Office of the City Auditor

Report to the City Council
City of San Jose

# AN AUDIT OF THE POLICE DEPARTMENT – BUREAU OF FIELD OPERATIONS PATROL DIVISION'S STAFFING AND DEPLOYMENT

## The SJPD Needs To Acquire Patrol Staffing Software To Assess The Efficiency And Effectiveness Of Its Patrol Staffing

Report 00-01
February 2000

# CITY OF SAN JOSÉ, CALIFORNIA

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City Auditor


February 23, 2000

Honorable Mayor and Members
of the City Council
801 North First Street, Room 600
San Jose, CA 95110

Transmitted herewith is a report on *An Audit Of The San Jose Police Department – Bureau Of Field Operations Patrol Division's Staffing And Deployment.* This report is in accordance with City Charter Section 805.

An Executive Summary is presented on the blue pages in the front of this report. The City Administration's response is shown on the yellow pages while the City Auditor's comments on the City Administration's response are shown on the green pages before the Appendices.

I will present this report to the Finance Committee at its March 8, 2000, meeting. If you need additional information in the interim, please let me know. The City Auditor's staff members who participated in the preparation of this report are Mike Edmonds, Ruth Merino, and Greg Elliott.

Respectfully submitted,

Gerald A. Silva
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finaltr
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# Executive Summary

In accordance with the City Auditor's 1998-99 workplan, we performed an audit of the San Jose Police Department's Bureau of Field Operations patrol divisions' staffing and deployment practices. We conducted this audit in accordance with generally accepted government auditing standards and limited our work to those areas specified in the Scope and Methodology section of this report.

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## Finding I The SJPD Needs To Acquire Patrol Staffing Software To Assess The Efficiency And Effectiveness Of Its Patrol Staffing

The San Jose Police Department's (SJPD) Bureau of Field Operations (BFO) patrol division employs patrol officers to answer calls for service (CFS) and perform proactive public safety duties and community policing 24 hours a day, 365 days a year throughout the City of San Jose (City). During the course of our audit, the SJPD and the City Auditor's Office developed computerized staffing models in order to determine the number of patrol officers required for the March 1999 redistricting. Our review of the SJPD's initial computer model revealed that:

- The SJPD's initial model calculated a 546 patrol staff requirement for redistricting. However, we found that the SJPD's computer model overstated its staffing requirement by incorrectly including activities unrelated to CFS in its CFS workload; and
- The SJPD responded to our findings by revising its initial model to produce a calculated patrol staff requirement of 510 officers, 36 less than its original model calculated. However, in the interest of officer safety, the SJPD also revised the rounding technique used in its computer model. This change increased the calculated patrol staff requirement by 37 to 547 officers, of which the Budget Office allowed 546.

The City Auditor's Office prepared computerized staffing and deployment models to demonstrate if opportunities exist to deploy patrol staffing more efficiently. Although similar in

many ways to the SJPD's model, the City Auditor's models are slightly different from the SJPD's model and from one another. In discussing these models, we will refer to them as Version 1 and Version 2.

While the City Auditor's computerized staffing and deployment models appear to identify patrol deployment alternatives that are empirically more efficient than the SJPD's current deployment, that may not, in fact, be the case. This conclusion is based upon data limitations, the potentially high costs of alternative deployment methods, and public and officer safety concerns. Our analysis, however, identified several deployment issues that merit further attention and should be evaluated more fully. These issues include the use of a full afternoon 4th watch and different watch starting times. In addition, the City Auditor's Office questions the method the SJPD uses to calculate the amount of free patrol time for proactive policing. Specifically, our analysis of the different deployment methods revealed the following:

- Version 1 provides for a full 4th Watch, and appears to provide a better matching of staff to workload than the SJPD's model. Version 1's starting times are slightly at variance with the Memorandum of Agreement (MOA) between the City and the San Jose Police Officers' Association, and require seven more officers than currently budgeted at an estimated cost of $581,000 per year, as many as 12 more sergeants at an estimated cost of $1.3 million per year, and as many as 33 more vehicles at an estimated cost of $1.4 million. However, our review also noted that the SJPD could implement a full 4th watch without any additional vehicles if it used an early and late car deployment; and
- Version 2 uses a different method to calculate the free patrol time requirement. Specifically, we prepared a model calculating the 40 percent free patrol time target on total available patrol time reduced by the patrol time used for non-CFS activities such as follow-up, administrative, lunch, breaks, court, and training time. Version 2 requires 488 officers, 65 officers fewer than Version 1 and 58 fewer officers than the SJPD's budgeted staffing deployment. However, Version 2 could also require as many as 12 more sergeants. Version 2, like Version 1 provides for a full 4th watch and provides a better matching of staffing to workload. We estimate the cost implications of the basis for

calculating free patrol time to be $3.6 million per year. The SJPD could use these patrol resources to redeploy officers for community policing activities, to address public and officer safety concerns, or other policing activities.

Both the City Auditor's Office and the SJPD's computerized patrol staffing and deployment models have limitations. We contacted other police departments that have purchased specialized patrol staffing computer software that have more flexibility and capabilities than either the SJPD's or the City Auditor's model. Although these software packages can cost as much as $400,000, their benefits appear to justify the expense. Finally, a number of police departments have used Federal grant funds to procure these patrol staffing software packages.

We recommend that the City negotiate with the San Jose Police Officers' Association to modify shift-starting times to provide sufficient flexibility to deploy officers in the most efficient manner. Further, we recommend that the SJPD and the Administration use the information in this report to develop, and forward to the City Council for concurrence a strategic, multi-year, community policing-based plan and a staffing proposal for the SJPD BFO patrol division that is responsive to both officer and public safety needs and CFS demand. By so doing, the SJPD could reallocate and redeploy as much as $3.6 million per year in BFO patrol staff resources to activities such as community policing activities, public and officer safety concerns, or other policing activities. Finally, we recommend that the SJPD investigate the feasibility of using federal or state grant funds to procure patrol staffing and deployment software. If federal or state grant funds are not available, we recommend that the SJPD, through the annual budget process, develop a budget proposal to purchase the software.

## RECOMMENDATIONS

We recommend that the SJPD and City Administration:

**Recommendation #1** **Negotiate with the San Jose Police Officers' Association to modify shift-starting times to provide sufficient flexibility to deploy officers in the most efficient and effective manner. (Priority 2)**

**Recommendation #2** **Use the information in this report to develop, and forward to the City Council for concurrence, a strategic, multi-year, community policing-based plan and a staffing proposal for the SJPD Bureau of Field Operations patrol division that is responsive to both officer and public safety needs and calls for service demand. The report should include the advantages, disadvantages, and cost implications of the following policy decisions:**

- **A full 4th watch, and**
- **An appropriate basis for calculating free patrol time.**

**(Priority 2)**

We recommend that the SJPD:

**Recommendation #3** **Investigate the feasibility of using federal or state grant funds to procure police staffing and deployment software. If federal or state grant funds are not available, we recommend that the SJPD, through the annual budget process, develop a budget proposal to purchase the software. (Priority 2)**

# Introduction

In accordance with the City Auditor's 1998-99 workplan, we performed an audit of the San Jose Police Department's Bureau of Field Operations patrol divisions' staffing and deployment practices. We conducted this audit in accordance with generally accepted government auditing standards and limited our work to those areas specified in the Scope and Methodology section of this report.

The City Auditor's Office thanks the Police Department's management and staff for their cooperation during the audit.

**Background**

The mission of the San Jose Police Department (SJPD) is as follows:

- Promote public safety;
- Prevent, suppress, and investigate crimes;
- Provide emergency and non-emergency services;
- Create and maintain strong community partnerships;
- Adopt a multi-disciplinary approach to solving community problems; and
- Develop and promote a diverse, professional workforce.

To achieve its mission, the SJPD is organized as follows:

1. Office of the Chief of Police;
2. Bureau of Administration;
3. Bureau of Technical Services;
4. Bureau of Investigations; and
5. Bureau of Field Operations.

The organization chart for the SJPD is shown on the following page.

## POLICE DEPARTMENT
## MAIN DIVISIONS

### Office of the Chief of Police

- Provide management and administration to all bureaus and divisions within the Department.
- Maintain liaision with other criminal justice agencies to handle reporting, coordinate legislation, and seek grants.
- Provide statistical analyses and reporting as a basis for planning police services to meet departmental mission.
- Coordinate information regarding vice-oriented crimes with appropriate units.
- Maintain an internal investigative system to investigate complaints about Department employee conduct.

54.5 FTE

1,803.2 FTE

### Bureau of Administration

- Process special program/fund appropriation requests.
- Maintain minimum vacancy rates of 2% or less for sworn and 11% or less for non-sworn staff.
- Administer the Disability Tracking Program and monitor the Department's Equality Assurance status.
- Provide training to Department members through in-service classes.
- Maintain integrity of police evidence and control and assign equipment; provide photographic services.

97.2 FTE

### Bureau of Field Operations

- Maintain safe and effective response times to both emergency and non-emergency calls for service.
- Develop Community Policing Partnerships in neighborhoods and schools throughout the City.
- Employ proactive patrol and investigative strategies to address crime, traffic, and special policing problems.
- Present informational and educational programs to increase public safety and reduce crime.
- Insure professional development of Bureau personnel.

1,075.5 FTE

### Bureau of Investigations

- Investigate reported crimes with solution potential to bring responsible offenders to justice.
- Document and collect evidence by specialized technicians in the most serious cases.
- Work with schools and community organizations to prevent, intervene and suppress narcotics and gang crimes.
- Review all DUI cases for cost recovery criteria and prepare the appropriate billings.
- Provide in-service training for all Department members, including the police academy and the Reserve Unit.

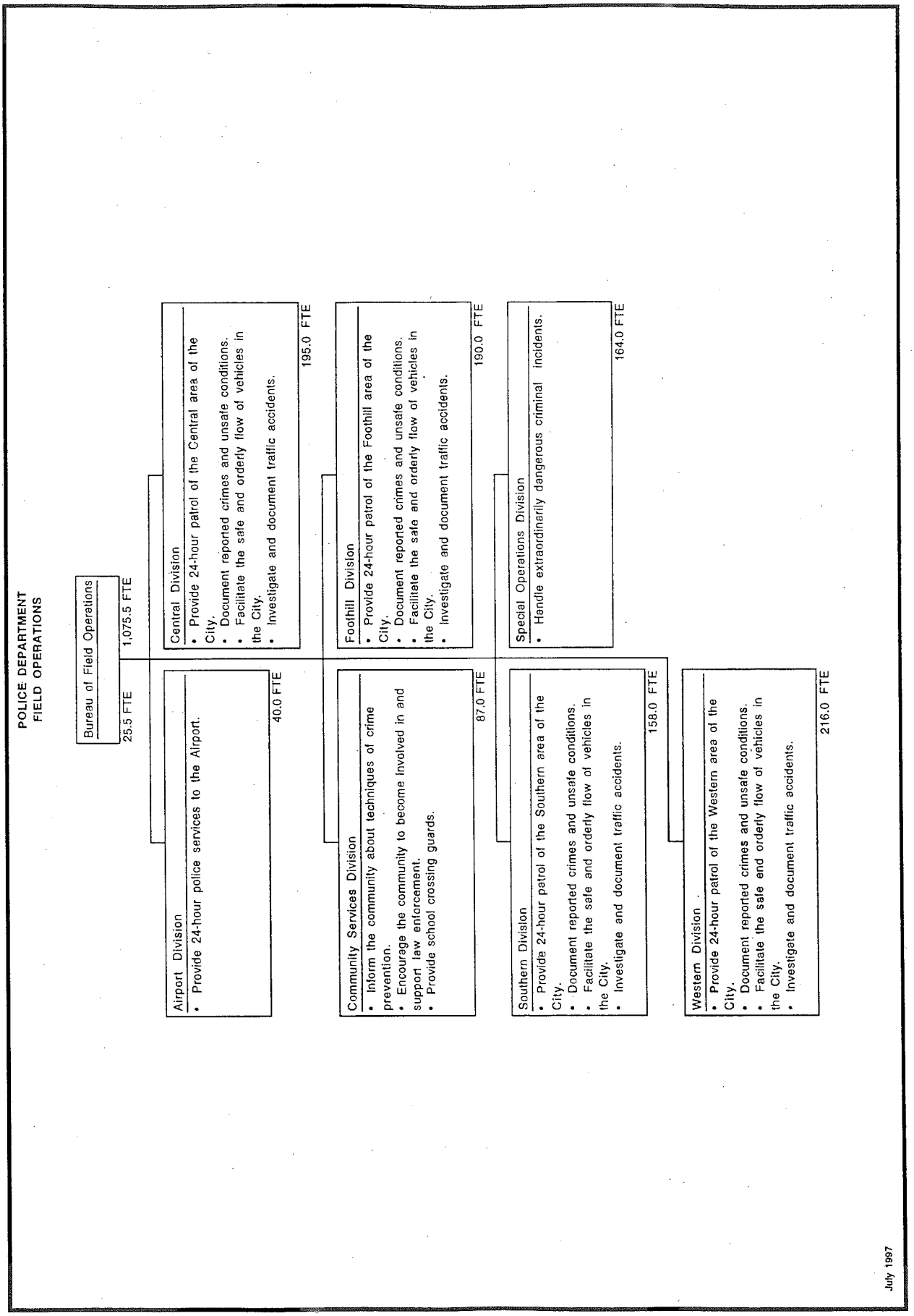
249.6 FTE

### Bureau of Technical Services

- Maintain records with information pertaining to persons, stolen vehicles, stolen properties, and other areas.
- Process information on a timely basis to aid in identifying, apprehending and prosecuting suspects.
- Arrest persons and handle court dispositions in conjunction with processing warrants.
- Provide fingerprinting services.
- Provide computer aided 24-hour emergency communications services.

326.4 FTE

As the organization chart shows, the Bureau of Field Operations (BFO) is the largest bureau. The Bureau is organized into seven divisions: Community Services, Special Operations, the Airport, and four geographically based patrol divisions. The patrol divisions are Foothill, Central, Western, and Southern, and each division is comprised of four districts. The organization chart for the BFO is shown on the following page.


POLICE DEPARTMENT
FIELD OPERATIONS
Bureau of Field Operations
25.5 FTE
1,075.5 FTE
Airport Division
• Provide 24-hour police services to the Airport.
40.0 FTE
Central Division
• Provide 24-hour patrol of the Central area of the City.
• Document reported crimes and unsafe conditions.
• Facilitate the safe and orderly flow of vehicles in the City.
• Investigate and document traffic accidents.
195.0 FTE
Community Services Division
• Inform the community about techniques of crime prevention.
• Encourage the community to become involved in and support law enforcement.
• Provide school crossing guards.
87.0 FTE
Foothill Division
• Provide 24-hour patrol of the Foothill area of the City.
• Document reported crimes and unsafe conditions.
• Facilitate the safe and orderly flow of vehicles in the City.
• Investigate and document traffic accidents.
190.0 FTE
Southern Division
• Provide 24-hour patrol of the Southern area of the City.
• Document reported crimes and unsafe conditions.
• Facilitate the safe and orderly flow of vehicles in the City.
• Investigate and document traffic accidents.
158.0 FTE
Special Operations Division
• Handle extraordinarily dangerous criminal incidents.
164.0 FTE
Western Division
• Provide 24-hour patrol of the Western area of the City.
• Document reported crimes and unsafe conditions.
• Facilitate the safe and orderly flow of vehicles in the City.
• Investigate and document traffic accidents.
216.0 FTE
July 1997

The four patrol divisions provide 24-hour patrol of the City's 16 districts and 83 beats. The divisions document reported crimes and unsafe conditions, facilitate the safe and orderly flow of vehicles in the City, and investigate and document traffic accidents.

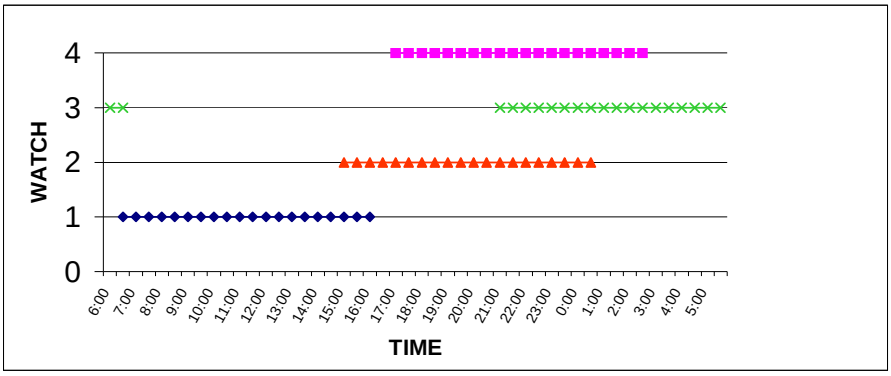
*Watch Schedules*

The BFO patrol officers work 4-10 hour days on one of 3½ watches[1]. Each watch schedule allows for 30 minutes at the beginning of the shift for briefing and another 30 minutes at the end of the shift to return to the station. The daily watch hours are:

- 1st Watch: 6:30 a.m. to 4:30 p.m. In addition, there is one patrol officer per district that works from 6:00 a.m. to 4:00 p.m. daily to cover the 6:00-6:30 a.m. gap that occurs in the watches. These are called the early cars;
- 2nd Watch: 3:00 p.m. to 1:00 a.m.; and
- 3rd Watch: 9:00 p.m. to 7:00 a.m.

The 4th watch runs from 5:00 p.m. to 3:00 a.m., Thursday through Sunday only and is used in only eight districts. The following graph shows the daily hours the patrol watches cover.

**Graph 1 SJPD's Current Watch Daily Coverage Hours; Watch 4 Occurs Thursday Through Sunday Only**




Patrol officers work one of the seven four-day/week schedules shown below.

- Sunday through Wednesday;
- Monday through Thursday;

[1] A watch is a shift worked by patrol teams and their supervisors.

- Tuesday through Friday;
- Wednesday through Saturday;
- Thursday through Sunday;
- Friday through Monday; and
- Saturday through Tuesday.

Each district has two teams working the 1st, 2nd, and 3rd Watches with the teams overlapping on one day of the week. In other words, if one team works Sunday through Wednesday and the second team works Wednesday through Saturday, then Wednesday would be the overlap day. The overlap day is used to cover officers who are absent in other districts. Therefore, the SJPD tries to stagger the overlap days to provide for adequate absence coverage.

*Redistricting Project*

Due to geographic and demographics changes, the SJPD initiated a project to redo the police districts[2] and beats[3]. The project, known as redistricting, was implemented in March 1999 and increased the number of police districts from 12 to 16, and increased the number of police beats from 60 to 83. By redistricting from 12 to 16 patrol districts, the SJPD expects to equalize the calls for service (CFS) workload[4]. By so doing, the SJPD expects to provide better service and response times to residents and allow for sufficient free patrol time for proactive policing (free patrol time).[5]

To achieve its redistricting goals, the SJPD developed a computer model to determine the staffing requirements and allocation of staff. The goal of the staffing model is to meet the CFS workload and provide an average of 40 percent free patrol time for officers to afford sufficient time for community policing efforts and other activities.

[2] A district is a geographical division comprised of beats. The City has 16 districts and these are denoted by letters. Four districts comprise a Division.

[3] A beat is a geographical division. Officers are assigned to beats. Several beats comprise a district.

[4] Calls For Service are calls received by the San Jose Communications Center requiring a patrol officer response. Calls For Service workload is the time allotted during a patrol officer's day to respond to calls for service and write reports.

[5] Free patrol time is time allotted during a patrol officer's day that can be used for community policing, car stops, patrolling, and similar activities. Although officers are available to respond to Calls For Service, staffing is sufficient to ensure a certain amount of this time occurs during the patrol officer's work week.

**Audit Scope, Objectives, And Methodology**

The purpose of this audit was to evaluate staffing and deployment practices within the patrol division of the SJPD. The objectives of the audit were to:

- Review the BFO patrol division's staffing and deployment procedures;
- Validate the Police Department's computerized staffing model's key components and assumptions; and
- Develop computerized staffing models to demonstrate if opportunities exist to deploy the division's patrol staff more efficiently.

We did not restrict ourselves to the current San Jose Police Officers' Memorandum of Agreement (MOA) with respect to certain aspects of operations, such as starting times, and the method of rotating patrol vehicles.

To perform our audit we:

- Obtained from the SJPD the CFS data from the 12 districts that were in effect in 1996 and which data the SJPD reallocated to the 16 districts that the SJPD implemented in March 1999;
- In the absence of computer documentation for a computer generated patrol management report, we manually traced and documented the elements of a major patrol officer time component called status activity;
- Reviewed the SJPD's computerized staffing model;
- Developed our own computerized simulation patrol staffing and deployment model using Excel Solver software; and
- Ran numerous iterations of our computerized model with varying assumptions.

We interviewed officials and staff of the SJPD, the Budget Office, and the Information Technology Department. We also participated in police patrol car ride-alongs. We interviewed staff from several comparable police departments, federal and state grant agencies, the consultant the City recently used to review SJPD practices, and representatives from companies that produce police staffing computerized models and software.

The documentation we reviewed included:

- Patrol officer staffing schedules;
- Staffing and workload information;
- Police internal management reports;
- Police Officers' Association Memorandum of Agreement;
- Police consultant reports; and
- Various Police Department memoranda.

We performed only limited testing to determine the accuracy and reliability of information in the various computer reports used. Such testing included observation, walk-through, and comparison of the SJPD's patrol division's internal management reports. We met with SJPD and Information Technology staff to obtain and review information regarding the accuracy and reliability of the computer-generated information. We did not review the general and specific application controls for the computer system used in compiling the various computer reports we reviewed.

**Major Accomplishments Related To This Program**

In Appendix B, the SJPD informs us of its major accomplishments regarding the BFO patrol divisions.

## Finding I The SJPD Needs To Acquire Patrol Staffing Software To Assess The Efficiency And Effectiveness Of Its Patrol Staffing

The San Jose Police Department's (SJPD) Bureau of Field Operations (BFO) patrol division employs patrol officers to answer calls for service (CFS) and perform proactive public safety duties and community policing 24 hours a day, 365 days a year throughout the City of San Jose (City). During the course of our audit, the SJPD and the City Auditor's Office developed computerized staffing models in order to determine the number of patrol officers required for the March 1999 redistricting. Our review of the SJPD's initial computer model revealed that:

- The SJPD's initial model calculated a 546 patrol staff requirement for redistricting. However, we found that the SJPD's computer model overstated its staffing requirement by incorrectly including activities unrelated to CFS in its CFS workload; and
- The SJPD responded to our findings by revising its initial model to produce a calculated patrol staff requirement of 510 officers, 36 less than its original model calculated. However, in the interest of officer safety, the SJPD also revised the rounding technique used in its computer model. This change increased the calculated patrol staff requirement by 37 to 547 officers, of which the Budget Office allowed 546.

The City Auditor's Office prepared computerized staffing and deployment models to demonstrate if opportunities exist to deploy patrol staffing more efficiently. Although similar in many ways to the SJPD's model, the City Auditor's models are slightly different from the SJPD's model and from one another. In discussing these models, we will refer to them as Version 1 and Version 2.

While the City Auditor's computerized staffing and deployment models appear to identify patrol deployment alternatives that are empirically more efficient than the SJPD's current deployment, that may not, in fact, be the case. This conclusion is based upon data limitations, the potentially high costs of alternative deployment methods, and public and officer safety

concerns. Our analysis, however, identified several deployment issues that merit further attention and should be evaluated more fully. These issues include the use of a full afternoon 4th watch and different watch starting times. In addition, the City Auditor's Office questions the method the SJPD uses to calculate the amount of free patrol time for proactive policing. Specifically, our analysis of the different deployment methods revealed the following:

- Version 1 provides for a full 4th Watch, and appears to provide a better matching of staff to workload than the SJPD's model. Version 1's starting times are slightly at variance with the Memorandum of Agreement (MOA) between the City and the San Jose Police Officers' Association, and require seven more officers than currently budgeted at an estimated cost of $581,000 per year, as many as 12 more sergeants at an estimated cost of $1.3 million per year, and as many as 33 more vehicles at an estimated cost of $1.4 million. However, our review also noted that the SJPD could implement a full 4th watch without any additional vehicles if it used an early and late car deployment; and
- Version 2 uses a different method to calculate the free patrol time requirement. Specifically, we prepared a model calculating the 40 percent free patrol time target on total available patrol time reduced by the patrol time used for non-CFS activities such as follow-up, administrative, lunch, breaks, court, and training time. Version 2 requires 488 officers, 65 officers fewer than Version 1 and 58 fewer officers than the SJPD's budgeted staffing deployment. However, Version 2 could also require as many as 12 more sergeants. Version 2, like Version 1 provides for a full 4th watch and provides a better matching of staffing to workload. We estimate the cost implications of the basis for calculating free patrol time to be $3.6 million per year. The SJPD could use these patrol resources to redeploy officers for community policing activities, to address public and officer safety concerns, or other policing activities.

