

The Charge of the Rate Brigade: A Rate Template for In-House Construction Labor

by Donald J. Guckert and Jeri Ripley King

One of the core services of most facilities management organizations in higher education is to provide minor improvements, alterations, and repairs that fall beyond the scope and funding of normal maintenance. These services range from simple “handyman” activities, such as installing bookshelves and repairing departmental equipment, to more ambitious endeavors like renovations of classrooms and laboratories. To maintain institutional quality and provide the necessary flexibility to work around the schedules of the customers, often the most cost-effective approach is to use in-house staff to deliver the services. These services are differentiated from maintenance services, and are commonly referred to as “in-house construction.”

Thirty years ago, most in-house construction work was funded through annual operating budgets. As budgets tightened, this approach began to give way to charging a fee for services. Now, recharging for in-house construction labor is



recognized necessary to protect maintenance and operations budgets from being eroded by the costs of elective improvements.

Questions about how to establish recharge rates have surfaced at the APPA Institute for Facilities Management. During discussions about in-house construction, many of the institute’s attendees have been surprised to discover that, despite having a recharge system in place, they are indirectly subsidizing in-house construction efforts with their maintenance and operations budgets by not capturing all of the costs associated with providing the services.

To try to eliminate the mystery surrounding rate determination, we set out to develop and explain a basic template that could be applied to all types of institutions and situations to ensure that all costs, direct and indirect, would be fully recovered. Institutions could then make informed decisions about the degree of cost recovery they are seeking.

Controlling for Apples and Oranges

We knew, from an existing survey conducted in 1999 by the University of Arkansas Physical Plant, that there was a wide range of hourly recharge rates. Over the years, we had heard many guesses about why the rates varied so much. These guesses included the economics associated with geographic locations, union versus non-union, private versus public, and small versus large institutions. Logic dictates that

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benchmarking actual costs from one institution to another has little value if the base wages vary significantly.

To avoid comparing apples to oranges, we needed to find a way to normalize the data. Rather than focusing on the specific dollar amount, we decided to look at the ratio of recharge rates to direct wages. For example, if the hourly rate charged to the customer is \$40 and the hourly wage paid to a tradesperson is \$20, the ratio is 2-to-1. By looking at the ratio, we would be able to isolate the mix of factors that influence the calculation of rates.

The Survey

To test our assumptions, we requested voluntary responses from APPA member institutions to a web-based survey instrument. We asked for recharge rates by trade; average annual billable hours; and elements included in the rates: fringe benefits; equipment and shop overhead; plant maintenance and operations costs; and other overhead expenses. In addition, we gathered information about geographical location, union versus non-union, private versus public, the institution size, type (doctoral/research, masters, etc.), approximate work volume, services offered (carpentry, masonry, electrical, plumbing, etc.), and where in-house construction resides within the organization to see whether there were any discernible trends that would have an impact on rates.

Understanding the Survey Responses

Thirty-three institutions responded to our Web-based survey in Spring 2003. The institutions ranged from the small, private, liberal arts baccalaureate college to the multi-campus, public, doctoral research extensive university. Twenty-four of the responses were from doctoral research institutions. Fourteen were from Big Ten and Big 12 schools. The majority of the responses were from public institutions.

Figure 1: Calculation of Billable Hours

The following is a sample rate calculation for an employee receiving nine holidays, five weeks of vacation, twelve sick days, 40 hours of training/meetings, and 24 hours of other time.

Annual Available Hours	2080
Less:	
Holidays	72
Funeral/Jury	8
Vacation	200
Sick Leave	96
Training and Meetings	40
Other	24
Total Billable Hours	1642

This average number of billable hours would target a 78% availability rate (1642 divided by 2080) per trades person.

When we looked at the ratios of rates to direct wages, we found that they ranged from 1-to-1 to 3.01-to-1. In other words, if the direct wage of a plumber is \$20/hour, one institution would charge \$20 for one hour of labor and another would charge \$60.20. The enormous difference is because the charged rates do not cover the same things. In the case of the 1-to-1 ratio, the only costs recovered were the wages for that hour of labor, with no recovery for operational or administrative overhead. Those with greater ratios included some or all of the other overhead elements.

