
San Jose, CA	12 minutes*

* Compliance should be met at the 90th percentile

Source: Various city websites

EMS Operations Are Funded on a Reimbursement Basis by the State

As authorized by the agreement, the city receives state health department funds on an expenditure-reimbursement basis. This means the city's general fund is used to initially support EMS operations. The city's emergency services department submits invoices and detailed expenditure reports to the State of Hawai'i, and the state sends reimbursements to the city for providing ambulance services on O'ahu. The state reimbursements are deposited as revenues to the city's general fund.

Funds are appropriated to the following categories: salaries, current expenses, and equipment. State contract funds are categorized into the following expenditure categories: personnel costs, current expenses, equipment, motor vehicles, administration costs, indirect overhead, 911 services, and facilities improvement. Both the city and state place limitations on how funds can be transferred between categories.

Section 2-17.2(c), Revised Ordinances of Honolulu, establishes the restrictions on the transfer of funds between expenditure categories. City council approval is required for the transfer of funds between the expenditure categories if the amounts exceed the transfer limits set by the city ordinance. The state contract with EMS allows fund transfers only between the current expenses and equipment categories. Transfers from salaries or other budget categories are not permitted without the state's approval. Given these parameters, EMS management must carefully plan and manage its operational budget to ensure the funds are efficiently used to provide emergency medical services.

Proactive EMS Actions Could Have Increased Program Funds by $4.7 Million

EMS has the duty to ensure that ambulance and emergency medical services are provided in the most effective and cost-efficient way. From FY 2008 to FY 2010, EMS did not spend $4.7 million in state contract dollars. Most of the unspent funds came from salary savings as a result of position vacancies and unspent monies for equipment purchases and facility improvements.

Because city and state spending guidelines limit how excess funds can be transferred between categories, EMS needed to plan budgets carefully or negotiate with the state on alternative use of excess funds. We found that EMS did not negotiate with the state health department to reprogram excess funds to support EMS needs.

As a result, the city missed opportunities to maximize the use of state dollars that could be used to improve ambulance services. For example, if the program managers had proactively negotiated with the state health department to establish an additional, permanent unit in Honolulu's urban core, the city would have been able to return the Rapid Response 1 unit back to service in leeward and central O'ahu.

Unspent Funds for Salaries Could Have Been Used to Improve the Program

In each fiscal year of our audit period, EMS left a balance of unspent contract dollars: FY 2008 ($2.1 million), FY 2009 ($1.5 million), and FY 2010 ($1.1 million). Exhibit 2.5 compares EMS budgets and actual expenditures over the three-year audit period. We found that most of the savings came from personnel costs due to unfilled vacancies. Deferred facility improvements and use of alternative source funds for equipment purchases resulted in additional savings. However, the cost savings were not used to improve EMS operations. Budgeting limitations and

management's lack of initiative to develop alternative uses for the funds caused the contract dollars to go unspent.

Exhibit 2.5
EMS Budget vs Actual Expenditures (FY 2008 to FY 2010)*

Category	FY 2008		
	Budgeted	Actual	Balance
Personnel Costs	$22,316,245	$20,852,848	**$1,463,397**
Other Current Expenses	$3,547,141	$3,760,727	**$3,050,388**
Equipment Purchases	$1,229,576	$496,753	**($2,531,151)**
Motor Vehicle Purchases	$1,478,000	$1,627,391	**($149,391)**
Administration	$431,352	$376,244	**$55,108**
Indirect Overhead	$1,797,678	$1,624,981	**$172,697**
911 Services	$50,772	$60,478	**($9,706)**
Facility Improvements	$111,211	$59,038	**$52,173**
Total	$30,961,975	$28,858,460	**$2,103,515**

Category	FY 2009		
	Budgeted	Actual	Balance
Personnel Costs	$23,634,960	$23,245,099	**$389,861**
Other Current Expenses	$3,511,802	$3,789,636	**($277,834)**
Equipment Purchases	$936,160	$38,838	**$897,322**
Motor Vehicle Purchases	$1,600,000	$1,374,005	**$225,995**
Administration	$432,635	$389,446	**$43,189**
Indirect Overhead	$1,895,614	$1,811,400	**$84,214**
911 Services	$50,772	$58,621	**($7,849)**
Facility Improvements	$211,211	$59,038	**$152,173**
Total	$32,273,154	$30,766,083	**$1,507,071**

Category	FY 2010		
	Budgeted	Actual	Balance
Personnel Costs	$23,072,960	$22,690,102	**$382,858**
Other Current Expenses	$3,511,802	$4,004,434	**($492,632)**
Equipment Purchases	$936,160	$0	**$936,160**
Motor Vehicle Purchases	$1,600,000	$1,604,933	**($4,933)**
Administration	$432,635	$415,971	**$16,664**
Indirect Overhead	$1,895,614	$1,768,151	**$127,463**
911 Services	$50,772	$61,726	**($10,954)**
Facility Improvements	$211,211	$59,028	**$152,183**
Total	$31,711,154	$30,604,345	**$1,106,809**

*Note: Some totals may not foot due to rounding

Source: Emergency Medical Services Division

Salaries was the largest unspent category within personnel costs for each of the three fiscal years. According to EMS administrators, the unspent money resulted from personnel vacancies. The unspent salary allocations ranged between $1.85 million in FY 2008 to $679,000 in FY 2010. Although salary savings was used to offset overtime costs, total personnel costs for each fiscal year ended with a balance of unspent money.

Exhibit 2.6
EMS Personnel Costs (FY 2008 to FY 2010)*

PERSONNEL COST	*FY 2008*		
	Budgeted	***Actual***	***Balance***
Salaries	$12,022,812	$10,168,666	$1,854,146
Payroll Taxes and Assessments	$0	$0	$0
Fringe Benefits (29.61%)	$5,270,225	$4,763,929	$506,296
Non-Holiday Overtime	**$3,996,584**	**$5,019,498**	**($1,022,914)**
Hazards Pay	$236	$12	$225
Standby Pay	$37,019	$42,396	($5,377)
Accumulated Vacation (Lump sum)	$0	$82,478	($82,478)
Holiday Overtime Pay	$360,000	$346,510	$13,490
Night Shift Pay	$441,666	$300,243	$141,423
Temporary Assignment Pay	$37,703	$44,253	($6,550)
Contract Positions	$150,000	$84,864	$65,136
Total Personnel Costs	$22,316,245	$20,852,848	**$1,463,397**

PERSONNEL COST	*FY 2009*		
	Budgeted	***Actual***	***Balance***
Salaries	$12,854,323	$11,214,863	$1,639,460
Payroll Taxes and Assessments	$0	$0	$0
Fringe Benefits (29.61%)	$5,581,489	$5,310,450	$271,039
Non-Holiday Overtime	**$4,172,524**	**$5,762,483**	**($1,589,959)**
Hazards Pay	$236	$0	$236
Standby Pay	$37,019	$10,664	$26,356
Accumulated Vacation (Lump sum)	$0	$80,517	($80,517)
Holiday Overtime Pay	$360,000	$346,193	$13,807
Night Shift Pay	$441,666	$310,395	$131,271
Temporary Assignment Pay	$37,703	$47,861	($10,158)
Contract Positions	$150,000	$161,675	($11,675)
Total Personnel Costs	$23,634,960	$23,245,099	**$389,861**

PERSONNEL COST	*FY 2010*		
	Budgeted	***Actual***	***Balance***
Salaries	$12,292,323	$11,613,708	$678,616
Payroll Taxes and Assessments	$0	$0	$0
Fringe Benefits (29.61%)	$5,581,489	$5,183,658	$397,831
Non-Holiday Overtime	**$4,172,524**	**$4,910,736**	**($738,212)**
Hazards Pay	$236	$0	$236
Standby Pay	$37,019	$42,396	($5,377)
Accumulated Vacation (Lump sum)	$0	$79,807	($79,807)
Holiday Overtime Pay	$360,000	$331,152	$28,848
Night Shift Pay	$441,666	$295,085	$146,581
Temporary Assignment Pay	$37,703	$75,233	($37,530)
Contract Positions	$150,000	$158,327	($8,327)
Total Personnel Costs	$23,072,960	$22,690,102	**$382,858**

* Note: Some totals may not foot due to rounding

Source: Emergency Medical Services Division

If EMS had proactively negotiated with the state, the excess funds could have been used to hire, train and develop new staff, improve operations, or reduce overtime costs. For example, if EMS does not have a reasonable expectation of filling vacancies, it should consider budgeting salaries at the filled-position level rather than authorized positions and using the excess funds to establish employee incentives or retention programs that will reduce staff shortages or turnover. Similarly, proactive actions could have allowed EMS to start alternatives to its discontinued Emergency Medical Technician (EMT) Academy which was a creative, pro-active initiative to address critical operational problems.

Proactive Actions Could Have Increased Funding for Equipment and Facilities

We also found that EMS did not spend all of the state funds allocated in the ambulance services contract (see Exhibit 2.5). Besides salaries, the *equipment purchases* and *facility improvements* budget categories had high, end-of-year balances that were unspent. In FY 2009, EMS spent only $38,838 of the $936,160 budgeted for equipment purchases, and spent $0 of the $936,160 allocated for FY 2010.

