

CLB 029

## ***Wrap Rate Calculations***

*Lesson*



Defense Acquisition University

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# Rates

## Wrap Rate Calculations

### *Introduction*

Approximate Length: 15 Minutes

Welcome to the **Wrap Rate Calculations** lesson of the **Rates** module. This lesson includes the following topics:

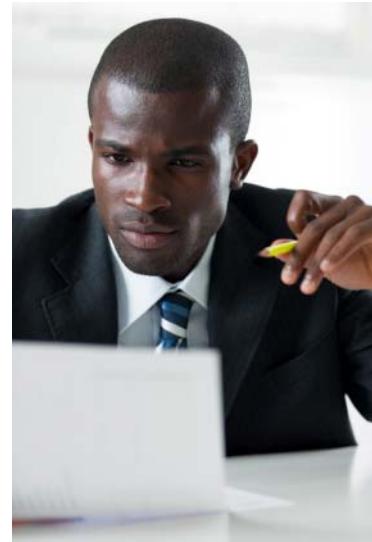
- Intro
- Wrap Rate Calculation 1
- Wrap Rate Calculation 2
- Summary

**Contract pricing** and the Defense Contract Audit Agency (**DCAA**) develop and evaluate contractors' **fully burdened labor rates (FBLRs)**, also called **wrap rates**.

The government negotiates **forward pricing rate agreements (FPRAs)** with contractors that represent the best estimate as to what the expected wage rates will be during a specified period. FPRAs are used to set the pay standard for a variety of skill sets found within a geographical region.

Cost analysts rely on the FPRAAs when evaluating and comparing contractors' proposals. For example, if the FPRA for a Senior Level IV Computer Programmer in Huntsville, AL is \$200, and a contractor has that skill priced at \$120 in their proposal, then you need to figure out what the contractor overlooked or which requirements they didn't fully understand.

As a cost analyst, you will obtain the wage rates, overhead rates, and other cost rates from contract pricing and the DCAA. On occasion, you may disagree with or find an error in the provided rates.



## ***Learning Objectives***

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Upon completion of this lesson you will be able to:

- Calculate the wrap rate given direct labor, overhead, and other costs.
- Use the wrap rate to estimate fully burdened labor cost.



## **Wrap Rate Calculation 1**

Once you have all the pieces, calculating the wrap rate is **not** "brain surgery" but the specific calculations will vary from one contractor to the next depending on the bases each uses for allocating overhead and other costs.

For example, a contractor reported the following for Contract A-22 last month:

- 50,000 hours direct labor (DL)
- \$1 million DL costs
- \$.5 million manufacturing overhead
- \$.2 million other costs

Calculate the FBLR for this contractor for Contract A-22.

### **Answer 1**

There are two ways to calculate the Contract A-22 FBLR. One way to calculate the FBLR:

$$\begin{array}{ll} \$1 \text{ million DL cost} \div 50,000 \text{ DL hours} = & \$20 \text{ DL rate} \\ \$500,000 \text{ manufacturing overhead} \div 50,000 \text{ DL hours} = & 10 \text{ manufacturing overhead rate} \\ \$200,000 \text{ other costs} \div 50,000 \text{ DL hours} = & \underline{4} \text{ other costs rate} \end{array}$$

**\$34 FBLR or wrap rate**

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Another way to calculate the FBLR:

|                        |                |
|------------------------|----------------|
| DL cost                | \$1,000,000    |
| Manufacturing overhead | 500,000        |
| Other costs            | <u>200,000</u> |

$$\text{Total} \quad \$1,700,000 \div 50,000 \text{ DL hours} = \boxed{\$34 \text{ FBLR or wrap rate}}$$

## **Estimation**

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Now that we have determined Contract A-22 has an FBLR of \$34, let's apply that information to next month.

The contractor expects to expend 70,000 DL hours on Contract A-22 next month. Estimate the fully burdened labor cost for Contract A-22 next month.

### **Answer**

Given Contract A-22 FBLR of **\$34** and **70,000** direct labor hours for next month, the fully burdened labor cost is calculated as follows:

$\$34 \text{ FBLR} \times 70,000 \text{ DL hours} = \$2,380,000$  fully burdened labor cost estimate for next month



## Wrap Rate Calculation 2

Now let's calculate the wrap rate for a contractor who allocates overhead and other costs based on cost instead of hours.

