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BY RICHARD L. WERNER

THE ART & SCIENCE OF FORECASTING
the Estimated Cost at Completion

Forecasting is both an art and a science. The art arises from the forecaster's personality and predilections, while the science comes from the data, project metrics, and tools used by the forecaster.

This article will help you learn how to produce realistic forecasts and improve the accuracy of crucial financial measurements.

Construction industry executives rely on several types of forecasts:

- Cash flow analyses
- Revenue and profit projections
- Equipment resource reports
- Project labor estimates
- Long-term projections
- Short-term projections

These forecasts are based on another forecast, Estimated Cost at Completion (ECAC). This forecast begins before a job is won, becomes the basis for the job's Original Budget, and continues periodically throughout the project.

This article focuses on forecasting ECAC for active jobs under construction. Forecasting the ECAC is absolutely vital because it provides the basis for the job's anticipated ultimate profitability, commonly referred to as the Estimated Margin at Completion (EMAC), where EMAC = Contract Amount - ECAC; and where EMAC% = (EMAC/Contract Amount) x 100.

ECAC is also the basis for periodically recognizing revenue throughout the job's duration for Lump Sum and Unit Price jobs, where Recognized Revenue = Incurred Costs + [Incurred Costs/ECAC] x EMAC.

Typical ECAC Forecast Trends

Because forecasting is as much of an art as it is as a science, it's impossible to remove personality and predilections from the forecasting process. However, once a forecaster's tendencies are understood, managers can compensate for the predisposition of each forecaster.

Forecasters tend to fall into one of four categories: *Procrastinators*, *Pessimists*, *Optimists*, and *Realists*. Exhibit 1 below shows how forecaster tendencies affect ECAC estimates.

Procrastinators rarely make a forecast until the job is almost complete and it's too late to take the necessary corrective actions. This type of forecasting is perhaps the most undesirable because it can lead to favorable or unfavorable end-of-job surprises.

Pessimists assume that anything that can go wrong will go wrong. The advantage of such forecasts is that unfavorable surprises at the end of the job are unlikely. However, improper decisions may be made throughout the job to compensate for a possible job cost overrun that never materializes.

Optimists always see the bright side. They are sure that productivity will remain high, all subcontractors will be on schedule, and required materials will arrive on time. Optimistic forecasts have two disadvantages: 1) the likelihood of unfavorable end-of-job surprises and 2) the possibility that key personnel may be moved to other jobs that appear to be in a more precarious position.

Realists properly evaluate the job early in the job cycle and continue to do so on a monthly basis. They realistically forecast the ECAC as job conditions change. This allows management to take timely, appropriate, and corrective actions.

Because realistic forecasts are the most desirable, we'll focus on factors that enable contractors to create such forecasts more often. The first step is to assess the relationship between forecasts, budgets, and variances.

Forecasts, Budgets & Variances – Oh My!

The ECAC is the basis for determining the most important financial measurements for managing construction work:

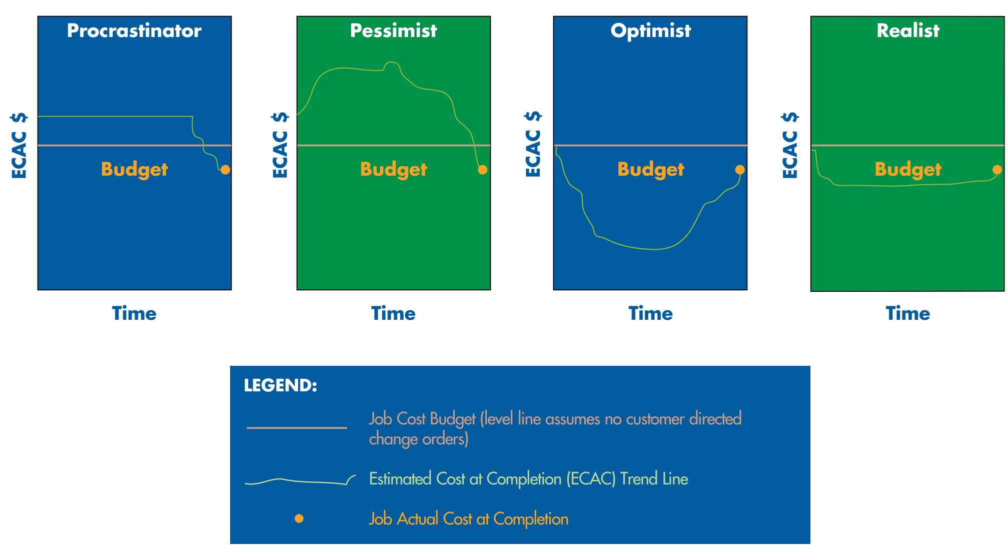
- End-of-Job Profitability
- Recognized Revenue on a Periodic Basis
- Projected Variances from the Revised Budget (RB)