According to an EMS administrator, the division purchased equipment such as defibrillators, laptop computers, office furniture, radio/telecommunications equipment, and various new and replacement medical equipment in FY 2008, FY 2009, and FY2010. EMS used federal grant funds to purchase the items instead of state funds. Proper planning and proactive actions could have optimized the use of the state funds and ensured the state funds were used for the program.

During our three-year review period, we found that EMS spent less than half of their budgeted funds for facility improvements, leaving balances of over $152,000 in FY 2009 and FY 2010.

- According to EMS administrators, facility improvements were intended for the new Waipi'o Unit facility, which would have included a back up dispatch and training center. To date, the facility has not been built and the Waipi'o ambulance unit remains at its temporary location at the Waipi'o Kaiser clinic.

- In addition, improvements to the Kane'ohe and Waialua units were postponed.

In both instances, we believe that EMS should have foreseen some of the anticipated savings in these areas and could have negotiated with the state health department to reprogram money for alternative uses, rather than allow the funds to go unspent.

Recommendations

1. EMS should proactively work with the State of Hawai'i Department of Health to revise the contract terms so that funds are grouped in broad categories that allow unused funds to be reprogrammed as needed.

2. EMS should modify the ambulance services contract to allow EMS to budget for salaries based on actual FTEs or positions filled, rather than positions authorized.

3. EMS should modify the ambulance services contract to allow EMS to use unexpended funds to hire, train, and develop staff needed to operate the program.

4. EMS should modify the ambulance services contract to classify equipment funds as multi-year funds that can be carried over to subsequent years.

5. EMS should modify the ambulance services contract to allow unexpended funds for equipment to be reprogrammed for alternative uses that will improve the response times for ambulance services.

6. When the division anticipates it will have excess funds, EMS should negotiate with the State Department of Health to reprogram those funds for alternative uses.

7. EMS should coordinate with the State Department of Health to establish an additional, permanent ambulance unit in Honolulu's urban core that will allow EMS to return Rapid Response 1 to service Leeward and Central O'ahu.

Management Actions Reported

Honolulu Emergency Services Department (HESD) managers expressed general agreement with the recommendations. In response to our draft report and recommendations, they stated they took several actions and are planning other actions to implement the recommendations. According to the department managers, they initiated discussions with the State of Hawai'i

health department to revise the contract terms so unused funds can be reprogrammed as needed, particularly for hiring, training, and developing staff. Although the initial discussions have not been successful, the managers state they will continue the discussions. The department managers state they are currently negotiating with the State Department of Health to reprogram excess funds for alternative uses, and plan to revise their budget submissions to move at least $800,000 from the equipment category to other budget areas. In addition, the managers have increased the city's fringe benefit rate from 29 percent to 42 percent.

HESD managers also state they asked for and received approval from the state health department to open a *peak time* ambulance to serve the downtown area from 11:00 a.m. to 7:00 p.m. This additional ambulance is expected to help improve response times in the downtown area and will be funded by reprogramming funds from other areas. The new ambulance is expected to be operational in November 2011.

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Chapter 3

EMS Relies on Costly Overtime to Provide Ambulance Services

The State of Hawai'i contract for ambulance services requires the city to provide on-call emergency ambulance services 24 hours per day, seven days a week for 16 units. Emergency Medical Services (EMS) Division relies on costly overtime to provide the required services and coverage required by the contract because of staff vacancies, turnover, staffing shortages, and excessive leave within the division. As a result, one employee was paid over $200,000 per year and several earned over twice their base salaries. Some employees also work over extended periods which could impact the quality of patient care and could endanger patients who need serious or critical care related to 911 calls. The overtime costs may also expose the city to potential unfunded liabilities for pensions.

State Contract for Ambulance Coverage

The state contract for ambulance services require the city to provide on-call advanced life support (ALS) emergency ground ambulance service 24 hours a day, seven days a week for 16 districts on O'ahu. The contract further requires the city to provide ambulance service 16 hours per day, seven days per week for 2 other districts and rapid-response vehicle services seven days per week for 2 more districts. The city provides ambulance service at a 21st district that was approved by the state and activated in January 2008.

To provide the required ambulance services, EMS was authorized 277.75 full time equivalents (FTEs). As of April 2011, EMS had 245.75 FTEs filled. The balance of 32 FTEs was vacant and impacted the city's ability to provide the required ambulance services.

Overtime Costs Totaled $15.7 Million Over Three Years

Between FY 2008 and FY 2010 the city's EMS operation spent $15.7 million in non-holiday overtime costs[13]. EMS staff stated long-term vacancies, employee turnover, and sick leave abuse caused the high overtime. As a result, some workers incurred excessive overtime hours and unusually high pay. For example,

- We found that some workers were earning between 200 percent and 350 percent of their regular salaries in non-holiday overtime pay between FY 2008 and FY 2010
- One employee's annual earnings totaled over $207,000
- One EMS worker accumulated over 2,400 hours, or 305 days, of overtime pay
- Another employee worked 388 days in one fiscal year and took only 27 days off

Exhibit 3.1 shows the personnel costs for non-holiday overtime for FY 2008 to FY 2010. Annual overtime costs ranged from $4.9 million to almost $5.8 million and exceeded the overtime budget costs by 18 percent to 38 percent. Salaries for vacant positions were used to cover the overtime costs and not used to improve ambulance services.

Exhibit 3.1
EMS Non-Holiday Overtime Costs: Budget vs Actual
(FY 2008 to FY 2010)

	FY 2008	*FY 2009*	*FY 2010*
Non-holiday Overtime (Budgeted)	$3,996,584	$4,172,524	$4,172,524
Non-holiday Overtime (Actual)	$5,019,498	$5,762,483	$4,910,736
Percent Over Budget	26%	38%	18%

Source: Emergency Medical Services Division

[13] According to the bargaining Unit 10 agreement for EMS field workers, non-holiday overtime is earned when an employee works in excess of a scheduled eight-hour work day. The overtime pay rate is calculated at one and one-half times the basic pay rate. EMS operates three, eight-hour shifts (7:00 a.m. to 3:00 p.m.; 3:00 p.m. to 11:00 p.m.; and 11:00 p.m. to 7:00 a.m.) to cover a 24-hour period. If an EMS worker works beyond one of these assigned shifts, overtime rates are applicable.

Staff Vacancies Contribute to the Overtime Costs

State of Hawai'i and EMS administrators confirmed that the excessive overtime is a major problem for the city's ambulance operations. EMS staff stated that one of the primary causes for overtime is the number of staff vacancies in the division.

More specifically, as of June 30, 2008, EMS had 48 vacancies. As of June 30, 2009, EMS had 40 vacancies. As of February 2011, EMS had 30 vacancies. Exhibit 3.2 details the number of EMS positions authorized, filled, and vacant.

Exhibit 3.2
EMS Positions Authorized, Filled, and Vacant*
(as of February 2011)

Classification	*Authorized Positions*	*Filled Positions*	*Vacant Positions*
EMT I	0	0	0
EMT II	71	50	21
EMT III (MECSTP/EMD)	37	36	1
EMT IV	1	1	0
MECS I	124	120	4
MECS II	20	18	2
FOS	8	6	2
Total	**261**	**231**	**30**

EMT - Emergency Medical Technician
MECS - Mobile Emergency Care Specialist
FOS - Field Operations Supervisor
MECSTP - Mobile Emergency Care Specialist Training Program
EMD - Emergency Medical Dispatcher

*Note: Position counts referenced in this table reflect individual employees, and not FTEs.

Source: Emergency Medical Services Division

According to EMS administrators, personnel leave for better paying jobs or positions that provided a career ladder. The personnel losses and subsequent EMS vacancies were particularly high in 2005 and 2006. In these years, 15 staff left EMS for the Honolulu Fire Department, Hickam Fire Department, and Federal Fire Department. In 2010, EMS lost 7 more persons to the Federal Fire Department. The EMS administrators report existing

employees must work overtime to provide the coverage required in the state contract. Exhibit 3.3 shows the recruitment and turnover, by position, from fiscal years 2008 through 2010.

Exhibit 3.3
Net Positions Lost (FY 2008 to FY 2010)

Classification	*# Hired 2008*	*# Lost 2008*	*# Hired 2009*	*# Lost 2009*	*# Hired 2010*	*# Lost 2010*	*Net Gain/Loss*
EMT I	22	-2	21	-2	0	0	39
EMT II	12	-15	9	-13	13	-9	-3
EMT III (MECSTP)	0	0	0	0	0	0	0
EMT IV (EMD)	2	-2	2	-1	2	-1	2
MECS I	3	-8	5	-6	4	-14	-16
MECS II	0	0	0	-2	0	0	-2
FOS	0	0	0	0	0	1	1

EMT - Emergency Medical Technician
MECS - Mobile Emergency Care Specialist
FOS - Field Operations Supervisor
MECSTP - Mobile Emergency Care Specialist Training Program

Source: Emergency Medical Services Division

Personnel Losses Continue Despite Attempts to Fill Vacancies

Although Kapi'olani Community College's (KCC) emergency medical technician (EMT) certification program provides up to 40 EMTs in a calendar year, EMS must compete against other public and private organizations for the EMT graduates. As a result, EMS has not succeeded in filling all its vacancies.

