Increasing Your ROI IQ

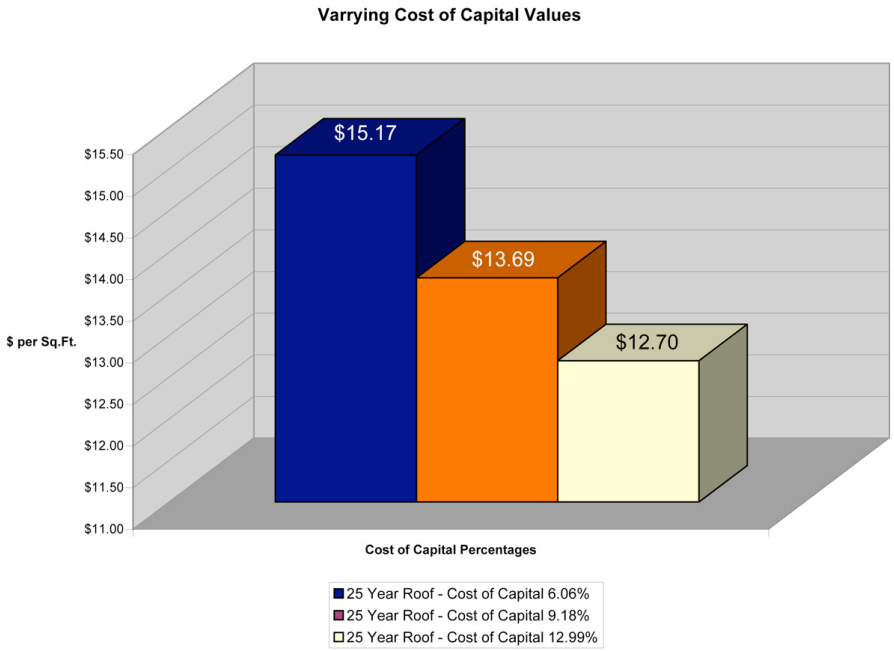
By Frank Percaciante

Identifying long-term Return On Investment (ROI) through the use of life-cycle cost analysis is nothing new. The use of ever-more-sophisticated software programs to crunch the numbers has introduced an admirable exactitude to life-cycle cost analysis. However, since it is the purveyor of the solution rather than the user of the analysis who establishes the ROI tool's parameters and premises, some healthy skepticism is in order. Even if the data plugged in is 100 percent accurate, it is still the seller who is writing the rules of the game. By establishing an erroneous or misleading set of parameters, the purveyor can deliberately tip the results in his favor.

Requesting a third party to audit a manufacturer's ROI claims is one way to resolve this problem. Meanwhile, this article will give you the information you need to ask the right questions of your suppliers, so that you can critically analyze life-cycle performance claims.

Defining Rate of Return on Investment

Typically, ROI tools apply a required rate of return against which all data is measured. Some companies assign an arbitrary value that may or may not reflect your company's idea of a desirable return. A strong ROI tool will use something similar to Ibbotson's Cost of Capital Yearbook, which provides average return-on-investment goals according to industry. Others allow you, the customer, to identify your desired rate of return.. Before attempting to compare the expected ROI's of various roofing options, you need to understand what rate of return is being applied. As a basic guideline, ten percent is a reasonable rate of return for a private company's roofing investment, and five and one half percent is a reasonable rate for a federal, state, or local public agency or non-profit entity.



To understand how easily the value assigned to Cost of Capital can distort your results, it might be helpful to imagine applying a zero rate of return, as in this example, as opposed to the more reasonable ten percent for rooftop materials.

Defining Up-Front Costs

You cannot achieve an accurate comparison of roofing costs without a realistic assessment of what the cost of each system will be. Obtaining actual quotes based on the specific parameters of your roofing project is the best way to start. Since installation costs will vary greatly according to the system being installed, the costs used for analysis should be installed costs based on actual quotes from the same contractor, whether you are comparing material solutions from one or several manufacturers.