To produce realistic forecasts, it's important to understand the relationship between the ECAC, other forecasts, budgets, and projected variances. The PM's forecast of ECAC is a major (but not the only) predictor of a job's ECAC. In turn, the job's ECAC is the basis for determining budget variances as they occur. Here's how it works:

- The Original Budget, Budget Rearrangements, and Customer-Directed (i.e., chargeable) Change Orders comprise the Revised Budget.
- The job's ECAC is a function of the PM's ECAC forecast, Incurred Costs, Committed Costs, and productivity for Internally Generated Costs (IGCs, which are defined in the following section).

From this point forward, all references to ECAC will be synonymous with the job's ECAC, and forecasts will be synonymous with the PM's forecast of ECAC.

Exhibit 1: The Effect of Forecaster Tendencies on ECAC Estimates



The ECAC may be greater than the forecast, but never less. For example, if incurred or committed costs are $10,000 and the forecast is $8,000, then a contractor may want to use an ECAC of $10,000 rather than $8,000.

- The Projected Cost Variance equals the ECAC minus the Revised Budget (ECAC-RB).

The PM's forecast and resulting ECAC do not affect the revised budget in any way. If a Customer-Directed change order is issued, then the revised budget changes, and the resulting PM's forecast should change accordingly. Conversely, internal change orders should alter the PM's Forecast, but not the Revised Budget.

Classifying Costs

Whether your company is building a skyscraper or a school playground, accurate forecasting relies on the consistent use of cost categories. In the typical construction project, direct and indirect costs are generally assigned to one of the following cost categories:

- Labor
- Equipment used (owned and rented)
- Subcontracts
- Materials (including furnished equipment)
- Other costs (insurances, bonds, and mobilization)

In addition, there may be a separate cost category for Allocated Costs (which could include portions or all of overhead). The goal is to minimize or eliminate charging overhead costs to jobs that cannot be easily specifically allocated to jobs. Trying to allocate all overhead costs is usually an exercise in futility and can produce erroneous or misleading results.

Internally Generated Costs

IGCs are defined as costs under the contractor's direction and – to a certain extent – control. Such costs are labor, equipment used, and allocated costs – which are highly variable and the most difficult to reliably forecast. Although IGCs are under the contractor's direction, they can vary the most depending on site conditions, available labor skills and resources, weather, etc.

Externally Generated Costs

EGCs are defined as costs under the direction and control of others (vendors and subcontractors). Such costs are material, subcontract, and other costs. These costs tend to stay constant throughout the job, assuming that purchase orders and subcontracts are issued at the beginning of the job, and that the job's plans and specifications are adequately prepared.

Material and subcontract costs, in the absence of customer-directed change orders, do not take as much effort to forecast. Even when multiple customer-directed change orders

Exhibit 2: The WBS & Productivity Measures

Units of Measure Legend:	
LS	Lump Sum
CY	Cubic Yard
SF	Square Feet
CWT	Hundredweight
EA	Each

Job XYZ			Cost Categories					
Cost Code	Description	Units of Measure	Labor	Equip. Used	Materials	Subcontract	Other	Allocated
01000	Mobilization	LS						
02000	Common Excavation - Large Area	CY						
03010	Forms - Slab on Grade	SF						
03020	Re-Bar (Nos. 2-11) - S.O.G.	CWT						
03025	Base Plates for Structural Steel	EA						
03030	Concrete - S.O.G. - from Truck	CY						
	Total							

As this sample shows, the WBS can reflect both productivity measures and cost coding. The costs and quantities associated with the WBS must be continually updated with discrete cut-off periods to match cost and production.