In an effort to boost recruitment and retention, EMS established an in-house EMT Academy in July 2008. Although the EMT academy project resulted in additional hiring, turnover continued. Retention data showed that of the 22 EMT Academy graduates in FY 2008, 7 (33 percent) left the EMS program before their two-year payback commitment was completed. In FY 2009, the turnover rate increased - 10 of the 21 graduates left the EMS program. The EMT Academy was discontinued in 2010.

EMS used existing operations staff as course instructors to operate the EMT Academy and supplement the KCC program. This effort created staff shortages. The FY 2008 estimated personnel

cost for the EMT academy, including overtime and salaries of new recruits, was $610,781. EMS administrators determined the cost was not worthwhile and terminated the program.

An EMS study conducted in March 2011 examined the impact of having approximately 25 vacant field positions on a single day of operations. The study revealed:

- There are 137 slots to be filled on the daily roster for a 24-hour period
- One third (73 persons) of the work force of 219 has two days off (Saturday and Sunday)
- Vacations may account for up to 13 additional staff per shift that were not available to work
- Mobile Intensive Care Technician (MICT) trainees (14) are attending training classes and are unavailable to cover work shifts
- MICT interns (14) are in the field obtaining hands-on training and are unavailable to cover work shifts.

The study concluded 105 FTEs were available to fill 137 positions. To provide the coverage required in the state contract, EMS had to staff the 32 shifts at an overtime pay rate of *time-and-a-half.*

Sick Leave Abuse Add to Overtime Costs

Another reason that EMS incurs significant overtime costs is sick leave abuse. According to EMS personnel data, sick leave calls occur primarily on Fridays, Saturdays, Sundays, holidays, and other non-holiday, special days such as Superbowl Sunday, Mother's Day, and Halloween.

A review of Saturday and Sunday sick leave occurrences between January 1, 2011 and February 27, 2011 reveal a daily sick leave roster ranging from 20 on Sunday, February 27 to 30 on Saturday, January 1. As a result, EMS staffing for overtime increased from an estimated 7 positions on an average day to 15 to 17 positions that needed to be covered.

Holidays also resulted in an increase in sick calls. In FY 2009, sick calls increased during the end-of-year holiday season: 33 sick calls on Christmas Eve, 26 sick calls on Christmas Day, 25 sick calls on

New Year's Eve, and 21 sick calls on New Year's Day. Correcting sick leave abuse is difficult due to the city's sick leave policy that allows employees to accrue 21 days per year and the terms of the union contract.

Non-Holiday Overtime Creates Excessive Salaries

We found that some EMS workers are earning between 200 and 350 percent of their regular salaries in non-holiday overtime compensation. We reviewed payroll data for the period FY 2008 to FY 2010 and identified the 10 EMS employees that earned the highest salaries. We found:

- The top-earning employee had a base, annual salary of $60,072. Including non-holiday overtime compensation, the employee earned $207,695 in FY 2009 and averaged $180,825 over three years.

- The employee with the lowest base, annual salary in the top 10 ($53,040) averaged $121,485 in annual compensation over the three-year period covering FY 2008 to FY 2010.

Exhibit 3.4 compares the top ten EMS earners' regular salaries with their actual compensation.

Exhibit 3.4
Top 10 EMS Earners (FY 2008 to FY 2010)

	Employee	FY 2008		FY 2009		FY 2010		Base Salary + Non-Holiday Overtime (3-year average)
		Base Salary	Base Salary + Non-Holiday Overtime	Base Salary	Base Salary + Non-Holiday Overtime	Base Salary	Base Salary + Non-Holiday Overtime	
1	Employee A	$60,072	$178,480	$60,072	$207,695	$60,072	$156,299	**$180,825**
2	Employee B	$62,676	$179,485	$62,676	$190,307	$62,676	$167,843	**$179,212**
3	Employee C	$62,676	$140,362	$62,676	$167,515	$62,676	$170,792	**$159,556**
4	Employee D	$60,072	$142,566	$60,072	$159,678	$60,072	$162,494	**$154,913**
5	Employee E	$74,364	$117,816	$74,364	$125,605	$74,364	$134,803	**$126,075**
6	Employee F	$68,292	$138,706	$68,292	$127,502	$68,292	$107,753	**$124,653**
7	Employee G	$53,040	$130,774	$53,040	$135,536	$53,040	$98,146	**$121,485**
8	Employee H	$71,184	$118,155	$71,184	$115,845	$71,184	$121,633	**$118,544**
9	Employee I	$60,072	$128,065	$60,072	$105,830	$60,072	$108,960	**$114,285**
10	Employee J	$60,072	$135,050	$60,072	$103,534	$60,072	$100,805	**$113,130**

Note: In this table, overtime compensation refers only to non-holiday overtime. It does not include other compensation such as holiday overtime, night differential pay, temporary assignment pay, hazard pay, and meal allowance.

Source: Office of the City Auditor calculation based on Emergency Medical Services Division data

Managers Need to Proactively Control Overtime

EMS policy and union rules affect overtime costs. EMS policy for distributing overtime provides specific priorities and states that distribution of overtime should be done without creating consecutive days of work. Union rules require that if an employee works for six consecutive days, the employee should be given at least 24 hours of rest. If the rest is not provided, for every day after the sixth consecutive day, the employee will be paid at the overtime rate of time-and-a-half until 24 hours of rest is provided.

Proactive actions by EMS administrators to comply with the policy and union rules could reduce overtime. For example:

- Our review of overtime data showed that an EMS employee worked 109 consecutive days. In this instance, the employee worked on January 18, 2008 and did not take a day off until May 6, 2008. Under this scenario, after the employee worked a full shift on January 23 (the sixth

consecutive day), EMS management should have provided a 24-hour rest period to ensure that the overtime clock did not kick in. By providing a break on day seven, nine, ten or on the employee's regularly-scheduled days off, EMS managers could have reduced the overtime costs.

- Unfortunately, EMS managers did not take action to provide a 24-hour break until over three and a half months later. As a result, every hour worked by this employee for 103 consecutive days was paid at the overtime rate, including the employee's regularly-scheduled shifts. Payroll records show that this employee, with a base salary of $62,676, earned $179,485 including the non-holiday overtime in FY 2008.

- In FY 2008, 13 EMS workers earned at least double their regular salary with non-holiday overtime.

- A total of 62 employees, or 30% of the 210 EMS fieldworkers, earned at least half of their regular salary in non-holiday overtime in FY 2008.

Excessive Work Hours Could Affect Worker and Public Safety

A 2007 study commissioned by the International Association of Fire Chiefs and U.S. Fire Administration titled, *Effects of Sleep Deprivation on Fire Fighters and EMS Responders*, reports that being awake for prolonged periods, such as when working more than a typical eight hour shift, impairs performance. The study shows:

- That being awake for 18 hours produces impairments equal to a blood alcohol concentration (BAC) of 0.05.

- After 24 hours of wakefulness, actions are impaired at the BAC equivalent of 0.10.

- That is, a drowsy driver may be as dangerous as a drunk driver.

- The report also noted that long work hours (shifts lasting more than 10 to 18 hours) have been clearly linked to errors in tasks requiring vigilance and focused alertness.

Some EMS employees are working more than 18 hours per day. In FY 2010, 106 full-time EMS workers (slightly more than half of the 210 staff) worked at least 400 hours or 51 days of overtime.

Exhibit 3.6 shows the overtime hours and days for the top ten employees in FY 2010 who worked overtime.

Exhibit 3.5
EMS Top 10 Overtime Hours Accrued (FY 2010)

	Employee	Non-Holiday Overtime Hours Worked	Non-Holiday Overtime Days Worked
1	Employee A	2,392.00	299.00
2	Employee B	2,364.25	295.53
3	Employee C	2,326.75	290.84
4	Employee D	2,221.25	277.66
5	Employee E	1,569.50	196.19
6	Employee F	1,453.50	181.69
7	Employee G	1,422.75	177.84
8	Employee H	1,405.25	175.66
9	Employee I	1,280.50	160.06
10	Employee J	1,271.00	158.88

Source: Emergency Medical Services Division

Neither union contracts nor management scheduling policies placed limits on the amount of hours an employee could work. As a result, EMS workers may be fatigued and could compromise their safety and the safety of others they treat. Our review of some individual work patterns raised some concerns:

- One employee accumulated 2,441 hours of non-holiday overtime, or 305 days, in FY 2008. This employee worked 51 consecutive days (March 31 – May 20, 2008). The average hours worked per day during this period was almost 17 hours. The same employee took one day off on May 21, 2008, but then worked another stretch of 40 consecutive days until June 30, 2008. The employee worked at least 16 hours per day for 36 of the 40 days, with an average work day of almost 18 hours. Such long hours could affect the employee's ability to perform his or her job and the safety of the residents that were handled.

- Another employee accumulated 2,733 hours of non-holiday overtime, or 342, days in FY 2008. This employee

took only 27 days off from work during the *entire* fiscal year: regular day off (19 days); sick leave (4 days); vacation (3 days); and holiday (1 day). This employee averaged only 2.25 days off per month. Such long hours of overtime could affect the employee's ability to provide emergency medical services and could jeopardize the safety of the patient.