Contractor C reported the following last month:

- 2,500 DL hours
- \$65 DL rate
- Manufacturing overhead is allocated at the rate of 125% of direct labor costs
- Other costs are allocated at the rate of 20% of direct labor costs and overhead costs

Calculate Contractor C's FBLR.

### Answer

$$\begin{aligned} 2,500 \text{ DL hours} \times \$65 \text{ DL rate} &= \$162,500 \text{ DL costs} \\ 1.25 \text{ overhead rate} \times \$162,500 \text{ DL costs} &= 203,125 \text{ overhead costs} \\ .20 \times (\$162,500 \text{ DL costs} + \$203,125 \text{ overhead costs}) &= \underline{\underline{73,125}} \text{ other costs} \\ \\ &\quad \$438,750 \text{ fully burdened} \\ &\quad \text{labor cost} \\ \\ \$438,750 \text{ fully burdened labor cost} \div 2,500 \text{ DL hours} &= \$175.50 \text{ FBLR or wrap rate} \end{aligned}$$

## **Estimation**

Now that we have determined Contractor C has an FBLR of \$175.50, let's apply that information to next month.

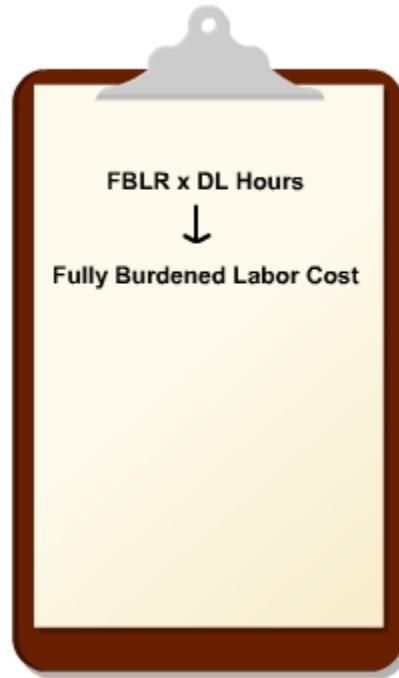
The contractor expects to expend 2,000 DL hours next month.

Estimate the fully burdened labor cost for Contractor C for next month.

## **Answer**

Given Contractor C's FBLR of **\$175.50** and **2,000** direct labor hours for next month, the fully burdened labor cost is calculated as follows:

$$\$175.50 \text{ FBLR} \times 2,000 \text{ DL hours} = \textbf{\$351,000} \text{ fully burdened labor cost estimate for next month}$$



## **Summary**

Congratulations! You have completed the **Wrap Rate Calculations** lesson. Please take a moment to review the key information in this lesson.

### **Wrap Rate Calculation**

To calculate the wrap rate, you begin by calculating the overhead costs rate in accordance with the contractor's overhead base.

You calculate the **other costs rate** the same way—in accordance with the contractor's other costs base.

Finally to calculate the **wrap rate**, you add the **direct labor wage rate, overhead costs rate**.

### **Fully Burdened Labor Cost Calculation**

After you calculate the wrap rate, you can apply the wrap rate to direct labor hour estimates to forecast the contractor's future fully burdened labor costs.