Billable Hours: Each full-time employee (FTE) is compensated for 2080 total hours per year. However, not all of these are "billable hours." Billable hours exclude the number of hours allowed for leave time such as vacation, sick leave, safety and other training, meetings, and an estimate of down time for departmental celebrations, employee recognition events, memorial services, general shop meetings, or other events.

If you are trying to recover all costs associated with the service provided, the rate needs to reflect a targeted number

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Figure 2: Sample Overhead Elements

Overhead includes all of the operating expenses, except direct labor and materials.

Fringe Benefits
Office Staff & Management Salaries/Wages
Training Expenses
Telephone
Supplies
Uniforms/Personal Protective Equipment
Shop Supplies/Tools
Vehicle Gas and Insurance
Equipment/Vehicle Maintenance and Repair
Equipment Depreciation
Computing Expense
Rent, Leasing/other Facilities Indirect Costs

Figure 3: Calculating Average Recharge Rate

1. **TOTAL OPERATIONAL COST** = Total Wages + All Overhead Costs (See Figure 2)
2. **TOTAL BILLABLE HOURS** = Billable Hours (See Figure 1) x Number of Billable FTE
3. **HOURLY RECHARGE RATE** = Total Operational Cost / Total Billable Hours

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of billable hours for each trade, or an average for each individual. Simply put, the more hours you have per employee to recover your annual costs, the lower the hourly rate will be; fewer billable hours per employee points to a higher rate.

Overhead: The rate survey asked about many categories of overhead, including fringe benefits; office support/supervision/management overhead; equipment and shop overhead; plant-maintenance/operation fees; and other miscellaneous costs. Full cost recovery considers each of these overhead expenses.

Significant rate subsidies may exist. This is especially true if fringe benefits are picked up from a centrally funded source.

A very common form of subsidy is not charging the unit for shop and office space or the cost of operations and maintenance for that space. Organizations that fully apportion overhead expenses in their rates have included costs for the facility, i.e., rent and utilities.

Other forms of subsidy include not recouping the costs of providing office support, supervision, or tools and equipment in the recharge rate. While having these costs outside the rates may sound good on the surface, it can hamper growth. If these overhead costs are supported by a static funding source, the growth and expansion of the operation will be limited when the demand for services outstrips the overhead structure needed to support the workforce. On the other hand, full recovery of support expenses in overhead allows the rates to absorb the addition of supervisory and support staff, and equipment commensurate with the demand for the services.

In our survey, the elements of overhead included in the rates varied greatly.

Of the 33 responding institutions, only five indicated that their recharge rates included all of the elements listed in Figure 2; an additional seven institutions reported using most of the factors. This suggests that the majority of our surveyed institutions were providing some form of subsidy to their in-house construction services.

Since many overhead expenses are more or less fixed, we found that larger organizations were able to charge less. We were able to extrapolate that economies of scale appear to lower rates, simply because very large organizations have a higher number of billable trades people per office staff member (estimators, schedulers, accounting clerks, management, etc.), which can drive down hourly overhead costs. Very small organizations have a lower ratio of trades people per management or support staff, which can drive up overhead costs.

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Figure 4: Calculating Individual or Trades Rates

1. **TOTAL TRADE OR EMPLOYEE COST =**
*Specific trade or employee wages +
Specific Overhead Costs Apportioned
to Specific Trade or Individual*
2. **DETERMINE BILLABLE HOURS BY
SPECIFIC TRADE OR INDIVIDUAL**
3. **TRADE OR INDIVIDUAL HOURLY
RECHARGE RATE = Total Trade or
Employee Cost / Total Billable Hours**

Profit/Loss and Break-Even Rate Structures: Adjustments for surpluses or deficits should be treated as operational overhead in the rate calculation. When institutional policy permits a balance to be carried forward, or divides a loss over several years, this can have an impact on the rates. It is important to recognize that, in a break-even environment, overages can reduce future rates, and losses can drive up future rates.

