

## Staffing Analysis-- New Method Accurately Converts Posts to Budgets

As published in *Sheriff Magazine*, January-February 2006. P. 34

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### Introduction

In our first article in this series<sup>1</sup> we underscored the importance of adequate and efficient staffing and introduced the methodology that has been developed by the National Institute of Corrections (NIC).<sup>2</sup> One of the innovations introduced by NIC is the “Net Annual Work Hours” (NAWH) methodology that replaced the old shift relief factor calculations. This new tool has proven to be more accurate in converting staffing practices to budget requirements.

### Staffing Analysis Process

The methodology described in NIC's *Workbook* involves 10 sequential steps:

#### The NIC Staffing Analysis Process

- **Step 1:** Profile the Jail
- **Step 2:** Calculate Net Annual Work Hours
- **Step 3:** Develop a Facility Activity Schedule
- **Step 4:** Develop the Staff Coverage Plan
- **Step 5:** Complete a Staff Summary
- **Step 6:** Develop a Schedule
- **Step 7:** Evaluate, Revise, and Improve the Plan
- **Step 8:** Calculate Operational Costs
- **Step 9:** Prepare a Report
- **Step 10:** Implement the Plan and Monitor the Results

This article focuses on the experience of Montgomery County, Md, as it implemented Step 2, Net Annual Work Hours, for the first time.

### A Participatory Process

Several Montgomery County Department of Correction and Rehabilitation (MCDOCR) staff and officials were involved with the initial NAWH calculations, including the chief of administration, the human resources manager, the chief of security for the new correctional facility, the chief of security for the detention facility, and the pre-release center supervisor.

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<sup>1</sup> *Staffing Analysis- New Methods Provide More “Relief;” Sheriff Magazine*, National Sheriffs’ Association, vol. 57, no. 61, November-December 2005.

<sup>2</sup> Miller, Rod and Dennis R. Liebert, *NIC Staffing Analysis Workbook for Jails, First Edition*. National Institute of Corrections, Washington, D.C. 1987. *Second Edition* published in 2001. For copies go to [www.nicic.org](http://www.nicic.org). E-learning course, available on-line or as a freestanding computer-based learning program on CD-ROM (<http://nicic.org/Services/eLearning.aspx>)

Involving more staff in the process proved effective. Their participation paid off in identifying each element that applies to the process, collecting and analyzing data, and projecting future developments. It was also helpful when it was time to explain the findings, and the resulting budget requests, to officials.

Before trying the NAWH methodology, MCDOCR had calculated a "relief factor" for staff assigned to relieved posts. The NIC methodology offered a new and promising methodology, the Net Annual Work Hour (NAWH), and Montgomery County decided to try it in evaluating staffing levels for its FY 2006 budget request. The County opened a state-of-the-art correctional facility in 2004 and continued to operate its older detention center. With 282 correctional officers in FY 2006, it was essential to calculate budget needs accurately.

### **Ten Percent Short**

As it turned out, the differences between the old methodology used by the MCDOCR (relief factor) and the new NAWH calculations were significant. The relief factor used for the FY2005 budget analysis turned out to be nearly 10 percent *lower* than that calculated by the NAWH methodology for the initial budget submission. If the MCDOCR had used the old methodology again, it would have continued to struggle with an ongoing overtime problem that was certainly driven in a large part by the budget shortfall caused by the earlier shift relief calculations. Using the old relief factor technique, the County entered the fiscal year nearly 30 full-time-equivalent officers short-- simply because of the math. The new NAWH method demonstrated the real number of hours a typical staff member was available to be assigned to a post each year.

Using the NAWH methodology, Montgomery County found that for every three hours a typical correctional officer works, he/she receives an hour of paid time away from his or her primary post. This is not unusual for a jail in the United States, though the precise combination of reasons that take jail staff away from their posts with pay (vacation, sick time, training, military leave, etc.) is unique to each facility.