It's very important that the coding be standardized for internal purposes. Also, each cost code must contain the Revised Budgeted Quantity, Forecast Quantity, and Installed Quantity if productivity is to be tracked.

Each cell within the cost categories must contain the Revised Budgeted Cost, Forecast Cost, Committed Cost, and Incurred Cost. This level of detail leads to more accurate ECAC forecasting.

occur, the basis for forecasting is straightforward. However, extra care must be taken when such costs are not covered by purchase orders or when the purchase orders are issued late in the job's life cycle.

Other costs (normally, a small portion of overall job costs and miscellaneous costs that are relatively constant over a job's duration) are generally not difficult to forecast unless the job's duration changes.

Work Breakdown Structure

Forecasting is performed periodically throughout a job's duration and normally occurs at the Cost Code/Cost Category level. Exhibit 2 on the previous page shows a typical job's Work Breakdown Structure (WBS) and the metrics required to forecast. To determine the ECAC for all Cost Codes/Cost Categories, the following information is required: Revised Budgeted Cost, Forecast Cost, Committed Cost, and Incurred Cost.

In addition, if productivity is to be tracked, then each Cost Code should capture Revised Budgeted, Forecast, and Installed Quantities. (In some instances, these must be tracked at the Cost Code/Cost Category level.)

Forecasting IGC

Productivity is much preferred for forecasting IGC because it is a measure of output (e.g., the number of blocks put in place per hour or yards of concrete placed per hour), rather than a measure of input (such as labor costs per hour).

To forecast IGC, extrapolate productivity for the remainder of the job using similar job progress and the current job to-date progress. When making projections, consider future conditions.

Measuring productivity requires collecting installed quantity data and associated inputs (incurred hours and costs). This can be straightforward if the cost codes are broken down to the appropriate level of detail. This may be more difficult to accomplish in some instances (hanging duct work) than others (placing concrete, excavation, or laying pipe).

For example, to construct a concrete placement, several activities are required. Contractors may need to prepare the foundation surface, install reinforcement, erect the forms, place the concrete, strip the forms, and finish the concrete. To realistically measure productivity, these activities require separate cost codes, with separate quantities and hours/costs collected for each.

The collection and reporting of productivity information for forecast purposes may be practical only for large cost items where cost is proportional to installed quantities and quantities can be practically measured.

When collecting productivity metrics is not appropriate and Cost Code/Cost Category costs are only tracked from a cost perspective, they can be more practically lumped into a single cost code. If tracking productivity without cost code segmentation, then productivity information can be skewed and yield misleading information.

Labor at the Operations Level

When monitoring labor productivity is of utmost importance (e.g., during the construction of petro-chemical or nuclear facilities), contractors can track costs at the cost code level and also budget and track quantities installed at the operations level.

As illustrated in Exhibit 3 below, this approach allows contractors to arrive at a very accurate cost code percent complete without tracking incurred costs at the operations level.

Exhibit 3: Labor at the Operations Level

The work package budgeted labor hours equal all hours entered at the operations level. Cost code budgeted labor hours should equal all budgeted hours for work packages linked to cost code. In this example, the cost code's percent complete is:

$$\frac{\text{Quantities Installed x Budgeted Labor Unit Cost for the Cost Code}}{\text{Cost Code Total Budgeted Amount}}$$

ECAC then equals (Incurred Costs/Percent Complete) x 100.

Job XYZ		Budgeted Labor Hours		
Cost Code: Plastic Piping		500		
Work Package: 12" Exterior Effluent			300	
	Operation: 12" PIPE			150
	Operation: 12" 90 ELLS			80
	Operation: Clamp Pipe			70
Work Package: 10" Exterior Effluent			200	
	Operation: 10" PIPE			100
	Operation: 10" 90 ELLS			60
	Operation: Clamp Pipe			40

Forecasting EGC

Responsibility for the productivity of EGC lies with the supplier and is of no concern to contractors – as long as the material or service is timely, of satisfactory quality, and delivered for the agreed-upon price.

Assuming contractors issue purchase orders and subcontracts early in the job cycle, determining EGC is relatively straightforward.

The Science of Determining ECAC

To determine ECAC most effectively, it's helpful to have computer software that performs the necessary, yet sometimes complex, computations. It's also important to have all the costing data easily accessible (e.g., simultaneously viewable on one computer screen).