# Rates

## Glossary

| Term                          | Definition                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Assembly</b>               | Assembly involves the effort to combine parts into subassemblies and assemblies.                                                                                                                                                                                                                                                                                                                         |
| <b>Cost Objective</b>         | Cost objective is an accounting term for a task, work order, product, program, or contract. In government acquisition the cost objective is normally the program or contract.                                                                                                                                                                                                                            |
| <b>Cost of Money</b>          | Cost of money is sometimes an allowable other cost, depending on the contractual agreement the contractor has with the government. The cost of money is the cost of capital committed to facilities as an element of contract cost. Department of Defense (DoD) pays additional money for the contractor to maintain the production facilities, operating lines, etc., for the duration of the contract. |
| <b>Delay Allowance</b>        | Delay allowance is an adjustment applied when formulating a labor standard to allow time for unavoidable predictable and unpredictable delays.                                                                                                                                                                                                                                                           |
| <b>Design Engineering</b>     | Design engineering involves delineating the characteristics and specifications of the end product.                                                                                                                                                                                                                                                                                                       |
| <b>Direct Labor Hours</b>     | Direct labor hours are hours that can be explicitly attributed to a particular task, work order, program, or contract.                                                                                                                                                                                                                                                                                   |
| <b>Direct Labor Wage Rate</b> | Direct labor wage rate is the composite hourly wage rate of those employees who can be charged directly to a specific program or contract.                                                                                                                                                                                                                                                               |
| <b>Efficiency Rate</b>        | Efficiency rate indicates a contractor's productivity and can be used to estimate direct labor hours on future projects. Efficiency rate is calculated by dividing a task's standard hours by the actual hours the contractor required to complete the task, and then multiplying the quotient by 100. Higher efficiency rates (closer to 100%) indicate greater productivity.                           |
| <b>Engineering Overhead</b>   | Engineering overhead includes the cost of directing and supporting the activities of the engineering department.                                                                                                                                                                                                                                                                                         |

| Term                                           | Definition                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Exponential Moving Average</b>              | Exponential moving average, when applied to time series data, is the average of the last X number of observations but with varying weights assigned to each observation. The most recent observation is assigned the greatest weight and each preceding observation is given an exponentially smaller weight. It is applied to smooth out short-term fluctuations in time series data and amplify long-term trends or cycles. |
| <b>Fabricating</b>                             | Fabrication involves the fashioning of parts from raw materials or purchased materials.                                                                                                                                                                                                                                                                                                                                       |
| <b>Fatigue Allowance</b>                       | Fatigue allowance is an adjustment applied when formulating a labor standard to allow time for workers to recuperate from work conditions and health concerns.                                                                                                                                                                                                                                                                |
| <b>Forward Pricing Rate Agreements (FPRAs)</b> | Forward pricing rate agreements (FPRAs) are negotiated by the government with contractors to set the pay standard for a variety of skill sets within a specified geographical region.                                                                                                                                                                                                                                         |
| <b>Fully Burdened Labor Cost</b>               | Fully burdened labor cost includes direct labor, overhead, and other costs. It is calculated by multiplying the contractor's wrap rate by the direct labor hours.                                                                                                                                                                                                                                                             |
| <b>Fully Burdened Labor Rate (FBLR)</b>        | Fully burdened labor rate, also called "wrap rate," includes the contractor's direct labor wage rate, overhead costs rate, and other costs rate. It is used when assessing contractors' proposals and making cost estimates.                                                                                                                                                                                                  |
| <b>General and Administrative Costs</b>        | General and administrative expenses typically include the expenses of a company's general and executive offices, staff services, and other miscellaneous activities related to the overall business.                                                                                                                                                                                                                          |
| <b>Labor Standard</b>                          | Labor standards are used to make realistic estimations of how long it should take to complete a job. A labor standard includes leveled time—the amount of time it takes an average worker under average conditions to complete a specified task. After leveled time is established, it needs to be adjusted to allow for personal time, fatigue, and unavoidable delays. The resulting metric is the labor standard.          |
| <b>Leveled Time</b>                            | Leveled time is one component of a labor standard. Leveled time is the time that a worker of average skill, making an average effort, under average conditions takes to complete a required task.                                                                                                                                                                                                                             |
| <b>Manufacturing Engineering</b>               | Manufacturing engineering involves planning the manufacturing process, developing process instructions and work methods, shop loading, organizing work stations, and matching shop capabilities to contractual requirements.                                                                                                                                                                                                  |
| <b>Manufacturing Overhead</b>                  | Manufacturing overhead, also known as "manufacturing expense" or "factory burden," includes all production costs except direct materials, direct labor, and other costs.                                                                                                                                                                                                                                                      |