Defining Maintenance Costs

Many roofing material manufacturers offer preventive maintenance (PM) programs to support their systems. Where that is the case, it makes sense to use the real costs of the recommended PM program, as quoted across the predicted life cycle of a particular roofing solution. Don't forget to apply some type of inflation rate to the PM program charges in order to keep them current with what market expectations will be in the future. Where no PM program is available, the manufacturer ought to be able to provide average maintenance costs over the predicted lives of their systems.

To maintain the integrity of the comparisons, the purveyor must set the time span to at least the length of time of the longest lived roof. For example, if you are comparing a solution with an expected service life of 30 years against a solution with an expected service life of 12 years, you will need to extrapolate your numbers across 30 years in order to obtain a fair comparison. The 12-year roofing option will have six years of serviceable life at the end of the 30-year comparison period. To avoid penalizing this roofing option, the life-cycle analysis tool should use an alternative calculation method: that is, the application of an equivalent annual cost (EAC) throughout the years of service in the analysis period. The EAC is developed from the sum of all cash flows associated with a roofing option for its entire lifespan broken down to an annuity payment that is applied throughout the analysis period, but not for the additional 6 years of serviceable life beyond it. Basically, a standard annuity payment calculated from all roofing costs over the 12-year life span is applied throughout the six years compared in the life-cycle analysis. The roof will still have six years of serviceable life, but will not be unfairly penalized for the cost of the remaining six years.

By way of demonstration, consider the EAC as a mortgage. If you pay on your 30-year mortgage for 20 years and decide to sell it, there will still be a balance remaining to pay off after you sell your house. In the same way, applying an EAC for six years throughout a life cycle analysis leaves you with a balance for the remaining six years that is not incorporated into the cost comparison because the remaining six years of performance is not realized. By keeping this remaining amount out of the life cycle cost comparison, you are able to create an apples-to-apples comparison

Defining the Inflation Rate

Simply put, the life-cycle costs of materials that last longer, but have a higher initial cost, will look better when you use a higher inflation rate. Conversely, a manufacturer selling only single-ply solutions will want to use an inflation rate as low as possible to keep down the costs of future

replacements. Since typically you are going to be comparing the solutions of multiple manufacturers, it's important to have an open discussion about the rate of inflation used by the ROI tool.

Although three percent is typical of the inflation rate used by the Consumer Price Index (CPI) during a stable economy, this rate varies greatly by industry, and as economies cycle through through periods of recessions and growth. The recent and anticipated volatility of oil and asphalt prices could justify an inflation rate for roofing as high as 12 percent.

When applying the inflation rate, it's also important that the life-cycle costing tool allow you to differentiate the rate used for materials from the rate used for labor, as the expectations for each will vary greatly. For example, the anticipated inflation rate for materials might be seven percent while the anticipated inflation rate for labor might be only four-and-one-half percent. A good representation for a typical roofing project would be 40 percent of the costs for roofing materials using the higher inflation rate, and 60 percent of the costs for the labor portion using the lower inflation rate.

Ideally, the ROI tool used will allow you to assign realistic inflation rates to both materials and labor. In any case, it is important that you understand the rate(s) of inflation used by the tool, and the rationale on which it is based, so that you can fairly compare one manufacturer's system against another's.

Defining the Cost of Capital

The value of money changes over time. When the inflation rate is less than your required rate of return on investment (also referred to as cost of capital), today's money is worth more than tomorrow's. So, in addition to calculating the rate of inflation in relation to specific costs, a reliable life-cycle costing tool must take the cost of capital into consideration by applying your required rate of return on investment on an annual basis, rather than only once at the end.

