

UNDERSTANDING THE MATHEMATICAL ERROR IN CURRENT PRACTICE OF CALCULATING FIREFIGHTER COMPENSATION



CURRENT PRACTICE

- City of Webster Groves pay for firefighters and captains is set by steps and ranges expressed in annual salary amounts. Battalion Chief pay is set by ranges expressed in annual salary amounts.
- Firefighters work 2912 hours in a year but should be paid on 2990 hours in a year because of Scheduled Overtime.
 - 2756 regular time hours + 156 scheduled overtime hours = 2912 actual hours worked
 - 156 OT hours x 1.5 = 234 OT hours (Overtime is paid at time and a half)
 - Total payable hours should be 2990 hours (2756 hours + 234 OT hours = 2990 hours)
- Current City practice to determine the hourly rate of pay the annual salary is divided by 2912 hours, not 2990 hours.

$$\frac{\text{Annual Salary}}{2912 \text{ Hours}} = \text{Hourly Pay Rate}$$

Example A – Current Practice

- Firefighter/Paramedic at Step 0 (starting point) on July 1, 2019. Assigned Minimum is \$60,157.

$$\frac{\$60,157}{2912 \text{ Hours}} = \$20.6583/\text{hour}$$

THE PROBLEM

- Using 2912 hours as the denominator in Example A creates an overvalued HOURLY rate that pays the regular and scheduled overtime hours at a rate exceeding the ordinance determined salary.

Example B – Determining Annual Salary by Hourly Rate Calculation

X	$\frac{\text{Regular Hours}}{\text{Hourly rate}} = \text{Regular Hours Salary}$	X	$\frac{\text{Scheduled Overtime Hours}}{\text{(Hourly Rate x 1.5)}} = \text{Scheduled Overtime Salary}$	+	$\frac{\text{Regular Hours Salary}}{\text{Scheduled Overtime Salary}} = \text{Allotted Annual Salary}$
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Example C – Expressing the problem (Using Example A data)

X	$\frac{2756 \text{ hours}}{\$20.6583} = \$56,934.2748$	X	$\frac{156 \text{ OT hours}}{(\$20.6583 \times 1.5)} = \$4,834.0422$	+	$\frac{\$56,934.2748}{\$4,834.0422} = \$11,768.3170$
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\$61,768.3170 ≠ \$60,157.00
Overpayment of \$1611.3170

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THE CORRECTION

- To correct the calculations of the annual salary the denominator (as shown in Example A) must be modified to reflect that Schedule Overtime Hours pay at 1.5X the hourly rate.

<i>Example D – Correcting the Hourly Denominator</i>	
	156 Scheduled Overtime Hours
X	1.5

	234 OT Hours
+	2756 Regular Hours

	2990 Hours for Denominator

- With the new denominator, Examples A and C can be recalculated to show that the salary is set to the appropriate hourly rate and that hourly rate correctly calculates back to the Allotted Annual Salary.

<i>Example E – Correcting the Hourly Rate Determination</i>	
<ul style="list-style-type: none"> Firefighter/Paramedic at Step 0 (starting point) on July 1, 2019. Assigned Minimum is \$60,157. 	
$\frac{\$60,157}{2990 \text{ Hours}} = \$20.1193/\text{hour}$	

<i>Example F – Hourly Rate Application Expresses Correct Salary</i>		
(Using Example A data)		
X	$\frac{2756 \text{ hours} \times \$20.1193}{\$55,448.7908}$	X
	$\frac{156 \text{ OT hours} \times (\$20.1193 \times 1.5)}{\$4,707.9162}$	+
		$\frac{\$55,448.7908}{\$60,156.70}$
<p>\$60,156.70 = \$60,157.00</p> <p>Rounding from 4 decimals to 2 decimals produces salary</p>		

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