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HOW TO PRICE NON-STANDARD TECHNOLOGY OR STANDARD TECHNOLOGY APPLIED TO ATYPICAL CONDITIONS

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The pricing of unusual or atypically used technology is a difficult but certainly not an impossible task to perform. Although this type of effort is rarely required, however, two situations where it may arise come to mind. First, a party may need to determine the price of “new technology” for a proforma statement prior to moving forward on a new project. Second, a party may seek to determine the price of a “new technology” that was never built, (or implemented) as part of damage calculations for a legal dispute. [For the purpose of clarity, the cost of an item must first be determined and then the estimating team establishes a price based upon the item’s cost.]

Before embarking on the task, one must perform a needs analysis to determine the potential solution(s). One example is the use of deep sea water, where unusual oceanic conditions exist, to provide cold water as part of an air conditioning loop for large developments, such as cities or towns. A second example is a mechanical arm used to extract toxic material from an inoperative storage facility. Both of these items may already exist in one of two forms: (1) technology that has been “bench or pilot” tested but never implemented in the field; or (2) similar technology that currently exists, but for significantly different uses, under radically different conditions. For this discussion, we will concentrate on the second alternative, where current technology exists but is applied in a different way. Once the need and the potential solution have been identified, the costing activity can be undertaken. [For more on cost estimating, see “*Cost Estimates Used for Damage Calculations*”, The Legis Report, Spring-Summer, 2005.]

The first step in the overall process is to conduct research regarding the required technology. Prior to internet availability, this required numerous calls and/or visits to manufacturers and suppliers to narrow the search. The internet has greatly streamlined this effort. In a relatively short time, the search can be organized so that phone calls or emails to technical reps will likely provide enough information to move forward. In the case of the robotic arm, a device to extract toxic material had

never been built but a similar arm existed for use by NASA. The NASA arm performed different tasks, existed in an entirely dissimilar environment, and was significantly smaller (1/4 size) than the required arm.

Once you have established that similar technology exists, the next step is to establish reasonable costing for the technology in its current form. Costing of this item should be relatively straight forward. Contact the manufacturer and discuss the cost of the current model. You should discuss your situation to determine if the manufacturer has ever dealt with similar situations. A representative can offer valuable insight. If available, the cost should be definitively established, as it will be important to the remainder of the pricing effort.

The third step in the process is to determine what modifications must be made to the current technology to “transform” it for the required use. This may require assistance from subject matter experts. This can be a time consuming process requiring professional diligence. The estimator must make sure that he/she has a thorough and complete understanding of the technology as it currently exists. Time invested by the estimating team will pay valuable dividends in an accurate estimate. Crucial areas to address include configuration changes, changes in power source, output and output management, control changes including computerization changes, necessary safety concerns that must be addressed, and any federal, state or local regulatory requirements.

After a list of adaptations is created, the cost for these changes must be determined. This is likely to be the most difficult step in the process because consideration must be given to numerous factors. For example, change in scale frequently represents an exponential increase in cost (i.e. – a crane that is required to lift twice as much weight may actually cost three or four times as much as the one currently available). Additionally, changes in where the technology is to be used may create environmental concerns (heat, cold, moisture, chemical, radioactivity, etc) that affect the price. Due to the uniqueness of

the technology, the learning curve for the re-engineering and manufacturing as well as the use of the technology, must be considered when determining cost. The required training and reduced productivity by the operator can also have a large impact on the total cost of the technology. Two key factors that must not be overlooked are development costs and contingency costing. Most cost estimates for commodity type items contains little or no developmental costs. Clearly, this is not the case with new and unusual technology. The standard cost for design and development is unlikely to adequately represent the final costs for these items. Furthermore, contingency costs require special attention. In the case of "new technology", contingency must cover much greater risk, including the possibility that the new technology will fail to perform. Contingency amounts for unknown technology can range from 50% of the direct and indirect costs to over 200% in some extreme cases.

Now that the estimating team has determined the cost of the item, a price for the item must be established. Pricing for any item includes: (1) the item's direct cost – the cost directly attributable to a specific product, (2) indirect costs – costs not directly attributable to a specific product but necessary for its creation and installation, (3) general and administrative costs – the portion of the fixed cost required for the operation of a business but not attributable directly to any specific product and (4) profit – return on investment and reward for risk taken. Once, these costs have been totaled, this establishes the price of the technology.

The final step in the process is to compare the fully developed price of the technology against known industry macro prices for the way the work is undertaken using similar technology. Although exact pricing is never certain, this "sanity check" against known order of magnitude pricing for similar technology is necessary to ensure reasonable pricing has been established.

Owner preference or need also plays a role in the pricing undertaking. Keep in mind that the owner may be willing to absorb higher operating costs for lower early capital costs and vice versa. Often, an owner's proforma statement will be required not to exceed a certain cost to meet financing and budgetary concerns. This will necessitate that operating costs are higher to lower the initial capital outlay. The only way to be aware of this prerequisite is through dialog with the technology's final owner.

Unusual or atypically used technology can be priced but it will take greater effort than pricing techniques employed in standard estimating efforts.

The estimating team must be sure that it identifies the need to be addressed, ascertains technology to meet this need, establishes costing for current technology available, recognizes required modifications, determines cost for these modifications, finalizes price for technology, and lastly, verifies pricing against known industry standards.

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Federal Contracts

David R. Smart, JD, PMP, has been promoted to Vice President in charge of Legis Consultancy's federal practice. Mr. Smart is utilizing his experience and knowledge of federal sector projects to advance Legis' efforts in this area. He has been spending significant amounts of time in Washington, D.C. and the northern Virginia area assisting the firm's federal clients. Additionally, he has been investigating suitable sites for a satellite office. Mr. Smart has been with Legis for 4 years focusing his efforts on cost, regulatory, and management issues arising out of construction, environmental and information technology projects.



New Website

The Legis website www.legisconsultancy.com has recently undergone a substantial upgrade. Among other improvements, the site now includes bios for our consultants and a representative list of recent projects which the firm has been involved in. The site also includes previous issues of *The Legis Report*.

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