Both the City Auditor's Office and the SJPD's computerized patrol staffing and deployment models have limitations. We contacted other police departments that have purchased specialized patrol staffing computer software that have more flexibility and capabilities than either the SJPD's or the City

Auditor's model. Although these software packages can cost as much as $400,000, their benefits appear to justify the expense. Finally, a number of police departments have used Federal grant funds to procure these patrol staffing software packages.

We recommend that the City negotiate with the San Jose Police Officers' Association to modify shift-starting times to provide sufficient flexibility to deploy officers in the most efficient manner. Further, we recommend that the SJPD and the Administration use the information in this report to develop, and forward to the City Council for concurrence a strategic, multi-year, community policing-based plan and a staffing proposal for the SJPD BFO patrol division that is responsive to both officer and public safety needs and CFS demand. By so doing, the SJPD could reallocate and redeploy as much as $3.6 million per year in BFO patrol staff resources to activities such as community policing activities, public and officer safety concerns, or other policing activities. Finally, we recommend that the SJPD investigate the feasibility of using federal or state grant funds to procure patrol staffing and deployment software. If federal or state grant funds are not available, we recommend that the SJPD, through the annual budget process, develop a budget proposal to purchase the software.

**The City Auditor's Review Of The SJPD's Initial Computer Model**

In 1997, the SJPD developed a computer model to assist the BFO in projecting and allocating patrol staff for the March 1999 redistricting plan. The goal of the model was to minimize team size while 1) equalizing workload, 2) maintaining minimum staffing, and 3) allowing 40 percent of each patrol unit's workweek to remain free for community policing and other activities.

Our review of the SJPD's initial computer model revealed that:

- The SJPD's initial computer model calculated a 546 patrol staff requirement for redistricting. However, we found that the SJPD's computer model overstated its staffing requirements by incorrectly including activities unrelated to CFS in its CFS workload. Specifically, the CFS workload includes activities such as follow-up, administrative, lunches, breaks, court time, return to station, report writing, and training; and
- The SJPD responded to our findings by revising its initial model to produce a calculated patrol staff requirement of 510 officers, 36 less than its original

model calculated. However, in the interest of officer safety, the SJPD also revised the rounding technique used in its computer models. This change increased the calculated patrol staff requirement by 37 to 547 officers, of which the Budget Office allowed 546.

Appendix C contains a detailed description of our analysis of the SJPD's initial computer patrol staff model and the changes the SJPD made in developing its revised model.

**The City Auditor's Office Prepared Computerized Staffing Models To Evaluate Opportunities To Improve The Efficiency Of Patrol Staffing And Deployment**

The City Auditor's Office prepared computerized staffing models to evaluate opportunities to improve the efficiency of patrol staffing and deployment. The SJPD's patrol staffing computer model was constrained with a number of scheduling and deployment practices that are covered in the MOA between the City and the San Jose Police Officers' Association. Some of these practices do not provide for the most efficient deployment of patrol staff. For instance, the combination of team integrity, set starting times, and a set number of watches results in the SJPD having more patrol staff when workload appears to be declining and less patrol staff when workload appears to be rising.

The City Auditor's Office developed two patrol staffing and deployment models to determine if more efficient deployment alternatives were possible. However, we did not always limit ourselves to the constraints in the MOA as noted above. For instance, we analyzed a number of factors that affect the calculated patrol staffing requirement, such as analyzing the effect of adding a full 4$^{th}$ watch with different starting times. We also contacted other police departments to identify other patrol staffing and deployment practices.

Although similar in many ways to the SJPD's revised model, the City Auditor's computer models are slightly different from the SJPD's model and from one another. However, in order to isolate the effects of our principal differences, we intentionally retained other SJPD model assumptions with which we have some theoretical differences. For example, we used the same absence and rounding method assumptions as the SJPD. Moreover, the City Auditor's models fully cover all workload, free patrol time, and absence requirements.

When reviewing the deployment alternatives shown in the City Auditor's models, the purpose of the models and their limitations should be clearly understood. First, the City Auditor's models should not be construed as the recommended deployment methods. In our opinion, the models serve several useful purposes. For instance, the models provide a means to compare workload and staffing throughout the workweek. By doing so, the models can assist in identifying problems with the SJPD's current deployment and potential opportunities for improvement. The models can also highlight the impact that decisions such as the number of watches and the watch starting times have on deployment.

Both the City Auditor's models and the SJPD's model have significant limitations that need to be considered when discussing the various deployment alternatives. The most significant limitation with the models is that they are only forecasting tools driven primarily by quantitative data. The best overall deployment plan should be one that balances efficiency with practical considerations such as public and officer safety. Therefore, the models should be viewed as a tool for achieving the best overall deployment plan, not the definitive deployment plan. These limitations are discussed on page 37.

In discussing the City Auditor's computer models, we will refer to them as Version 1 and Version 2, respectively. The description of each of the models and their respective advantages and disadvantages are shown below.

*City Auditor's Model, Version 1*

The City Auditor's model, Version 1 has many of the same constraints as the SJPD's revised model. However, Version 1 has the following differences:

- A full 4th watch; and
- Different starting times.

The watch times are:

| | |
|---|---|
| Watch 1 | 7:30 A.M. to 5:30 P.M. |
| Watch 2 | 4:30 P.M. to 2:30 A.M. |
| Watch 3 | 10:30 P.M. to 8:30 A.M. |
| Watch 4 | 1:30 P.M. to 11:30 P.M. |

The advantage and disadvantages of Version 1 are listed and then discussed below.

**Advantage of Version 1**

- Provides for a full 4th watch, which appears to provide a better matching of patrol staff to CFS workload than actual deployment and the SJPD's patrol staff computer model. As a result, officer workload appears to be more equalized.

**Disadvantages of Version 1**

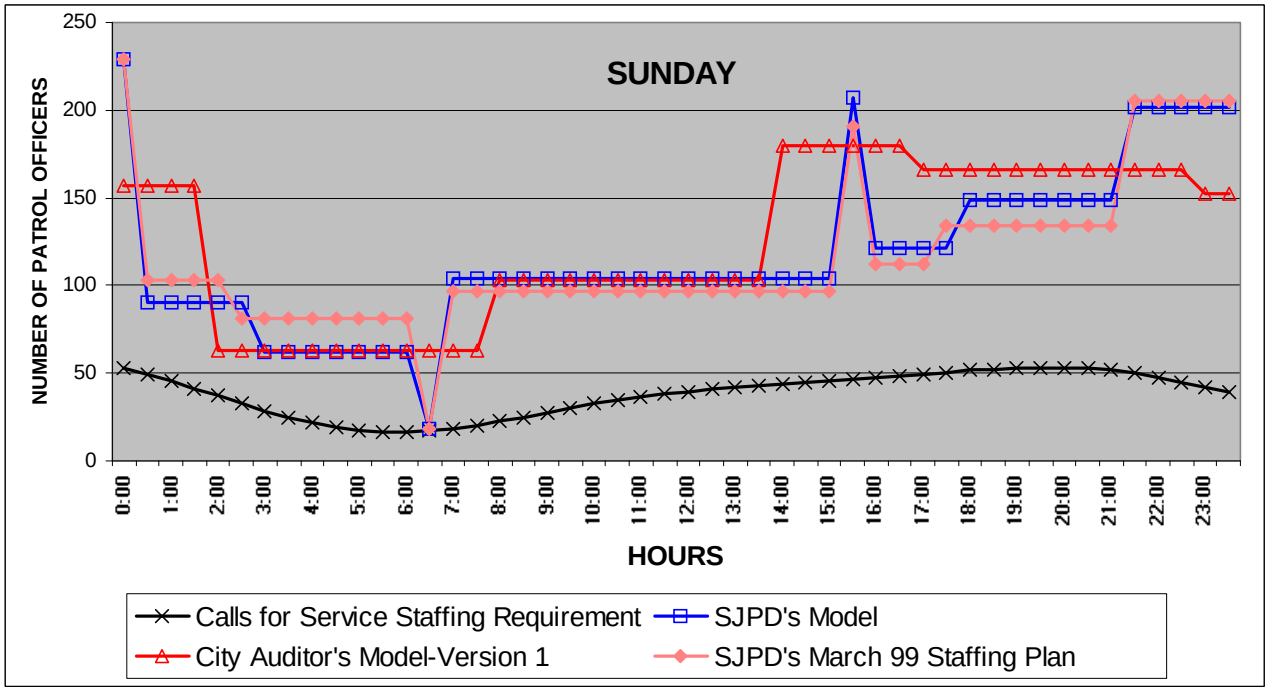
- Requires six more officers than the SJPD's model and seven more officers than currently budgeted at an estimated cost of $581,000 per year;
- Some of the starting times specified in the model are not consistent with the MOA and may not be practical;
- We estimate that as many as 12 more sergeants may be needed at an estimated cost of $1.3 million more per year than the current deployment; and
- May require as many as 33 more patrol vehicles at an estimated cost of $1.4 million.

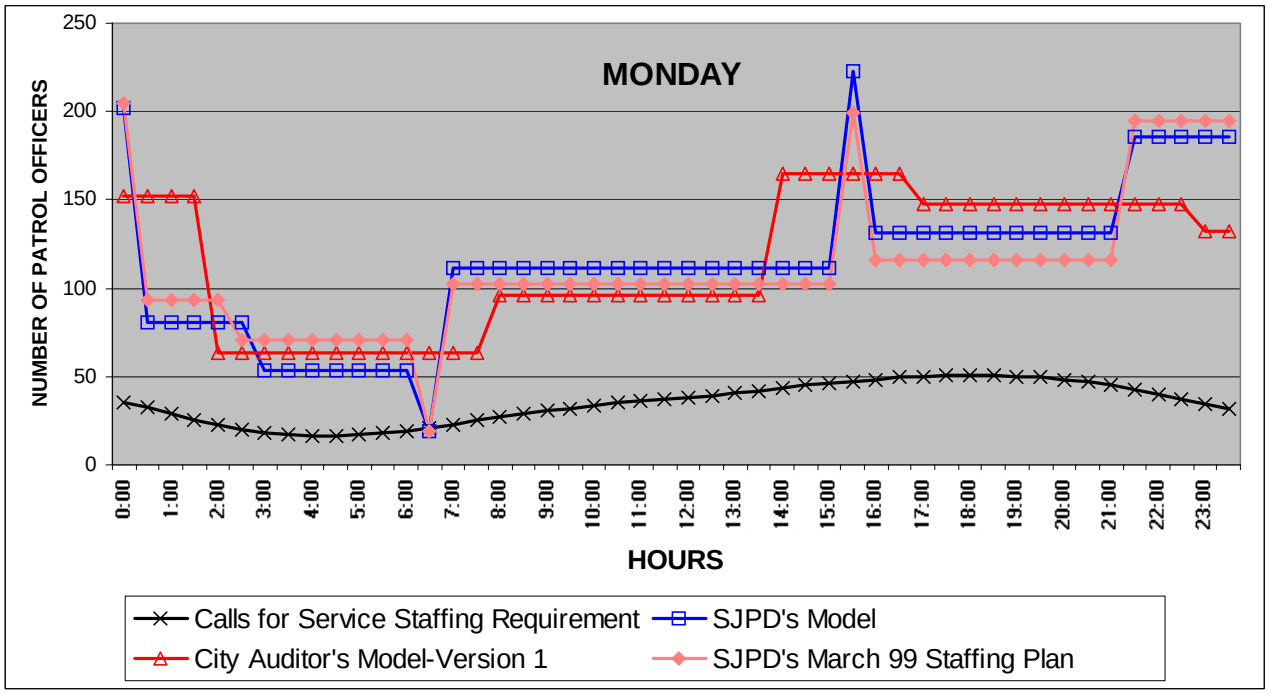
In our opinion, the primary advantage of the City Auditor's patrol staff deployment model is that it appears to provide a better matching of staff to CFS workload. Ideally, the deployment of staff should match the workload. That is, when the workload is high, more officers should be deployed. Conversely, when the workload is low, fewer officers should be deployed. This matching of staff to workload helps to equalize the workload among the officers on patrol.

The following Graphs compare the City Auditor's Version 1 calculated patrol staff requirement model to the SJPD's calculated patrol staff requirement model and March 1999 patrol staffing.

It should be noted that the SJPD's calculated and March 1999 patrol staff are not identical. This is because after BFO management reviewed the calculated patrol staffing, they made changes to increase staffing from 3:00 A.M. to 6:30 A.M. These changes resulted in increased staffing for the 3rd watch and decreased staffing for the 1st watch. Also, the SJPD did not change the 4th watch starting time to the 5:30 P.M. starting time used in the model. Instead, the SJPD elected to keep the 4th watch starting time at 5:00 P.M.

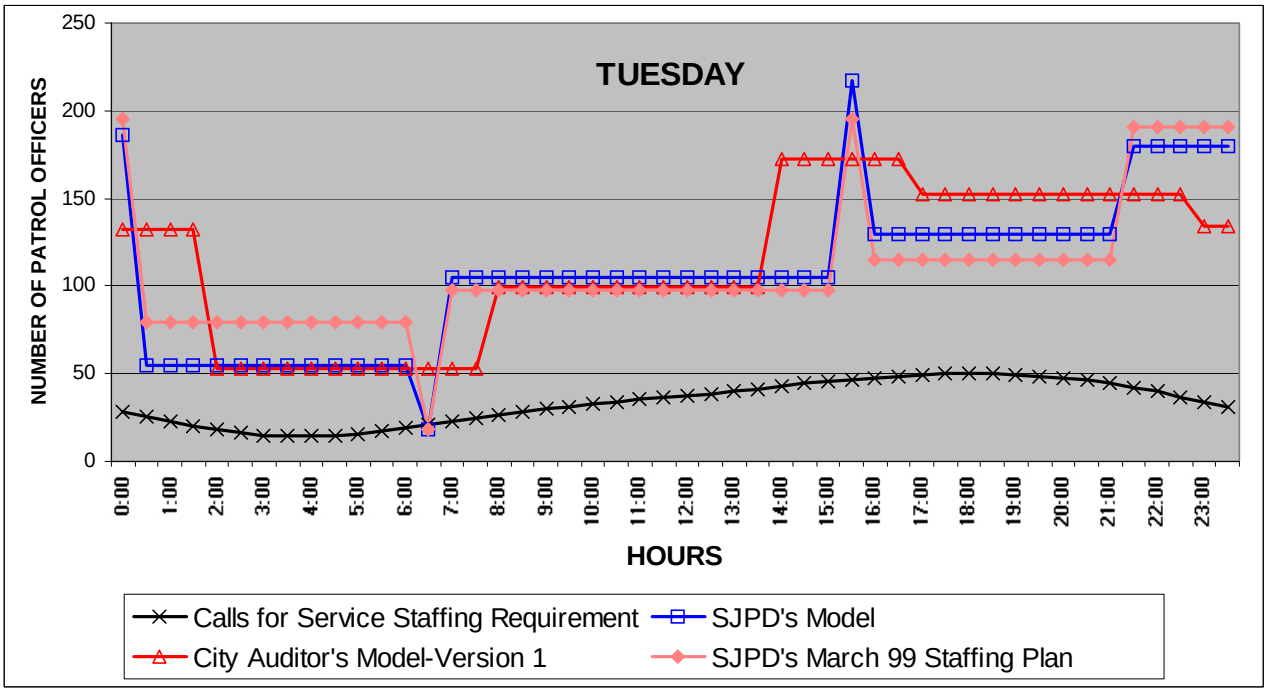
**GRAPHS 2 AND 3**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 1 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN**

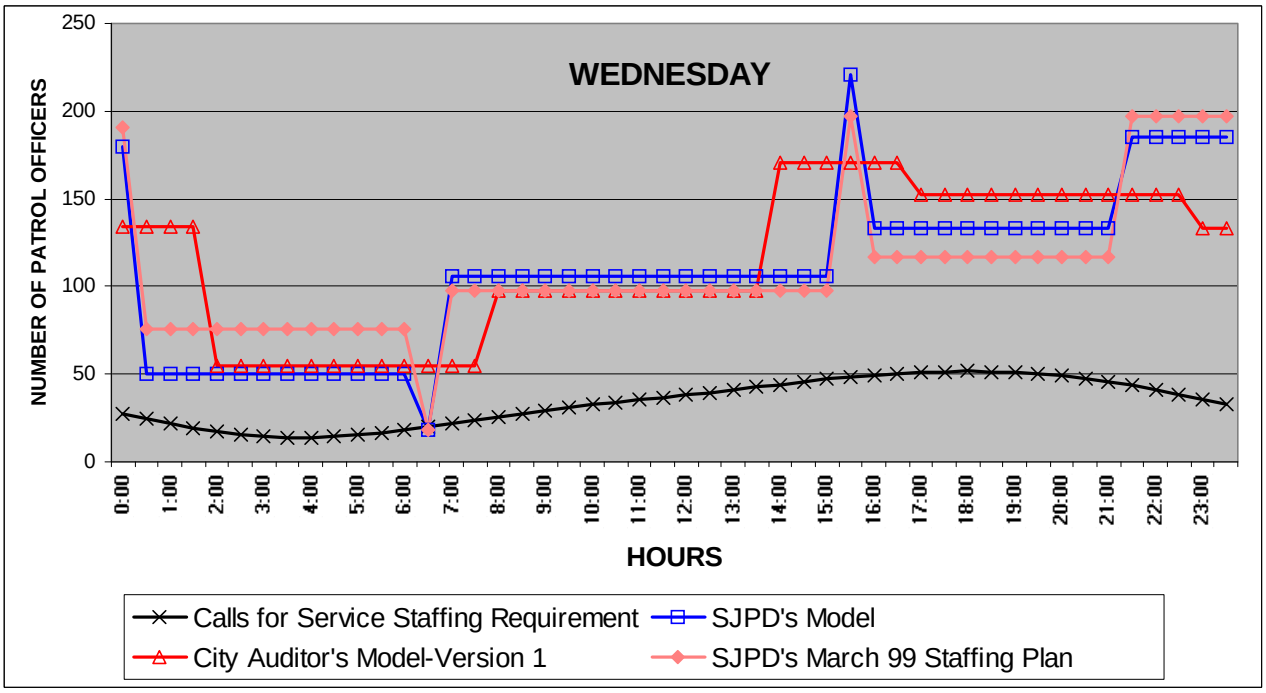


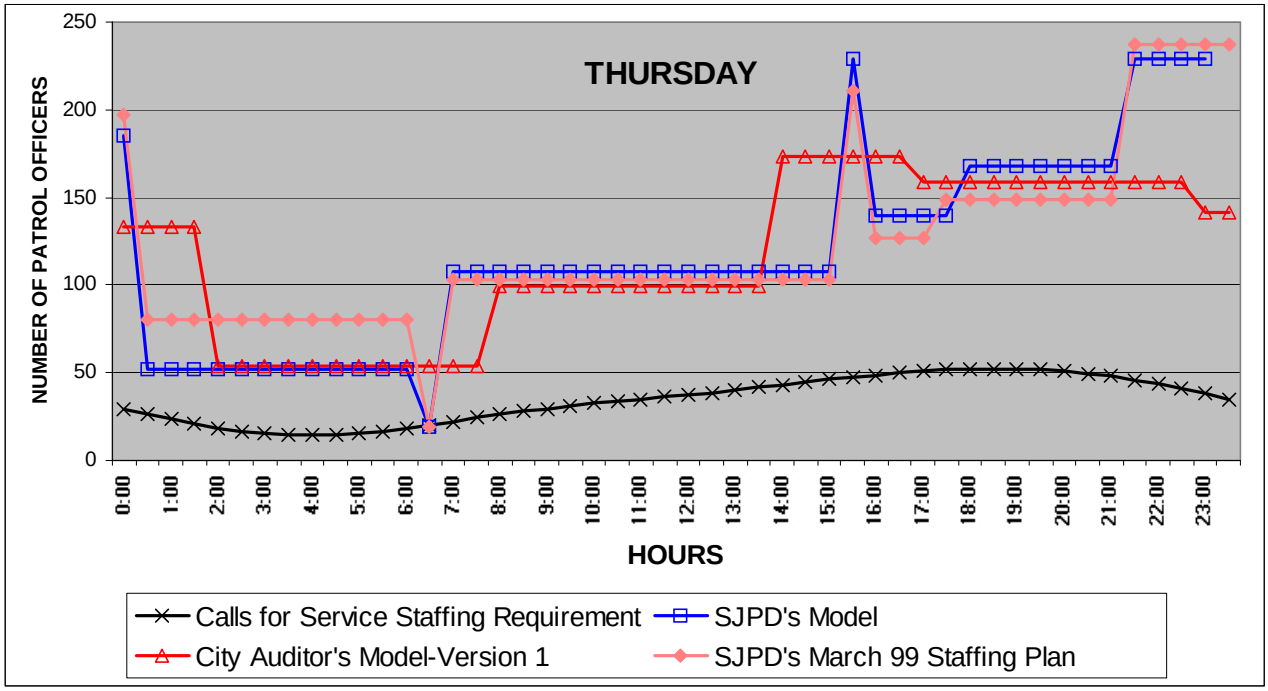

The calls for service staffing requirement is the number of officers required to handle the calls for service workload based on the average call duration of 36.03 minutes. The calls for service data is based on historical 1996 information and has been adjusted for priority levels. Each priority 1 call requires 5.16 officers, priority 2 requires 2.38 officers, priority 3 requires 1.77 officers, and priority 4 requires 1.33 officers. On average each call requires 2.18 officers.