Verifying Results

Don't cut corners when you are contributing your own estimates to the calculations performed. For example, even if your salaried in-house maintenance team will be handling all maintenance and repairs except for major restorations and replacements, you still need to make sure that the internal costs of maintenance are approximated based on the anticipated hours per year, with your own labor costs adjusted for inflation, in order to create an apples-to-apples comparison of costs. And though it sounds obvious, double-checking the calculations is always sound practice, as is giving the results a reality check based on your own facility maintenance management experience. If a result looks too good to be true, it probably is.

A good ROI tool will display the following parameters so that an independent audit can be made:

- Inflation rate applied to maintenance
- Inflation rate applied to materials
- Inflation rate applied to installation labor
- Yearly calculations that can be easily verified for completeness and accuracy

30 Year-Garland StressPly Modified Roof

ROOF DATA		
Present Value System Cost (Sq. Ft.)		$11.89
Roof Size (Sq. Ft.)		50,000
Projected Roof Life (Years)		30
Annual Maintenance Cost (Sq. Ft.)	Calculated	$0.103
Initial System Cost (Sq. Ft.) Including Labor		$11.94
Capital Expenditure or Repair		CAP EX
Roofing Materials Inflation Rate		7.00%
Labor Inflation Rate		4.50%
WACC	Hospitals - Health Services	6.06%
Federal Tax Rate		36.5%
State Tax Rate	Virginia	6.0%
Number of Years for Life Cycle Comparison		30

Combined Tax Rate 40.31%

See Installed Roofing Inflation Analysis Report by Dr. Scott Moore, SMA Financial Management Resources. Labor 60% of Project - Inflation 4.5% and Materials 40% of Project - Inflation 7-10%

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Maintenance Cost	N/A	$3,243	$3,422	$3,611	$3,811	$4,023	$4,247	$4,484	$4,736	$5,002
Roof Replacement Cost	$597,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depreciation Tax Benefit	($3,085)	($6,170)	($6,170)	($6,170)	($6,170)	($6,170)	($6,170)	($6,170)	($6,170)	($6,170)
Total Expenditure by Year	**$593,915**	**($2,927)**	**($2,748)**	**($2,559)**	**($2,359)**	**($2,147)**	**($1,923)**	**($1,686)**	**($1,435)**	**($1,169)**

An independent audit of the ROI results provided by a manufacturer will require full disclosure of the critical factors used in the ROI calculation.

Bells and Whistles

Next-generation ROI tools attempt to assess cradle-to-grave ROI as well as life-cycle environmental impact. It is safe to say that the more bells and whistles a tool provides, the more suspect its results. Every new factor calculated opens another possibility for miscalculation, with every micro miscalculation adversely affecting the reliability of the macro ROI calculation.

Still, the sophistication of such tools is increasing rapidly, and if you perform due diligence, the information can be useful, particularly if you are looking for some form of government tax incentives or participation in another type of government program.

With that in mind, here are some of the additional factors you might wish to assess, and some caveats in evaluating them:

- Energy savings resulting from improved reflectivity, the increased R-value of insulation, or other material considerations, such as the use of vegetative surfacing – the caveat here is to be mindful of the volatility of energy costs, as the savings assessments will only be as accurate at the energy cost values used by the tool.
- Disposal costs, whether the cost of transporting debris to a landfill or to a recycling center, are similarly volatile.
- Resources used in the manufacturing process and environmental hazards related to the installation and/or removal process are some of the other factors affecting cradle-to-grave assessment – in this regard, it is best to keep in mind that the goal is to reduce environmental impact and reduce cost *without* sacrificing the ultimate sustainability attribute, that is, rooftop longevity.

Conclusion

The more you know about the factors affecting ROI calculations, the better prepared you will be to analyze competing roof systems. Only by thoroughly understanding the basis on which ROI calculations are made, can you be sure that the performance outcomes achieved by the roof solution you invest in, equal or exceed those estimated by the ROI tool.

Frank Percaciante is a graduate of John Carroll University, with a degree in finance. He joined Design Build Solutions, Inc in 2004. In his role as comptroller, he helped develop the Return On Investment software used by The Garland Company, Inc. and its subsidiaries.