- Yet another employee accumulated 2,584 hours of non-holiday overtime pay, or 323 days, in FY 2008. This employee worked 109 consecutive days from January 18 – May 5, 2008. We found that the employee worked 16 hours or more for 80 of those days, or 74 percent of the days worked. The long overtime could impair the employee's ability to provide emergency medical services and could jeopardize the resident's safety.

We recognize that overtime is necessary in any emergency medical service operation that requires 24 hours a day, seven days a week service. No matter how well EMS plans its operations or distributes its resources, situations will arise that will require extra cost, resources and effort to ensure quality service. However, public safety is at risk when overtime incurred by EMS results in fatigue or sub-standard performance. These examples of employees working long hours to earn higher compensations indicate EMS managers need to take proactive actions to manage, limit, and reduce the overtime worked by EMS employees.

EMS Overtime May Increase the City's Unfunded Liabilities for Pensions

Overtime compensation is allowed when calculating future pension benefits. Although the state health department pays the salary, overtime, and fringe benefit costs for EMS personnel, the city's financial obligation for pensions also increases when overtime costs increase. Under state law, as of July 1, 2008[14], the city is obligated to contribute 15 percent of an employee's compensation into the retirement system. That is, the higher the compensation, the higher the city's contribution. The Department of Budget and Fiscal Services estimates that the city's annual required contribution into the Employee Retirement system (ERS) will increase from $96.9 million in FY2011-12 to $122.1 million in FY2016-17.

[14] §88-122, Hawai'i Revised Statutes, requires that effective July 1, 2005, employers contribute 13.75% of an employee's compensation into the ERS; and effective July 1, 2008, the employer contribution rate increased to 15%.

The city's contribution does not ensure the full pension cost will be covered when the employee retires. For example, we calculated an EMS employee's annual salary for the period FY 2008 to FY 2010, the city's employee retirement system contributions for this employee, and the estimated pension benefit. In calculating pension-related figures, we used the following assumptions:

1. Employee retired after 25 years of service

2. Non-contributory status for the entire 25 years

3. Non-contributory pension based on the following formula: 1.25% × years of service × monthly average final compensation (AFC)

4. *High Three* used to calculate AFC was established between FY 2008 – FY 2010

5. Monthly benefit based on maximum allowed

6. Calculations are based on regular salary plus non-holiday overtime only (excludes other eligible compensation)

Exhibit 3.6 compares the city's estimated pension liability based on the employee's regular annual salary and regular salary plus non-holiday overtime earnings. In this example, the city's pension liability increased from $27,032 over the three-year period, to $81,371 due to the overtime earnings. Exhibit 3.7 compares the potential ERS pension payout to this employee based on regular salary and regular salary plus non-holiday overtime earnings. We estimate that the employee would receive a monthly pension benefit of $1,564 based on regular salary only. The monthly pension increases to $4,709 when non-holiday overtime earnings are included. Exhibit 3.8 shows this employee's potential withdrawal from the ERS system over time, based on regular salary and regular salary plus non-holiday overtime pay.

Exhibit 3.6
Estimated City Pension Contribution

	Regular Annual Salary	*Regular + Non-Holiday O.T. Annual Salary*	*Estimated City Pension Contribution (Regular Annual Salary)*	*Estimated City Pension Contribution (Regular Annual Salary + Non-Holiday O.T.)*
FY 2008	$60,072	$178,480	$9,011	$26,772
FY 2009	$60,072	$207,695	$9,011	$31,154
FY 2010	$60,072	$156,299	$9,011	$23,445
Total Estimated City Pension Contribution			$27,032	$81,371

Source: Office of the City Audtior calculation, based on Emergency Medical Services Division data

Exhibit 3.7
Employee Retirement System (ERS) Payout Estimate

	Regular Annual Salary	*Regular + Non-Holiday O.T. Annual Salary*
FY 2008	$60,072	$178,480
FY 2009	$60,072	$207,695
FY 2010	$60,072	$156,299
Average Final Compensation (AFC)	$60,072	$180,825
Average MONTHLY AFC	$5,006	$15,069
Maximum Monthly Benefit	$1,564	$4,709

Source: Office of the City Audtior calculation, based on Emergency Medical Services Division data

Exhibit 3.8
Potential Increase in Pension (Including Overtime Pay)
Estimated ERS Payout

Estimated ERS Payout		
No. of Years Collecting Pension	***Based on Regular AFC***	***Based on Regular + Non-Holiday O.T. AFC***
5 years	$93,840	$282,540
10 years	$187,680	$565,080
20 years	$375,360	$1,130,160
25 years	$469,200	$1,412,700

Source: Office of the City Auditor calculation, based on Emergency Medical Services Division data

Recommendations

8. EMS should work with the Department of Human Resources to establish step classifications within the current personnel structure that provide a career ladder for EMS ambulance staff.

9. EMS should work with union representatives to amend work rules that limit the number of work hours an EMS employee can work in a pay period.

10. EMS management should provide the EMS chief with a daily report of all EMS workers that have seven consecutive days of work and who are scheduled to accrue overtime if a 24-hour rest period is not provided.

11. EMS and the EMS chief should work directly with EMS dispatch to coordinate relief, control extended work, and prevent overtime.

12. EMS should coordinate with the State Department of Health and union representatives to develop employee incentive programs that reward longevity, retention and wellness, and discourage sick leave abuse.

13. EMS should modify its traditional eight-hour shift to include alternative shifts that minimize overtime.

Management Actions Reported

Prior to the release of the final report, Honolulu Emergency Services Department (HESD) and EMS managers reviewed the draft report and the report recommendations. The managers provided information on the actions taken and planned in response to the draft report. We did not audit the information provided.

HESD managers report they are currently working to develop a career ladder for its staff. They commented they are working with the state health department, the city's human resources department, and the United Public Workers (UPW) union to expand the MECS-2 positions (paramedic preceptors). The managers state they are in the process of upgrading two dispatch positions to working dispatch supervisor positions; upgrading Response 2 staff to supervisory positions; and have assigned a new EMS district chief to oversee the staffing desk to ensure that department rules are followed.

HESD managers report the staffing desk prepares two daily staffing reports for EMS managers that allow them to monitor consecutive shifts. In the new contract with the state health department, HESD will limit the number of consecutive shifts for EMS staff to a maximum of 10. They report that, over the past few months, HESD initiated a sick leave pattern abuse program which is covered in the existing UPW contract. Within two weeks of implementing this program, the managers report sick leave fell by 40 percent.

HESD managers report they are working with the UPW and the city's human resources department to pilot an alternate schedule of 12 and 16 hour shifts. According to the managers, a task force of employees met at the UPW headquarters to help develop the schedule with EMS management. A survey of EMS division staff reportedly found that 87 percent of the respondents wanted a shift option other than eight hours. The goal for implementing the new shifts is January 2012.

HESD managers report they are taking other actions to implement the recommendations. These include increasing paramedic production by negotiating with Kapi'olani Community College to shorten the paramedic certification program so that KCC graduates three classes of 20 students per year instead of the present two classes per year. Other initiatives include filling some vacancies by hiring part time paramedics; augmenting the ambulance staff by using police resources, and introducing a *peak time* ambulance that will provide extra coverage where it is

needed. Department managers report they are increasing the city's fringe benefit rate from 29 percent to 42 percent in the new State of Hawai'i contract.

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Chapter 4

Complete Data Is Needed for the Quality Improvement Program

Emergency Medical Services (EMS) accumulates a plethora of data, but the data focuses on response times and lacks information recommended by best practices to fully evaluate and improve the effectiveness and efficiency of its services. We recommend that EMS collect data on levels of care related to patient outcomes (including survival rates, health, and required treatments).

To more accurately gauge response time compliance, EMS should separately track response time and miles traveled for service calls outside of a unit's designated service area. This will allow EMS management to distinguish response time and other performance measures for calls within and outside a unit's district.

The sub-contractor contract does not specify response times or require data reports on its performance. As a result, EMS lacked important data to fully evaluate the overall ambulance service and improve its program. We recommend that EMS modify the American Medical Response (AMR) contract to include response times and data reports that will allow EMS to monitor and use sub-contractor performance data to augment and improve the overall EMS program. The improvements should be part of a strategic, long range plan for improving the quality of the program.

State Contract Requires Quality Improvement Program

The State of Hawai'i contract for ambulance services requires the city to establish a quality improvement program that measures, maintains, and improves the effectiveness and efficiency of emergency medical services. Best practices include a systemic approach to follow-up on patient care and feedback on improvements needed.

Response Data Is Collected for the Quality Improvement Program

To improve the program, EMS gathers a plethora of data that focuses on response times. EMS uses the data to analyze, evaluate, and improve the program. Ambulance response times are the most common gauge for evaluating emergency medical services. However, response times are not the best indicator of effective service.

Best Practices Recommend Collecting Additional Data

Emergency medical services best practices recommend that service providers track patient outcomes, obtain direct patient feedback, and collect other data in order to fully assess its service and make improvements.