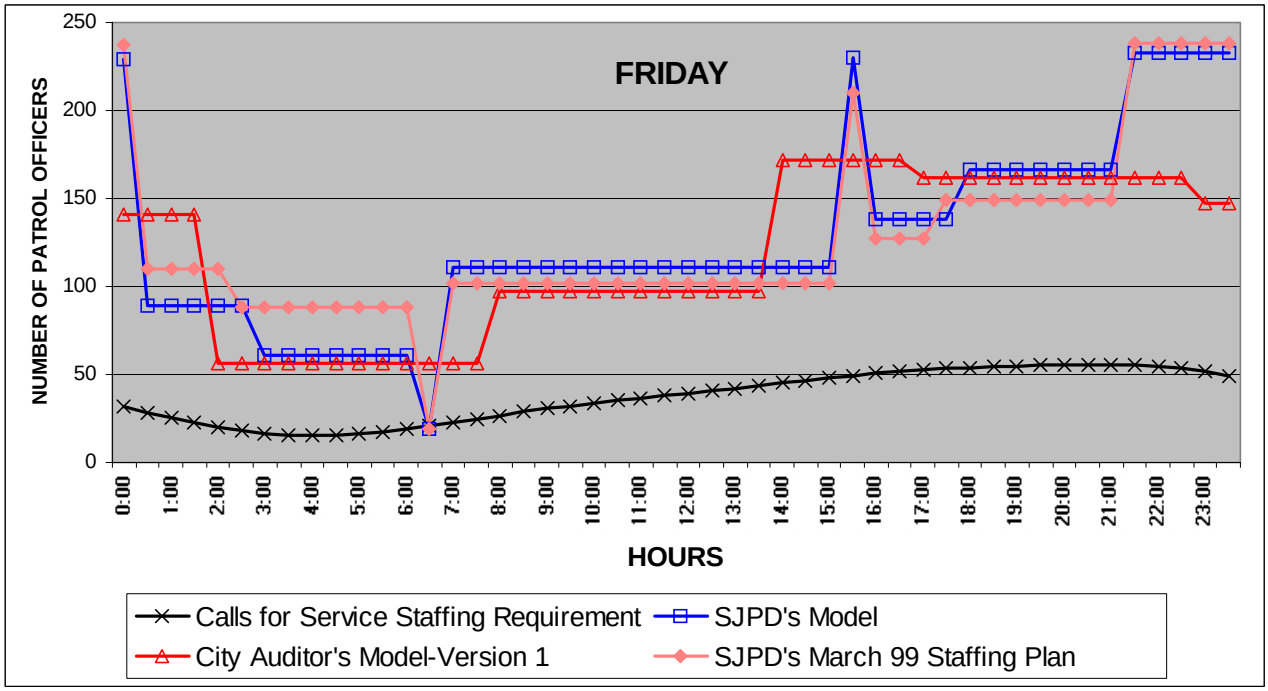
**GRAPHS 4 AND 5**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 1 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN (cont.)**



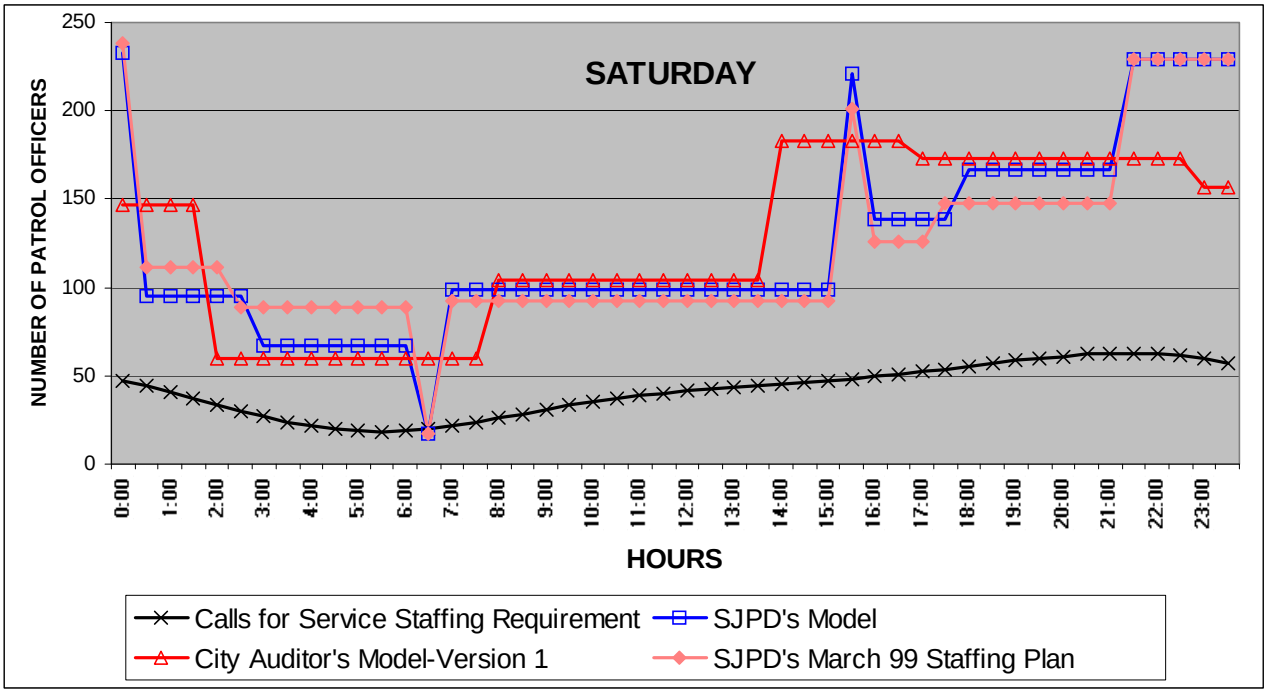



**GRAPHS 6 AND 7**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 1 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN (cont.)**



**GRAPH 8**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 1 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN (cont.)**



In our opinion, the Graphs highlight several SJPD deployment issues that merit further attention and should be more fully evaluated. As the graphs show, the SJPD's two deployment plans have staffing peaks from 9:30 P.M. to 12:30 A.M. *(21:30 hours to 00:30 hours)*[6] every day of the week. With the exception of Fridays and Saturdays, these staffing peaks coincide with a drop in the CFS workload.

In contrast to the SJPD's deployment, the City Auditor's model, Version 1, uses four full watches and different starting times to deploy staff. The most notable difference in the deployment plans is the City Auditor's use of a full 4th watch starting daily at 1:30 P.M. The result of this deployment plan is smaller teams spread more evenly across the day and the week.

The staffing for the full 4th watch is derived by redeploying officers from the other watches. As Exhibit 1 shows, the SJPD's 2nd watch provides the most officers – 62, to staff Version 1's 4th watch. The SJPD's 3rd watch also provides 40 officers to staff Version 1's 4th watch. See pages D-1 and D-2 in Appendix D for staffing information for Version 1 and the SJPD March 1999 staffing plan by district, watch, and day of the week.

**Exhibit 1 Comparison Of Total Number Of The Officers Per Watch: SJPD's March 1999 Staffing Plan To Version 1**

| Daily Average Officers Per Watch | Watch 1 | Watch 2 | Watch 3 | Watch 4 | Total Watches |
|---|---|---|---|---|---|
| SJPD March 1999 Staffing Plan | 173 | 210 | 141 | 22 | 546 |
| City Auditor's Version 1 | 174 | 148 | 101 | 130 | 553 |
| Increase/<Decrease> | 1 | <62> | <40> | 108 | 7 |
| % Change Inc/<Dec> | 1% | <30%> | <28%> | 491% | 1% |

The primary benefit of Version 1 is that it seemingly provides for a deployment pattern that better matches staff to CFS workload. As a result, the CFS workload appears to be more evenly distributed among the officers. As the Graphs show, the City Auditor's Version 1 redeploys the peak officers to the early afternoon hours when the CFS workload is rising. Thus, the City Auditor's Version 1 with a full 4th watch starting at 1:30 P.M. would allow the SJPD to have more patrol officers out on the street when the CFS workload is rising.

[6] Times which are in parenthesis and italicized are in military time to match graph information.

A deployment plan such as Version 1 with a full 4th watch starting in the early afternoon may also benefit the SJPD's community policing efforts. A November 1998 SJPD police management study noted that the prime time for community policing activities is Monday-Thursday from 1:00 P.M. to 9:00 P.M. because neighborhood residents, businesspersons, social service providers, and other government agency personnel are available. A deployment plan such as Version 1 could improve the SJPD's community policing efforts because it deploys more officers during prime community policing hours.

To assess how well the SJPD's model and the City Auditor's Version 1 matched CFS workloads to patrol staffing, we performed two statistical analyses - a chi-square and an *r* square. Both of the analyses calculate how well each model matches patrol staffing and CFS workloads. With the chi-square measurement, the lower the score the better the match. On the other hand, an *r* square score of 1 is a perfect match. Specifically, the results are as follows:

**Exhibit 2 Comparison Of The SJPD's And City Auditor's Version 1 Models' Statistical Measurements**

| Statistical Measurement | SJPD's Model | City Auditor's Version 1 |
|---|---|---|
| Chi-square | .09 | .04 |
| *R* Square | .52 | .75 |

As shown above, both statistical measurements indicate that the City Auditor's Version 1 provides better matching of staff to workload than does the SJPD's model. Specifically, Version 1's chi-square measurement of .04 is much lower than the SJPD's score of .09. Similarly, the City Auditor's Version 1 *r* square score of .75 is nearly 50 percent closer to 1 than the SJPD's score of .52.

*Disadvantages of Version 1*

One of the disadvantages of the City Auditor's model is that Version 1 results in a staffing requirement of 553 officers, or 6 positions more than the SJPD's model and 7 more officers than currently budgeted. We estimate the cost of additional positions to be approximately $581,000 per year. Our analysis shows that the increased staffing is caused by rounding. We used the same rounding method the SJPD used. However, Version 1 with its full 4th watch requires 24 more teams than the SJPD's model. We estimate that the rounding on these

additional 24 teams resulted in a calculated 10 additional officers.

In discussing the City Auditor's Version 1 with the SJPD, the department noted several additional potential disadvantages. Specifically, the SJPD noted that some of the City Auditor's Version 1 starting times are not consistent with the MOA and some of the starting times may not be practical. Further, the full 4th watch may require additional sergeants and more patrol vehicles. These potential disadvantages are discussed below.

*Starting Times Are Not Consistent With The MOA And May Not Be Practical*

Exhibit 3 below shows how the City Auditor's Version 1 varies from the MOA starting time restrictions.

**Exhibit 3 City Auditor's Model Version 1 Variance From MOA Starting Time Restrictions**

| Watch No. | Current Starting Times | Starting Times Allowed in MOA | Starting Times Version 1 | Version 1 Variance from the MOA |
|---|---|---|---|---|
| Watch 1 | 6:30 A.M. | Current times +/- 30 minutes | 7:30 A.M. | 30 Minutes |
| Watch 2 | 3:00 P.M. | 3:00 P.M. to 5:00 P.M. | 4:30 P.M. | None |
| Watch 3 | 9:00 P.M. | Current times +/- 30 minutes | 10:30 P.M. | 60 Minutes |
| Watch 4 | 5:00 P.M. | No restrictions * | 1:30 P.M. | None * |

* The MOA does not specify any restrictions on the starting time of the fourth watch. However, the SJPD noted that the San Jose Police Officers' Association has indicated that it believes the Watch 4 starting time is subject to negotiation.

As shown above, the City Auditor's Version 1 starting times are slightly outside the starting times allowed in the MOA. Specifically, Watch 1 is 30 minutes outside the MOA and Watch 3 is 60 minutes outside the MOA. The starting times for both Watches 2 and 4 satisfy the requirements in the MOA.

The reason that the City Auditor's Version 1 has different starting times than allowed under the MOA is that we used *Excel Solver* linear programming software to select the optimum starting times for each watch instead of using the times specified in the MOA. Thus, although the City Auditor's Version 1 starting times are outside the MOA, the starting times selected provide optimum efficiency based on the quantitative data.

Another SJPD concern is that the starting times may not be practical for a variety of reasons. For example, the SJPD noted that Version 1, Watch 1 starting time of 7:30 A.M. is not practical because Watch 1 officers will be driving out to their beats at 8:00 A.M. instead of 7:00 A.M. According to SJPD staff, the commute traffic is significantly higher in volume at 8:00 A.M. than at 7:00 A.M. and thus the length of time driving to and from beats may be longer. Further, SJPD staff contend that because the Watch 3 officers will be returning to station at 8:30 A.M. instead of 7:00 A.M., they will be too fatigued at the end of the shift to handle the morning commute CFS.

It should be noted that the Version 1 starting times could be adjusted slightly to address some of the SJPD's concerns and still allow for a full mid-day 4th watch. For example, Richmond, California has a deployment similar to the City Auditor's Version 1 with the following starting times:

**Starting Times**

| | Richmond, CA | City Auditor's Version 1 |
|---|---|---|
| Watch 1 | 7:00 A.M. to 5:00 P.M. | 7:30 A.M. to 5:30 P.M. |
| Watch 2 | 4:30 P.M. to 2:30 A.M. | 4:30 P.M. to 2:30 A.M. |
| Watch 3 | 9:30 P.M. to 7:30 A.M. | 10:30 P.M. to 8:30 A.M. |
| Watch 4 | 11:30 A.M. to 9:30 P.M. | 1:30 P.M. to 11:30 P.M. |

Richmond's starting times are within the MOA restrictions shown in Exhibit 3. However, because of time constraints, we did not run the model with Richmond's starting times.

We recommend that the SJPD and City Administration:

**Recommendation #1**

**Negotiate with the San Jose Police Officers' Association to modify shift-starting times to provide sufficient flexibility to deploy officers in the most efficient and effective manner.**

*Additional Sergeants Could Be Needed*

The SJPD also noted that a full 4th watch would increase the number of sergeants needed to supervise the patrol officers. According to a SJPD lieutenant, the SJPD seeks to maintain a span of control of one sergeant for every 4-9 patrol officers. In addition, according to SJPD staff, to ensure consistent supervision, the SJPD seeks to have patrol officers on the same team accountable to one sergeant. This desired span of control and consistency of supervision could not be achieved unless

sergeants are added for the full 4th watch. When the SJPD added the limited 4th watch, it determined that one sergeant could supervise two teams.[7] Accordingly, the SJPD added four sergeants to supervise the eight 4th watch teams.[8] The SJPD's March 1999 4th watch team sizes range from 2-4 officers per team. Teams are combined such that sergeants on the 4th watch supervise 5-6 officers.

The City Auditor's Version 1 full 4th watch also has relatively small teams, 3-5 officers per team. As such, using one sergeant to supervise two teams for a full 4th watch seems feasible. Under this scenario the SJPD would need to add 12 sergeants to the new teams for a full 4th watch at an estimated cost of $1.3 million per year. Our analysis shows that in using the Version 1 model, on Watch 4 one sergeant can supervise 6 – 9 officers. This allocation is consistent with the SJPD's practice of assigning one sergeant for 4 – 9 officers.[9]

Exhibit 4 compares the SJPD's limited 4th watch and the City Auditor's Version 1 full 4th watch span of control.

[7] Under the redistricting project implemented in March 1999, with the expansion from 12 districts to 16 districts, the sergeant deployment shows that two teams share the same sergeant in 10 of the 16 districts on the third watch.

[8] Only half of the sixteen districts have the 4th watch on Thursday – Sunday.

[9] The sergeants and the officers on the combined teams are on the same radio channel. The sergeants and the officers on the combined teams do not always have the same days on and days off, however, they are very similar. Since the officers receive supervision from another sergeant on the overlap day anyway, we estimate the difference would have a small effect on team integrity. Further, the model can be re-run such that the combined teams can have the same days on and days off.

**Exhibit 4 Comparison Of The SJPD's And The City Auditor's Version 1 - 4th Watch Span Of Control**

| Span of Control Factors | SJPD's Current Limited 4th Watch | City Auditor's Version 1 - Full 4th Watch | Difference |
|---|---|---|---|
| Number of days of the week patrolled | 4 | 7 * | 3 |
| Number of districts served | 8 | 16 | 8 |
| Number of patrol teams | 8 ** | 32 *** | 24 |
| Number of Sergeants | 4 | 16 | 12 |
| Ratio of Sergeants to patrol teams | 1 to 2 | 1 to 2 | None |
| Ratio of Sergeants to patrol officers | 1 to (5-6) | 1 to (6-9) | |

* Two 4-day work weeks, with one day being the overlap day which officers use to cover absences in other districts

** One team per district for 8 districts

*** Two teams per district for 16 districts

*Additional Patrol Vehicles Could Be Needed To Implement The City Auditor's Staffing Models*

Our vehicle analysis indicates that the City Auditor's staffing model Version 1 with a full 4th watch would require more vehicles than the SJPD's current deployment. Specifically, our analysis indicates that Version 1 could require approximately 33 more vehicles. The City Auditor's Version 1 requires more vehicles because it has seven more staff than the SJPD's model and the full 4th watch with the modified starting times requires three separate sets[10] of vehicles. By way of contrast, the SJPD's current deployment only requires two sets of vehicles and an additional 22 vehicles for the limited 4th watch.

Currently, the cost of an additional vehicle is estimated to be approximately $43,800. Thus, the cost of 33 additional vehicles needed to implement Version 1 with a full 4th watch would be approximately $1.4 million. Our analysis did not address the maintenance costs associated with the additional vehicles.

Our estimate of 33 additional vehicles for a 4th watch assumes that the SJPD would need to revise its vehicle rotation practice. Currently, the 1st and 3rd watches share a set of vehicles and the

[10] A set is a group of vehicles used by patrol officers on one or more watches.

2nd and 4th watches have their own set of vehicles. This vehicle rotation practice would not be practical under Version 1 because all four watches would each need their own set of vehicles.

A revised vehicle rotation practice could significantly reduce the number of vehicles required, but additional vehicles would still be needed. To implement Version 1 with fewer cars, the SJPD could change its vehicle rotation practice so that the 1st, 2nd, and 3rd watches alternate the use of two sets of vehicles. The 4th Watch would need its own set of vehicles. Our analysis indicates that Version 1 would require 33 more vehicles under this vehicle rotation practice.

Although Version 1 requires more patrol vehicles, further analysis shows that a variation in deployment similar to the early car deployment the SJPD currently uses would allow the SJPD to implement a full 4th watch without any additional vehicles. Specifically, the SJPD could use 16 early cars that start ½ hour earlier than Watch 1, and use 16 late cars that start ½ hour later than Watch 2. By using early and late cars, the number of cars required on each of the watches is reduced by 16. This is because the 16 cars the early Watch 1 uses can also be used during Watch 2, and the 16 cars the late Watch 2 uses can be shared with Watch 1. The SJPD stated that they are concerned with increased staff and training time associated with the late car briefing.

**The City Auditor's Model, Version 2 Uses An Alternative Basis For Calculating Free Patrol Time**

The City Auditor's Version 2 model uses an alternative basis for calculating free patrol time from that used by the SJPD's revised model and the City Auditor's Version 1 model. Specifically, the SJPD's revised computer model applies the 40 percent requirement for free patrol time to the total available patrol time. The total available patrol time includes not only time for responding to CFS, but also court and training time, and status activity time[11], which includes activities such as follow-up, administrative duties, lunch, breaks, travel time, and report writing. We used the SJPD's basis for calculating the 40 percent requirement for free patrol time in the City Auditor's

[11] Status activity is a police management report category that reports on the amount of time officers spend on loading and fueling patrol cars, lunch, breaks, some report writing, follow-up, and some time for return to the station at the end of the shift. Officers radio the start and end time spent on these activities to the Communications Center where they are recorded by the computer-aided dispatch system. Officers can also key the information into their laptop computers that are connected to the Computer Aided Dispatch (CAD) system.

Version 1 model in order to isolate the effect of the full 4th watch and different starting times.[12]

With respect to the level of free patrol time, we were unable to identify an authoritative standard regarding the appropriate level of free patrol time that should be available and the method for calculating it. Therefore, we were unable to validate whether the amount of free patrol time that the SJPD builds into its staffing calculations is appropriate. However, in our opinion, the method that the SJPD used to calculate its free patrol time requirement is questionable and should be justified because of the significant impact the calculation has on its staffing requirement.

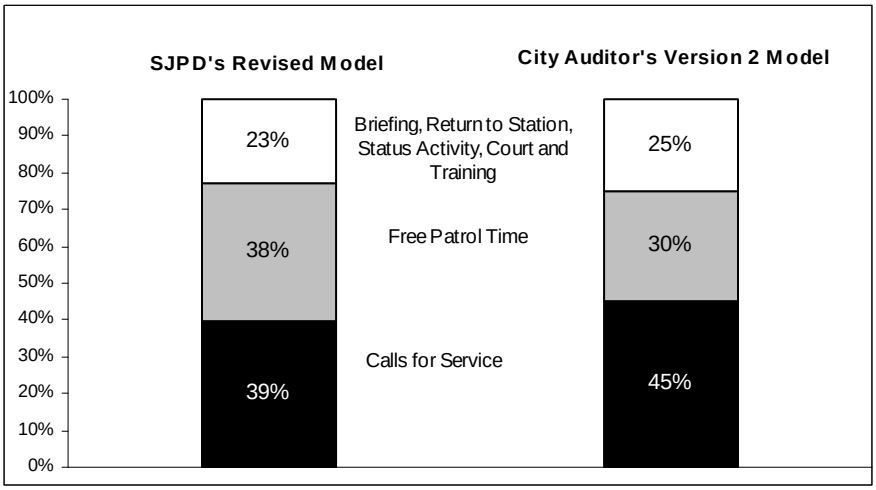
Specifically, our analysis brings into question the SJPD'S calculation of free patrol time. Essentially, the SJPD's handling of status activity results in its patrol staff computer model adding free patrol time to time that is already not available for CFS and free patrol time. For instance, when the SJPD's model calculates free patrol time on the total 10-hour day less 30 minutes for briefing time (9½ hours), it is calculating free patrol time against activities such as follow-up, administrative, lunch, breaks, return to station, and training. To illustrate, the SJPD's model includes approximately 105 minutes for the above-mentioned items. When the SJPD's patrol staff computer model calculates the free patrol time on 9½ hours, about 42 minutes (105 minutes X 40 percent) of its free patrol time per patrol officer per day is calculated on time that is not available for CFS and free patrol time.

In our opinion, the SJPD should have subtracted the status activity, court, and training time before calculating free patrol time. This approach provides for 40 percent free patrol time on the actual patrol time. Using this method, we calculated the free patrol time to be approximately 180 minutes per day as compared to the 228 minutes in the SJPD's model.

Graph 9 compares the components of a patrol unit's daily workload in the SJPD's revised model with the daily workload components in the City Auditor's Version 2 model.

[12] Because both the City Auditor's models are run on a 9-hour day, Version 1 cannot include return to station time in its basis for calculating free patrol time. The SJPD's model is also run on a 9-hour day, however its free patrol time and its ideal CFS workload (discussed on page C-2) are based on a 9½-hour day.

**Graph 9 SJPD's Revised Model Compared To The City Auditor's Version 2 Model - Time Components Of A Patrol Officer's Ten-Hour Work Day**




As the above graph demonstrates, the SJPD's patrol staffing computer model and the City Auditor's Version 2 model have different percentages for each of the different workload components. In comparing the two, the SJPD's model has more free patrol time available. On the other hand, the City Auditor's Version 2 model has more time for CFS and for briefings, return to station, status activity, court time, and training. It should be noted that both the SJPD's and City Auditor's models have more actual free patrol time than is shown in the graph above. This is because both the SJPD and the City Auditor added staff to the model-calculated staff requirement because of rounding. Specifically, if the models indicated a need for 4.01 officers on a particular team, both the SJPD and the City Auditor rounded up to 5 officers. This rounding technique effectively created additional free patrol time. As a result, in the City Auditor's model Version 2, the actual free patrol time is 37 percent, instead of the 30 percent shown above in Graph 9. The SJPD's 38 percent free patrol time shown above in Graph 9 would be similarly greater in actuality.

*City Auditor's Model Version 2*

The primary advantage of Version 2 is that it requires 488 officers, or 58 fewer officers than the SJPD's March 1999 staffing plan. Thus, by using the City Auditor's basis for calculating free patrol time, the patrol staffing requirement would be reduced by 58 officers. This equates to $4.8 million in patrol staff. Like Version 1, Version 2 has a full 4th watch,

the same starting times, and appears to equalize the CFS workload among the patrol officers.