Useful Data for Determining ECAC

To perform their duties, PMs typically receive reams of paper that contain job cost reports, schedules, change orders, and requests for payments.

Buried somewhere in all this information is the data needed to perform forecasts. The trick is to provide only the information required for forecasting and no more. Providing extraneous information is counterproductive because it distracts the forecaster.

The information also needs to be in a format that is comfortable for the PM. Because each PM processes information differently, the presentation must be flexible. Exhibit 4 below provides information that can be useful when developing the forecast.

FAQs Answered

When developing realistic forecasts, CFMs frequently ask several questions.

When forecasting labor, should labor be defined as Gross Labor (Hours x Rate) or Fully Burdened Labor (Gross Labor + Payroll Taxes and Insurances)? Either definition works, but using Fully Burdened Labor greatly simplifies the forecasting process because contractors don't have to forecast Labor Burden separately.

Exhibit 4: Cost Code Data Elements

While all of these data elements may be needed at one time or another, typically only a subset of this data is required.

		Data Categories								
Metric		Original Budget	Revised Budget	Incurred Installed	Percent Complete	Committed	Last Forecast	Projected Variance from Budget	Last Date of Forecast	Reason for Forecast
	Cost	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Equip. Used (Hours)	✔	✔	✔	✔		✔	✔	✔	✔
	Equip. Used (Rate)	✔	✔	✔			✔	✔	✔	✔
	Equip. Used (Unit Cost)	✔	✔	✔			✔	✔	✔	✔
	Labor (Hours)	✔	✔	✔	✔		✔	✔	✔	✔
	Labor (Rate)	✔	✔	✔			✔	✔	✔	✔
	Labor (Unit Cost)	✔	✔	✔			✔	✔	✔	✔
	Quantity	✔	✔	✔	✔		✔	✔	✔	✔

If indirect costs are allocated to jobs, how should they be forecast? Even if these costs are proportional to labor cost, the allocated costs and forecast allocated costs should be in a separate cost category. If allocated costs are proportional to labor costs, then contractors can automatically update allocated cost forecasts proportionally to labor forecast changes.

Is it practical to forecast at the Job/Cost Category level, rather than at the Job/Cost Category/Cost Code level? This is never as effective, but it is better than not forecasting at all. The forecast at the job/cost category is more of a “gut feel” approximation than forecasting at the cost category/cost code level. At this level, cost/code variances are lost.

Plus, to make forecasting at the job/cost category level work, contractors must follow different processes than when forecasting at the cost category/cost code level.

Do I always need to forecast the ECAC? No, other common methods include Forecast to Complete (FCTC) and Forecast Percent Complete (FCPC). This article discusses ECAC because it’s the most common methodology, and the easiest to implement if the proper information is available. Other methods of forecasting all produce ECAC.

Should the Costing WBS and Billing WBS (Schedule of Values/Bid Items) be the same? While there should be a relationship between these structures, they generally should not be the same. Typically, the Costing WBS is more detailed than the Billing WBS, so contractors can better control costs and use costing information from prior jobs to assist in estimating future jobs with similar cost codes.

Is it useful to specify starting and ending dates in the forecast? Because start-up, learning curve, and final productivity all have a major impact on production rates, and because crew mixes can vary over time, contractors can optimize the appropriateness of Dollar/Unit and Labor Dollar/Hour information by specifying a period of time.

Because forecasting IGC and EGC are so different, and have different elements of risk, should I forecast them at the same time or separately? It can be done either way, but IGC is inherently more difficult to forecast than EGC. So, IGC is typically forecast more frequently and with greater diligence. If purchase orders and subcontracts are maintained on a timely basis, then the EGC are largely self-forecasted in the sense that the ECAC can be set to the larger of the Forecast Cost or the Committed Costs.

Why does this article focus on amounts “at-completion,” rather than “to-date”? For IGC, “to-date” amounts help forecast “at-completion” amounts. For EGC, “at-completion” amounts are much more meaningful because committed costs are a better indicator than “to-date” costs. In addition, materials (such as reinforcing bar and large pipe) are often delivered long before they are installed. By focusing on “at-completion” rather than “to-date” amounts, contractors can properly calculate variances without having to inventory such material (from an accounting perspective).

