

Labor Efficiencies & Base Service Charges New Features Introduced in Xactimate version 2002

Answer

When estimating the servicing, construction or alteration of any structure, one of the largest variables affecting costs is labor productivity. One of the major factors affecting labor productivity is the amount of work to be done. As the quantity of work being performed increases, so does the productivity of labor "per unit" increase by the efficiencies gained (known as "economies of scale"). In contrast, **smaller jobs require a much greater effort of labor "per unit"**.

To properly account for the efficiencies and inefficiencies between job sizes, one must take into account both the time needed to perform the work, and also the time spent on other associated tasks which must occur. Examples of these other tasks are driving to the job, stopping to pick up materials or equipment if needed, set up and clean up. Accounting for the time spent on these additional tasks within a repair or service estimate, is typically done by either factoring their related costs into each line item unit price, or breaking them out into a separate charge.

While each method is acceptable, **for smaller jobs it's often more important to recognize, and break out these additional costs** attributed to labor into a separate and distinct charge. In doing so, greater accuracy is achieved among the various job sizes within this type of work. The mechanical trades - Electrical, HVAC, and Plumbing - have historically used this method when providing repair estimates. They've discovered that by breaking out these costs into a separate charge (typically called a "Service Charge" on the repair bill) they can better explain and account for the differences between smaller and larger repairs.

Direct Yield and Supporting Events

Within the building cost databases published by Xactware for the estimating products of Xactimate, and XactTotal, labor costs for each line item are separated into Direct Yield and Supporting Events assumptions.

The "Direct Yield" is the portion of labor attributed to having a skilled tradesperson perform the task, after all other factors for drive time, set-up, clean-up, etc. (Supporting Events) are accounted for elsewhere.

The Supporting Events factor for labor contains the assumed portion of time which will be lost to the performance of the additional tasks such as drive time, set-up, clean-up, breaks, daily planning, etc., as well as time needed for the tradesperson to measure, cut, and/or get the materials from the place where they were delivered to the job site, to the spot where they are to be installed.

for more information on Retail Labor Rates, Direct Yield and Supporting Events, see the **white paper at the following web address: http://eservice.xactware.com/apps/esc/retail_labor1.jsp*

New Labor Efficiency settings

In order to add greater precision to the labor estimation process, Xactware's Xactimate product, version 2002, allows you to select between several categories of Labor Efficiency when creating an estimate.

These options give the user the flexibility of having the program either break out a service charge for each trade, or factor those costs into the Supporting Events assumption of each line item based upon the type of job they are estimating. There are three Labor Efficiency job types to select from:

- Restoration / Service / Remodel with Service Charges Factored In
- Restoration / Service / Remodel with Service Charges Broken Out
- New Construction

How does it work?

Restoration / Service / Remodel with Service Charges Factored In

When the "Restoration / Service / Remodel w/Service Charges **Factored In**" efficiency setting is chosen, **the labor productivity is decreased (meaning more time is allowed to perform the task)** in order to account for additional time spent driving to the job, picking up materials and/or equipment, including any additional trips which may be necessary. This is done by factoring these costs into the Labor Supporting Events of

each line item unit price, using the assumption that a certain percentage of each tradesperson's day is spent performing these associated activities.

Restoration / Service / Remodel with Service Charges Broken Out

When the "Restoration / Service / Remodel w/Service Charges Broken Out" efficiency setting is chosen, the labor productivity of each line item is increased (meaning less time is allowed). This is done by reducing the Supporting Events assumption of each line item so that it, in combination with the labor direct yield contains only the direct labor needed to perform the task. The assumptions related to time spent performing the associated tasks of driving to the job, picking up materials and/or equipment, and any additional trips are broken out into a separate **Base Service Charge** for each trade involved in the job.

Here's how it works:

The first time a line item is entered in an estimate (for example - ½" drywall - hung, taped, floated, ready for paint), Xactimate specifies the Base Service Charge for the labor trade responsible for performing the task (in this case, a drywall installer). The base service charges are calculated by multiplying the number of hours assumed for drive time, the number of trips needed, and typical mobilization time by the Retail Labor Rate for that trade. As additional line items are entered for that same trade, no additional base service charges are applied. When new line items are added which reference another trade (for example - a finish carpenter) the appropriate base service charge for that new trade is added to the estimate. By breaking out some of the supporting events into a separate service charge, you can more precisely estimate the increased efficiencies of larger estimates, and the reduced efficiencies found in smaller jobs.