To illustrate this, consider a 20 FTE operation that bills 1650 hours per employee per year. The total billable time for the unit would be 33,000 hours (20 FTE x 1650 hours). If the unit had a loss of \$33,000 in the previous year, the rates for each individual would need to be one dollar per hour higher

in the following year in order to retire the debt. Conversely, if the operation needs to draw down a surplus, the result would be lower rates.

Only two of the respondents to our survey indicated that their rates included an over or under budget amount from the previous year.

The Generic Rate Template

To calculate whether your institution is recovering the full cost of providing in-house construction services, look to see whether the average hourly recharge rate is equal to the total operational cost divided by the total annual billable hours (Figure 3). The total operational cost represents all expenses necessary to run the in-house construction service. This includes salaries and wages, benefits, overhead, and adjustments for prior year losses or surpluses. The method used in Figure 3 will calculate a single recharge rate for all billable employees.

Rates can also be developed as an average by specific trade, or by individual within a trade. To calculate hourly rates by individuals or trades, the overhead is apportioned by billable hour. By doing the individual calculations, you can make allowances for those trades people who bill more or less time, need more or less training to meet requirements in a given year, or have differences in wage or benefit levels.

The approach to calculating the hourly rate by individual or by trade group (Figure 4) is fundamentally the same as outlined in Figure 3, with the following modifications:

1. Determine the wages by trade, employee classification within a trade or by individual.
2. Instead of averaging all overhead expenses together, apportion overhead among trades or individuals based upon their unique requirements for shop equipment, tools, vehicles, supervision and space.
3. Adjust billable hours by trade or individual. The billable hours will often vary between trades because some trades are more specialized and have higher annual training and certification needs. Senior employees earning more vacation time may drive differences between individuals within a trade.

Some Rules of Thumb

We found a few general rules of thumb for checking the calculated rate against full cost recovery. Normally, the hourly recharge rate for a given employee will be approximately twice their direct wage. For example, if you

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were looking at a \$20/hour wage, you could expect to find that the hourly recharge rate would be approximately \$40.

The recharge rate for full cost recovery would include non-billable time, overhead and other adjustments. In our example, our \$20/hour employee's hourly rate would include the \$20 wage, about \$5 for the cost of compensated time that is non-billable (based on an 80% availability rate), roughly \$5 for benefits (25% of the hourly wage), and about \$10 for overhead and adjustments. This adds up to a \$40 hourly recharge rate, or a ratio rate-to-wage of 2-to-1.

If a ratio is significantly below two-times the direct wage, check to see whether billable time is overestimated, overhead is underestimated, or benefits were factored into the rate.

To Subsidize or Not?

It is important to recognize that your institution may not want a recharge rate that covers all costs. The ultimate goal of any in-house construction organization is to provide acceptable small construction projects at the lowest possible total cost. Determining what the rate would be for full cost recovery allows your institution to make decisions about certain elements that can influence the ability of the recharge organization to cover its targeted expenses.

Generalizing from our Spring 2003 survey data, most of the responding institutions appeared to be subsidizing their in-house construction rates in some way. This can occur by

direct or indirect subsidization. Direct subsidization would include administrative or office salaries and wages, or benefit costs that are paid out of a central funding pool. Indirect subsidization occurs when organizations recharge services without recouping the cost of supervision, administrative support, vehicles, equipment, tools, training and other overhead expenses related to those services.

Summary

In order to address many of the questions that have surfaced about how to develop in-house construction rates, we conducted a rate survey that resulted in validating our assumptions, increased our understanding of the influence of the various elements of overhead, and helped us develop a generic rate template. Our rate survey showed that organizations that are fully recovering their costs are following the same basic approach to determining their rates.

Determining rates that permit full cost recovery for in-house construction can provide your organization with the information it needs to decide how to manage its funds. Full-cost recovery for in-house construction services may or may not be a goal of your institution. However, if less than full-cost recovery has not been an informed decision, facilities management organizations may be unwittingly losing budgetary ground by subsidizing elective improvements. 🏰

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