Is forecasting using a spreadsheet practical? To have the best and most current information available, most contractors normally depend on an enterprise system to furnish the data.

Exporting the data to a spreadsheet, performing the forecast on the spreadsheet, and then importing the forecast back to the enterprise system is practical – if that’s easier than using the forecasting function available with the enterprise system. See the practical example and Exhibits 5A, 5B, and 6 for a sample forecasting input screen.

Conclusion

To produce realistic ECAC forecasts, review the characteristics of the forecasters (the art), and decide how to compensate for the forecasters’ natural predilections. Also, consider the characteristics of the data and tools needed to forecast efficiently and effectively (the science).

And, it’s important to remember that forecasting requires professional judgment. So, contractors must fully support their forecasters. These professionals must have adequate training, effective data-gathering techniques, easy-to-use forecasting tools, and must understand the purpose of the forecast.

With this support and the successful combination of the art and science of forecasting, contractors will predict ECAC with astonishing accuracy. ■

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RICHARD L. WERNER, PE, is Chairman of Construction Industry Solutions USA, COINS USA (formerly Shaker Computer and Management Services, Inc.) in Latham, NY. COINS USA develops, sells, implements, and supports enterprise software for the construction and service industries.

Dick earned a BS in Civil Engineering from Bucknell University, an MS in Civil Engineering from Cornell University, and an MBA from Northeastern University. He has taught at Cornell University, the Pratt Institute, and Union College. A frequent speaker and writer on construction industry issues, Dick is a longtime CFMA member and contributor to *CFMA Building Profits*.

Phone: 518-242-7200
E-Mail: richard.werner@coins-global.com
Website: www.coins-global.com

Don’t miss the practical example that begins on the next page.

Forecasting the ECAC: A Practical Example

PMs commonly forecast each job's ECAC on a monthly basis, using all cost codes and categories that are not complete. (IGC may be forecast more frequently, depending on the impact of cost variances on overall job profitability.)

The data elements that assist the forecaster in determining the ECAC depend on the type of work (i.e., Industrial, Heavy & Highway, or Specialty), the amount of work that is self-performed, and the forecaster's individual preferences.

A GC that does little self-performing work may only use a few of the data elements in Exhibit 4. On the other hand, when quantities are tracked to measure productivity and the contractor self performs much of the work (typical for Heavy & Highway work), the Labor and Equipment Used data elements highlighted in Exhibit 4 might reasonably be used.

Technology can greatly facilitate the forecasting process with software that furnishes accurate information as the basis for

Exhibit 5A: Forecasting Using Quantities & Costs as Input Before Initial Forecast

1	2	3	4	5	6	7	8	9	10	11
Cost Code	Category	Cost Code Description	UOM	Last Date Forecasted	RB Quantity	Installed Quantity	Period Installed Quantity	Quantity % Complete	Forecast Quantity	RB UC
02321	Labor	Structure Excavation	CM		1,788.00	715.00	715.00	39.99	1,788.00	5.59
02321	Materials	Structure Excavation								0.20
02321	Equipment	Structure Excavation								5.20
02321	Subcontract	Structure Excavation								1.45
02321		Cost Code Total								

Exhibit 5B: Forecasting Using Quantities & Costs as Input After Forecast

1	2	3	4	5	6	7	8	9	10	11
Cost Code	Category	Cost Code Description	UOM	Last Date Forecasted	RB Quantity	Installed Quantity	Period Installed Quantity	Quantity % Complete	Forecast Quantity	RB UC
02321	Labor	Structure Excavation	CM	01/31/2012	1,788.00	715.00	0.00	39.99	1,788.00	5.59
02321	Materials	Structure Excavation		01/31/2012						0.20
02321	Equipment	Structure Excavation		01/31/2012						5.20
02321	Subcontract	Structure Excavation		01/31/2012						1.45
02321		Cost Code Total								

Exhibit 6: Forecasting Using Labor Hours & Costs as Input Before Initial Forecast