Research conducted for the District of Columbia Fire and Emergency Medical Services Department in 2004 found that most emergency medical services planning operates under the blanket assumption that clinical outcomes are dependent on rapid ambulance response times. That is, the quicker an ambulance arrives, the better the chance of survival for the patient. The report notes that, except for cardiac arrest, there is little or no evidence suggesting a causal relationship between response time intervals and improved patient outcome. The report also notes that response time is affected by funding level, traffic, hospital location, size and configuration of service area, quality of road network, size and variance of population, and other factors.

Nationally, the better emergency management systems do not rely solely on indicators such as response times to assess how patients fare under their systems. More specifically:

- In 2006, the National Association of State EMS Officials and The National Association of EMS Physicians issued best practices for emergency medical service performance. One of their recommendations was to directly survey patients to gauge their satisfaction with their emergency medical service experience either by anonymous mail or interview surveys.

- An October 2008 study conducted for the Denver Emergency Medical Services System found that many cities (82.5 percent) have begun to track clinical and patient outcomes, including patient satisfaction (36.1 percent).

Patient Survey Data is Missing

Although EMS meets with hospital care providers on a regular basis to evaluate pre-hospital care and to assess its ambulance service, EMS does not track patient outcomes (such as survival rates, health, and required treatments); solicit patient feedback; or collect other data recommended by best practices. As a result, EMS lacks important data to fully evaluate and improve its services.

We found that Honolulu's EMS does not conduct patient post-delivery surveys. According to an EMS administrator, the division does not view patient surveys as a reliable indicator and, depending on the condition of the patient, does not believe individuals may be able to accurately rate their experience. By forgoing patient surveys and not collecting data on patient outcomes, EMS program improvements for ambulance services are not based on best practices.

In lieu of determining patient outcomes or conducting patient surveys, EMS participates in the O'ahu Morbidity and Mortality committee. The committee is chaired by the O'ahu District Medical Director and includes representatives from EMS, the Honolulu Fire Department, the Honolulu Police Department, Federal Fire Fighters, its sub-contractor for ambulance services, Kapi'olani Community College, and nurses from 14 hospitals and clinics that receive patients.

The committee meets at least six times a year to address concerns or complaints from the hospitals or the emergency medical service providers. EMS obtains feedback from doctors and nurses about EMS personnel who, for example, may have forgotten to complete a needed treatment prior to hospital arrival, incorrectly administered medication, or submitted incomplete paperwork. According to EMS administrators, these inputs often result in new service or corrective actions. EMS claims the committee is an effective alternative tool for improving its services.

These meetings however may not be sufficient to fully evaluate and identify improvements needed in the program, particularly if the status or condition of the delivered patient is unknown.

Out-of-District Data Is Missing

As reported in Chapter 2, EMS administrators state the contract response time guidelines are not met because ambulances are sometimes called to provide service outside of the unit's district. Data on these calls is not collected. That is, EMS does not

separately track response time and miles traveled for service calls outside of a unit's designated service area. For example:

- Units in the Honolulu urban area may be called to respond to service calls in Kailua, which is outside their district because the local unit is transporting another patient to Queen's Medical Center in downtown Honolulu. The urban unit response time is retained at 10 minutes and not changed to the 15 minute urban/rural standard.

- Similarly, an in-city call for service may be assigned to an urban/rural unit that has just delivered a patient to the Queen's Medical Center in downtown Honolulu. The response time is not adjusted to account for, or distinguish, between in-district and out-of-district calls.

As a result, EMS lacks accurate information to determine how these calls affect the ambulance response times.

AMR Data Is Missing

Ambulance response times compiled by American Medical Response (AMR) are not included in the EMS reports to the State of Hawai'i despite the number of transports provided by AMR. We found that EMS does not collect or review response time data from AMR. As a result, EMS does not know whether its contractor response times could improve the city's response time statistics or its ambulance services. Exhibit 4.1 shows the number of transports AMR provided on behalf of the city and the amount paid.

Exhibit 4.1
AMR Operating Data under Contract with the City and County of Honolulu (FY 2008 to FY 2010)

	No. of Basic Life Support (BLS) Calls	*No. of Advanced Life Support (ALS) Calls*	*Total No. of Calls*	*Total Amount Paid by the City to AMR*
FY 2008	452	5	457	$142,720
FY 2009	1,783	737	2,520	$315,366
FY 2010	2,051	645	2,696	$250,062
Total	4,286	1,387	5,673	$708,148
% change over 3 years	354%	12,800%	490%	75%

Source: Emergency Medical Services Division

Over the last three years, the city has used AMR services more frequently. From FY 2008 to FY 2010, the total number of calls for AMR ambulance responses increased 354 percent for basic life support calls, and 12,800 percent for advanced life support calls.

Exhibit 4.2
American Medical Response Ambulance

Source: Office of the City Auditor

AMR Data Is Incomplete

According to EMS data, AMR provided 5 advanced life support transports in FY 2008. The number of ALS transports increased to 737 in FY 2009 and another 645 in FY 2010. The EMS contract requires AMR to notify EMS central dispatch with the response time and other performance data following each transport. The contract, however, does not include specific response time standards.

The city's contract also requires AMR to notify EMS central dispatch, after each transport, with the arrival at the scene time, departure from the scene time, arrival at the destination time, and completion of the call time. According to an EMS administrator, the division does not collect or regularly review AMR response time-related data, even though response time and other performance measure data are available for EMS to review at any time. As a result, the response time data reported by EMS for purposes of this audit do not include the 1,387 ALS ambulance transports conducted by AMR between FY 2008 and FY 2010.

The city's contract with AMR also lacks response time performance measures. The state health department imposes ambulance response time guidelines on the city's EMS ambulance operations. However, those standards do not formally apply to AMR because the city's contract with AMR does not contain any specific response time standards. As a result, the city is unable to determine whether AMR is providing adequate ambulance service.

Recommendations

14. EMS should conform to best practices by compiling and reviewing patient survey data collected by the State of Hawai'i health department. The survey data should be used to analyze, evaluate, and improve ambulance services.

15. EMS should compile, track and report medical service provider complaints through the O'ahu Morbidity and Mortality Committee, and report the results to the State Department of Health in the annual EMS Department and Agency Report.

16. EMS should track and report on service calls outside of an ambulance unit's district boundaries so that the information can be used to analyze response time variances, evaluate response times, and improve ambulance services.

17. EMS should include AMR performance data in its quality improvement program.

18. EMS should amend its contract with AMR to include ambulance response time standards or performance measures that are comparable to the State of Hawai'i requirements.

19. EMS should require AMR to submit response time data that EMS can incorporate into its overall reports, response times, performance results, and quality improvement program.

20. EMS should use the data collected to develop and implement a long range, strategic plan for improving its ambulance services. The plan should identify how AMR or any contractor services will be used to augment and improve the EMS ambulance response times and program.

Management Actions Reported

Honolulu Emergency Services Department managers expressed general agreement with recommendations 15-20 and report they have already implemented some of the recommendations. In response to the draft report and the report recommendations, HESD managers provided additional information. We did not audit the information provided.

HESD managers report they do not conduct patient post-delivery surveys because the state health department places a survey on the back of the bills sent to patients. HESD reviewed 498 surveys conducted by the state health department and found that 98 percent rate EMS service as good, very good, or excellent. Less than 2 percent rated EMS service as fair, poor, or very poor. Most of the negative responses related to issues that were not under EMS control, and involved billing, emergency room care, or lost items. Only two negative responses related to patient care, and the EMS Chief of Quality Assurance followed up on these cases. The HESD managers state they will continue to use the state survey forms to address overall service quality, and follow up on complaints or negative responses. EMS will continue to review the state survey data to identify areas for improvement.

The HESD director commented that long term plans include coordination with HPD to increase police officers' utilization of Automated External Defibrillator (AED) devices. In situations where HPD is the first responder, application of the AED will improve survival rates in cardiac arrest cases.

HESD managers stated that EMS participates in the Cardiac Arrest Registry to Enhance Survival (CARES) program and inputs data into a national database. However, local hospitals need to input data related to post-EMS drop-offs. Without the local hospital inputs, EMS will have incomplete data and cannot properly assess and monitor patient outcomes. EMS will work with hospitals to obtain the data directly from the hospitals.

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Chapter 5
Conclusion and Recommendations

The State of Hawai'i contract for ambulance services requires the city to meet response time guidelines for emergency ambulance services 90 percent of the time, provide on-call emergency ambulance services 24 hours per day, seven days a week for 16 units, and establish a quality improvement program that measures, maintains, and improves the effectiveness and efficiency of emergency medical services. Best practices include a systemic approach to follow-up patient care and feedback on improvements needed.

Although over 90 percent of O'ahu residents rate the ambulance services as good or excellent, our review indicated improvements are still possible. More specifically only 3 of the 21 city units met the response time guidelines for ambulance services, and did so in only one year during our three-year review period. We are recommending that city program managers work proactively with the state to maximize use of the contract funds so that unused funds, which totaled over $4.7 million over the last three fiscal years, can be used to improve city performance.