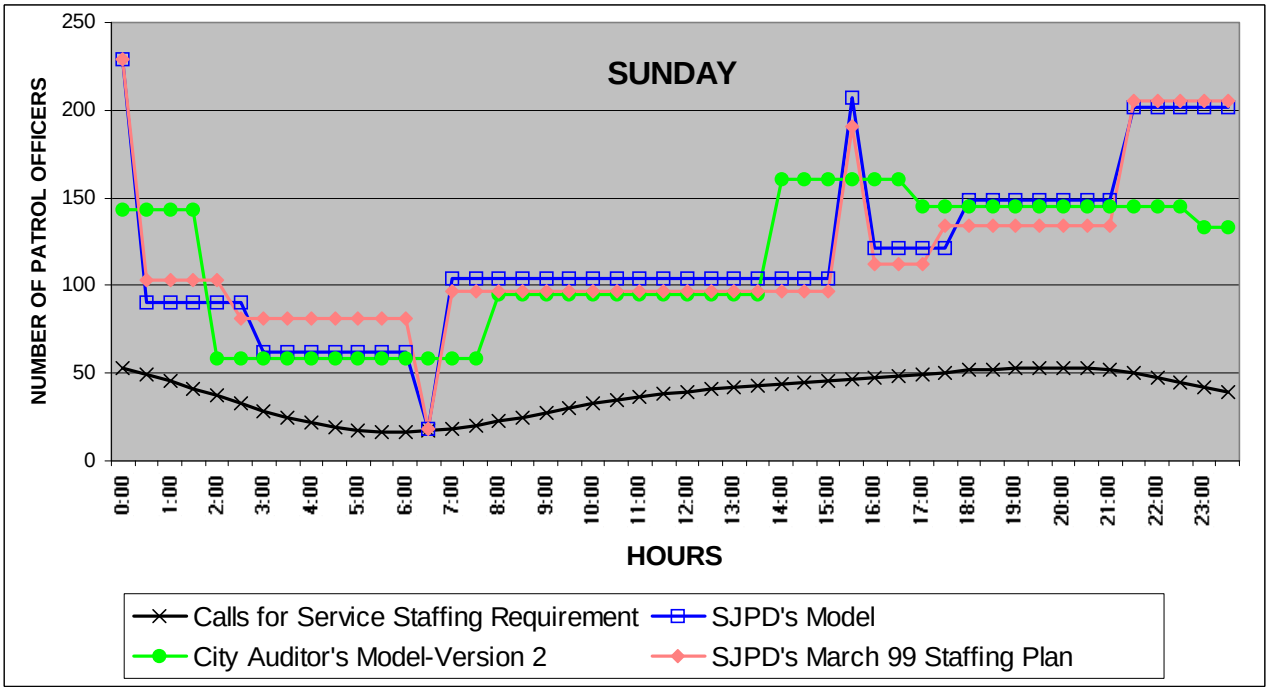
The disadvantages of the City Auditor's Version 2 are that

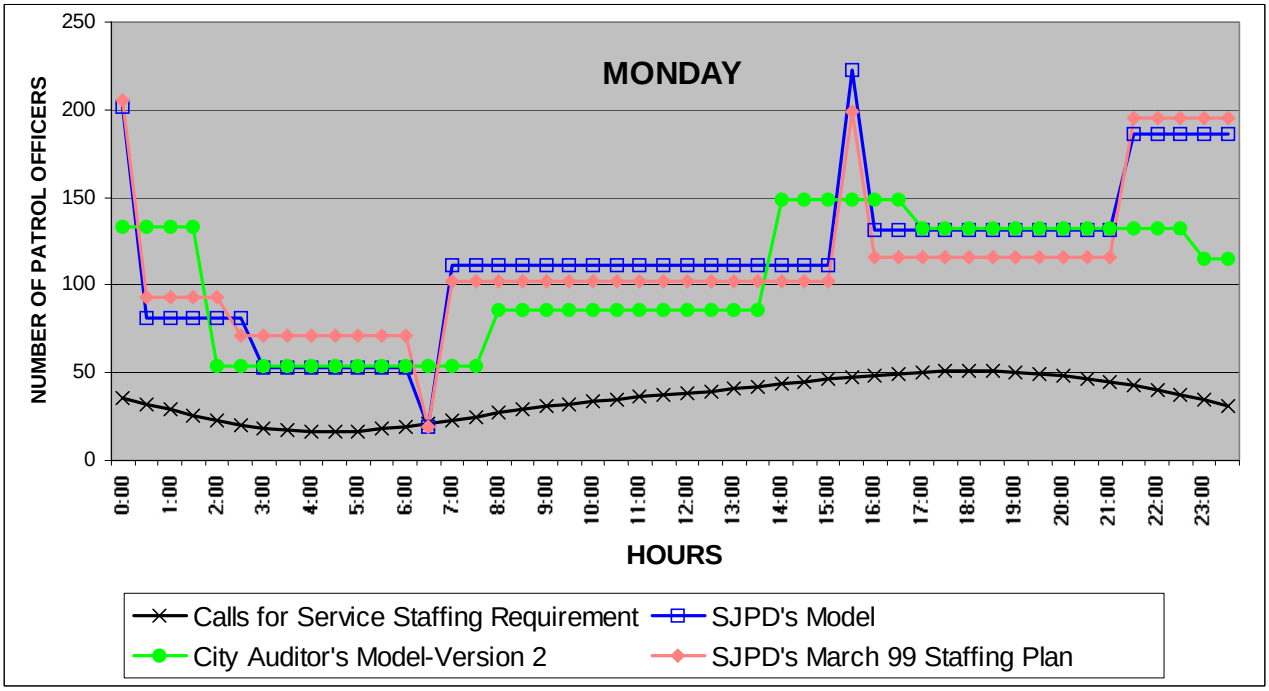
- Some of the starting times specified in the model are not consistent with the MOA, and
- As many as 12 more sergeants may be needed.

Graphs 10 – 16 compare the City Auditor's Version 2 calculated patrol staff requirement model to the SJPD's calculated patrol staff requirement model and March 1999 patrol staffing.

The Graphs help to highlight how the City Auditor's Version 2, with a full 4th watch and different starting times appears to provide a better matching of staff to workload than the SJPD's calculated patrol staff requirement and the SJPD's March 1999 deployment. The City Auditor's Version 2 model fully covers all workload, free patrol time, and absence requirements.

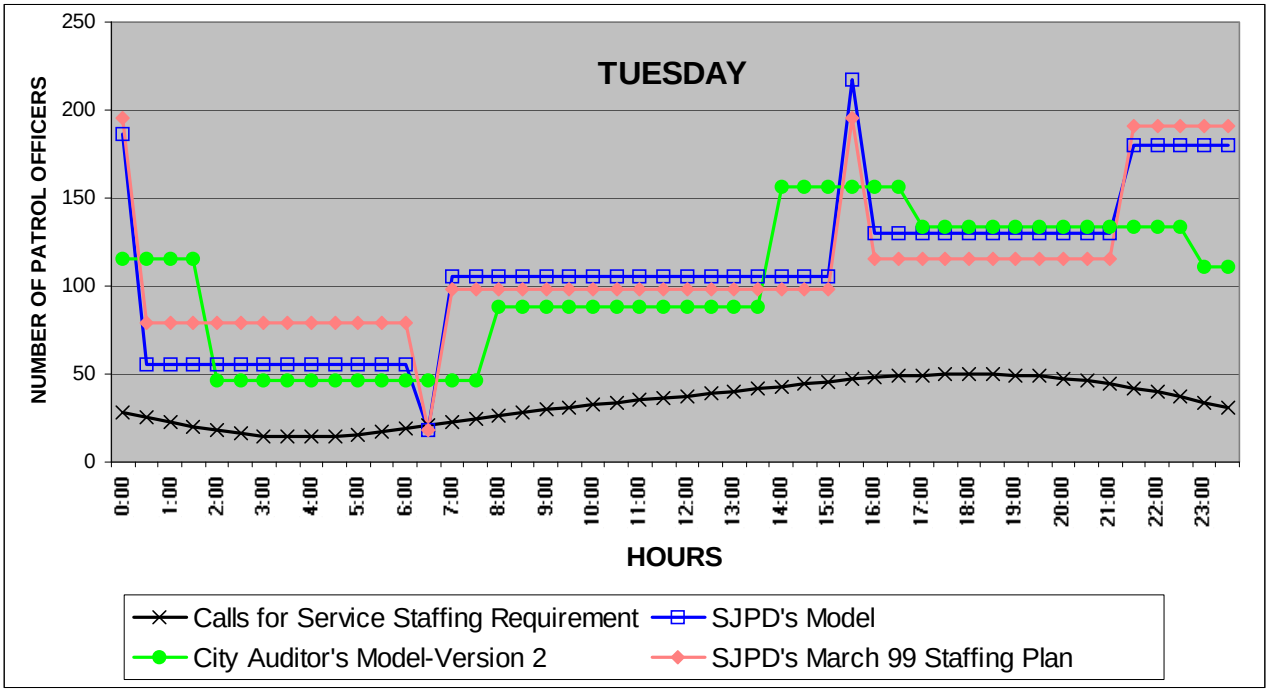
**GRAPHS 10 AND 11**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 2 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN**

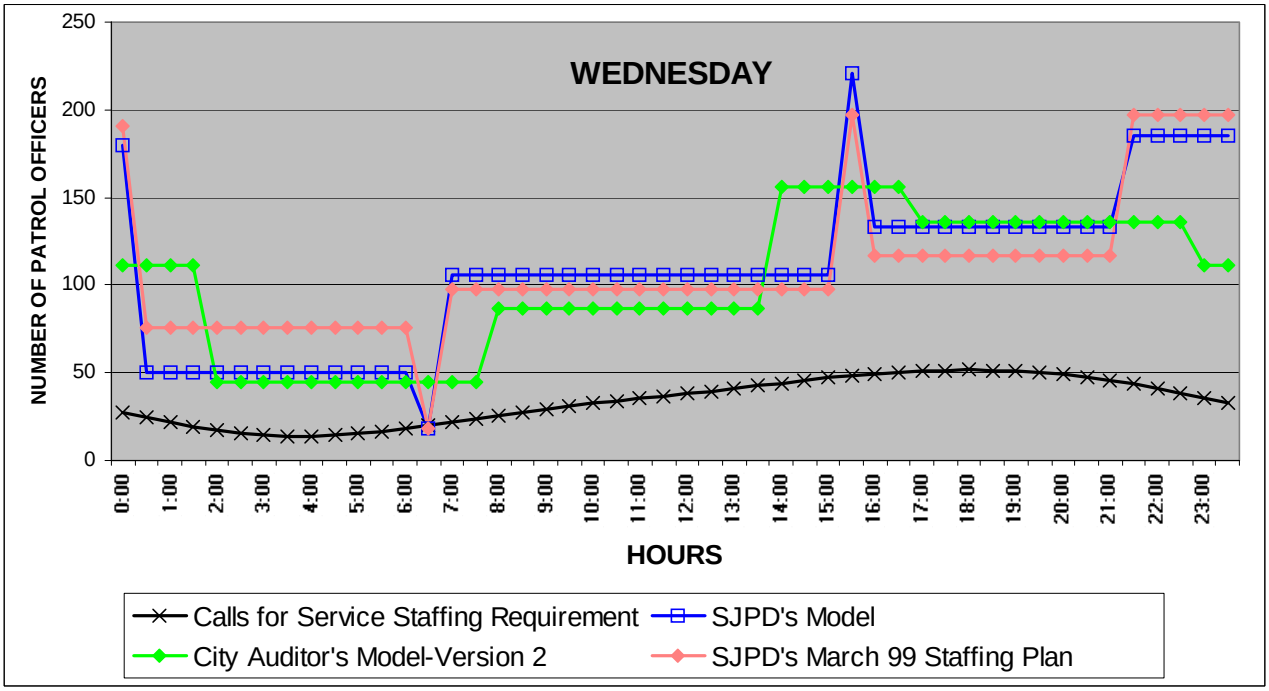


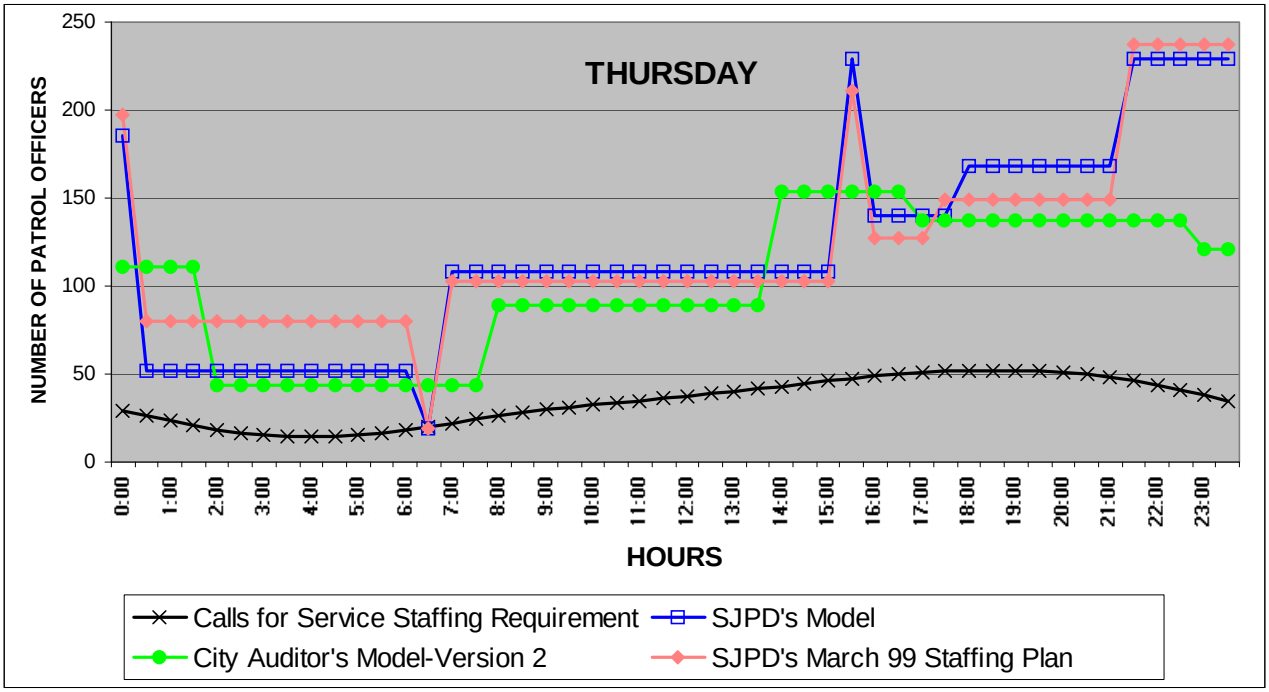

The calls for service staffing requirement is the number of officers required to handle the calls for service workload based on the average call duration of 36.03 minutes. The calls for service data is based on historical 1996 information and has been adjusted for priority levels. Each priority 1 call requires 5.16 officers, priority 2 requires 2.38 officers, priority 3 requires 1.77 officers, and priority 4 requires 1.33 officers. On average each call requires 2.18 officers.

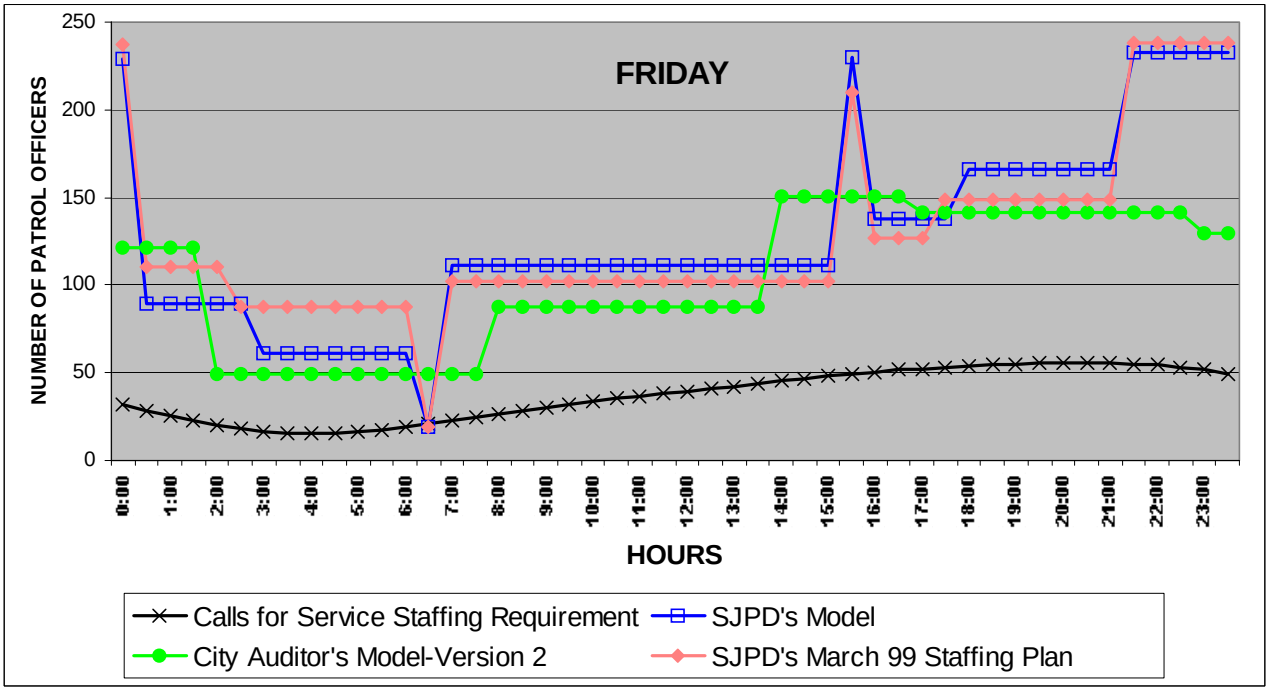
**GRAPHS 12 AND 13**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 2 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN (cont.)**



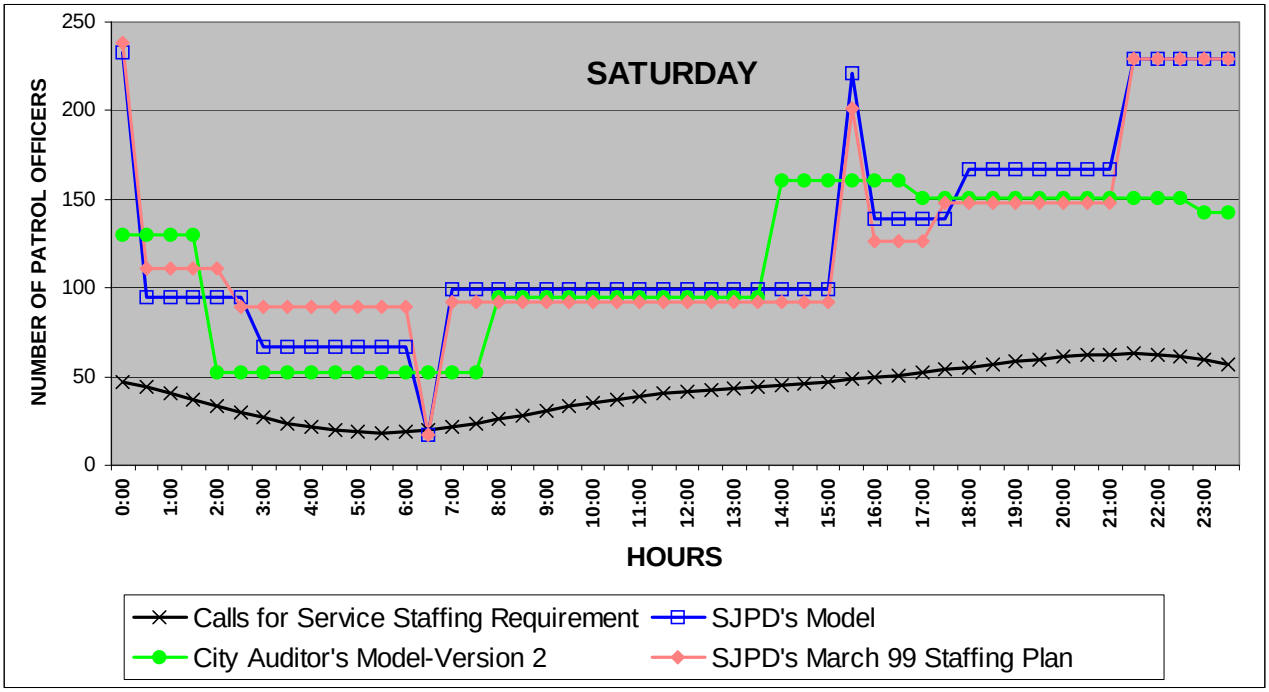



**GRAPHS 14 AND 15**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 2 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN (cont.)**



**GRAPH 16**
**CITY-WIDE COMPARISON OF CITY AUDITOR'S STAFFING MODEL VERSION 2 TO THE SJPD'S STAFFING MODEL AND MARCH 1999 STAFFING PLAN (cont.)**



In our opinion, the Graphs highlight several SJPD deployment issues that merit further attention and should be more fully evaluated. As the graphs show, the SJPD's two deployment plans have staffing peaks from 9:30 P.M. to 12:30 A.M. *(21:30 hours to 00:30 hours)* every day of the week. With the exception of Fridays and Saturdays, these staffing peaks coincide with a drop in the CFS workload.

Similar to Version 1, the City Auditor's model, Version 2, uses four full watches and different starting times to deploy staff. The staffing for the full 4th watch is derived by redeploying officers from the other watches. As Exhibit 5 shows, the SJPD's 2nd and 3rd watches provide the officers to staff Version 2's 4th watch. See pages D-2 and D-3 in Appendix D for staffing information for Version 2 and the SJPD March 1999 staffing plan by district, watch, and day of the week.

**Exhibit 5 Comparison Of Total Number Of Officers Per Watch: SJPD's March 1999 Staffing Plan To Version 2**

| Daily Average Officers Per Watch | Watch 1 | Watch 2 | Watch 3 | Watch 4 | Total Watches |
|---|---|---|---|---|---|
| SJPD March 1999 Staffing Plan | 173 | 210 | 141 | 22 | 546 |
| City Auditor's Version 2 | 157 | 129 | 87 | 115 | 488 |
| Increase/<Decrease> | 16 | <81> | <54> | 93 | <58> |
| % Change Inc/<Dec> | <9%> | <39%> | <38%> | 423% | <11%> |

We also performed a chi-square and an *r* square analysis as described on page 20. The results for Version 2 are as follows:

**Exhibit 6 Comparison Of SJPD's And City Auditor's Version 2 Models' Statistical Measurements**

| Statistical Measurement | SJPD's Model | City Auditor's Version 2 |
|---|---|---|
| Chi-square[13] | .09 | .04 |
| *R* square[14] | .52 | .76 |

As shown above, both statistical measurements indicate that the City Auditor's Version 2 appears to provide a better matching of staff to workload than does the SJPD's model. Specifically, Version 2's chi-square measurement of .04 is much lower than

[13] With the chi-square measurement, the lower the score, the better.

[14] With the *r* square measurement, the closer to 1, the better.

the SJPD's score of .09. Similarly, the City Auditor's Version 2 *r* square score of .76 is 50 percent closer to 1 than the SJPD's score of .52.

*Additional Sergeants Could Be Needed*

Because Version 2, like Version 1, also has a full 4th watch, additional sergeants could be needed as described on pages 22 and 23. However, as we noted previously, the City Auditor's Version 2 requires 58 fewer officers than the SJPD currently allocates to patrol. Some of these positions could be used to create more sergeant positions. Further, because Version 2 requires fewer officers, the span of control citywide would be significantly improved because the teams would be much smaller as shown in Exhibit 7.

Exhibit 7 compares the SJPD's March 1999 staffing plan to the City Auditor's Version 2 ratio of sergeants to patrol officers.

**Exhibit 7 Comparison Of The SJPD's March 1999 Staffing Plan To The City Auditor's Version 2 Ratio Of Sergeants To Patrol Officers**

| Staffing Plan Or Model | Number Of Sergeants | Number Of Patrol Officers | Average Ratio Of Sergeants To Patrol Officers |
|---|---|---|---|
| March 1999[15] | 90 | 546 | 1 to 6.1 |
| Version 2 | 102 | 488 – 546 | 1 to 4.8 – 1 to 5.4 |

We have also included detailed team information in Appendix D for Version 2 and the SJPD's March 1999 staffing plan.

*Additional Patrol Vehicles Would Not Be Needed To Implement The City Auditor's Version 2 Staffing Model*

Our vehicle analysis indicates that the City Auditor's staffing model Version 2 with a full 4th watch would not require more vehicles.

[15] The March 1999 deployment shows 90 sergeants supervising 546 officers for a ratio of 1:6.1. The SJPD would need a total of 100 sergeants to eliminate the current practice of two teams sharing the same sergeant in 10 of the 16 districts on the 3rd watch.

**City Auditor Conclusions Regarding Opportunities To Improve The Efficiency Of Patrol Staffing**

The City Auditor's Office prepared computerized staffing and deployment models to identify opportunities to improve the efficiency of patrol staffing and deployment. While our computerized staffing and deployment models appear to identify patrol deployment alternatives that are empirically more efficient than the SJPD's current deployment that may not, in fact, be the case. This conclusion is based on data limitations and the potentially high costs of alternative methods, and public and officer safety concerns.

In our opinion, our computerized models help to identify several deployment issues that merit further attention and should be evaluated more fully. For instance, the graphs of both of the City Auditor's models highlight some of the benefits of an early afternoon 4$^{th}$ watch and different watch starting times. Specifically, the early afternoon 4$^{th}$ watch seems to provide a better matching of staff to workload, thereby equalizing the CFS workload. The early afternoon 4$^{th}$ watch may also benefit the SJPD's community policing efforts because more officers would be available during the prime community policing hours.