New Construction

While it is still important to recognize the additional Supporting Events labor costs involved in New Construction (or "total") job types, it is generally accepted within the industry to factor these costs into each unit price. As done in the "Restoration / Service / Remodel w/Service Charges Factored in" setting, the associated costs of drive time, trip charges, etc. are included in the labor supporting events of each line item. However, these cost factors are modified to be reflective of the time spent related to New Construction (or "total") job types only. This setting is intended to be used for those estimating the cost to build a structure from the ground up.

Some examples of the differences which can be seen in labor supporting events between New Construction, and Restoration / Service / Remodeling job types are:

- Drive time in new construction is generally not paid if workers are to meet at the job site each morning. Exceptions to this are for the mechanical trades which meet at a specified location to load tools and materials needed for the day.
- Clean up tends to be much less extensive and/or frequent in new construction than in restoration or remodeling work where customers may be living in the home while work is underway.
- The overall loss of productivity which is experienced when working in a home which is occupied does not apply. While workers still need to measure, cut, and carry the material from the place where it is delivered on site, to where it must be installed, this distance is generally much shorter in new construction. The proximity of where a tradesperson sets up their equipment, to where the work is being performed is also much closer. For example, when performing finish carpentry in new construction, the carpenter's equipment (saws, compressor, etc.) are set up right within the structure. All cutting is done right where (or very near) to the actual area where the molding is to be installed. In performing restoration work, the set up or staging area must usually be located outside the structure. The carpenter must take measurements, walk outside, cut the material, and re-enter the structure to install it. During this process, extreme care must be taken while working around other contents (furniture, etc.), ensuring exterior doors are not left open, and often even removing shoes or boots to keep from soiling the floor covering in unaffected areas.

The New Construction efficiency assumption setting is also used as the basis of the calculation engine for XactTotal, Xactware's estimating tool for total losses, and insurance to value.

How is it different from previous versions?

Prior versions of Xactimate managed labor inefficiencies in restoration and remodeling job types using "minimum charges" and "minimum adjustments". This system, worked by generally assigning a minimum

charge for each trade which included not only the Service or Trip charges associated with a job, but also the labor costs, and materials needed to actually perform smaller repairs or services. As line items were entered in the estimate, their dollar value was subtracted from the minimum charge for that trade. When the estimate was completed, any remaining minimum charge not consumed by the line items associated with it was added as a minimum adjustment to the estimate total.