1	2	3	4	5	6	7	8	9	10	11
Cost Code	Category	Cost Code Description	UOM	Last Date Forecasted	RB Hours	Incurred Hours	Period Incurred Hours	Hours % Complete	Forecast Hours	RB $/Hour
02321	Labor	Structure Excavation	HRS		250.00	94.00	94.00	37.60	250.00	40.00
02321	Materials	Structure Excavation								
02321	Equipment	Structure Excavation								
02321	Subcontract	Structure Excavation								
02321		Cost Code Total								

Notes: 1. CCCP = Computer Calculated Cost Projection; CM = Cubic Meters, ECAC = Estimated Cost at Completion; PTCV = Projected Total Cost Variance; RB = Revised Budget, UC = Unit Cost.
2. The highlighted cells are cells in which input can be made, the other cells are for presenting information to assist the forecaster in determining the forecast amount.
3. The forecast amounts for this scenario are Forecasts at Completion Amounts.

forecasting ECAC (as previously described) and that gives the forecaster the ability to enter forecasts and calculate the ECAC based on that information.

Exhibit 5A below is an example of what a forecast entry screen might look like in such an application. It illustrates a single cost code (02321, Structure Excavation) that has labor, material, equipment, and subcontract costs for the case of the self-performing previously mentioned Heavy & Highway work.

In this example (refer to Exhibits 5A, 5B, and 6), the ECAC forecast is as of February 29, 2012. Some items to note include:

1) In Exhibits 5A and 6, as indicated by the blank dates in column 5, no previous forecasts have been made. The default forecast shown in column 21 is the Revised Budget (column 15) for cost code 02321, and all costs were incurred in the current fiscal period ending February 29, 2012 (compare columns 16 and 17).

The forecast as of February 29, 2012

12	13	14	15	16	17	18	19	20	21	22	23	24
Incurred UC	Period UC	Forecast UC	RB	Incurred Cost	Period Incurred	Committed Cost	$ % Complete	CCCP	Forecast	ECAC	PTCV	Reason
4.60	4.60	4.60	10,000	3,289	3,289	3,289	32.89	8,225	10,000	10,000	0	
0.00	0.00	0.00	360	0	0	460	0.00	460	360	460	100	
5.60	5.60	5.60	9,299	4,004	4,004	4,004	39.99	10,013	9,299	10,013	714	
1.45	1.46	1.45	2,600	1,040	1,040	1,040	40.00	2,600	2,600	2,600	0	
			22,259	8,333	8,333	8,793	36.12	21,298	22,259	23,073	814	

The forecast as of February 29, 2012

12	13	14	15	16	17	18	19	20	21	22	23	24
Incurred UC	Period UC	Forecast UC	RB	Incurred Cost	Period Incurred	Committed Cost	$ % Complete	CCCP	Forecast	ECAC	PTCV	Reason
4.60	0.00	5.03	10,000	3,289	0	3,289	36.54	8,225	9,000	9,000	-1,000	
0.00	0.00	0.28	360	0	0	460	0.00	500	500	500	140	
5.60	0.00	5.03	9,299	4,004	0	4,004	44.49	10,013	9,000	9,000	-299	
1.45	0.00	1.45	2,600	1,040	0	1,040	40.00	2,600	2,600	2,600	0	
			22,259	8,333	0	8,793	39.49	21,338	21,100	21,100	-1,159	

The forecast as of February 29, 2012

12	13	14	15	16	17	18	19	20	21	22	23	24
Incurred $/ Hour	Period $/ Hour	Forecast $/ Hour	RB	Incurred Cost	Period Incurred	Committed Cost	$ % Complete	CCCP	Forecast	ECAC	PTCV	Reason
34.99	34.99	40.00	10,000	3,289	3,289	3,289	32.89	10,000	10,000	10,000	0	
			360	0	0	460	0.00	460	360	460	100	
			9,299	4,004	4,004	4,004	43.06	9,299	9,299	9,299	0	
			2,600	1,040	1,040	1,040	40.00	2,600	2,600	2,600	0	
			22,259	8,333	8,333	8,793	37.27	22,359	22,259	22,359	100	

2) Of the 24 columns shown, only the shaded four columns (10, 14, 21, and 24) allow input from the forecaster. The other columns present information used to determine the ECAC (column 22).

3) Automation built into the software application can improve the forecasting process. Exhibit 5A displays amounts that are calculated automatically, such as Computer Calculated Cost Projection (CCCP in column 20), ECAC, and Projected Total Cost Variance (PTCV, which equals ECAC - Revised Budget).