Why must the NAWH estimate be accurate? Because failing to accurately estimate NAWH inevitably results in budget shortfalls, usually in the form of unexpected overtime. Even worse, budget shortfalls might cause an agency to leave posts vacant, posing serious safety and liability concerns.

DOCR officials made the case that the NAWH estimate is a crucial budgeting tool that helps to distinguish between *gross* staff hours budgeted and the *net* hours that are actually available to be scheduled for daily MCDOCR operations. As a result, subsequent budgets were adjusted to add nearly 10 percent more staff-- not to increase deployment in the jail, but to provide sufficient funds (for the first time) to cover the staffing practices that had already been in place. The county's policy requires all posts and positions in the MCDOCR daily staffing plan to be filled, and that caused expenditures to chronically exceed budget allocations, usually in the form of unexpected levels of overtime.

When budget estimates are inaccurate (in other words, too low), the county has to draw on staff overtime because it has no part-time staff resources, which means that all short falls must be satisfied by overtime. Extensive use of overtime is not only expensive, it is also bad for the organization in other ways.

Excessive overtime leads to:

- Performance problems for staff who work long hours
- Increased use of sick leave when employees try to manage their personal lives
- Added overtime that is needed to compensate for growth in sick leave
- Disciplinary actions that take up the time of the employee, the supervisor, and management

Excess mandatory overtime also undermines the department's reputation within the ranks and generates widespread morale problems.

### Using the Worksheet to Calculate NAWH

Form A in the *Second Edition Workbook* provides a template for calculating NAWH.<sup>3</sup> Montgomery County used this as a starting point. Figure 1 describes each of the factors that Montgomery County found that would cause a staff member to be away from his or her post with pay, including various forms of paid leave (vacation, sick, holidays) and other activities that make them unavailable to report to their posts (such as certain types of training). (See Figure 1)

There are two basic methods for estimating a figure for each element of the NAWH calculation:

**Actual experience from previous years**, preferably using several years of data to identify trends and patterns. Example: average amount of vacation time actually used per year was calculated by adding all vacation time taken by full time staff in a classification, and dividing the total hours by the number of staff. In accounting terms, this would be a "cash" basis of analyzing data. Hours are counted only when they are actually used, not when they are earned.

**Accrued (entitlement) in the coming year.** This approach identifies the amount of time off that is specified in employee contracts and personnel policies. In accounting terms, this would be an "accrual" method-- hours are counted when they are earned, regardless of when they are actually used.

Two techniques are used to refine the estimates:

**Projecting the impact of new practices for which no data are available.** This technique looks ahead to the next year and predicts changes in the context. This is often necessary when there are changes in laws or policies. For example, it was necessary to project the impact of the Family Medical Leave Act for the year after it was enacted. Changes must also be projected when a new employee contract becomes effective.

**Adjusting figures based on expected or desired changes in the coming year.** This technique examines past practices and entitlements and makes deliberate adjustments for the coming year. For example, if an employee contract is being negotiated in the coming year, an adjustment might be made to predict an expected change in entitlements. If the

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<sup>3</sup> The form, and the complete staffing analysis workbook, are available on-line at the National Institute of Corrections web site, [www.nicic.org](http://www.nicic.org). The form is also available as an Excel spreadsheet at the NIC site.

county launches an initiative to reduce staff use of sick leave, for example, the NAWH would be adjusted to reflect the impact of this desired change.