As noted in the report, the audit also identified a number of additional costs associated with a full afternoon 4$^{th}$ watch. The additional costs are for more officers, more vehicles, and more cars. These costs need to be considered in evaluating the merits of a full 4$^{th}$ watch or any other deployment plan.

Besides economic costs, the SJPD noted several public and officer safety concerns that need to be considered. These concerns include the number of officers available to respond to calls in the early morning hours and officer fatigue.

As to the level of free patrol time, we were unable to identify an authoritative standard regarding the appropriate level of free patrol time that should be available. We used one method to calculate the amount of free patrol time needed and the SJPD used another method. In our opinion, our method provides a reasonable level of free patrol time. On the other hand, the SJPD staff believe that their method of calculating free patrol time is also appropriate. Nevertheless, the decision on which method to use has a significant effect on the number of patrol officers needed and should be justified.

To demonstrate the cost implications of the basis for calculating free patrol time we compared the City Auditor's Version 2

calculated patrol staffing to the SJPD's budgeted staffing deployment. Version 2 requires 58 fewer officers than the SJPD's budgeted staffing deployment which equates to about $4.8 million worth of patrol staffing per year. Version 2 requires fewer officers because it calculates free patrol time based on patrol time without status activity, court, and training time. However, Version 2 with the full 4th watch requires 12 additional sergeants, which would add about $1.3 million in patrol staff costs per year. Thus, we estimate the cost implication of the basis for calculating free patrol time at about $3.6 million. The $3.6 million should not be interpreted to mean that the City Auditor is recommending a reduction in the number of patrol officers. Instead, these savings should be viewed as an opportunity to reallocate and redeploy staff to address issues such as community policing, public and officer safety, and other needed policing activities. The calculation of the $3.6 million is shown below.

| | |
|---|---|
| 58 fewer officers at $83,000 per officer per year | $4,814,000 |
| 12 additional sergeants at $105,000 per sergeant per year | <1,260,000> |
| Annual cost implications of the basis for calculating free patrol time | $3,554,000 |

In our opinion, because the level of free patrol time has such a significant effect on patrol staffing needs, the SJPD should prepare a staffing proposal that describes the advantages, disadvantages, and cost implications of the appropriate basis for calculating free patrol time.

Also, in our opinion, the SJPD's staffing proposal should be presented in the context of a formal community policing plan. Currently, the SJPD does not have a formal community policing plan. A November 1998 police management study of the SJPD noted that a written community policing plan is needed to establish clear community policing objectives.

Specifically, the police management study of the SJPD noted the following regarding the SJPD's community policing efforts:

> *Currently there is not an organization-wide accepted definition of community policing within the City of San Jose. Without a definition, the steering of such activities and initiatives is set on no clear course . . .*

> *Organizational supportive materials such as The Years Ahead, 1996-1997—2000-2001 Study, Annual Program Plans, and Management Reports still refer to community policing activities in terms of programs and projects. Due to the success of many of these programs San Jose has been recognized as a national success in community policing practices. However, there remains the need for a strategic, multi-year, community policing based plan . . . To move to the next level benchmark in community policing, the SJPD should undertake a formal planning process for community policing that culminates in a written plan extending out three to five years . . . In addition, formalized planning is likely to produce more and better quality information on which decision-makers can rely.*

These concepts should be incorporated in a strategic, multi-year, community policing-based plan and a staffing proposal for the SJPD's BFO Division. The SJPD and the City Administration should develop and forward such a proposal to the City Council for concurrence. By so doing, the SJPD could reallocate and redeploy as much as $3.6 million per year in BFO patrol staff resources to activities such as community policing, patrol staff safety, and other areas of need in San Jose.

We recommend that the SJPD and City Administration:

**Recommendation #2**

**Use the information in this report to develop, and forward to the City Council for concurrence, a strategic, multi-year, community policing-based plan and a staffing proposal for the SJPD Bureau of Field Operations patrol division that is responsive to both officer and public safety needs and calls for service demand. The report should include the advantages, disadvantages, and cost implications of the following policy decisions:**

- **A full 4th watch, and**
- **An appropriate basis for calculating free patrol time.**

**The SJPD And City Auditor Staffing Model Limitations**

Both the City Auditor's models and the SJPD's model have significant limitations that need to be considered when discussing the various deployment alternatives. The most significant limitation with the models is that they are only forecasting tools driven primarily by quantitative data. The

best overall deployment plan should be one that balances efficiency with practical considerations such as public and officer safety. Therefore, the models should be viewed as a tool for achieving the best overall deployment plan, not the definitive deployment plan. For instance, both the SJPD's model and the City Auditor's models rely on average lengths of time for all CFS instead of the average time spent on CFS by type of call. That is, all of the models assume that a set number of vehicles responded to each type of priority call and each responding unit spent 36.03 minutes, regardless of the nature of the call or the time of day or week. For instance, if certain types of CFS or CFS received at certain times of the day or night generally took longer to resolve, the models would not differentiate these calls from any other. Finally, none of the models consider response time performance targets or if CFS are backed up (queuing).

Other limitations and concerns regarding the model are described below.

*Calculation Of The Calls For Service Workload*

One aspect of our model that differs from the SJPD's model is the calculation of the CFS workload. To determine the CFS workload, the SJPD used each district's average CFS, weighted by priority, by the half-hour, for each day of the week. In contrast, the City Auditor's models "smoothed" the CFS workload. Specifically, the City Auditor's models smoothed the CFS workload by averaging each half-hour of data with the preceding and subsequent two hour time period. The benefit of "smoothing", a common forecasting technique, is that the minor peaks and valleys in the workload are rounded, allowing for improved forecasting.

Our smoothing of the workload concerned the SJPD because their model included a constraint that the staffing level had to at least equal the peak workload for every half-hour time period. We analyzed the workload data to determine if the City Auditor's Office models met the SJPD's constraint. We found that of 5,376 half-hour segments in our model (336 half-hours in a week x 16 districts), there were only 4 instances when our Version 1 did not meet the peak workload and only 15 instances when our Version 2 did not meet the peak workload. We also determined that we would need to add 4 staff to Version 1 and 11 staff to Version 2 to meet the peak workload every half-hour.

*Staffing Levels On Watch 3 May Be Too Low*

The SJPD is concerned that the City Auditor's models provide too few patrol officers from 2:00 A.M. to 8:00 A.M. The SJPD's model also produced a low staffing level from 12:30 A.M to 7:00 A.M. on Tuesday, Wednesday, and Thursday mornings and from 2:30 A.M. to 7:00 A.M. on Friday, Saturday, Sunday, and Monday mornings. This is because of the low level of CFS during these time periods. The SJPD decided to increase the number of patrol officers for the March 1999 staffing plan during these early morning time periods to accommodate officer and public safety. In reviewing the City Auditor's models, the SJPD also noted that several 3rd watch teams had only two officers. According to the SJPD two officer teams are unacceptable for public and officer safety. Finally, the SJPD noted that during the day special SJPD units are available as back-up to patrol units. However, during the early morning hours there are no special units working that would be available for back-up. This limitation in the model can be addressed by factoring minimum staffing levels into the model.

*Complexity Of City Auditor's Models*

Because of the complexity of the City Auditor's models, even the slightest change in assumptions resulted in months of intense manual inputting and recalculations. In addition, every changed assumption had to be run 16 times because each model is comprised of 16 sub-models representing each of the City's 16 districts' distinct CFS workloads. As a result, we were unable to run models for other potentially viable patrol staff deployment methods because of time constraints. For example, the City of Sacramento, California, uses a patrol deployment method similar to the SJPD's, but which allows for a more efficient deployment of resources. Specifically, Sacramento uses a 4-10 workweek, but reduces the size of the overlap team day by having some officers start a day earlier than the other members of their team. This results in two overlap days, with the staffing on each of the two overlap days smaller than if there was one overlap day.

The City of Sacramento increases its patrol team sizes to cover for all absences. Because the overlap day is small, the officers are still responsible for CFS on the overlap days, however, this method does allow officers to remain in their districts on overlap days. In our opinion, by having the teams start their workweeks on different days, Sacramento is able to reduce the inefficiencies seen in the SJPD's patrol deployment.

The City of San Diego, California, uses another deployment method. San Diego also uses a 4-10 workweek, however, like the City of Sacramento, it also provides increased team sizes to cover absences. San Diego's deployment practice is different in that the overlap days are dedicated to community policing and training.

**Other Jurisdictions Use Police Staffing And Deployment Software**

In the past, the SJPD did not use specialized police staffing and deployment software because it was not compatible with some of the City's patrol staffing practices such as team integrity and the 4-10 workweek. However, with advances in software and technology, specialized software is now available that is compatible with the City's patrol staffing practices. In addition, the specialized software has more flexibility and capabilities than either the SJPD's or the City Auditor's. For example, the specialized software can extract the data from the CAD, use the data by type of call, and does not rely on length of CFS averages. Also, the specialized software can perform queuing to determine when CFS tend to stack up.

As part of our audit, we contacted other police departments and found that many are currently using different types of police staffing and deployment software. Cities and counties using this type of software include: Sacramento, California; Fresno, California; Richmond, California; Seattle, Washington; Dallas, Texas; Nashville, Tennessee; and Los Angeles County, California.

Patrol staffing software can provide a number of benefits. For instance, one benefit is the capability of identifying inefficiencies in patrol staffing deployment. A Nashville, Tennessee police captain told us that the software they used allowed them to identify 47 officers that could be redeployed to other activities. These police staffing software also allow law enforcement agencies to consider response times and queuing problems. For instance, the Nashville, Tennessee police captain also told us that these software aided them in eliminating stacked calls in the afternoon hours by redeploying patrol officers where they were needed most.

Another benefit of some patrol staffing software is that it can also provide crime trend and pattern recognition to facilitate district or beat problem solving. Such information is critical for effective community policing and problem solving. However, the SJPD does not have this information readily available at the

beat or district level. Although the new Automated Information System (AIS) could provide this information, the information would not be as readily available.

The 1998 police management study, in fact, noted that the SJPD needs to improve its information management. According to the management study,

> *One of the most important tools that a modern, high-performing organization can have is a system that provides timely and comprehensive information for decision making . . . One of the critical tools for effective community policing and problem solving is current information about crime and disorder problems disaggregated to the district and beat levels. As a department's patrol section takes steps to implement community policing and problem solving, it will need information that will allow frequent and small-scale problem identification, foster repeat call analysis, and provide data to assess the results of problem solving efforts.*
>
> *The benefits of this approach are many. Enhanced analytical products improve patrol productivity, because officers' activities are directed toward specific objectives. For example, analyzing repeat calls for service and seeking to eliminate or ameliorate the problems that create frequent calls to a given location free patrol resources and decrease calls for service. This targeting means that the patrol force will be able to work more efficiently and effectively within resource limits.*

Finally, another local jurisdiction we surveyed noted the following benefits in their grant application requesting funds for deployment and crime analysis software:

- Can identify locations of repeat calls through a geographic location system, thus allowing the department to target location of repeat calls and identifying the cause of these repeat calls. Addressing repeat calls reduces repetitive call answering. Repetitive call loads "eat up" patrol officers' time. Reducing or removing them allows officers more time for more proactive work;

- Helps the department prioritize the most significant problems and allocate appropriate resources;
- Allows the department to set priority levels for 81 problem categories by geographic area or default to agency standards. The problem category priority by geographic area is integrated with the software's automatic trend analysis and pattern recognition tools;
- Helps the department allocate and target resources to match the needs of the problem-solving efforts; and
- Has the ability to optimally target resources to meet their call load and thus increase efficiency and effectiveness. Also, it allows the department to free officers from call load to spend time on community problem solving.

*Federal Or State Funds Could Be Used To Buy Software*

Although a firm price for the police staffing and deployment software cannot be determined, one vendor that has implemented systems with two of the jurisdictions we contacted estimated the cost for implementing a system in San Jose would be approximately $350,000 - $400,000. Although costly, we found that a number of the jurisdictions have used federal or state grant funds to purchase this system. Furthermore, the acquisition cost is essentially a one-time expense. Moreover, the vendor discussed above provides a free cost/benefit analysis for the software system.

One of the Federal grants available is the COPS MORE (Making Officer Redeployment Effective) grant. The Department of Justice fact sheet regarding the COPS MORE grant states:

> *The most important requirement in the COPS MORE application was a demonstration of how COPS MORE funds would result in actual increases in the number of officers deployed in community policing equal to, or greater than, the number of officers which would result from grants of the same amount for hiring new officers.*

According to staff in Sacramento, California and Nashville, Tennessee, these cities obtained federal funds to purchase or upgrade their patrol staffing and deployment software because it allowed them to identify inefficiencies in their current staffing. Thus, the staffing software allowed them to essentially meet their patrol workload with fewer patrol

officers. By doing so, staff in Nashville, Tennessee reported that they were able to deploy patrol staff to other activities such as community and proactive policing. As noted previously, staff in Nashville, Tennessee reported that their patrol staffing and deployment software allowed them to redeploy 47 officers and virtually eliminate the backing up of calls during busy times of the day.

According to the United States Department of Justice, COPS MORE grant funds have been awarded in 1995, 1996, and 1998, but were not awarded in 1999. In addition, the availability of future funding is not known at this time.

Our review found that if COPS MORE funds are not available, other federal and state funds could be used to purchase this software. Other options include the Federal Local Law Enforcement Block Grants (LLEBG) and the State of California Supplemental Law Enforcement Services (SLES) grant. According to the City's liaison in Washington, D.C., the LLEBG grant will be available in 2000. This grant award is based on a jurisdiction's number of Uniform Crime Reports Part 1 Violent Crimes reported to the Federal Bureau of Investigations. Further, the grant program guidelines specify that funds must be spent in accordance with one or more of seven purpose areas including

> *Law enforcement support for . . . Procuring equipment, technology, and other materials directly related to basic law enforcement functions.*

According to U.S. Department of Justice staff in Washington, D.C., procurement of police staffing and deployment software would meet these criteria.

The SJPD has already received Council approval for its 1999-00 SLES grant. According to the SJPD, 2000-01 grant funds are anticipated to be available. The SLES grant is for "front line law enforcement purposes." The SJPD has used SLES for computer systems with front line law enforcement purposes.

If federal or state grant funds are not available, we recommend that the SJPD, through the annual budget process, develop a budget proposal to purchase the software.

We recommend that the SJPD:

**Recommendation #3**

**Investigate the feasibility of using federal or state grant funds to procure police staffing and deployment software. If federal or state grant funds are not available, we recommend that the SJPD, through the annual budget process, develop a budget proposal to purchase the software.**

## CONCLUSION

The SJPD and the City Auditor's Office developed computerized staffing models in order to determine the number of patrol officers required for redistricting. The SJPD's model was constrained by a number of scheduling and deployment practices that are covered under the current MOA between the City of San Jose and the San Jose Police Officers' Association. The City Auditor's Office was not constrained by the MOA and was able to develop models that met the CFS workload and improved the matching of patrol staffing to workload. While the City Auditor's computerized models appear to identify patrol deployment alternatives that are empirically more efficient than the SJPD's current deployment, that may not, in fact, be the case. This conclusion is based upon data limitation, the potentially high cost of alternative deployment methods, and officer and public safety. However, the City Auditor's analysis identified several deployment issues that merit further study. These issues include a full afternoon 4th watch and different starting times. In addition, the City Auditor's Office questions the method the SJPD uses to calculate free patrol time. Specifically, calculating free patrol time based upon total available patrol time less patrol officer activities such as follow-up, administrative, lunch, breaks, court, and training time, reduces staffing requirements by 58 positions. As a result, the SJPD could use these patrol resources for community policing, public and officer safety concerns, or other policing activities.

Although both the City Auditor's Office and the SJPD developed patrol staffing and deployment models, we found that other police departments have purchased specialized patrol staffing model software that have more capability and flexibility. Although costing as much as $400,000, the benefits of these software packages clearly appear to outweigh the costs. A number of police jurisdictions have used federal grant funds to procure these software packages. In addition, the SJPD may also have access to state grant funds to procure these software packages.

## RECOMMENDATIONS

We recommend that the SJPD and City Administration:

**Recommendation #1** **Negotiate with the San Jose Police Officers' Association to modify shift-starting times to provide sufficient flexibility to deploy officers in the most efficient and effective manner. (Priority 2)**

**Recommendation #2** **Use the information in this report to develop, and forward to the City Council for concurrence, a strategic, multi-year, community policing-based plan and a staffing proposal for the SJPD Bureau of Field Operations patrol division that is responsive to both officer and public safety needs and calls for service demand. The report should include the advantages, disadvantages, and cost implications of the following policy decisions:**

- **A full 4th watch, and**
- **An appropriate basis for calculating free patrol time.**

**(Priority 2)**

We recommend that the SJPD:

**Recommendation #3** **Investigate the feasibility of using federal or state grant funds to procure police staffing and deployment software. If federal or state grant funds are not available, we recommend that the SJPD, through the annual budget process, develop a budget proposal to purchase the software. (Priority 2)**

# Memorandum

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CITY AUDITOR

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

**TO:** Gerald Silva
City Auditor

**FROM:** William M. Lansdowne
Chief of Police

**SUBJECT:** RESPONSE TO AUDIT - SJPD BUREAU OF FIELD OPERATIONS PATROL DIVISION'S STAFFING AND DEPLOYMENT

**DATE:** February 20, 2000

Approved Kay Winer Date 2/22/00

## BACKGROUND

The final draft report on the *Audit of the San Jose Police Department – Bureau of Field Operations Patrol Division's Staffing and Deployment* was submitted on January 28, 2000 by the Office of the City Auditor. The Auditor's Office (AO) has dedicated considerable time and effort in an attempt to develop staffing and deployment plans that offer cost-effectiveness, while maintaining community and officer safety levels. With the array of tangible and non-tangible variables in a large police department, the task has proven to be a challenging one. Concurrently, the Police Department's Crime Analysis Unit designed a staffing and deployment plan that was utilized for the March 1999 Redistricting Plan shift change. The Redistricting Plan was modified at the September 1999 shift change in terms of deployment and divisional boundaries. The AO's report conducts a cross comparison of both deployment/staffing plans.

Since June of 1999 members of the Department's command staff and Crime Analysis Unit have held detailed discussions with members of the AO's staff. The AO's staff members initially indicated their planned recommendations could enable the Department to reallocate and redeploy as much as $4.5 million in Bureau of Field Operations (BFO) Patrol Division staff resources to activities such as community policing, patrol staff safety, additional sergeant positions, and other areas of need in San Jose. However, the final January 28, 2000 AO draft report framed the document in the following perspective, "*First, the City Auditor's models should not be construed as the recommended deployment models.*"[1] The report continued, "*The most significant limitation with the models is that they are only forecasting tools driven only by quantitative data. The best overall deployment plan should be one that balances efficiency with practical considerations such as public and officer safety. Therefore the models should be viewed as a tool for achieving the best overall deployment plan, not the definitive deployment plan.*"[2] The AO's report continues by stating, "*While our computerized staffing and deployment models appear to identify patrol deployment alternatives that are empirically more efficient than the SJPD's current deployment that may not, in fact, be the case. This conclusion is based on data limitations, the potentially high costs of alternative methods, and public and officer safety concerns.*" [3]

[1] January 28, 2000 report – Page 13
[2] January 28, 2000 report – Page 13
[3] January 28, 2000 report – Page 35

There are three primary elements from the AO's report that will be given further consideration by the Department as it begins to formulate its long-range Strategic Plan for Community Policing:

- The future purchase of staffing software
- Functionality recommendations for the forthcoming Automated Information System (AIS) and Computer Aided Dispatch (CAD) systems
- Fourth Watch staffing

## ANALYSIS

The focus of this analysis will be on the Police Department's response to the three recommendations contained in the AO's final January 28, 2000 draft report. The Department generally agrees with the three recommendations as strictly stated. However, the Department does take issue with many of the major conclusions contained in the narrative portions of the Auditor's report.

### Auditor's Recommendation Number 1

***Negotiate with the San Jose Police Officers' Association to modify shift-starting times to provide sufficient flexibility to deploy officers in the most efficient and effective manner.***
***(Priority 2)***

### SAN JOSE POLICE DEPARTMENT RESPONSE

The Department generally agrees with this recommendation. However, after considerable analysis, the Department has found fundamental problems with the AO's recommended Versions 1 and 2 concerning start time, staffing, and deployment issues. The Department's response to these issues will be broken down into the following categories: Process, Shift Starting Times, Staffing, Full Fourth Watch, Proactive Patrol, and Vehicles.

#### PROCESS

The AO's final draft report utilized industry standard analytical tools and precise mathematical calculations to arrive at statistically optimal staffing and deployment models. The Auditor's two models do not take into account, however, the Department's experience nor community and officer safety.

In contrast, the Crime Analysis Unit calculated minimum staffing requirements for each of 16 districts, using the MOA constraints of start times, etc, and the goal of achieving 40% free patrol time. The AO's report, on the other hand, did not incorporate Memorandum of Agreement criteria such as contractual start times into their model. The Crime Analysis Unit created simulation models on charts that proposed workload and staffing levels for each day of the week. In a closed-door session, Crime Analysis staff

projected the models from a laptop, and Bureau of Field Operations (BFO) command staff reviewed various alternatives. The original computer model was modified to meet real-life concerns of officer safety and special demands of areas such as the Downtown area. For each adopted change, BFO command staff members were able to see the impact of the change in each district. In essence, after months of time-intensive empirical analysis conducted by the Crime Analysis Unit, actual practitioners with decades of experience in patrolling the streets and neighborhoods of San Jose were incorporated into the process. This integration demonstrated an effective blending of technology and practicality.

SHIFT STARTING TIMES

| AUDITOR VERSIONS 1 & 2 | | |
|---|---|---|
| **Watch** | **Time Schedule** | **Comments** |
| Watch 1 | 7:30 AM to 5:30 PM | 30 minutes outside MOA |
| Watch 2 | 4:30 PM to 2:30 AM | Outside MOA |
| Watch 4 | 1:30 PM to 11:30 PM | Status pending |
| Watch 3 | 10:30 PM to 8:30 AM | 60 minutes outside MOA |

San Jose Police Department's 1999 Redistricting Model Patrol start times are as follows:

| SAN JOSE POLICE DEPARTMENT'S 1999 REDISTRICTING MODEL | | |
|---|---|---|
| **Watch** | **Time Schedule** | **Comments** |
| Watch 1E | 6:00 AM to 4:00 PM | Early Day Watch car – one per district |
| Watch 1 | 6:30 AM to 4:30 PM | Day Watch |
| Watch 2 | 3:00 PM to 1:00 AM | Swing Watch |
| Watch 4 | 5:00 PM to 3:00 AM | Fourth Watch – Thurs.-Sun. only – 8/16 districts |
| Watch 3 | 9:00 PM to 7:00 AM | Midnight Watch |

The AO's recommended watch starting times are impractical for a variety of reasons, including:

- Under the AO's starting times, First Watch officers would be ready to accept calls for service at 8:00 AM, and would return to the Police Administration Building (PAB) at 5:00 PM, both at peak commute traffic times. Opportunities for commute traffic control and enforcement would be significantly reduced. Service levels and response times would be severely impacted.

- The Fourth Watch ends at 11:30 PM, meaning its officers would be returning to the PAB at 11:00 PM, during the time that resource-intensive, violent and alcohol related crimes such as gang fights, domestic disturbances, traffic collisions, etc., begin to escalate. This problem is exacerbated by Second and Third Watch staffing being reduced by roughly one-third. The AO's report states that for "optimal efficiency" in matching patrol officer deployment to calls for service, the Fourth Watch should start at 1:30 PM to capture the increase of calls for service in the early afternoon.

Mathematically that may make sense, but one must consider that First Watch officers have a variety of specialized unit personnel who serve as back-up if the need arises: e.g. Traffic Enforcement Unit, Street Crimes, Detectives, and Narcotic Enforcement Team members. The early afternoon increase in calls for service is not a significant community safety concern, nor the basis to strip Second and Third Watch personnel of its staffing.

- Second Watch personnel would be coming into service at 5:00 PM, again at peak traffic commute times, which would have a major impact on response times, officer safety, and opportunities for traffic control and enforcement.