Xactimate Minimum Charge Method prior to version 2002

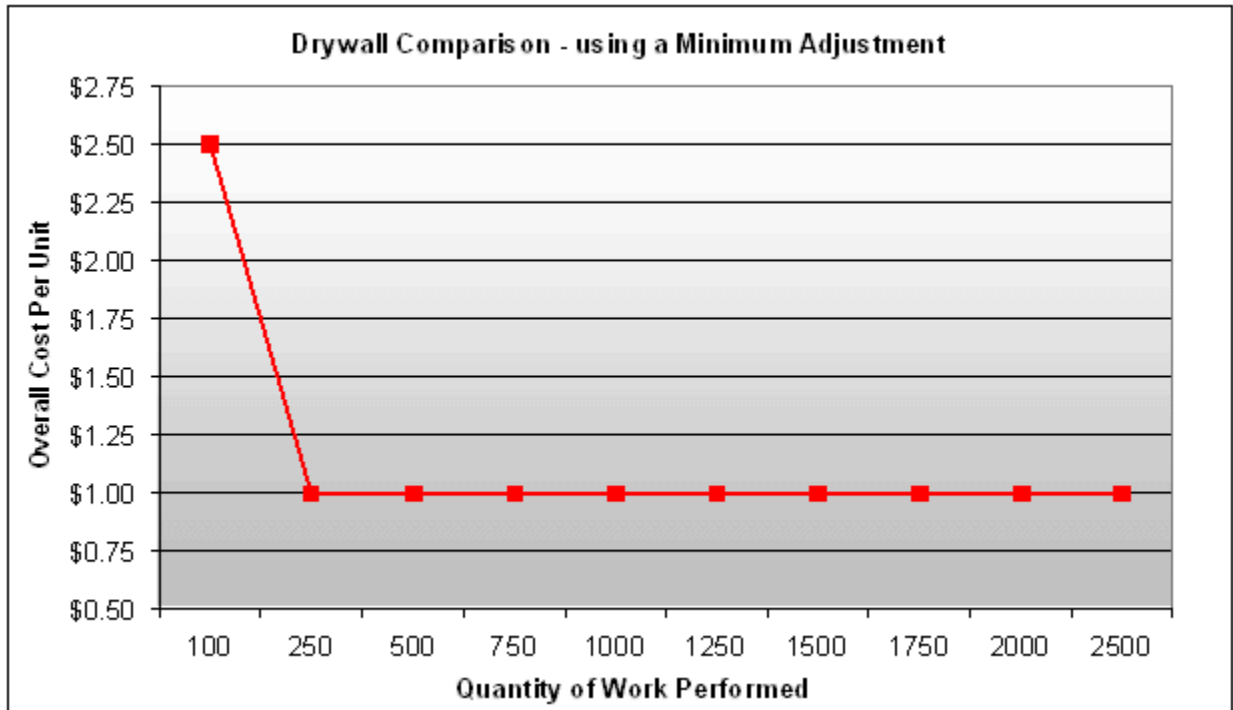
<u>Line Items Estimated</u>	<u>Price Ea</u>	<u>Qty</u>	<u>Total</u>
1/2" drywall hung, taped, floated, ready for paint	1.00 SF	20 SF	\$ 20.00
5/8" drywall, hung and fire-taped only	.80 SF	42 SF	\$ 33.60
Texture drywall	.40 SF	100 SF	\$ 40.00
Total Line Items			\$ 93.60
Adjustment for Minimum Charges			
<u>Minimum Charge</u>	<u>Amount</u>	<u>\$ In Estimate</u>	<u>Adjustment</u>
Drywall Repair	\$ 250.00	\$ 93.60	\$ 156.40
Estimate Sub-Total			\$ 250.00

This example shows that the estimate total for drywall is increased to meet the minimum charge. Once the minimum charge was met or exceeded by line items in the estimate, it no longer applied. The chief difference between Minimum Charges and Base Service Charges is that while minimum charges include both the materials and the labor needed to affect the smaller repair, Base Service Charges focus more precisely on the labor attributed only to the fixed costs of mobilization, job set up, and other factors as explained earlier.

In order to see how the minimum charge method affected the overall cost per unit, let's look at the following example of installing and finishing drywall at a cost of \$1 per square foot and a drywall minimum charge of \$250 (price examples used are for convenience in math). Cost calculation for various quantities ranging from 100 to 2500 square feet was done using the following formula:

$$\text{Example } \frac{((\$1 \times 100) + \$150) / 100}{\text{Quantity}} = \text{Total Cost / Unit} = \$2.50$$

Placing this data in a graph, looks like the following:



This graph shows that the overall cost per square foot starts off relatively high, then drops sharply as the minimum charge has been met, after which it remains constant. The estimate total remains the same whether the job entails replacing 10 square feet, or 250 square feet of drywall. It also indicates that no efficiencies are experienced as the quantity of units installed increases beyond 250 square feet.

When you select the Restoration / Service / Remodel w/Service Charges Broken Out efficiency, the fixed costs associated with drive time, job set up, etc. which used to be in the Labor Supporting Events assumptions are placed into the Base Service Charge. The net result is an overall price which gradually increases or decreases in direct proportion with the quantity.

