Tactic 4
Valuing Intangible EHS Benefits Using Real Options

Step 1. Understand the intangible benefit and how failure to realize its value could affect the company

As has been stated in the Introduction of this publication, intangible benefits have always seemed to defy rational valuation. This tactic will use a modified Delphi technique and Real Options to help you present values placed on intangibles by your own company leaders, including your lead financial manager.

To illustrate this tactic, assume that you have a Spill Prevention, Control, and Countermeasure (SPCC) plan in place because you store oil on-site for the boiler used to produce steam for your process. There are statistics on enforcement penalties that have been levied on companies that have been found to violate the regulatory requirement for SPCC planning. In addition, there are statistics on what oil spill remediation can cost.

There is less information about the possible amount of public relations costs in the aftermath of a major oil spill. You are unsure what the lack of goodwill can cost when it comes to securing future regulatory approvals and the fact that you will have to deal affirmatively with the anger in the local community. There may be some legal reviews and challenges to other facets of your operations that had not been an issue before the spill.

You should determine all the items that could be affected by a substantial oil spill and prepare a scenario on a spill of oil at your facility, the response that would be made to that spill, and the aftermath of up to a year after the spill.

Tip: Some companies decide to produce these financial calculations under “attorney-client privilege.” You should inquire about this before you begin and carefully follow legal advice during the use of this Tactic.

Step 2. Share this information with a selected group of senior managers in your company

On the first reading of your scenario or the presentation of the scenario at a focus group meeting, the leaders would weigh in on the consequences that you proposed in the scenario and put some additional detail on the chain of events that will unfold for days and weeks after the event. Make sure that you get the engineering and operations managers as well as the financial managers and top leaders. Based on their comments, you will revise the scenario and pose questions that have been raised in this focus group meeting. Even if you go no further than this, you are beginning to generate awareness of the importance of your work to help prevent such an occurrence.

Step 3. Conduct a modified Delphi process with the leaders

The revised scenario with the questions that have been raised during the focus group is presented serially to each of the leaders that participated in the focus group conducted in Step 2. This technique is called a modified Delphi process. You will ask them to try to answer the questions and to place values (both financial and nonfinancial values) on the activities associated with the chain of events that is described. Have them address the future changes in cost on the basis of increased legal scrutiny and the required remediation level.
At the end of each response, revise the report, add the values provided, and ask additional questions. Send the report to the next person. Keep repeating this process until two rounds have been completed. They may request other people to review the information. For example, they may have outside legal counsel look at the scenario and provide some details of the likely legal implications of such an event. Again, you are raising their awareness of the importance of having a proactive SPCC planning process in place.

Of course, you can select other items to look at, such as your waste minimization plan that is required when you sign the hazardous waste manifests.

**Step 4. Analyze the information with activity-based costs and Real Options**

Financial values determined by the participants in the modified Delphi are entered into a valuation spreadsheet. Qualitative results and a valuation summary are prepared. Tactic 1 can be used to prepare a hierarchical process map of a typical response to this scenario. The Systems Approach tools would be used to prepare action plans for dealing with the various outcomes as identified in the analysis of the scenario. The activity-based costs can be calculated with Tactic 3.

Financial options pricing models require measurement of a number of variables that are best obtained from a functioning market. Real Options do not have directly observable values for many items. The analysis proposed here uses “expert” assessment by employees and managers to measure the options model.

This approach focuses the knowledge of key experts on the effects of errors. The measurements are the consensus judgment of experts. This is an important departure from classic Options Theory and provides a model that captures the judgment developed at your company and allows it to become a source of competitive advantage through time.

**Tip:** There is some extremely difficult math involved in Options Theory. You may want to hire a finance professor at a local university or someone else familiar with Real Options to calculate this cost for you.
It is likely that you will use the Black-Sholes model. You will need the following information:

<table>
<thead>
<tr>
<th>Element</th>
<th>Common Label</th>
<th>Relationship to value of the option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current value of underlying asset (the company or division)</td>
<td>P</td>
<td>+, increase in value of company causes option to increase</td>
</tr>
<tr>
<td>Strike cost/purchase cost of project</td>
<td>Ex</td>
<td>-, increase in cost of project causes option to decrease</td>
</tr>
<tr>
<td>Volatility or variance of the value of the company or division</td>
<td>$\sigma^2$</td>
<td>+, increase in variability of the value of the company or division causes the option to increase</td>
</tr>
<tr>
<td>Dividends paid or cash flow foregone</td>
<td>D</td>
<td>-, increase in lost cash inflows causes option to decrease</td>
</tr>
<tr>
<td>Life of option in years</td>
<td>T</td>
<td>-, a decrease in the life of the option causes the option to decrease</td>
</tr>
</tbody>
</table>

These values are put into a series of equations and a market price is computed.

**Step 5. Prepare a report and distribute it to those designated by the leaders that participated in the study**

The use of this Tactic should help focus attention on many of your EHS activities that could have a substantial impact on the future financial capability of the company. Using the modified Delphi method has the advantage that it commits the management to clear public statements about things like probability of certain events, such as oil spills or other accidents. This generally means that they become more careful and more dedicated to the analysis project and will begin to see the value of the EHS activities in place to prevent these events.

In the case of the oil spill, the managers typically estimate future changes in cost based on increased legal scrutiny and the required remediation level. Change is seen as a rate plus a computed variance based on high and low estimates of the probable costs. They should understand that there may be future steep increases in the cost of legal assistance should such an event occur. There will also be unanticipated and steep costs associated with the remediation. It would be much more prudent financially to invest in spill prevention technology and to maintain the SPCC plan in a state of readiness.