**Figure 1: Categories of "Time Off" Used by Montgomery County**

<b>Time Off Category Used in NAWH Calculations for FY 2005</b>	<b>Source and Methodology</b>
Vacation Hours	Actual hours used based on past experience
Average Compensatory Hours	Actual hours used based on past experience
Average Sick Leave Hrs (projected, recent experience)	Actual hours used based on past experience
Projected Training Hours (see notes) <i>training received</i>	Projected, based on anticipated turnover and changes in training practices
Average Trainer Hours (staff <i>serv</i> ing as trainers)	Actual hours used based on past experience
Personal Leave Hours (CLE, PER)	Actual hours used based on past experience
Average Military Hours (Active)	Actual hours used based on past experience
Average Medical Exam Hours	Projected based on contractual requirements
Admin 2 (AD2) Union Business	Actual hours used based on past experience
Admin 5 (AD5) Uncontested Temp. Disability	Actual hours used based on past experience
Average Disability Hours (DAL)	Actual hours used based on past experience
Administrative (AML) incl. Court, bereavement, military (reserve)	Actual hours used based on past experience
Leave W/Out Pay (LWOP)	Actual hours used based on past experience
Holidays	Based on contractual requirements
<b>CONSIDERED BUT NOT USED by Montgomery County</b>	
Breaks	Not used for NAWH calculation because this activity is addressed in the staffing and coverage plan
Time to Fill Vacancies (Vacancy Rate)	Not used because this is addressed in the annual budget in a different way

One technique frequently used in this process is the "weighted average." An example of a weighted average may be found in the analysis of training hours. The amount of training provided to newly-hired MCDOCR correctional officers is substantially higher than training provided to staff after their first year of employment.

**Figure 2: Net Annual Work Hours (NAWH) Work Sheet for FY 2005**

Projected Net Annual Work Hours, FY 2005		A--MCDC	B--MCCF
		CO I-III & MCO Detention Center	CO I-III & MCO Correctional Facility
1	<b>TOTAL HOURS</b> contracted annually	<b>2086</b>	<b>2086</b>
<b>HOURS OFF</b>			
2	Average Vacation Hours	112	150
3	Average Compensatory Hours	26	32
4	Average Sick Leave Hrs (projected, recent experience)	92	92
5A	Projected Training Hours (see notes) training received	53	52
5B	Average Trainer Hours (staff serving as trainers)	5	5
6	Personal Leave Hours (CLE, PER)	30	30
7	Average Military Hours (Active)	27	36
8	Average Medical Exam Hours	3	3
9	Admin 2 (AD2) Union Business	0	2
10A	Admin 5 (AD5) Uncontested Temp. Disability	4	10
10B	Average Disability Hours (DAL)	40	40
11	Administrative (AML) incl. Court, bereavement, military (reserve)	18	22
12	Leave W/Out Pay (LWOP)	6	6
13	Holidays	80	80
14	<b>TOTAL HOURS OFF-POST per employee per year</b>	<b>496</b>	<b>560</b>
15	<b>NET ANNUAL WORK HOURS</b> (Line 1 minus Line 14)	<b>1590</b>	<b>1526</b>
16	NAWH expressed as a "relief factor" (for reference)	5.51	5.74

A weighted average for training identifies the amount of training for first-year officers and multiplies it by the number of staff expected to be in their first year in FY 2006. This figure would be combined with the total hours for officers who have been employed for more than one year, and the grand total is divided by the total number of staff.

This is depicted in the formula below.

$$\text{Average Training Hours} = [(O_1 \text{ times } T_1) + (O_2 \text{ times } T_2)] \div (O_1 + O_2)$$

Where--

O<sub>1</sub> = Number of Officers expected to be in their first year of employment

T<sub>1</sub> = Number of hours of training for each new officer

O<sub>2</sub> = Number of Officers expected in their second or higher year of employment

T<sub>2</sub> = Number of hours of training for each officer in their second or higher year

Montgomery County's findings for correctional officers in each facility are shown in Figure 2. Other classifications of staff were also examined by the MCDOCR but are not shown on this sample. (See Figure 2)

### SUMMARY

Montgomery County used the new staffing analysis methodology to produce a more accurate budget request. In the process they explained chronic staffing shortfalls that had troubled the county for years. Based on their experience with the new Net Annual Work Hours methodology, the county is now applying other new staffing analysis techniques to its operations.

In our next installment, we will examine another step in the staffing analysis process in more detail.

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