Emergency Medical Services (EMS) Division relies on costly overtime to provide the required services and coverage required by the contract because of staff vacancies, turnover, staffing shortages, and excessive leave within the division. As a result, some employees are paid up to $200,000 per year and are working without breaks over extended periods. The long hours could impact the quality of patient care and could endanger patients who need serious or critical care related to 911 calls. The overtime costs may also expose the city to potential unfunded liabilities for pensions.

EMS accumulates a plethora of data, but the data focuses on response times and lacks information recommended by best practices to fully evaluate and improve the effectiveness and efficiency of its services. We recommend that EMS use available data to develop strategic, long range plans that can be used to improve the quality of the program. We further recommend that EMS amend contract language with its subcontractor to impose appropriate response time standards and monitor and use sub-contractor performance data to augment and improve the EMS program.

Recommendations

1. EMS should proactively work with the State of Hawai'i Department of Health to revise the contract terms so that funds are grouped in broad categories that allow unused funds to be reprogrammed as needed.

2. EMS should modify the ambulance services contract to allow EMS to budget for salaries based on actual FTEs or positions filled, rather than positions authorized.

3. EMS should modify the ambulance services contract to allow EMS to use unexpended funds to hire, train, and develop staff needed to operate the program.

4. EMS should modify the ambulance services contract to classify equipment funds as multi-year funds that can be carried over to subsequent years.

5. EMS should modify the ambulance services contract to allow unexpended funds for equipment to be reprogrammed for alternative uses that will improve the response times for ambulance services.

6. When the division anticipates it will have excess funds, EMS should negotiate with the State Department of Health to reprogram those funds for alternative uses.

7. EMS should coordinate with the State Department of Health to establish an additional, permanent ambulance unit in Honolulu's urban core that will allow EMS to return Rapid Response 1 to service Leeward and Central O'ahu.

8. EMS should work with the Department of Human Resources to establish step classifications within the current personnel structure that provide a career ladder for EMS ambulance staff.

9. EMS should work with union representatives to amend work rules that limit the number of work hours an EMS employee can work in a pay period.

10. EMS management should provide the EMS chief with a daily report of all EMS workers that have seven consecutive days of work and who are scheduled to accrue overtime if a 24-hour rest period is not provided.

11. EMS and the EMS chief should work directly with EMS dispatch to coordinate relief, control extended work, and prevent overtime.

12. EMS should coordinate with the State Department of Health and union representatives to develop employee incentive programs that reward longevity, retention and wellness, and discourage sick leave abuse.

13. EMS should modify its traditional eight-hour shift to include alternative shifts that minimize overtime.

14. EMS should conform to best practices by compiling and reviewing patient survey data collected by the State of Hawai'i health department. The survey data should be used to analyze, evaluate, and improve ambulance services.

15. EMS should compile, track and report medical service provider complaints through the O'ahu Morbidity and Mortality Committee, and report the results to the State Department of Health in the annual EMS Department and Agency Report.

16. EMS should track and report on service calls outside of an ambulance unit's district boundaries so that the information can be used to analyze response time variances, evaluate response times, and improve ambulance services.

17. EMS should include American Medical Response (AMR) performance data in its quality improvement program.

18. EMS should amend its contract with AMR to include ambulance response time standards or performance measures that are comparable to the State of Hawai'i requirements.

19. EMS should require AMR to submit response time data that EMS can incorporate into its overall reports, response times, performance results, and quality improvement program.

20. EMS should use the data collected to develop and implement a long range, strategic plan for improving its ambulance services. The plan should identify how AMR or any contractor services will be used to augment and improve the EMS ambulance response times and program.

Management Response

The Managing Director's Office reports it is in accord with the audit recommendations and has implemented or is actively implementing the audit recommendations. Some of the actions taken include:

- Proactively working with the State of Hawai'i to revise the contract terms so that funds can be reprogrammed as needed.

- Setting a goal of a 50 percent vacancy reduction within the next year.

- Changing the 18 month part-time paramedic program at Kapi'olani Community College to a 12 month, full time program, and working to increase admissions for emergency medical technician training.

- Developing a career ladder by reallocating paramedic positions to district chief positions, reallocating dispatch positions to supervisory positions, and working with the union and the budget and fiscal services department to fill these positions.

- Reducing non-holiday overtime by assigning a district chief to oversee staff assignments with a mandate to prevent unnecessary overtime and leave-taking.

- Using the ambulance call data to analyze current operations and to help in long-range strategic planning. The analysis revealed a need for a peak call-time ambulance for the metropolitan Honolulu area which will be operational in December 2011.

- Reviewing subcontractor use and performance and expanding the review to include response time analysis.

We made technical, non-substantive changes to the draft report for purposes of accuracy, clarity, and style.

We thank the Managing Director, the Honolulu Emergency Services Department, and the Department of Budget and Fiscal Services for their pro-active support. A copy of the Managing Director's response is provided on page 51.

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PETER B. CARLISLE
MAYOR

DOUGLAS S. CHIN
MANAGING DIRECTOR

CHRYSTN K. A. EADS
DEPUTY MANAGING DIRECTOR

November 29, 2011

Mr. Edwin S. W. Young
City Auditor
Office of the City Auditor
1001 Kamokila Boulevard, Suite 216
Kapolei, Hawai'i 96707

Dear Mr. Young:

Thank you for the opportunity to comment on the results of your recent audit of the Honolulu department of emergency services' emergency services division (HESD/ESD or EMS). We are in accord with your recommendations, many of which we have already implemented or will soon be implementing as noted below.

- Proactively work with the state of Hawai'i to revise the contract terms so that funds can be reprogrammed as needed.

The state of Hawai'i department of health (SDOH) has been responsive to reprogramming funds to meet our changing needs. We will continue to explore and implement additional efficiencies in the fiscal year 2012 budget and beyond, some of which are touched upon below.

- Maximize the unexpended contract funds to hire, train, and develop staff needed to operate the program.

We have a goal of a 50 percent vacancy-reduction within the next year. In January 2011, the Kapiolani Community College's (KCC) eighteen-month part-time paramedic program was changed to a twelve-month full time program at our request. We are also working with them to increase admissions for emergency medical technician training. Both of these changes will produce a larger workforce and significantly cut down on vacancies.

- Develop a career ladder that could reduce staff shortages and turnover.

We have been working on reallocating paramedic positions to district chief positions resulting in more districts and more district chiefs. We are also reallocating dispatch positions to supervisory positions in our communications section. These changes will improve supervision of our field personnel and provide additional promotional opportunities. We are meeting with UPW and the city's budget and fiscal department in December with a goal of filling these positions by February 2012.

- Monitor and reduce excessive overtime and leave within EMS.

As described herein, we have a renewed focus on staffing, with the help of KCC and SDOH. Non-holiday overtime for the first quarter of 2011 was substantially less than in previous years and we expect this trend will continue as more vacant positions are filled. Additionally, we have assigned a district chief to oversee staffing assignments with a mandate to prevent unnecessary overtime and leave-taking.

- Follow best practices by collecting customer service related data that can be used to improve the quality of services.

Call data is used to analyze our current operations and deployment and help us in long-range strategic planning. Our analysis of this data, among other things, revealed the need for an additional peak call-time ambulance in the metropolitan Honolulu area anticipated to be operational in December 2011. Customer service data is currently collected by the SDOH. Rather than duplicate these efforts and costs, we will work with the hospitals and SDOH to utilize their information. In combination with our other quality assurance tools we should be able to better assess our services and that of our contract ambulances.

- Amend the subcontractor contract to include ambulance response time standards and collect performance data to properly evaluate and improve emergency medical services.

Over the last year, we have reviewed subcontractor utilization and performance. We have now expanded this to include response time analysis in addition to contract compliance.

- Use the available data to prepare reports that can be used to develop strategic, long-range plans and to improve the quality of the program.

The audit has helped us to recognize we are underutilizing report information available to us, making this an area of concentration we are actively pursuing.

Thank you again for helping us better serve the community. While we are thrilled that ninety percent of Honolulu residents rate the ambulance services as *good* or *excellent*, there is room for improvement and we are committed to providing exceptional patient care one hundred percent of the time.

Very truly yours,

Douglas S. Chin
Managing Director

cc: James H. E. Ireland, Director, HESD
Michael Hansen, Director, BFS

Appendix 1

Ambulance Service Models

Nationally, the most common emergency medical services transport system is a fire-department based system, followed by private service providers. The third most common model is the government/third party service, which is the system used on the island of O'ahu. Exhibit A1.1 shows the State of Hawai'i's county-by-county model for providing statewide ambulance service.

Exhibit A1.1
Emergency Medical Services Models, State of Hawai'i

County	*Service Model*
Hawai'i	Ambulance operations are based at fire departments; the county also contracts with AMR for supplemental ambulance service.
Maui	Private contractor operated ambulance service. Ambulance services are provided by a private contractor (AMR).
Honolulu	County-operated ambulance service. Ambulance service is provided by a stand-alone city agency (EMS); the city also contracts with AMR for supplemental ambulance service
Kaua'i	Private contractor operated ambulance service. Ambulance services are provided by a private contractor (AMR).