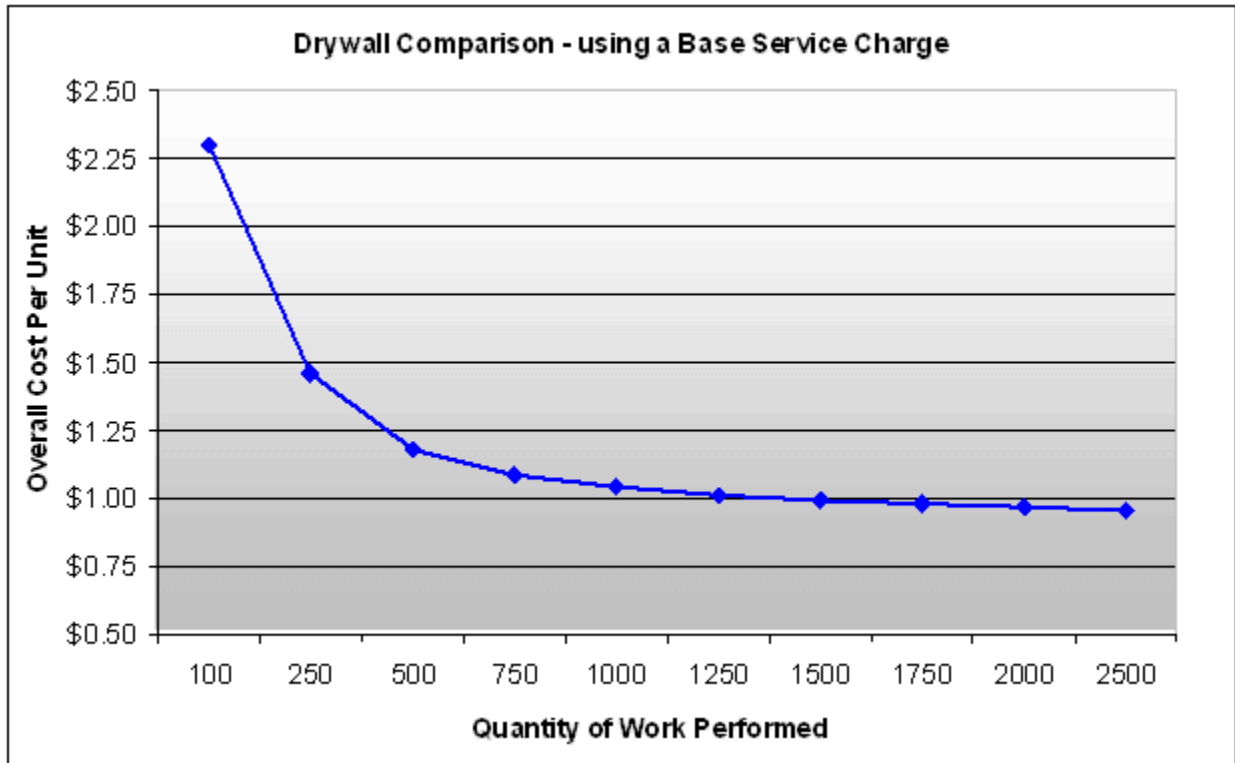
The following example of installing and finishing drywall at a cost of \$.90 per square foot and a Base Service Charge of \$140 (calculated using a Retail Labor Rate of \$40/hr x 3.5 hours) shows how the Base Service Charge method affects the overall cost per unit,. Using these costs applied to the same quantities used in the old-style minimum charge example, the total cost per square foot is calculated by the following formula:

$$\text{Example } \frac{((\text{Unit Cost} \times \text{Quantity}) + \text{Base Serv. Chg.})}{\text{Quantity}} = \text{Total Cost / Unit}$$

$$\frac{((\$0.90 \times 100) + \$140)}{100} = \$2.30$$

The difference in this model is that while the minimum adjustment in the preceding example was eventually met, and therefore no longer applied, the Base Service Charge is always applied regardless of quantity.

Placing this data in a graph, looks like the following:



This example shows a much more gradual decrease in overall price per unit, which better accommodates the varying quantities even in smaller jobs. In addition, the chart also indicates that the overall cost per unit continues to decrease in the larger estimated quantities.

While this method does result in a total cost per unit which varies based upon quantity, the individual unit prices as shown in the estimate itself do not change as they are reflective of line item prices only.

As with all previous versions of Xactimate, version 2002 continues to provide complete access to the details contained within the pricing database, allowing each user to fine-tune the default assumptions provided to meet their individual circumstances. Our corporate motto of "Fairness through Openness" continues to be the driving force behind Xactware's software design and architecture.

The new features of **Labor Efficiencies and Base Service Charges**, included in Xactimate and XactTotal versions 2002 provide new levels of accuracy for the complex task of estimating labor costs between small and large jobs by addressing economies of scale.