As the forecaster enters information in columns 10, 14, 21, and/or 24, the application dynamically updates the ECAC and PTCV in real time.

For instance, for the IGCs (in this scenario, Labor and Equipment Used), changing the Forecast Quantity and/or the Forecast Unit Cost generates a new CCCP Amount (CCCP = Incurred Costs + [Remaining Quantity x Forecast Unit Cost]) in column 20.

Then, the forecaster can use the CCCP amount as the Forecast or enter a different Forecast Amount (column 21). Based on that update, ECAC and PTCV will be automatically updated per the rules established in the software for ECAC calculations.

4) Of particular importance in this example is that, even before the forecaster enters the initial forecast, the ECAC for the Material and Equipment Used items does not equal the Forecast (Revised Budget) because no prior forecast has been entered.

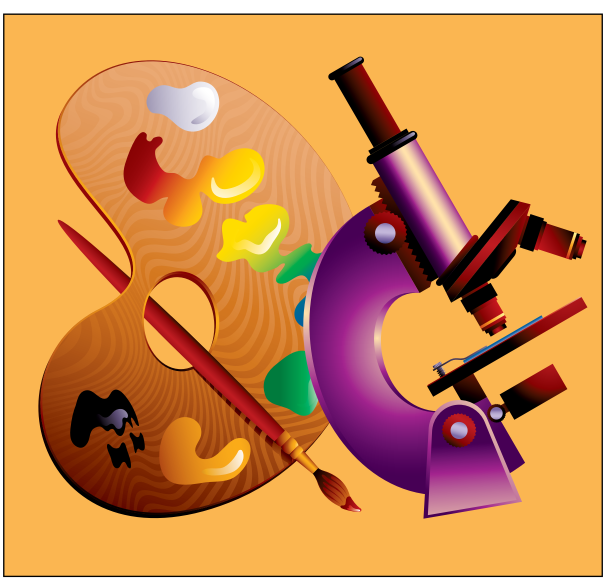
This is because the application is built so that it derives its own CCCP (column 20); this is what the application "thinks" the ECAC should be, based on all provided information. For the example shown in Exhibit 5A, the intelligence rules are configured as follows:

For IGC: ECAC = Manually Entered Forecast unless Incurred Cost is greater than the Manual Entered Forecast; then use the CCCP. If a Manually Entered Forecast has never been entered, then use the larger of the Revised Budget or CCCP, where CCCP = Incurred Cost + (Incurred Unit Cost x Remaining Quantity).

For the case of Equipment Used (an IGC), the application calculates ECAC to be $10,013 (ECAC = CCCP, or 4,004 + (1,788-715) x 5.60).

For EGC: ECAC = the greater of CCCP or Forecast, where CCCP = the greater of Forecast, Incurred Costs or Committed Costs.

For the case of Material (an EGC), these rules mean that since no prior forecast was made for Material, the application uses the larger amount ($460) for ECAC because even though there are no incurred costs, there are committed costs that are greater than the forecast.



5) By using this information and jobsite knowledge, the forecaster enters information in the highlighted cells to produce the ECAC for the entire job.

For simplicity, assume the forecaster enters the following forecast amounts in column 21: Labor $9,000; Material $500; Equipment $9,000; no entry for Subcontract.

Exhibit 5B shows what the resulting ECAC amounts would be after the forecast is entered. The PTCV with respect to the Revised Budget for this cost code has been changed from a cost overrun of $814 to a cost savings of $1,159.

Similarly, Exhibit 6 shows what a typical input screen might look like if quantities are not tracked. Here, input information (effort expended) forms the basis for the design rather than output (quantities installed). While not as good of a production indicator, this information is easier to obtain and is still useful to the forecaster.

Exhibit 6 shows information similar to that in Exhibits 5A and 5B, but displays hourly data (input effort) rather than quantity installed data (output produced).

Since production is not tracked in Exhibit 6, the projected overrun for the Equipment Used ($714, column 23) on Exhibit 5A is not picked up in Exhibit 6.

By examining Exhibits 5A, 5B, and 6, you can design an unlimited number of input screens, depending on the construction work involved and the forecaster's preferences. ■