| Term                                               | Definition                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Material Overhead</b>                           | Material overhead includes costs related to the acquisition, transportation, receiving, inspection, handling, and storage of materials.                                                                                                                                                                                                                                                    |
| <b>Other Costs</b>                                 | Other costs are any other costs the firm incurs but has not accounted for as either direct or overhead costs.                                                                                                                                                                                                                                                                              |
| <b>Overhead Costs</b>                              | Overhead costs, also called "burden," are indirect costs that benefit multiple programs or contracts, and therefore cannot feasibly be charged directly to just one.                                                                                                                                                                                                                       |
| <b>Personal Allowance</b>                          | Personal allowance is an adjustment applied when formulating a labor standard to allow time for workers to take care of personal needs.                                                                                                                                                                                                                                                    |
| <b>Predetermined Leveled Time</b>                  | Predetermined leveled times are based on basic motion standard data which capture basic body motions, such as reach, move, turn, grasp, position, release, disengage, and apply pressure.                                                                                                                                                                                                  |
| <b>Profit</b>                                      | Profit is sometimes an allowable other cost, depending on the contractual agreement the contractor has with the government. Some acquisition contracts allow the contractor to include an agreed-upon amount of <b>profit</b> in addition to their costs. This is usually in return for taking on a difficult, high risk project that requires a long-term commitment of time and capital. |
| <b>Quality Assurance Engineering</b>               | Quality assurance engineering involves the formulation of standards and specifications for tests and inspections.                                                                                                                                                                                                                                                                          |
| <b>Quality Control</b>                             | Quality control involves the act of testing or inspecting the product during the manufacturing process and prior to final acceptance.                                                                                                                                                                                                                                                      |
| <b>Recovery Rates</b>                              | The recovery rate is used by contractors to allocate overhead and other costs to each program or contract they benefit. Recovery rates are calculated by dividing the total indirect cost pool dollars by a relevant base.                                                                                                                                                                 |
| <b>Regression Analysis</b>                         | Regression analysis is a statistical technique that illuminates how the value of a dependent variable, such as direct labor wage rates, changes in response to changes in one or more independent variables, such as time.                                                                                                                                                                 |
| <b>Reliability and Maintainability Engineering</b> | Reliability and maintainability engineering involves designing and manufacturing products to meet longevity and repair requirements.                                                                                                                                                                                                                                                       |
| <b>Service Centers</b>                             | Service centers are included in many firms to provide company-wide services such as scientific computer operation, data processing, copying, technical typing, photographing, etc.                                                                                                                                                                                                         |

| Term                           | Definition                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Simple Moving Average</b>   | Simple moving average, when applied to time series data, is the average of the last X number of observations. It is applied to smooth out short-term fluctuations in time series data and amplify long-term trends or cycles.                                                                                                                                                                                       |
| <b>Special Allowance</b>       | Special allowance is an adjustment applied when formulating a labor standard to allow time for infrequent, unpredictable occurrences, such as power failures, machine breakdowns, and minor repairs.                                                                                                                                                                                                                |
| <b>Standard Hour</b>           | Standard hour is defined as the number of hours a skilled worker will use to complete a given job under ideal or perfect conditions.                                                                                                                                                                                                                                                                                |
| <b>Standard Time Data</b>      | Standard time data is based on groups of motions (drilling a hole or painting a square foot of surface area) that are estimated as a single element.                                                                                                                                                                                                                                                                |
| <b>Sustaining Engineering</b>  | Sustaining engineering involves as needed support as problems arise throughout the life of the contract.                                                                                                                                                                                                                                                                                                            |
| <b>Time Study</b>              | During time studies, industrial engineers observe and record the time that a selected worker requires to perform each of the subtasks in the work design. Several observations are required to average out random variations and assure that all elements of the work have been considered.                                                                                                                         |
| <b>Weighted Moving Average</b> | Weighted moving average, when applied to time series data, is the average of the last X number of observations but with varying weights assigned to each observation. Usually the most recent is given the greatest weight, and each preceding observation is given a progressively smaller weight. It is applied to smooth out short-term fluctuations in time series data and amplify long-term trends or cycles. |
| <b>Work Sampling</b>           | Work sampling is commonly used to develop non-engineering standards. Estimates are based on the proportion of time spent by one or more persons on a given activity.                                                                                                                                                                                                                                                |
| <b>Wrap Rate</b>               | Wrap rate, also called "fully burdened labor rate," includes the contractor's direct labor wage rate, overhead costs rate, and other costs rate. It is used when assessing contractors' proposals and making cost estimates.                                                                                                                                                                                        |