Source: Emergency Medical Services Division and American Medical Response (AMR)

National statistics on emergency medical services transport models vary. Rather than providing ambulance services directly, the health department contracts with various service providers to implement the state mandate. Exhibit A1.2 describes the most common models for providing medical transport throughout the country.

Exhibit A1.2
National Distribution of Emergency Medical Services Models by System Type (FY 2010)

System Type	*Percent*
Fire Department, cross-trained and separate EMS	29%
Private Company	25%
Government/Third Party Service	22%
Hospital-Based	16%
Other	8%

Note: Honolulu's EMS is a Government/Third Party service operation

Source: EMS World, December 2010

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Appendix 2

State of Hawai‘i Role and Responsibilities

The State Emergency Medical Services and Injury Prevention System Branch in the State of Hawai‘i Department of Health is responsible for administering, maintaining, and operating a statewide comprehensive emergency medical services system. The branch is responsible for:

- Regulating ambulances and ambulance services;
- Collecting and evaluating data for the continued evaluation of the state system;
- Assisting each county in the development of a *911* emergency telephone system; and
- Establishing standards and providing training for dispatchers in the state system, and maintaining a program of quality assurance for dispatch equipment and operations.

EMS Contract with the State Department of Health

Since 1978, the state health department has contracted with the City and County of Honolulu to provide emergency medical services for the island of O‘ahu. The state’s contract with the city's Emergency Medical Services Division (EMS) establishes various guidelines and requirements for ambulance service:

- The number and types of ambulances, ambulance units, and their locations;
- The number and types of personnel to staff the ambulances;
- Staff training and qualifications;
- Medical and auxiliary services to provide; and
- Response times

Exhibit A2.1 shows the state health department response time standards for jurisdictions throughout Hawai‘i.

Exhibit A2.1
Response Time Standards

City and County of Honolulu

Ambulance Unit	*Type*	*Response Time*
Charlie 1 (Honolulu)	Urban	10 minutes
Metro 1 (Honolulu)	Urban	10 minutes
Kailua	Urban/Rural	15 minutes
Kaneohe	Urban/Rural	15 minutes
Pawa‘a 1 (Waikiki)	Urban	10 minutes
Waialua	Urban/Rural	15 minutes
Wai‘anae	Urban/Rural	15 minutes
Wailupe	Urban/Rural	15 minutes
Waimanalo	Urban/Rural	15 minutes
Waipahu	Urban/Rural	15 minutes
Baker 1 (Honolulu)	Urban	10 minutes
Wahiawa	Urban/Rural	15 minutes
Kahuku	Rural	20 minutes
‘Aiea	Urban/Rural	15 minutes
Hawai‘i Kai	Urban/Rural	15 minutes
Makakilo	Urban/Rural	15 minutes
Rapid Response 1 (Central O‘ahu)	Urban/Rural	15 minutes
Rapid Response 2 (Ka‘a‘awa)	Rural	20 minutes
Makiki	Urban/Rural	10 minutes
Nanakuli	Urban/Rural	15 minutes
Waipi‘o	Urban/Rural	15 minutes

Source: State Department of Health

Hawai‘i County

Ambulance Unit	*Type*	*Response Time*
Aero medical	Rural	25 minutes
Hilo	Urban/Rural	15 minutes
Kawailani	Urban/Rural	15 minutes
Kea‘au/Waiakea	Rural	20 minutes
Waimea	Rural	20 minutes
Kailua-Kona	Urban Rural	15 minutes
Captain Cook	Rural	20 minutes
Honoka‘a	Rural	20 minutes
Ka‘u	Rural	20 minutes
North Kohala	Rural	20 minutes
Ocean View	Rural	20 minutes
Pahoa	Rural	20 minutes
South Kohala/Maunalani	Rural	20 minutes
Waikoloa	Rural	20 minutes
Volcano	Rural	20 minutes

Source: State Department of Health

Maui County

Ambulance Unit	*Type*	*Response Time*
Helicopter	Rural	25 minutes
Wailuku	Urban/Rural	15 minutes
Makawao	Rural	20 minutes
Kihei	Urban/Rural	15 minutes
Lahaina	Urban/Rural	15 minutes
Hana	Rural	20 minutes
Napili	Rural	20 minutes
Kula	Rural	20 minutes
Wailea	Urban/Rural	15 minutes
Moloka‘i	Rural	20 minutes
Lana‘i	Rural	20 minutes

Source: State Department of Health

Kaua‘i County

Ambulance Unit	*Type*	*Response Time*
Waimea	Rural	20 minutes
Lihu‘e	Urban/Rural	15 minutes
Kilauea	Rural	20 minutes
Kapa‘a	Rural	20 minutes
Koloa	Rural	20 minutes

Source: State Department of Health

The State of Hawai‘i funds almost 100 percent of EMS operations, except for 30 percent of the cost for five administrative positions that cost approximately $135,000 per year. In FY 2008, the State of Hawai‘i provided Honolulu a budget of almost $31 million for ambulance services. Contract dollars available to the city’s EMS division in FY 2009 were $32.3 million and $31.7 million in FY 2010. The following table shows the funding provided over the last few years.

Exhibit A2.2
EMS Budget vs Actual Expenditures (FY 2008 to FY 2010)*

Category	FY 2008		
	Budgeted	Actual	Balance
Personnel Costs	$22,316,245	$20,852,848	**$1,463,397**
Other Current Expenses	$3,547,141	$3,760,727	**$3,050,388**
Equipment Purchases	$1,229,576	$496,753	**($2,531,151)**
Motor Vehicle Purchases	$1,478,000	$1,627,391	**($149,391)**
Administration	$431,352	$376,244	**$55,108**
Indirect Overhead	$1,797,678	$1,624,981	**$172,697**
911 Services	$50,772	$60,478	**($9,706)**
Facility Improvements	$111,211	$59,038	**$52,173**
Total	$30,961,975	$28,858,460	**$2,103,515**

	FY 2009		
	Budgeted	Actual	Balance
Personnel Costs	$23,634,960	$23,245,099	**$389,861**
Other Current Expenses	$3,511,802	$3,789,636	**($277,834)**
Equipment Purchases	$936,160	$38,838	**$897,322**
Motor Vehicle Purchases	$1,600,000	$1,374,005	**$225,995**
Administration	$432,635	$389,446	**$43,189**
Indirect Overhead	$1,895,614	$1,811,400	**$84,214**
911 Services	$50,772	$58,621	**($7,849)**
Facility Improvements	$211,211	$59,038	**$152,173**
Total	$32,273,154	$30,766,083	**$1,507,071**

	FY 2010		
	Budgeted	Actual	Balance
Personnel Costs	$23,072,960	$22,690,102	**$382,858**
Other Current Expenses	$3,511,802	$4,004,434	**($492,632)**
Equipment Purchases	$936,160	$0	**$936,160**
Motor Vehicle Purchases	$1,600,000	$1,604,933	**($4,933)**
Administration	$432,635	$415,971	**$16,664**
Indirect Overhead	$1,895,614	$1,768,151	**$127,463**
911 Services	$50,772	$61,726	**($10,954)**
Facility Improvements	$211,211	$59,028	**$152,183**
Total	$31,711,154	$30,604,345	**$1,106,809**

***** Note: Some totals may not foot due to rounding

Source: Emergency Medical Services Division

Although the city provides ambulance transport services, the program is within the jurisdiction of the state health department. The city cannot unilaterally establish, for example, a new ambulance unit, amend operating hours, or relocate ambulance units. The state must approve any changes to emergency medical services. The city does not bill patients for medical transports; the state handles all billings and collections.

EMS is one of two public safety divisions[15] within the Honolulu Emergency Services Department (HESD). EMS provides advanced life-support and pre-hospital medical response using the fleet of ambulances. The division's goal is to provide quality emergency medical services on O'ahu and to continue to improve the effectiveness and efficiency of the delivery of these services.

In 2010, the Office of the City Auditor commissioned the National Research Center, Inc. to conduct a National Citizen Survey™ of City and County of Honolulu residents. The survey, which was sent to 1,200 randomly-selected households on O'ahu, gauged resident opinions about community services provided by local government. A total of 444 completed surveys were obtained, providing an overall response rate of 38 percent. To view the entire 2010 National Citizen Survey™ results for Honolulu, visit the Office of the City Auditor's website at: http://www1.honolulu.gov/council/auditor/resportsissuedinfiscalyear2010_11.htm.

Exhibit A2.3
2010 National Citizen Survey ™ Results

Survey Question: Please indicate to what degree you would support or oppose the City and County continuing to fund upgrades to emergency service facilities even if it involves raising taxes:

Strongly Support	41%
Somewhat Support	52%
Somewhat Oppose	6%
Strongly Oppose	1%

Source: 2010 Service Efforts and Accomplishments, Office of the City Auditor

[15] The second HESD program is the Ocean Safety and Lifeguard Services Division. This division provides a comprehensive aquatic safety program that includes lifeguard services at 19 city beach parks, patrol and rescue activities, and responses to medical cases at the beaches. The division's goal is to provide adequate beach protective services on O'ahu's beaches with properly trained and appropriately equipped lifeguard personnel. The division is completely funded by the city.