- Of most concern is what is recommended to occur after 2:00 AM, when the Second Watch begins to return to the PAB. The Third Watch, which is recommended by the AO for reductions of 28%-38%, would be asked to police a 174 square mile, 900,000 resident city from 2:00 AM to effectively 8:00 AM with **no back-up**. Two simultaneous resource-intensive incidents could leave the City virtually defenseless. Lastly, response times to priority calls for service, such as domestic violence and gang violence, would be greatly delayed due to lack of proper staffing.

- There are several other considerations concerning the Third Watch recommended start time of 10:30 PM:

  - In reviewing the AO's deployment plan, Version 1 recommends a Third Watch staffing range of 53-63 officers, while Version 2 recommends 44-58 officers. This recommendation does not include a 20% absentee factor. Such staffing would require 9-12 officers to patrol the Southern Division (the entire City area south of Dry Creek Road-Curtner Avenue-Capitol Expressway-East foothills) during the Third Watch from 2:00 AM to 8:00 AM.

  - Priority 1 and 2 calls are not dispatched until two officers are in service. With such small teams, response times would certainly lengthen.

  - A review of Watch Commander logs, which tracks the numbers of calls for service being worked and calls pending, indicates there are consistently instances wherein 44-63 officers (- 20% absenteeism factor) would be incapable of handling calls for service. In one instance, a single event required 44 officers.

  - The Crime Analysis Unit plan staffs each police district individually, whereas the AO's report small team composition relies on officers from adjoining districts to act as fill officers. In a 174 square mile city, the distances to be traveled invalidate this approach, and would delay responses and reduce officer safety.

  - Due to self-preservation factors, officers would not want to be out of service because of self-initiated activity. Therefore, proactive law enforcement efforts would decline significantly.

- Third Watch officers would respond to a variety of calls from 6:00 AM to 8:00 AM that would require police reports, e.g. nighttime burglaries, traffic accidents, auto burglaries, etc. The resultant need to complete such crime reports would create significant overtime costs.

- Third Watch officers would be unable to share their vehicles with First Watch officers. First Watch officers would be coming out of briefing at 8:00 AM, and Third Watch Officers would not be bringing in their vehicle until 8:30 AM, therefore creating a 30-minute overlap.

- A fatigue factor would cause injury and liability problems. Third Watch officers would be required to handle the surge of hot calls from 11:PM to 2:00 AM. They would have to respond to all calls for service throughout the City from 2:00 AM onward with reduced teams. When officers are most fatigued at 6:00 AM, they would be asked to handle a new upsurge of calls from 6:00 AM to 8:00 AM.

- Many officers work the Third Watch to accommodate family day care concerns. If officers did not get home until 9:00 to 9:30, they could not be home in time to relieve their working spouses, etc. At a time when private industry offers day care compensation to entice employees, this would be a giant step backwards.

- The SJPOA would strongly oppose the 8:30 AM shift change hours.

STAFFING

The AO's report recommends that the Department adopt a full Fourth Watch to more optimally match calls for service to staffing. Accordingly, the AO recommends in both Versions 1 and 2 that the staffing to accomplish the redeployment come from the Second and Third Watches.

| AUDITOR'S VERSION 1 - RECOMMENDATIONS | |
|---|---|
| Recommendation | Comments |
| Increase of one (1) officer to First Watch | 1% increase |
| Redeployment of 62 officers from Second Watch | 30% reduction |
| Redeployment of 40 officers from Third Watch | 28% reduction |
| Increase of 108 officers to Fourth Watch | 491% increase |
| Average Second Watch team reduction from 7.5 to 5.3 officers | Including overlap teams |
| Average Third Watch team reduction from 5.0 to 3.6 officers | Including overlap teams |

| AUDITOR'S VERSION 2 - RECOMMENDATIONS | |
|---|---|
| Recommendation | Comments |
| Redeployment of 16 officers from First Watch | 9% reduction |
| Redeployment of 81 officers from Second Watch | 39% reduction |
| Redeployment of 54 officers from Third Watch | 38% reduction |
| Increase of 93 officers to Fourth Watch | 423% increase |
| Redeployment of 58 officers to community policing, community and officer safety activities or other policing activities | |
| Average Second Watch team reduction from 7.5 officers to 4.6 officers | Including overlap teams |
| Average Third Watch team reduction from 5.0 officers to 3.1 officers | Including overlap teams |

As was noted above, with the staffing reductions recommended by the AO for the Second and Third Watches, the ability for the City to provide effective police services would be severely impacted. Auditor's Version 1 recommends that four Third Watch teams be staffed with two officers, while Version 2 recommends that 11 Third Watch teams be staffed with only two officers. Utilizing quantitative analysis, the AO recommended changing Second and Third Watch staffing from 11:00 PM to 8:00 AM to levels that could jeopardize public and officer safety. Again, this is after the Fourth Watch has begun returning to the PAB and the depleted Second and Third Watches must protect the City without back-up personnel.

FULL FOURTH WATCH

The Department's current Fourth Watch is a conservative and cost-effective device to place supplementary staffing where it can assist the Third Watch with the surge of unit-intensive calls that occur until 3:00 AM. The staffing of 22 officers and 4 sergeants is deployed from Thursday-Sunday to address increased calls for service on weekends. They are assigned to districts within each division that demonstrate the greatest need. The deployment is orchestrated so that officers and sergeants are placed in five or six member teams that share the same radio channel and days off.

The AO's report did not consider that from the early afternoon until early evening, (when schools are letting out and commute traffic generates calls for service), there are a number of specialized units in service throughout the City available to assist patrol officers if necessary. There is no such safety net in place for the Second and Third Watches.

The AO recommends redeploying 58 officers from the Second and Third Watches for community policing, officer safety, and other policing activities. The AO's report infers that the Department has no coherent community policing plan, which is not the case. The backbone of the Department's community policing plan is the Beat Officer. The Department's assortment of formal community policing programs, such as Project

Crackdown, is designed to support and empower the Beat Officer. Though most community policing meetings do not take place after 9:00 PM, many community-driven enforcement efforts do take place during that time period. By reducing the Second and Third Watches to such minimal levels, late evening and nighttime community policing efforts could not be accomplished, such as auto burglary prevention, DUI enforcement, and dealing with transient issues.

If the staffing reductions recommended in the AO's Version 2 were implemented, its impact on community and officer safety would be felt at once. The Department would immediately have to redeploy the 58 officers back to their original assignments to begin the process of restoring the community and officer safety levels that existed before Version 2 was conceived. In short, a full Fourth Watch as prescribed by the AO's report would create a multitude of more serious problems than it was designed to resolve.

At this time, the Department does not consider having a full Fourth Watch a major priority, particularly at the cost of rendering the City less safe after 11:00 PM. Other competing Department priorities include staffing for traffic enforcement, school safety, high technology investigation, and backfilling vacant and TDY sworn and non-sworn positions. In the future and under different circumstances, the Department could give serious consideration to a full Fourth Watch concept.

PROACTIVE PATROL TIME

The AO's report states the following concerning status activity time, *"In our opinion, our method provides a reasonable level of free patrol time. On the other hand, the SJPD staff believes that their method of calculating free patrol time is also appropriate. Nevertheless, the decision on which method to use has a significant effect on the number of patrol officers needed and should be justified."*[4] The terms "free patrol time" and "uncommitted time" as used in the AO's report minimize the importance of this time period, which the Department views as "proactive patrol time."

Proactive Patrol Time is the only time officers have to conduct proactive community policing and enforcement activities (e.g. attend community policing meetings, effect problem resolution, make on-view arrests, traffic control, strategic planning, preventative patrolling, etc.).

The basic difference between Version 1 and Version 2 is how each calculates proactive patrol time. Version 1 utilized the same formula as the Department's model to calculate proactive patrol time to isolate differences between the models. Version 2's methodology for calculating proactive patrol time is the foundation on which the AO is able to establish a full Fourth Watch, and redeploy the 58 officer positions to other activities within the Department. The redeployment, according to the AO, equates to a net $3.7 million savings in redeployed staffing costs.

[4] January 28, 2000 report – Page 35

Version 1 calculated proactive patrol time, as did the Department, by subtracting the 30 minutes of briefing time and then multiplying the remaining 9 ½ hours by .40 (the Department's adopted standard of 40% for proactive patrol time). Version 2 deducts additional time, referred to as "Status Activity Time," from the model (report writing, training, lunch, court, vehicle repair, breaks, etc.) from the 9 ½ hours prior to multiplying it by .40. Using this method, the AO's report calculated the need for proactive patrol time to be approximately 180 minutes per day as compared to the 228 minutes in the Police Department's model. The 48-minute per workday dividend, according to the AO, is extrapolated into a patrol staffing reduction of 58 officers. The AO's deduction would, when calculated relative to the Department's model, reduce proactive patrol time to 33%.

The Department's position is that status activity time is time in which the officer is preoccupied for a legitimate purpose, and cannot handle calls for service or conduct community policing efforts. Therefore, it should not be considered free or proactive patrol time for the purpose of calculating proactive patrol time. The AO considers the status activity time to be uncommitted time against which additional proactive time should not be calculated, and therefore, the resultant time for calls for service is increased.

The AO's report also states that, *"we were unable to identify an authoritative standard regarding the appropriate standard regarding the appropriate level of free patrol time that should be available and the method for calculating it."*[5]

In 1996, the Department contracted with David M. Griffith and Associates, Ltd., for assistance in developing the Public Safety Augmentation Plan, as well as a Five-Year Plan. The Griffith report stated in part, "*Industry research and experience have indicated that a net uncommitted time of about 50 percent is necessary for successful implementation of community–oriented policing... Uncommitted time is defined as the net time available, after time required to respond to calls for service, write reports, and handle other responsibilities which occur during a typical patrol shift like training, court appearances and administrative duties.*"[6] As a fiscally conservative measure, the Department adopted a standard of 40% for proactive patrol time.

As the Department begins to develop its long-range Strategic Community Policing Plan, the Department will strive to take the randomness out of patrol activity, and utilize the Department's new crime data analytical tools to maximize directed patrol activity. The Department is beginning to utilize crime-mapping software that will assist with "hot spot" enforcement strategies. The Automated Information System (AIS) completion date of October 2000 is fast approaching, and with it a new array of Computer Aided Dispatch (CAD) and crime report data analytical functionality will become available. The point is that this is not the time to cut back on proactive patrol time, as is the opinion of the AO.

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[5] January 28, 2000 report – Page 26
[6] Final Report on the Projection of Police Department Resource Needs – Page 8)

Conversely, it is the time to maintain or expand on proactive patrol time, and to emphasize the need to utilize the time intelligently to solve crime problems.

VEHICLES

Both BFO Fleet Manager and the AO estimate that Version 1 would require an addition of 33 vehicles at an estimated cost of $1.4 million.

Additionally, as the AO staff has found, it is difficult to apply one police department's vehicle deployment process to another's, due to differences in MOA contractual details, shift lengths, start times, vehicle maintenance plans, mileage caps, etc. After conferring with other agencies, the AO report recommended the sharing of patrol vehicles between the three watches. The Department's fleet manager determined the plan would be difficult for the Department to implement because of the inability to rotate vehicles due to mileage accumulation, driver and maintenance accountability factors, as well as daily assignment difficulties. The AO's recommended rotation concept will be given further consideration by the Fleet Manager.

**Auditor's Recommendation Number 2**

***Use the information in this report to develop, and forward to the City Council for concurrence, a strategic, multi-year, community policing-based plan and a staffing proposal for the SJPD Bureau of Field Operations that is responsive to both officer and public safety needs and calls for service demand. The report should include the advantages, disadvantages, and cost implications of the following policy decisions:***

- ***A full Fourth Watch; and***
- ***An appropriate basis for calculating uncommitted time.***
  ***(Priority 2)***

**SAN JOSE POLICE DEPARTMENT RESPONSE**

The Department concurs with this recommendation. As of January 2000, the Department is in the process of establishing a long-range Community Policing Strategic Plan that will incorporate organizational, training, and technical change. A staffing component will be included that will address the Fourth Watch and proactive patrol time issues. The Department's reference by the AO's report, Sacramento, San Diego, and Nashville, will be contacted regarding these issues. This effort is an outgrowth of the Advancing Community Policing Leadership Grant and other management initiatives within the Department. The grant also allows for funding to hire a consultant expert in the field of writing strategic plans. Due to its comprehensiveness, the plan cannot be produced within the 60-day window proposed by the AO, and at this preliminary stage it is too soon to predict a completion date.

**Auditor Recommendation Number 3**

***Investigate the feasibility of using federal or state grant funds to procure police staffing and deployment software. If federal or state grant funds are not available, we recommend that the SJPD, through the annual budget process, develop a budget proposal to purchase the software.***
***(Priority 2)***

**SAN JOSE POLICE DEPARTMENT RESPONSE**

The Department generally concurs with this recommendation. It is evident from the variance of approaches between the Police Department and the AO towards optimizing patrol staffing and deployment that the Department should consider purchasing alternative staffing software. For instance, the Department feels that the "smoothing" technique employed by the AO was used improperly. The AO feels the Department improperly calculated its need for proactive patrol time. It is even difficult to apply another Departments' staffing criteria, due to differences in department priorities, crime problems, commute patterns, budgets, and demographics. The ability to project staffing needs would be enhanced by the ability to utilize the average time spent on specific types of calls, not simply call averages, and to take into consideration queuing, response times, etc.

However, it should be stated that the methodology employed by the Crime Analysis Unit to arrive at the March 1999 Redistricting Plan was produced with professional standards. In a letter sent to City Auditor Gerald Silva on July 2, 1999, Craig Fraser, Police Executive Forum Director of Management Services, wrote, "*Of the four recommendations made by the Auditor, PERF is in disagreement with only that which recommends the acquisition of packaged scheduling software. The City has the expertise and talent to create software approaches that will guide allocation of patrol officers to meet the City's needs without purchase of expensive systems that often do not provide the needed flexibility.*"

The Department does not disagree that more sophisticated, comprehensive, and user-friendly staffing software would enhance our ability to perform staffing analysis tasks. However, the potential cost of $400,000 requires that we purchase the most appropriate software for our purposes. The Department will evaluate funding sources when the software package to be purchased is identified.

The following are considerations for the proper timing of such an acquisition:

- The recently retired Crime Analysis Unit Program Manager's replacement should be appointed in April of 2000 and will evaluate and select the most suitable software for the least cost.

- The CAD system will be replaced in the near future, and a consultant is in the process of being selected to guide the process. The CAD consultant should also

play a key role in establishing that the software is compatible with the new CAD system.

- The staffing software must also be compatible with the enterprise database feature of the new Automated Information System, which will not be fully operational until October 2000.

CONCLUSIONS

The Auditor's Office has provided the Police Department with options for a variety of technical staffing and deployment concerns. The issues of staffing software, information technology functionality, vehicle rotation, and Fourth Watch staffing will be given due consideration as the Department's long-range Community Policing Strategic Plan is developed.

William M. Lansdowne
Chief of Police

WML:DK

**OFFICE OF THE CITY AUDITOR**
**COMMENTS ON THE RESPONSE OF THE CITY ADMINISTRATION TO**
***AN AUDIT OF THE SAN JOSE POLICE DEPARTMENT-***
***BUREAU OF FIELD OPERATIONS PATROL DIVISION'S STAFFING AND DEPLOYMENT***

The following comments are presented to expand upon, clarify, and correct statements in the response of the City Administration to an *Audit Of The San Jose Police Department-Bureau Of Field Operations Patrol Division's Staffing And Deployment.*

The SJPD's response largely deals with the details of the City Auditor Office's Version 1 and Version 2 models. The City Auditor's Office clearly stated in its report that the two models were not intended to be prescriptive, but rather demonstrative of opportunities to better deploy SJPD patrol officers. For example, while specific shift starting times and a full 4th watch are shown in Version 1 and Version 2 models, the City Auditor's Office did not explicitly recommend that the SJPD adopt either of these concepts.

The City Auditor's Office readily conceded in its report that any actual patrol officer deployment plan must factor in the human element and other concerns, such as public and officer safety. The City Auditor's Office modified several draft versions of its patrol staffing report to clearly communicate the SJPD's concerns about these very issues. Accordingly, the City Auditor's Office is disappointed with the length to which the SJPD went to critique the details in the Version 1 and Version 2 models and the overall tone of the SJPD's written response.

***Administration's Response-Page 3, Shift starting times chart***

| AUDITOR VERSIONS 1 & 2 | | |
|---|---|---|
| **Watch** | **Time Schedule** | **Comments** |
| Watch 1 | 7:30 AM to 5:30 PM | 30 minutes outside MOA |
| Watch 2 | 4:30 PM to 2:30 AM | Outside MOA |
| Watch 4 | 1:30 PM to 11:30 PM | Status pending |
| Watch 3 | 10:30 PM to 8:30 AM | 60 minutes outside MOA |

**Auditor's Comments**

The Administration's response notes that Watch 2, starting at 4:30 p.m. is outside the MOA. This is not correct. The Memorandum of Agreement between the City of San Jose and San Jose Police Officers' Association in effect June 28, 1998 through June 30, 2000, Article 17.2 states in part:

> *The Chief of Police may implement a fourth watch. If the Chief elects to do so, then the Chief may modify . . . the existing second watch to start between the hours of 3:00 p.m. and 5:00 p.m., as the Chief may determine is appropriate and/or necessary to more efficiently handle calls for service.*

***Administration's Response-Page 4, Paragraph5***

> *In reviewing the AO's deployment plan, Version 1 recommends a Third Watch staffing range of 53-63 officers, while Version 2 recommends 44-58 officers. This recommendation does not include a 20% absentee factor.*

**Auditor's Comments**

This is not correct. The City Auditor's Office included a 26.58% absence factor at all times in its staffing models.

***Administration's Response-Page 6, Paragraph 4***

> *. . . The AO's report infers that the Department has no coherent community policing plan, which is not the case.*

**Auditor's Comments**

The City Auditor's Office stated on pages 36 and 37 of its report that:

*Currently, the SJPD does not have a* ***formal*** *community policing program. A November 1998 police management study of the SJPD noted that a written community policing plan is needed to establish clear community policing objectives.*

*Specifically, the police management study of the SJPD noted the following regarding the SJPD's community policing efforts:*

> *Currently* ***there is not an organization-wide accepted definition of community policing within the City of San Jose****. Without a definition, the steering of such activities and initiatives is set on no clear course . . . Organizational supportive materials such as The Years Ahead, 1996-1997—2000-2001 Study, Annual Program Plans, and Management Reports still refer to community policing activities in terms of programs and projects. Due to the success of many of these programs San Jose has been recognized as a national success in community policing practices. However,* ***there remains the need for a strategic, multi-year, community policing based plan*** *. . . To move to the next level benchmark in community policing,* ***the SJPD should undertake a formal planning process for community policing that culminates in a written plan extending out three to five years*** *. . . In addition, formalized planning is likely to produce more and better quality information on which decision-makers can rely.* [Emphasis added]

Also, the SJPD noted in its own response to the City Auditor's Office report that it is in the process of establishing a long-range Community Policing Strategic Plan.

***Administration's Response-Page 7, Paragraph 4***

> *The terms "free patrol time" and "uncommitted time" as used in the AO's report minimize the importance of this time period, which the Department views as "proactive patrol time".*

**Auditor's Comments**

The City Auditor's Office modified its final draft report to change the "uncommitted time" nomenclature to "free patrol time" specifically to address the SJPD's sensitivity to the term "uncommitted time". Also, the first time we used the term "free patrol time" in our report was on page 6 as follows:

> *By so doing, the SJPD expects to provide better service and response times to residents and allow for sufficient* ***free patrol time for proactive policing*** *(free patrol time).* [Emphasis added]

In addition, the City Auditor's Office defined "free patrol time" as follows:

> *Free patrol time is time allotted during a patrol officer's day that can be used for community policing, car stops, patrolling, and similar activities. Although officers are available to respond to calls for service, staffing is sufficient to ensure a certain amount of this time occurs during the patrol officer's work week.*

It should be noted that the only references to "uncommitted time" are on pages 7 (noted above) and 8 of the administration's response. The City Auditor's Office did not use the term "uncommitted time" anywhere in its report.

***Administration's Response-Page 8, Paragraph 3 and 4***

> *The AO's report also states that, "we were unable to identify an authoritative standard regarding the appropriate standard regarding the appropriate level of free patrol time that should be available and the method for calculating it."*
>
> *In 1996, the Department contracted with David M. Griffiths and Associates, Ltd., for assistance in developing the Public Safety Augmentation Plan, as well as a Five-Year Plan. The Griffith report stated in part, "Industry research and experience have indicated that a net uncommitted time of about 50 percent is necessary for successful implementation of community-oriented policing . . . Uncommitted time is defined as the net time available, after time required to respond to calls for service, write reports, and handle other responsibilities which occur during a typical patrol shift like training, court appearances and administrative duties." As a fiscally conservative measure, the Department adopted a standard of 40% for proactive patrol time.*

**Auditor's Comments**

We contacted several other governmental jurisdictions and thoroughly researched law enforcement literature in an unsuccessful attempt to identify an authoritative standard regarding the appropriate standard of free patrol time and the method for calculating it. Further, the SJPD could not provide support for the above cited Griffith report statement regarding a free patrol time standard. In addition, the Police Executive Research Forum (PERF), another SJPD consultant, stated in a July 2, 1999 letter to the City Auditor's Office that:

> *A second series of issues are raised by the auditor's acceptance of the department's 40% non-call for service target. There is no discussion regarding why 40% was chosen as the target non-call for service time target and whether that target is the appropriate target. There should be more discussion of how this time is to be used and what is to be accomplished during this time. As was discussed in PERF's report, time committed to calls for service should vary by time of the day and day of the week. Also, prime time for community policing activities is usually during Monday through Thursday from about 1:00 p.m. until 9:00 p.m. which may require a decrease in desired call for service time consumed during those periods.*

***Administration's Response-Page 10, Paragraph 3***

> *However, it should be stated that the methodology employed by the Crime Analysis Unit to arrive at the March 1999 Redistricting Plan was produced with professional standards. In a letter sent to City Auditor Gerald Silva on July 2, 1999, Craig Fraser, Police Executive Forum Director of Management Services, wrote, "Of the four recommendations made by the Auditor, PERF is in disagreement with only that which recommends the acquisition of packaged scheduling software. The City has the expertise and talent to create software approaches that will guide allocation of patrol officers to meet the City's needs without purchase of expensive systems that often do not provide the needed flexibility."*

**Auditor's Comments**

The City Auditor's Office disagrees with the PERF statement that the City has sufficient resources to develop a patrol staffing software. As the City Auditor's Office report states, both the SJPD's and the City Auditor's models have significant limitations. For instance, both models relied on averages because calls for service data cannot be extracted from the SJPD's CAD system by the type and length of calls for service. Available patrol staffing software can extract such data from the CAD system. Thus, available patrol staffing software can provide much more extensive and accurate information on calls for service workloads. In contrast to the SJPD's and the City Auditor's Office models, available patrol staffing software can also perform queuing to determine when calls for service stack up. Furthermore, because available staffing software is much more user friendly, the SJPD could use it to evaluate other deployment alternatives such as those noted in the City Auditor's Office report. Finally, available patrol staffing software can also provide crime trend analysis and pattern recognition to facilitate the SJPD identifying specific district or beat problem areas and target patrol staffing resources accordingly.

