OVERVIEW

Drilling resources, both capital and human, are scarce and it is important to make the best use of what an organization has at its disposal. Underestimating project costs will cause budget shortfalls, often resulting in delays or incremental requests for expenditures. Cost overestimation is just as bad because the money allocated could have been spent on other projects. It is important to get the estimates as close to reality as possible the first time. Well Cost software, designed specifically for drilling and completions, provides powerful tools to produce accurate project estimates quickly and easily.

Accurate cost estimates are critical for both low-level budgeting and scoping, and for the more detailed Authorization for Expenditure (AFE). Well Cost software generates a comprehensive cost estimate using either deterministic or probabilistic methods, whether users have detailed historical knowledge of their drilling programs or a simple high-level list of tasks and costs.

Well Cost software is built on the Engineer’s Data Model™ (EDM™) platform and integrated with Landmark’s well-design and planning tools, enabling engineers to access historical data and streamline cost estimation and reporting workflows. Reports and plots are automatically generated, making it easy to analyze the results and present findings to key stakeholders.

BENEFITS

The Right Tool for the Job

Well Cost software was designed by drillers for well construction projects with specific capabilities that generic spreadsheets cannot match. Instead of a single number,
the software factors in estimate uncertainty, and generates a range of expected times and costs (P10, P50, and P90). Typically, spreadsheet solutions oversimplify the estimation of risk by collecting the list of tasks, the associated cost estimates, and a contingency factor by which all items are multiplied to account for the unknown.

**Consistent Practice for Budgeting and AFE**

When users have different projects and engineers using different techniques and assumptions to budget their projects, it is difficult to compile, compare, and analyze results across the organization. Well Cost software provides a systematic, consistent methodology and tool that organizations can standardize on saving time, improving team collaboration, and simplifying training.

**More Accurate Estimates**

The best estimates rely on knowledge of how projects have performed in the past. Well Cost software has access to all the historical well data available in the EDM database, making it easy to base new estimates on the performance of previous projects. Integration with Landmark’s drilling applications enables engineering data entered in applications like StressCheck™, CasingSeat™, and WELLCAT™ to be immediately available for use in the costing analysis.

**FEATURES**

**Probabilistic Time and Cost Estimation**

Well Cost software includes a Monte Carlo-based simulation tool that gathers input on the activities, costs, and uncertainties associated with the candidate wells and predicts the AFE cost and drilling time. Well data can be modeled from available historical data, and the analysis can factor in unplanned events such as non-productive time (NPT).

![Estimates over time and depth](image-url)
Landmark

Estimate Multiple Well Campaigns
In addition to producing estimates for single wells, Well Cost software allows users to estimate multiple wells together as a campaign. The resulting single estimate can take into account expected cost efficiencies that result in wells constructed later in the campaign costing less than those constructed earlier.

Compare Plan versus Actual
As the project progresses, it can be helpful to understand how the actual cost and time data compare to the estimate. Well Cost software can interface with operational reporting systems to retrieve this actual data and plot it against the estimate. The AFE can then be re-generated for the remaining phases and activities, allowing users to understand the time and cost required to complete the project. After completing the project, the actual data can be used to find the p-value at which the project was executed allowing users to make more accurate estimates in the future.

Customizable
Each estimate requires the use of event, phase, activity, and cost codes that are likely unique to a company. Well Cost software comes with a predefined list of codes which can easily be tailored to match those in a company’s financial accounting system.

Time-Saving Templates
Most companies have a set approach to drilling, so there is no need to begin with a blank activity list when starting a new estimate. Well Cost software can be used to define a drilling program once and then save it as a template. Such templates can then be used in the future to expedite the costing process, as the engineer only has to modify the data to fit the requirements of the new well.
System and Software

SOFTWARE REQUIREMENTS
Engineer’s Data Model™ (EDM™) software
Microsoft Database Engine (MSDE)

OPERATING SYSTEMS
Microsoft® Windows® 7 SP1, 64-bit
Windows Server 2008 R2 SP1, 64-bit
Windows Vista 64-bit
Oracle® 11.2.0.2 and 11.2.0.3
Oracle 10.2.0.4
SQL Server 2008 R2 SP1
SQL Server Express 2005 SP3

Automatic Plots and Reports
Well Cost software produces a set of plots and reports as part of the simulation, automatically giving users the tools needed to analyze the output. Plots include a variety of X-Y charts, bar charts, and histograms. The reports are available in standard formats (PDF, XML, XLS), and can be saved, printed, or emailed directly from the application.

Estimation Wizard
An estimation wizard guides users through the workflow, making it easy to understand the process of creating the estimate. Familiar editors and simple input forms are used to collect data, reducing the time required to be productive and streamlining training for new users.

Integrated with Landmark Drilling Applications
Once the estimate is complete, Well Cost software can publish cost and activity information to the EDM database for the OpenWells® Cost Estimate and AFE report, as well as the OpenWells Well Planning report. The software also uses the same framework elements (Well Explorer, Associated Data Viewer, Reference Datum, and the Wallplot) as the other Landmark drilling applications for consistent navigation and ease of use.

Drilling resources are scarce, and it is important to allocate capital appropriately to your opportunities to maximize return on investment.

Landmark offers solutions to help you deliver on your business strategies. For questions or to contact your Landmark representative, visit us at landmarksoftware.com.