Appendix 3

EMS Stations in the City and County of Honolulu

Unit No.	*Ambulance Unit*	*Response Time Standard*	*Location*	*Service Area*	*Hours of Operation*
01	Charlie 1	10 minutes (urban)	Kuakini Medical Center	Honolulu District [1] (Metro Honolulu)	24 hours per day/ 7 days per week
02	Metro 1	10 minutes (urban	Kuakini Medical Center	Honolulu District [1] (Metro Honolulu)	24 hours per day/ 7 days per week
03	Kailua	15 minutes (Urban/Rural)	Kailua Fire Station	Kailua. The area bounded on the west by Pali Highway to Castle Junction; and Kam. Hwy to the H-3; and the H-3 to the Kane'ohe Marine Base Hawai'i; on the east by Keolu Dr.	24 hours per day/ 7 days per week
04	Kane'ohe	15 minutes (Urban/Rural)	Kane'ohe Fire Station	Kane'ohe. The area bounded on the east by H-3; on the west by Kualoa Point	24 hours per day/ 7 days per week
05	Pawa'a 1	10 minutes (Urban)	Waikiki Fire Station	Honolulu District [1] (Waikiki)	24 hours per day/ 7 days per week
06	Waialua	15 minutes (Urban/Rural)	Waialua Fire Station	Waialua. The area bounded on the east by Pupukea Rd; on the west by Kaena Pt; on the south by the pine stretch on Kaukonahua Rd; and the Dole Pineapple on Kam. Hwy.	24 hours per day/ 7 days per week
07	Wai'anae	15 minutes (Urban/Rural)	Wai'anae Fire Station	Wai'anae. The area bounded on the southeast by Kaukama Rd (not including Kaukama Rd.) to Kaena Pt.	24 hours per day/ 7 days per week
08	Wailupe	15 minutes (Urban/Rural)	Wailupe Fire Station	Wailupe. The area bounded on the east by all areas west of Niu Valley Shopping Ctr.; on the west by Palolo Ave. south to Alohea Ave. to Fort Ruger Military Res.	24 hours per day/ 7 days per week
09	Waimanalo	15 minutes (Urban/Rural)	Waimanalo Fire Station	Waimanalo. The area from Makapu'u Pt. to Keolu Dr. on Kam. Hwy.	24 hours per day/ 7 days per week
10	Waipahu	15 minutes (Urban/Rural)	Waipahu Fire Station	Waipahu. The area bounded on the north by Hawai'i Country Club on Kunia Rd; on the east by Paiwa St.; on the west, all areas east of Kunia Rd. and Fort Weaver Rd.; on the south by A'awa Rd.	24 hours per day/ 7 days per week
11	Baker 1	10 minutes (Urban)	The Queens Medical Ctr.	Honolulu District [1] (Metro Honolulu)	24 hours per day/ 7 days per week
12	Wahiawa	15 minutes (Urban/Rural)	Wahiawa Fire Station	Wahiawa. The area bounded on the north by Kaukonahua Rd. and Helemano Military Res. on Kam. Hwy.; on the south by Kipapa Gulch; on the west by Kunia Rd. to the Hawai'i Country Club Golf Course	24 hours per day/ 7 days per week
13	Kahuku	20 minutes (Rural)	Kahuku Police/Fire Station	Kahuku. The area bounded on the east by Kualoa Pt. to (but not including) Pupukea Rd	24 hours per day/ 7 days per week
14	'Aiea	15 minutes (Urban/Rural)	Kapi'olani at Pali Momi	'Aiea. The are bounded along the ewa side of Moanalua Golf Course, then down the side of the Navy Marine Golf Course to Elliott St. to its end; on the west by Acacia Rd. (not including Acacia Rd.)	24 hours per day/ 7 days per week
15	Hawai'i Kai	15 minutes (Urban/Rural)	Hawai'i Kai Fire Station	Hawai'i Kai. The area bounded on the west by all areas of east Niu Valley Shopping Ctr.; on the east by all areas south of Makapu'u Pt.	24 hours per day/ 7 days per week
16	Makakilo	15 minutes (Urban/Rural)	Kapolei Fire Station #40	Makakilo. The area including Honokai Hale; on the east, A'awa Rd. and the West Loch	24 hours per day/ 7 days per week
18	Rapid Response 1	15 minutes (Urban/Rural)	Kuakini Medical Center	Rapid Response Unit 1 (Leeward). Primary back-up for Wahiawa, Waipi'o, Waipahu, Makakilo, Nanakuli and Wai'anae	24 hours per day/ 7 days per week
19	Rapid Response 2	20 minutes (Rural)	Behind Ka'a'awa Post Office	Rapid Response Unit 2 (Ka'a'awa). Primary back-up for Kahuku and Kane'ohe [2]	16 hours per day/ 7 days per week
20	Makiki	10 minutes (Urban)	Ke'eaumoku and Young	Honolulu District [1] (Metro Honolulu)	16 hours per day/ 7 days per week
21	Nanakuli	15 minutes (Urban/Rural)	Nanaikeola Kaiser Clinic	Nanakuli. The west of Honokai Hale to and including Kaukama Rd.	16 hours per day/ 7 days per week
22	Waipi'o	15 minutes (Urban/Rural)	Waipi'o Kaiser Clinic	Waipi'o. The area bounded on the north by Kipapa Gulch on H-2 and Lanikuhana; on the southeast by and including Acacia Rd.; on the south by Waipi'o Peninsula; on the west by Paiwa St.	16 hours per day/ 7 days per week [3]

[1] The area bounded on the north by the Ko'olau Range; on the south by Mamala Bay; on the west along an imaginary line from the Ko'olau Range, south along the 'Ewa-Honolulu district boundary, dropping along the ewa side of the Moanalua Golf Course, down the Honolulu side of the Navy Marine Golf Course to Elliott Street, following Elliott Street south to its end on and on the east by Palolo Avenue south to Alohea Avenue to Fort Ruger Military Reserve to the ocean.

[2] Rapid Response 1 was re-located into the Honolulu District (Kuakini Hospital) effective July 2011

[3] Effective July 3, 2011, the Waipi'o Unit operating hours increased to 24 hours per day/ 7 days per week

Source: Emergency Medical Services Division

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Appendix 4

Response Times by Geographic Type, City and County of Honolulu

Urban

Unit No.	Ambulance Unit	Type	DOH Standard Response Time (Minutes)	**FY 2008** % of Transports *Meeting* DOH Response Time Standard	**FY 2009** % of Transports *Meeting* DOH Response Time Standard	**FY 2010** % of Transports *Meeting* DOH Response Time Standard
01	Charlie 1	Urban	10	40%	44%	51%
02	Metro 1	Urban	10	56%	50%	53%
05	Pawa‘a 1	Urban	10	55%	62%	65%
11	Baker 1	Urban	10	52%	54%	60%
20	Makiki	Urban	10	55%	53%	62%
	Avg. compliance with response time standard			**51%**	**53%**	**58%**
	Avg. Response Time (minutes)			**10.91**	**10.72**	**10.12**
	Total # of Transports			**22,037**	**22,069**	**23,139**

Urban/Rural

Unit No.	Ambulance Unit	Type	DOH Standard Response Time (Minutes)	**FY 2008** % of Transports *Meeting* DOH Response Time Standard	**FY 2009** % of Transports *Meeting* DOH Response Time Standard	**FY 2010** % of Transports *Meeting* DOH Response Time Standard
03	Kailua	Urban/Rural	15	79%	79%	85%
04	Kane‘ohe	Urban/Rural	15	85%	87%	92%
06	Waialua	Urban/Rural	15	64%	62%	65%
07	Wai‘anae	Urban/Rural	15	89%	86%	89%
08	Wailupe	Urban/Rural	15	76%	79%	78%
09	Waimanalo	Urban/Rural	15	70%	78%	83%
10	Waipahu	Urban/Rural	15	76%	82%	82%
12	Wahiawa	Urban/Rural	15	84%	82%	81%
14	‘Aiea	Urban/Rural	15	75%	79%	85%
15	Hawai‘i Kai	Urban/Rural	15	78%	84%	85%
16	Makakilo	Urban/Rural	15	63%	66%	73%
18	Rapid Response 1	Urban/Rural	15	58%	73%	80%
21	Nanakuli	Urban/Rural	15	69%	72%	71%
22	Waipi‘o	Urban/Rural	15	70%	73%	67%
	Avg. compliance with response time standard			**76%**	**78%**	**81%**
	Avg. Response Time			**12.13**	**11.74**	**11.33**
	Total Number of Transports			**27,767**	**28,925**	**30,357**

Rural

Unit No.	Ambulance Unit	Type	DOH Standard Response Time (Minutes)	**FY 2008** % of Transports *Meeting* DOH Response Time Standard	**FY 2009** % of Transports *Meeting* DOH Response Time Standard	**FY 2010** % of Transports *Meeting* DOH Response Time Standard
13	Kahuku	Rural	20	85%	87%	90%
19	Rapid Response 2	Rural	20	86%	87%	93%
	Avg. compliance with response time standard			**86%**	**87%**	**91%**
	Avg. Response Time (Minutes)			**14.03**	**13.77**	**12.79**
	Total Number of Transports			**960**	**1,002**	**1,127**

Source: Emergency Medical Services Division