## APPENDIX A

## DEFINITIONS OF PRIORITY 1, 2, AND 3 AUDIT RECOMMENDATIONS

The City of San Jose's City Administration Manual (CAM) defines the classification scheme applicable to audit recommendations and the appropriate corrective actions as follows:

| Priority Class[1] | Description | Implementation Category | Implementation Action[3] |
|---|---|---|---|
| 1 | Fraud or serious violations are being committed, significant fiscal or equivalent non-fiscal losses are occurring.[2] | Priority | Immediate |
| 2 | A potential for incurring significant fiscal or equivalent fiscal or equivalent non-fiscal losses exists.[2] | Priority | Within 60 days |
| 3 | Operation or administrative process will be improved. | General | 60 days to one year |

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1 The City Auditor is responsible for assigning audit recommendation priority class numbers. A recommendation which clearly fits the description for more than one priority class shall be assigned the higher number. **(CAM 196.4)**

2 For an audit recommendation to be considered related to a significant fiscal loss, it will usually be necessary for an actual loss of $25,000 or more to be involved or for a potential loss (including unrealized revenue increases) of $50,000 to be involved. Equivalent non-fiscal losses would include, but not be limited to, omission or commission of acts by or on behalf of the City which would be likely to expose the City to adverse criticism in the eyes of its citizens. **(CAM 196.4)**

3 The implementation time frame indicated for each priority class is intended as a guideline for establishing implementation target dates. While prioritizing recommendations is the responsibility of the City Auditor, determining implementation dates is the responsibility of the City Administration. **(CAM 196.4)**

APPENDIX B

# CITY OF SAN JOSE - MEMORANDUM

| | | | |
|---|---|---|---|
| TO | Gerald A. Silva<br>City Auditor | FROM | William M. Lansdowne<br>Chief of Police |
| SUBJECT | Management Accomplishments<br>Patrol Staffing and Scheduling | DATE | May 16, 1999 |
| APPROVED | | DATE | |

RECEIVED
JUN 18 1999
CITY AUDITOR

In response to your letter of March 30, 1999, this memorandum is intended to outline the significant management accomplishments relative to patrol staffing and scheduling.

**POLICE REDISTICTING:**

The Police Department's last redistricting project occurred in January of 1986. At that time, the Police Department expanded from nine to twelve districts. Since 1986, the population of the city and the requests for police services have increased substantially. The continued growth and development of the city has raised issues relative to the deployment of police personnel in order to provide better and safer police service. For example, there was a severe disparity in the distribution of calls from police district to police district. One district reported 14,000 calls in a year and another district reported 27,000 calls. An analysis of average radio utilization showed that some radio channels were operating in a range that is considered to be unsafe by industry standards. This resulted in priority calls not being dispatched effectively due to radio channel availability. In addition, supervisory span of control expanded to as high as 15 officers.

At the March 1999, shift change a new redistricting plan was implemented which increases the number of police districts from 12 to 16. Under this new redistricting plan, the calls for service workload has been distributed evenly throughout the city. A computerized model was developed which enables patrol officers to be deployed based on calls for service. This has allowed the Police Department to effectively predict and assign the patrol resources to correspond with the fluctuation of calls for service from day to day and hour to hour. This redistricting model also takes into consideration minimum staffing concerns relating to officer and community safety, management / labor issues, as well as maintaining clear supervisory responsibility and accountability. Redistricting will provide patrol officers with an average of forty-percent proactive time in order to allow for an increase in community policing efforts and addressing police related issues within the district. In addition, the redistricting plan will result in:

- (1) Reduced response times
- (2) A reasonable span of supervisory control

- (3) Development of beat and district boundaries to better serve neighborhoods and to enhance police/community partnerships

- (4) Increase of two primary radio channels, decreasing radio channel over utilization.

WILLIAM M. LANSDOWNE
Chief of Police

WL/AG:ag1960

# Appendix C Detailed Description Of The City Auditor's Analysis Of The SJPD'S Initial Computer Patrol Staff Model And The Changes The SJPD Made In Developing Its Revised Model

The San Jose Police Department (SJPD)'s model was constrained by a number of deployment practices that fall into the category of past practices under the current Memorandum Of Agreement (MOA) between the City of San Jose and the San Jose Police Officers' Association (POA). These practices include: a four day, 10 hour per day work week (4-10 work schedule); team integrity; a predetermined number of watches; predetermined starting times; and predetermined overlap days. The model also included a constraint that 40 percent of each patrol unit's workweek remain free. These constraints are described below:

- 4-10 work schedule - The patrol divisions' officers work four days a week, 10 hours per day and then have three days off.
- Team Integrity - All the officers on a team have the same supervisor, the same radio channel, work the same days of the week, and have the same days off.
- Number of watches - The number of watches or shifts is the same as those prior to and subsequent to redistricting. Currently, the patrol divisions have three full watches and a partial fourth watch, which covers Thursday, Friday, Saturday, and Sunday nights in only eight districts.*
- Starting times - The model used the same starting times that were in effect prior to redistricting for the 1st, 2nd and 3rd watches. These times are: 1st watch - 6:30 A.M., 2nd watch - 3:00 P.M., and 3rd watch - 9:00 P.M. The 4th watch was moved from 5 P.M. to 5:30 P.M. both in the model and subsequent to redistricting in March 1999.* The model also uses the early car concept, using one patrol officer per district that starts at 6:00 A.M. daily to cover where a gap occurs in the watches. The early car concept was also

* The SJPD ran several scenarios with 3, 3½, and 4 shifts with starting times similar to existing shift starting times. The SJPD selected the 3½ watch scenario as the best alternative.

used prior to and subsequent to redistricting.

- Predetermined overlap day - Each full watch for each district has two teams to cover both sides of the week with one overlap day. This overlap day varies among the districts. On the overlap day, one team of officers is considered available to work beats in other districts where officers are absent for reasons such as vacation, sick leave, and compensatory time off.
- 40 percent free patrol time - To provide sufficient time for community and pro-active policing, the SJPD seeks to have 40 percent of a patrol officer's workweek remain free.

The SJPD's model incorporates a number of steps to determine patrol staffing requirements. These steps include:
1) calculating the ideal patrol officer's workload (ideal workload); 2) forecasting the workload; 3) calculating the minimum number of officers to meet the workload;
4) calculating the number of additional officers needed to cover for absences; and 5) rounding the result to the nearest whole number. Each of these steps is briefly described below.

## SJPD's First Model

*Calculating The Ideal Workload*

The SJPD's first model used an ideal workload as the basis for projecting staffing requirements. The ideal workload is the number of calls for service (CFS) assignments that one patrol officer can handle on an average working day and still have sufficient time for proactive and community policing. The SJPD's first model assumed that each patrol officer spent an average of 52.15 minutes responding to each CFS event. The 1996 Computer Aided Dispatch (CAD) system data showed that the average consumed time per event per patrol unit for priorities 1-4 was 28.77 minutes. The Police Department then applied the percentages of patrol time components as performed by a prior consultant's report. The SJPD divided the CFS time into the following components, as shown in Exhibit C-1.

**Exhibit C-1 Average Calls For Service Time Components In Minutes**

| Average CFS Component | Minutes |
|---|---|
| Average Calls For Service | 28.77 minutes |
| Average Report Writing | 7.26 minutes |
| Average Court, Training, And Administrative | 16.12 minutes |
| Average Total CFS Event | 52.15 minutes |

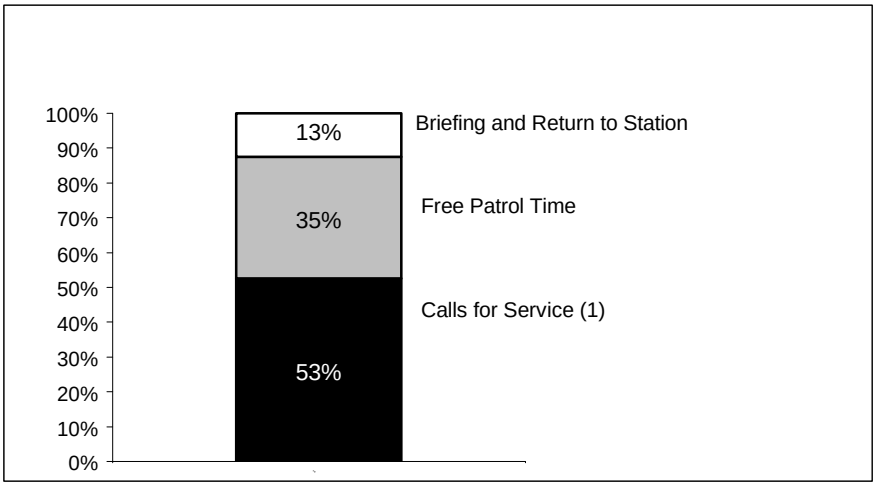
Using these assumptions, the SJPD calculated that a patrol officer's ideal daily workload is 6.04 CFS and an ideal weekly workload is 21.14 CFS. Exhibit C-2 shows the SJPD's calculation of the ideal daily workload used in its first model.

**Exhibit C-2 The SJPD's Calculation Of The Ideal Daily Workload Used In Its First Model**

| Breakdown Of Time Per Working Day | Minutes |
|---|---|
| Total Time (10 hour shift) | 600 |
| Briefing | 45 |
| Return To Station | 30 |
| Total Patrol Time (100%) | 525 |
| Calls For Service Time (60%) | 315 |
| Free Patrol Time (40%) | 210 |
| Ideal CFS Workload | 6.04 CFS/day |

Graph C-1 shows the components of the ideal daily workload of a patrol unit as calculated in the SJPD's first model.

**Graph C-1 SJPD'S First Model Time - Components Of A Patrol Officer's 10-Hour Day**




(1) The SJPD's first model incorrectly included in its calls for service 1) status activity, 2) court time, and 3) training. (See Page C-6)

As Graph C-1 demonstrates, the SJPD's model calculated that patrol units would spend their time in accordance with the following percentages: 1) CFS-53 percent; 2) free time-35 percent; and 3) briefing and return to station time-13 percent.

*Forecasting The Workload*

The next step in the SJPD's model was to forecast the workload. The workload forecast was based on actual 1996 CFS data from the CAD system from 12 districts and reallocated to the 16 districts in the March 1999 re-districting plan. The SJPD weighted the calls by priorities one through four, based on 1996 Citywide average responding number of patrol units. In other words, a Priority 1 call for service was assigned 5.16 officers, while a Priority 2 was assigned 2.38 officers, a Priority 3 was assigned 1.77 officers, and a Priority 4 was assigned 1.33 officers. The SJPD then aggregated the calls by time and location. Specifically, for each district, the SJPD aggregated the weighted calls by the time of the day and the day of the week. The result is the average daily CFS workload for the seven days of the week for each of the 16 districts.

*Calculating The Minimum Number Of Officers To Meet The Workload*

To calculate the minimum number of officers needed for the estimated workload, the SJPD's model used an optimization and resource software, Excel Solver. Specifically, Excel Solver calculated the minimum number of officers required to meet the workload within the constraints described above.

*Calculating The Number Of Additional Officers Needed To Cover For Absences*

After the software calculated the number of officers needed to meet the workload, the SJPD calculated how many additional officers were needed to cover absent officers. The SJPD calculated the absence factor at 1.2658.[1] In other words, for every officer required, an additional .265 officers would be required to cover absences. The SJPD has a weekly overlap day in each district (see page 6). The SJPD uses the overlap day to cover for half of the absences citywide[2]. Accordingly, the SJPD reduced the absence factor by .125[3] to account for using the overlap day to compensate for absences. The SJPD applied the remaining absence factor of 14 percent (.2658 - .125 = .1408), to the staffing requirement for each team. Because the teams on the 4th watch do not have an overlap day, the SJPD applied the full .2658 absence factor to these teams.

*Rounding The Result To The Nearest Whole Number*

The final step in the SJPD's model was rounding the calculations by district and by teams. The model rounded up for decimals of .5 or more and rounded down for decimals less than .50. For instance, if the model calculated the team staffing for a district to be 5.48 officers, the model rounded down to 5 officers. On the other hand, if the calculation was 5.52 officers, the model rounded up to 6 officers.

The SJPD's first model, using the above-described constraints, assumptions, and methodology, resulted in a staffing requirement of 546 officers for patrol.

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[1] The absence rate for patrol officers is calculated at 21%. The difference between the 21% absence rate and the 26.5% absence factor included in the 1.2658 is the compounding effect of officers added at a 21% absence rate who will also have absences. Absences include such things as sick leave, vacation, compensatory time off, full day training, and military leave.

[2] The City Auditor's Office prepared a spreadsheet analysis for the City Auditor's models to ensure that all teams have sufficient staffing to meet the 1.2658 absence factor Citywide utilizing the overlap day.

[3] .125 equals one overlap day divided by 8 days, which is two 4-day weeks. Two teams would work a seven-day period.

**The SJPD's Model Included Activities Unrelated To CFS In The CFS Workload**

When we reviewed the SJPD's computer model key components and assumptions, we identified a problem. Specifically, we found that the SJPD had incorrectly included status activity, court, and training time in its CFS workload. As noted on page C-2, the SJPD's first model assumed that each patrol unit spent an average of 52.15 minutes in responding to a CFS. The 52.15 minutes included 16.12 minutes for status activity, court, and training time.

Due to the unavailability of computer system documentation, we reviewed daily officer history records for one team for a two-week period to determine the components of status activity time. SJPD staff confirmed our analysis.

Our review found that status activity time included time spent on loading and fueling patrol cars, lunch, breaks, some report writing time, follow-up, and some time for returning to the station at the end of the shift. The significance of the lunch and break time being included is that these activities should not be included in the CFS workload. Similarly, the other activities such as court, training, and administrative time should not be included in the CFS workload. Although these activities need to be included in the SJPD computer model, they should not be included in the time required to respond to CFS. By including these components in the CFS workload, the SJPD overstates both the CFS workload and the number of officers required to meet the workload.

**The SJPD'S Revised Staffing Model**

Based upon our analysis of the SJPD's first model and subsequent discussions with them, the SJPD revised their staffing model. Specifically, the SJPD deducted the status activity, court, and training time out of the CFS workload and instead allocated a fixed number of minutes of the logged day for these components. In its revised model, the SJPD reduced the average time to respond to CFS from an average of 52.15 minutes to 36.03 minutes. Exhibit C-3 compares the SJPD's first and revised calculation of the amount of time spent on a CFS event.

**Exhibit C-3 Comparison Of The SJPD's First And Revised Model Estimated Total Committed Time/Event /Unit**

| | First Model (Minutes) | Revised Model (Minutes) |
|---|---|---|
| Average Time Consumed Per Event Per Unit | 28.77 | 28.77 |
| Estimated Average Court, Lunch And Breaks, Administrative Duties, And Training | 16.12 | 0 |
| Estimated Average Report Writing | 7.26 | 7.26 |
| Estimated Average Total Committed Time Per Event Per Unit | 52.15 | 36.03 |

In addition to reducing the CFS time, as shown above, the SJPD also changed several other components in its revised model. These other changes effectively minimized any reduction in the patrol staffing requirement. In its revised model, the SJPD increased the length of time upon which it calculated the 40 percent free patrol time target. Specifically, the SJPD calculated the free patrol time target by multiplying 570 minutes (600 working minutes less 30 minutes for briefing) by 40 percent. Thus, the model calculated the free patrol time requirement to be 228 minutes (570 minutes by 40 percent). The SJPD then subtracted both the free patrol time (228 minutes) and the status activity, court, and training (105.42 minutes) from the time available in the day (570 minutes). The SJPD's calculated remaining time (236.58 minutes) is the amount of time each patrol unit is available to respond to CFS. Using this calculation, the SJPD's revised ideal workload is 6.57 CFS per day. The comparison of the SJPD's first model to the revised version is shown in Exhibit C-4.

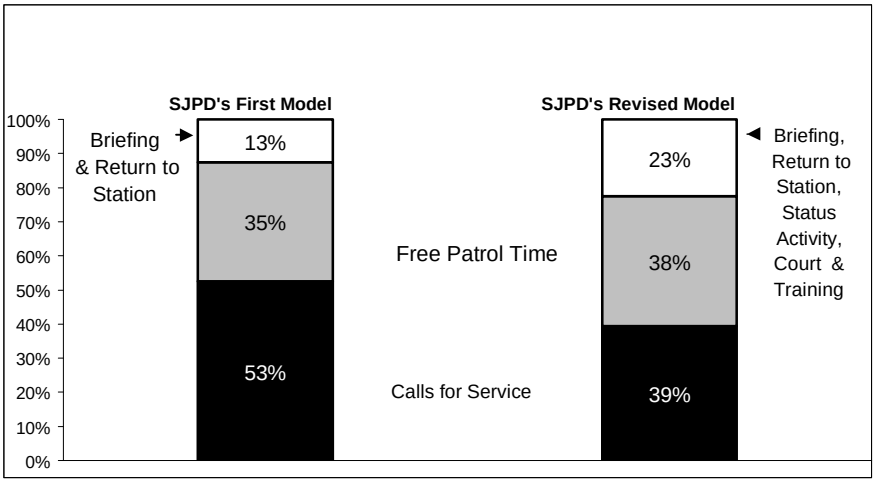
**Exhibit C-4 SJPD's First Model Compared To SJPD's Revised Model**

| Breakdown Of Time Components Per Working Day | SJPD Original Ideal CFS Workload Computation (in minutes) | SJPD Revised Ideal CFS Workload Computation (in minutes) |
|---|---|---|
| Total Time(10 hours) | 600 | 600 |
| Briefing[4] | 45 | 30 |
| Return To Station | 30 | |
| Total Patrol Time | 525 (100%) | 570 (100%) |
| Status, Return To Station, Training, Court, And Other Time | N/A | 105.4 (18.5%) |
| CFS Time | 315 (60%) | 236.6 (41.5%) |
| Free Patrol Time For Proactive And Community Policing Activities | 210 (40%) | 228.0 (40%) |
| Ideal CFS Workload | 6.04 | 6.57 |

The graph below compares the components of a patrol unit's daily workload in the SJPD's first model with the daily workload components in the revised model.

[4] The SJPD original model included 45 minutes for briefing and travel at the beginning of the shift.

**Graph C-2 SJPD'S First Model Compared To SJPD'S Revised Model - Time Components Of A Patrol Officer's 10-Hour Day**




As the graph above demonstrates, the SJPD's revised model changed the estimated percentage of time officers spent on different activities. Specifically, by removing status activity, court, and training time from the CFS workload, the percentage of time spent on CFS dropped from 53 percent to 39 percent. Conversely, free patrol time increased from 35 percent to 38 percent of total time and the remaining time for briefings, return to station, lunches, breaks, court appearances, and training increased from 13 percent to 23 percent of total time.

By changing its model, the SJPD initially reduced its calculated patrol officer requirement by 36 officers, from 546 to 510 officers. To adjust the model for officer safety, the SJPD then modified the rounding method in its model to increase the size of some of the smaller teams. This rounding change is illustrated in Exhibit C-5.

**Exhibit C-5 Illustrated Effect Of The SJPD'S Change In Rounding Technique From Its Initial Computer Model To Its Revised Model**[5]

| | SJPD Rounding Technique | |
|---|---|---|
| | Initial Computer Model | Revised Computer Model |
| For Teams With Fewer than 5 Officers: | | |
| Calculated Patrol Staff Requirement | 4.01 | 4.01 |
| Rounded Patrol Staff Requirement | 4.00 | 5.00 |
| For Teams With 5 Or More Officers: | | |
| Calculated Patrol Staff Requirement | 5.25 | 5.25 |
| Rounded Patrol Staff Requirement | 5.00 | 6.00 |

The SJPD's rounding method change increased the calculated patrol officer requirement by 37 officers, from 510 to 547 officers, of which the Budget Office allowed 546 officers.

[5] Specifically, in its initial model, the SJPD rounded down for decimals less than .5 and up from .5 and over. In its revised model, the SJPD changed its rounding to round up for decimals of .01 or more on teams with fewer than 5 officers. For teams with five or more officers, the SJPD rounded up for decimals of .25 or more.

Appendix D-1

Number of Officers Deployed for the City Auditor's Version 1 by District, Day of the Week, and Watch.

**Watch One 7:30am - 5:30pm**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 6 | | | | 6 | 6 | 6 |
| Team B | | R | 6 | 6 | 6 | 6 | | | |
| Team A | | F | | | | 5 | 5 | 5 | 5 |
| Team B | | F | 5 | 5 | 5 | | | | 5 |
| Team A | | N | | | | 6 | 6 | 6 | 6 |
| Team B | | N | 6 | 6 | 6 | | | | 6 |
| Team A | | S | 6 | 6 | 6 | | | | 6 |
| Team B | | S | | | 6 | 6 | 6 | 6 | |
| Team A | CENTRAL | V | 5 | | | | 5 | 5 | 5 |
| Team B | | V | | 6 | 6 | 6 | 6 | | |
| Team A | | K | 5 | 5 | | | | 5 | 5 |
| Team B | | K | | 5 | 5 | 5 | 5 | | |
| Team A | | E | 4 | 4 | | | | 4 | 4 |
| Team B | | E | | 4 | 4 | 4 | 4 | | |
| Team A | | L | 7 | 7 | 7 | | | | 7 |
| Team B | | L | | | 6 | 6 | 6 | 6 | |
| Team A | FOOTHILL | W | | | | 6 | 6 | 6 | 6 |
| Team B | | W | 6 | 6 | 6 | 6 | | | |
| Team A | | M | 5 | 5 | | | | 5 | 5 |
| Team B | | M | | | 5 | 5 | 5 | 5 | |
| Team A | | C | 6 | | | | 6 | 6 | 6 |
| Team B | | C | | 6 | 6 | 6 | 6 | | |
| Team A | | P | 5 | 5 | | | | 5 | 5 |
| Team B | | P | | | 5 | 5 | 5 | 5 | |
| Team A | SOUTHERN | T | 6 | | | | 6 | 6 | 6 |
| Team B | | T | 5 | 5 | 5 | 5 | | | |
| Team A | | A | | | | 5 | 5 | 5 | 5 |
| Team B | | A | 5 | 5 | 5 | | | | 5 |
| Team A | | X | | | | 6 | 6 | 6 | 6 |
| Team B | | X | 5 | 5 | 5 | 5 | | | |
| Team A | | Y | 5 | | | | 5 | 5 | 5 |
| Team B | | Y | 5 | 5 | 5 | 5 | | | |
| TOTAL | | | 103 | 96 | 99 | 98 | 99 | 97 | 104 |

**Watch Two 4:30pm - 2:30am**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 5 | | | | 5 | 5 | 5 |
| Team B | | R | 3 | 3 | 3 | 3 | | | |
| Team A | | F | | | | 4 | 4 | 4 | 4 |
| Team B | | F | 4 | 4 | 4 | | | | 4 |
| Team A | | N | | | | 5 | 5 | 5 | 5 |
| Team B | | N | 5 | 5 | 5 | | | | 5 |
| Team A | | S | 6 | 6 | 6 | | | | 6 |
| Team B | | S | | | 5 | 5 | 5 | 5 | |
| Team A | CENTRAL | V | 5 | | | | 5 | 5 | 5 |
| Team B | | V | | 5 | 5 | 5 | 5 | | |
| Team A | | K | 5 | 5 | | | | 5 | 5 |
| Team B | | K | | 4 | 4 | 4 | 4 | | |
| Team A | | E | 4 | 4 | | | | 4 | 4 |
| Team B | | E | | 3 | 3 | 3 | 3 | | |
| Team A | | L | 6 | 6 | 6 | | | | 6 |
| Team B | | L | | | 5 | 5 | 5 | 5 | |
| Team A | FOOTHILL | W | | | | 5 | 5 | 5 | 5 |
| Team B | | W | 5 | 5 | 5 | 5 | | | |
| Team A | | M | 5 | 5 | | | | 5 | 5 |
| Team B | | M | | | 4 | 4 | 4 | 4 | |
| Team A | | C | 6 | | | | 6 | 6 | 6 |
| Team B | | C | | 4 | 4 | 4 | 4 | | |
| Team A | | P | 4 | 4 | | | | 4 | 4 |
| Team B | | P | | | 4 | 4 | 4 | 4 | |
| Team A | SOUTHERN | T | 5 | | | | 5 | 5 | 5 |
| Team B | | T | 4 | 4 | 4 | 4 | | | |
| Team A | | A | | | | 5 | 5 | 5 | 5 |
| Team B | | A | 4 | 4 | 4 | | | | 4 |
| Team A | | X | | | | 6 | 6 | 6 | 6 |
| Team B | | X | 4 | 4 | 4 | 4 | | | |
| Team A | | Y | 5 | | | | 5 | 5 | 5 |
| Team B | | Y | 4 | 4 | 4 | 4 | | | |
| TOTAL | | | 89 | 79 | 79 | 79 | 85 | 87 | 94 |

**Watch Three 10:30pm - 8:30am**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 4 | | | | 4 | 4 | 4 |
| Team B | | R | 4 | 4 | 4 | 4 | | | |
| Team A | | F | | | | 3 | 3 | 3 | 3 |
| Team B | | F | 3 | 3 | 3 | | | | 3 |
| Team A | | N | | | | 4 | 4 | 4 | 4 |
| Team B | | N | 3 | 3 | 3 | | | | 3 |
| Team A | | S | 4 | 4 | 4 | | | | 4 |
| Team B | | S | | | 4 | 4 | 4 | 4 | |
| Team A | CENTRAL | V | 4 | | | | 4 | 4 | 4 |
| Team B | | V | | 2 | 2 | 2 | 2 | | |
| Team A | | K | 3 | 3 | | | | 3 | 3 |
| Team B | | K | | 2 | 2 | 2 | 2 | | |
| Team A | | E | 3 | 3 | | | | 3 | 3 |
| Team B | | E | | 2 | 2 | 2 | 2 | | |
| Team A | | L | 4 | 4 | 4 | | | | 4 |
| Team B | | L | | | 4 | 4 | 4 | 4 | |
| Team A | FOOTHILL | W | | | | 3 | 3 | 3 | 3 |
| Team B | | W | 3 | 3 | 3 | 3 | | | |
| Team A | | M | 3 | 3 | | | | 3 | 3 |
| Team B | | M | | | 3 | 3 | 3 | 3 | |
| Team A | | C | 4 | | | | 4 | 4 | 4 |
| Team B | | C | | 2 | 2 | 2 | 2 | | |
| Team A | | P | 3 | 3 | | | | 3 | 3 |
| Team B | | P | | | 3 | 3 | 3 | 3 | |
| Team A | SOUTHERN | T | 3 | | | | 3 | 3 | 3 |
| Team B | | T | 3 | 3 | 3 | 3 | | | |
| Team A | | A | | | | 3 | 3 | 3 | 3 |
| Team B | | A | 3 | 3 | 3 | | | | 3 |
| Team A | | X | | | | 3 | 3 | 3 | 3 |
| Team B | | X | 3 | 3 | 3 | 3 | | | |
| Team A | | Y | 3 | | | | 3 | 3 | 3 |
| Team B | | Y | 3 | 3 | 3 | 3 | | | |
| TOTAL | | | 63 | 53 | 55 | 54 | 56 | 60 | 63 |

**Watch Four 1:30pm - 11:30pm**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 4 | | | | 4 | 4 | 4 |
| Team B | | R | 4 | 4 | 4 | 4 | | | |
| Team A | | F | | | | 4 | 4 | 4 | 4 |
| Team B | | F | 4 | 4 | 4 | | | | 4 |
| Team A | | N | | | | 4 | 4 | 4 | 4 |
| Team B | | N | 4 | 4 | 4 | | | | 4 |
| Team A | | S | 5 | 5 | 5 | | | | 5 |
| Team B | | S | | | 5 | 5 | 5 | 5 | |
| Team A | CENTRAL | V | 4 | | | | 4 | 4 | 4 |
| Team B | | V | | 3 | 3 | 3 | 3 | | |
| Team A | | K | 4 | 4 | | | | 4 | 4 |
| Team B | | K | | 3 | 3 | 3 | 3 | | |
| Team A | | E | 3 | 3 | | | | 3 | 3 |
| Team B | | E | | 3 | 3 | 3 | 3 | | |
| Team A | | L | 5 | 5 | 5 | | | | 5 |
| Team B | | L | | | 5 | 5 | 5 | 5 | |
| Team A | FOOTHILL | W | | | | 5 | 5 | 5 | 5 |
| Team B | | W | 4 | 4 | 4 | 4 | | | |
| Team A | | M | 4 | 4 | | | | 4 | 4 |
| Team B | | M | | | 4 | 4 | 4 | 4 | |
| Team A | | C | 5 | | | | 5 | 5 | 5 |
| Team B | | C | | 4 | 4 | 4 | 4 | | |
| Team A | | P | 3 | 3 | | | | 3 | 3 |
| Team B | | P | | | 4 | 4 | 4 | 4 | |
| Team A | SOUTHERN | T | 4 | | | | 4 | 4 | 4 |
| Team B | | T | 4 | 4 | 4 | 4 | | | |
| Team A | | A | | | | 4 | 4 | 4 | 4 |
| Team B | | A | 4 | 4 | 4 | | | | 4 |
| Team A | | X | | | | 5 | 5 | 5 | 5 |
| Team B | | X | 4 | 4 | 4 | 4 | | | |
| Team A | | Y | 4 | | | | 4 | 4 | 4 |
| Team B | | Y | 4 | 4 | 4 | 4 | | | |
| TOTAL | | | 77 | 69 | 73 | 73 | 74 | 75 | 79 |

| | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| WATCH 1 | 103 | 96 | 99 | 98 | 99 | 97 | 104 |
| WATCH 2 | 89 | 79 | 79 | 79 | 85 | 87 | 94 |
| WATCH 3 | 63 | 53 | 55 | 54 | 56 | 60 | 63 |
| WATCH 4 | 77 | 69 | 73 | 73 | 74 | 75 | 79 |
| **TOTAL** | 332 | 297 | 306 | 304 | 314 | 319 | 340 |

## Appendix D-2

Number of Officers Deployed for the SJPD's March 99 Staffing Plan by District, Day of the Week, and Watch.

### Watch One 6:30am - 4:30pm

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 6 | 6 | 6 | | | | 6 |
| Team B | | R | | | 6 | 6 | 6 | 6 | |
| Team A | | F | 5 | 5 | 5 | | | | 5 |
| Team B | | F | | | 5 | 5 | 5 | 5 | |
| Team A | | N | 6 | 6 | | | | 6 | 6 |
| Team B | | N | | 6 | 6 | 6 | 6 | | |
| Team A | | S | 6 | 6 | | | | 6 | 6 |
| Team B | | S | | 6 | 6 | 6 | 6 | | |
| Team A | CENTRAL | V | | | 5 | 5 | 5 | 5 | |
| Team B | | V | 6 | 6 | | | | 6 | 6 |
| Team A | | K | | | | 5 | 5 | 5 | 5 |
| Team B | | K | 5 | 5 | 5 | 5 | | | |
| Team A | | E | | 5 | 5 | 5 | 5 | | |
| Team B | | E | 5 | | | | 5 | 5 | 5 |
| Team A | | L | | | | 6 | 6 | 6 | 6 |
| Team B | | L | 6 | 6 | 6 | 6 | | | |
| Team A | FOOTHILL | W | 6 | | | | 6 | 6 | 6 |
| Team B | | W | | 6 | 6 | 6 | 6 | | |
| Team A | | M | 5 | | | | 5 | 5 | 5 |
| Team B | | M | 5 | 5 | 5 | 5 | | | |
| Team A | | C | | | | 6 | 6 | 6 | 6 |
| Team B | | C | 6 | 6 | 6 | | | | 6 |
| Team A | | P | 5 | | | | 5 | 5 | 5 |
| Team B | | P | | 5 | 5 | 5 | 5 | | |
| Team A | SOUTHERN | T | 5 | 5 | | | | 5 | 5 |
| Team B | | T | | 5 | 5 | 5 | 5 | | |
| Team A | | A | | | 5 | 5 | 5 | 5 | |
| Team B | | A | 5 | 5 | | | | 5 | 5 |
| Team A | | X | 5 | 5 | | | | 5 | 5 |
| Team B | | X | | | 5 | 5 | 5 | 5 | |
| Team A | | Y | 5 | 5 | | | | 5 | 5 |
| Team B | | Y | | 5 | 5 | 5 | 5 | | |
| TOTAL | | | 92 | 109 | 97 | 97 | 102 | 102 | 93 |

### Watch Two 3:00pm - 1:00am

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | | | | 7 | 7 | 7 | 7 |
| Team B | | R | 6 | 6 | 6 | | | | 6 |
| Team A | | F | | | 6 | 6 | 6 | 6 | |
| Team B | | F | 6 | 6 | | | | 6 | 6 |
| Team A | | N | | 7 | 7 | 7 | 7 | | |
| Team B | | N | 8 | | | | 8 | 8 | 8 |
| Team A | | S | 8 | 8 | | | | 8 | 8 |
| Team B | | S | | 7 | 7 | 7 | 7 | | |
| Team A | CENTRAL | V | | | | 6 | 6 | 6 | 6 |
| Team B | | V | 6 | 6 | 6 | | | | 6 |
| Team A | | K | 6 | 6 | 6 | 6 | | | |
| Team B | | K | | | | 6 | 6 | 6 | 6 |
| Team A | | E | | | 5 | 5 | 5 | 5 | |
| Team B | | E | 5 | 5 | | | | 5 | 5 |
| Team A | | L | 7 | 7 | 7 | 7 | | | |
| Team B | | L | | | | 8 | 8 | 8 | 8 |
| Team A | FOOTHILL | W | | | 6 | 6 | 6 | 6 | |
| Team B | | W | 7 | 7 | | | | 7 | 7 |
| Team A | | M | | 6 | 6 | 6 | 6 | | |
| Team B | | M | 7 | | | | 7 | 7 | 7 |
| Team A | | C | 7 | 7 | 7 | | | | 7 |
| Team B | | C | | | 8 | 8 | 8 | 8 | |
| Team A | | P | 7 | | | | 7 | 7 | 7 |
| Team B | | P | 6 | 6 | 6 | 6 | | | |
| Team A | SOUTHERN | T | | | | 6 | 6 | 6 | 6 |
| Team B | | T | 6 | 6 | 6 | | | | 6 |
| Team A | | A | 7 | 7 | | | | 7 | 7 |
| Team B | | A | | 6 | 6 | 6 | 6 | | |
| Team A | | X | 7 | | | | 7 | 7 | 7 |
| Team B | | X | | 7 | 7 | 7 | 7 | | |
| Team A | | Y | 6 | 6 | 6 | | | | 6 |
| Team B | | Y | | | 7 | 7 | 7 | 7 | |
| TOTAL | | | 112 | 116 | 115 | 117 | 127 | 127 | 126 |

### Watch Three 9:00pm - 7:00am

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 5 | 5 | | | | 5 | 5 |
| Team B | | R | | 4 | 4 | 4 | 4 | | |
| Team A | | F | 4 | 4 | | | | 4 | 4 |
| Team B | | F | | 4 | 4 | 4 | 4 | | |
| Team A | | N | | | 4 | 4 | 4 | 4 | |
| Team B | | N | 4 | 4 | | | | 4 | 4 |
| Team A | | S | 4 | 4 | | | | 4 | 4 |
| Team B | | S | | | 4 | 4 | 4 | 4 | |
| Team A | CENTRAL | V | | 5 | 5 | 5 | 5 | | |
| Team B | | V | 5 | | | | 5 | 5 | 5 |
| Team A | | K | | | | 5 | 5 | 5 | 5 |
| Team B | | K | 5 | 5 | 5 | 5 | | | |
| Team A | | E | | 5 | 5 | 5 | 5 | | |
| Team B | | E | 5 | | | | 5 | 5 | 5 |
| Team A | | L | | | | 7 | 7 | 7 | 7 |
| Team B | | L | 5 | 5 | 5 | 5 | | | |
| Team A | FOOTHILL | W | | 4 | 4 | 4 | 4 | | |
| Team B | | W | 4 | | | | 4 | 4 | 4 |
| Team A | | M | | 4 | 4 | 4 | 4 | | |
| Team B | | M | 4 | | | | 4 | 4 | 4 |
| Team A | | C | | | 4 | 4 | 4 | 4 | |
| Team B | | C | 6 | 6 | | | | 6 | 6 |
| Team A | | P | | | 4 | 4 | 4 | 4 | |
| Team B | | P | 4 | 4 | | | | 4 | 4 |
| Team A | SOUTHERN | T | 4 | 4 | 4 | | | | 4 |
| Team B | | T | | | 4 | 4 | 4 | 4 | |
| Team A | | A | 4 | 4 | 4 | | | | 4 |
| Team B | | A | | | 4 | 4 | 4 | 4 | |
| Team A | | X | | | | 4 | 4 | 4 | 4 |
| Team B | | X | 4 | 4 | 4 | | | | 4 |
| Team A | | Y | 4 | 4 | 4 | | | | 4 |
| Team B | | Y | | | | 4 | 4 | 4 | 4 |
| TOTAL | | | 71 | 79 | 76 | 80 | 88 | 89 | 81 |

### Watch Four 5:30pm - 3:30am

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | | | | | | | |
| Team B | | R | | | | | | | |
| Team A | | F | | | | | | | |
| Team B | | F | | | | | | | |
| Team A | | N | 2 | | | | 2 | 2 | 2 |
| Team B | | N | | | | | | | |
| Team A | | S | 4 | | | | 4 | 4 | 4 |
| Team B | | S | | | | | | | |
| Team A | CENTRAL | V | 2 | | | | 2 | 2 | 2 |
| Team B | | V | | | | | | | |
| Team A | | K | 3 | | | | 3 | 3 | 3 |
| Team B | | K | | | | | | | |
| Team A | | E | | | | | | | |
| Team B | | E | | | | | | | |
| Team A | | L | | | | | | | |
| Team B | | L | | | | | | | |
| Team A | FOOTHILL | W | 3 | | | | 3 | 3 | 3 |
| Team B | | W | | | | | | | |
| Team A | | M | 3 | | | | 3 | 3 | 3 |
| Team B | | M | | | | | | | |
| Team A | | C | | | | | | | |
| Team B | | C | | | | | | | |
| Team A | | P | | | | | | | |
| Team B | | P | | | | | | | |
| Team A | SOUTHERN | T | | | | | | | |
| Team B | | T | | | | | | | |
| Team A | | A | | | | | | | |
| Team B | | A | | | | | | | |
| Team A | | X | 3 | | | | 3 | 3 | 3 |
| Team B | | X | | | | | | | |
| Team A | | Y | 2 | | | | 2 | 2 | 2 |
| Team B | | Y | | | | | | | |
| TOTAL | | | 22 | | | | 22 | 22 | 22 |

| | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| WATCH 1 | 92 | 109 | 97 | 97 | 102 | 102 | 93 |
| WATCH 2 | 112 | 116 | 115 | 117 | 127 | 127 | 126 |
| WATCH 3 | 71 | 79 | 76 | 80 | 88 | 89 | 81 |
| WATCH 4 | 22 | | | | 22 | 22 | 22 |
| **TOTAL** | 297 | 304 | 288 | 294 | 339 | 340 | 322 |

Appendix D-3

Number of Officers Deployed for the City Auditor's Version 2 by District, Day of the Week, and Watch.

**Watch One 7:30am - 5:30pm**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 6 | | | | 6 | 6 | 6 |
| Team B | | R | 6 | 6 | 6 | 6 | | | |
| Team A | | F | | | | 5 | 5 | 5 | 5 |
| Team B | | F | 4 | 4 | 4 | | | | 4 |
| Team A | | N | | | | 5 | 5 | 5 | 5 |
| Team B | | N | 5 | 5 | 5 | | | | 5 |
| Team A | | S | 6 | 6 | 6 | | | | 6 |
| Team B | | S | | | 5 | 5 | 5 | 5 | |
| Team A | CENTRAL | V | 5 | | | | 5 | 5 | 5 |
| Team B | | V | | 5 | 5 | 5 | 5 | | |
| Team A | | K | 4 | 4 | | | | 4 | 4 |
| Team B | | K | | 4 | 4 | 4 | 4 | | |
| Team A | | E | 4 | 4 | | | | 4 | 4 |
| Team B | | E | | 4 | 4 | 4 | 4 | | |
| Team A | | L | 6 | 6 | 6 | | | | 6 |
| Team B | | L | | | 6 | 6 | 6 | 6 | |
| Team A | FOOTHILL | W | | | | 5 | 5 | 5 | 5 |
| Team B | | W | 5 | 5 | 5 | 5 | | | |
| Team A | | M | 5 | 5 | | | | 5 | 5 |
| Team B | | M | | | 4 | 4 | 4 | 4 | |
| Team A | | C | 6 | | | | 6 | 6 | 6 |
| Team B | | C | | 5 | 5 | 5 | 5 | | |
| Team A | | P | 4 | 4 | | | | 4 | 4 |
| Team B | | P | | | 4 | 4 | 4 | 4 | |
| Team A | SOUTHERN | T | 5 | | | | 5 | 5 | 5 |
| Team B | | T | 5 | 5 | 5 | 5 | | | |
| Team A | | A | | | | 5 | 5 | 5 | 5 |
| Team B | | A | 5 | 5 | 5 | | | | 5 |
| Team A | | X | | | | 5 | 5 | 5 | 5 |
| Team B | | X | 5 | 5 | 5 | 5 | | | |
| Team A | | Y | 5 | | | | 5 | 5 | 5 |
| Team B | | Y | 4 | 4 | 4 | 4 | | | |
| TOTAL | | | 95 | 86 | 88 | 87 | 89 | 88 | 95 |

**Watch Two 4:30pm - 2:30am**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 4 | | | | 4 | 4 | 4 |
| Team B | | R | 3 | 3 | 3 | 3 | | | |
| Team A | | F | | | | 4 | 4 | 4 | 4 |
| Team B | | F | 3 | 3 | 3 | | | | 3 |
| Team A | | N | | | | 5 | 5 | 5 | 5 |
| Team B | | N | 5 | 5 | 5 | | | | 5 |
| Team A | | S | 5 | 5 | 5 | | | | 5 |
| Team B | | S | | | 5 | 5 | 5 | 5 | |
| Team A | CENTRAL | V | 5 | | | | 5 | 5 | 5 |
| Team B | | V | | 3 | 3 | 3 | 3 | | |
| Team A | | K | 5 | 5 | | | | 5 | 5 |
| Team B | | K | | 3 | 3 | 3 | 3 | | |
| Team A | | E | 4 | 4 | | | | 4 | 4 |
| Team B | | E | | 3 | 3 | 3 | 3 | | |
| Team A | | L | 5 | 5 | 5 | | | | 5 |
| Team B | | L | | | 4 | 4 | 4 | 4 | |
| Team A | FOOTHILL | W | | | | 5 | 5 | 5 | 5 |
| Team B | | W | 4 | 4 | 4 | 4 | | | |
| Team A | | M | 5 | 5 | | | | 5 | 5 |
| Team B | | M | | | 3 | 3 | 3 | 3 | |
| Team A | | C | 5 | | | | 5 | 5 | 5 |
| Team B | | C | | 3 | 3 | 3 | 3 | | |
| Team A | | P | 4 | 4 | | | | 4 | 4 |
| Team B | | P | | | 3 | 3 | 3 | 3 | |
| Team A | SOUTHERN | T | 4 | | | | 4 | 4 | 4 |
| Team B | | T | 3 | 3 | 3 | 3 | | | |
| Team A | | A | | | | 4 | 4 | 4 | 4 |
| Team B | | A | 4 | 4 | 4 | | | | 4 |
| Team A | | X | | | | 5 | 5 | 5 | 5 |
| Team B | | X | 4 | 4 | 4 | 4 | | | |
| Team A | | Y | 4 | | | | 4 | 4 | 4 |
| Team B | | Y | 3 | 3 | 3 | 3 | | | |
| TOTAL | | | 79 | 69 | 66 | 67 | 72 | 78 | 85 |

**Watch Three 10:30pm - 8:30am**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 4 | | | | 4 | 4 | 4 |
| Team B | | R | 3 | 3 | 3 | 3 | | | |
| Team A | | F | | | | 3 | 3 | 3 | 3 |
| Team B | | F | 3 | 3 | 3 | | | | 3 |
| Team A | | N | | | | 3 | 3 | 3 | 3 |
| Team B | | N | 3 | 3 | 3 | | | | 3 |
| Team A | | S | 3 | 3 | 3 | | | | 3 |
| Team B | | S | | | 3 | 3 | 3 | 3 | |
| Team A | CENTRAL | V | 3 | | | | 3 | 3 | 3 |
| Team B | | V | | 2 | 2 | 2 | 2 | | |
| Team A | | K | 3 | 3 | | | | 3 | 3 |
| Team B | | K | | 2 | 2 | 2 | 2 | | |
| Team A | | E | 3 | 3 | | | | 3 | 3 |
| Team B | | E | | 2 | 2 | 2 | 2 | | |
| Team A | | L | 4 | 4 | 4 | | | | 4 |
| Team B | | L | | | 3 | 3 | 3 | 3 | |
| Team A | FOOTHILL | W | | | | 3 | 3 | 3 | 3 |
| Team B | | W | 2 | 2 | 2 | 2 | | | |
| Team A | | M | 3 | 3 | | | | 3 | 3 |
| Team B | | M | | | 2 | 2 | 2 | 2 | |
| Team A | | C | 3 | | | | 3 | 3 | 3 |
| Team B | | C | | 2 | 2 | 2 | 2 | | |
| Team A | | P | 2 | 2 | | | | 2 | 2 |
| Team B | | P | | | 2 | 2 | 2 | 2 | |
| Team A | SOUTHERN | T | 3 | | | | 3 | 3 | 3 |
| Team B | | T | 2 | 2 | 2 | 2 | | | |
| Team A | | A | | | | 3 | 3 | 3 | 3 |
| Team B | | A | 3 | 3 | 3 | | | | 3 |
| Team A | | X | | | | 3 | 3 | 3 | 3 |
| Team B | | X | 2 | 2 | 2 | 2 | | | |
| Team A | | Y | 3 | | | | 3 | 3 | 3 |
| Team B | | Y | 2 | 2 | 2 | 2 | | | |
| TOTAL | | | 54 | 46 | 45 | 44 | 49 | 52 | 58 |

**Watch Four 1:30pm - 11:30pm**

| | Division | District | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|---|---|
| Team A | WESTERN | R | 3 | | | | 3 | 3 | 3 |
| Team B | | R | 4 | 4 | 4 | 4 | | | |
| Team A | | F | | | | 4 | 4 | 4 | 4 |
| Team B | | F | 3 | 3 | 3 | | | | 3 |
| Team A | | N | | | | 4 | 4 | 4 | 4 |
| Team B | | N | 4 | 4 | 4 | | | | 4 |
| Team A | | S | 4 | 4 | 4 | | | | 4 |
| Team B | | S | | | 4 | 4 | 4 | 4 | |
| Team A | CENTRAL | V | 3 | | | | 3 | 3 | 3 |
| Team B | | V | | 4 | 4 | 4 | 4 | | |
| Team A | | K | 3 | 3 | | | | 3 | 3 |
| Team B | | K | | 3 | 3 | 3 | 3 | | |
| Team A | | E | 2 | 2 | | | | 2 | 2 |
| Team B | | E | | 2 | 2 | 2 | 2 | | |
| Team A | | L | 5 | 5 | 5 | | | | 5 |
| Team B | | L | | | 5 | 5 | 5 | 5 | |
| Team A | FOOTHILL | W | | | | 4 | 4 | 4 | 4 |
| Team B | | W | 4 | 4 | 4 | 4 | | | |
| Team A | | M | 3 | 3 | | | | 3 | 3 |
| Team B | | M | | | 4 | 4 | 4 | 4 | |
| Team A | | C | 4 | | | | 4 | 4 | 4 |
| Team B | | C | | 4 | 4 | 4 | 4 | | |
| Team A | | P | 3 | 3 | | | | 3 | 3 |
| Team B | | P | | | 3 | 3 | 3 | 3 | |
| Team A | SOUTHERN | T | 3 | | | | 3 | 3 | 3 |
| Team B | | T | 4 | 4 | 4 | 4 | | | |
| Team A | | A | | | | 4 | 4 | 4 | 4 |
| Team B | | A | 3 | 3 | 3 | | | | 3 |
| Team A | | X | | | | 4 | 4 | 4 | 4 |
| Team B | | X | 4 | 4 | 4 | 4 | | | |
| Team A | | Y | 3 | | | | 3 | 3 | 3 |
| Team B | | Y | 4 | 4 | 4 | 4 | | | |
| TOTAL | | | 66 | 63 | 68 | 69 | 65 | 63 | 66 |

| | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| WATCH 1 | 95 | 86 | 88 | 87 | 89 | 88 | 95 |
| WATCH 2 | 79 | 69 | 66 | 67 | 72 | 78 | 85 |
| WATCH 3 | 54 | 46 | 45 | 44 | 49 | 52 | 58 |
| WATCH 4 | 66 | 63 | 68 | 69 | 65 | 63 | 66 |
| **TOTAL** | 294 | 264 | 267 | 267 | 275 | 281 | 304 |