Effective reporting for construction projects: increasing the likelihood of project success

Power and utility construction projects can fail for many reasons. Poor risk management, scope creep, approval delays, inexperienced project team or support personnel, ineffective controls, and improper contract administration can all contribute to project failures. Another contributing factor is ineffective project reporting systems. Implementing an effective project reporting system is one of the most difficult project management challenges, as project reporting requires coordinated information and integration from all project phases and construction activities, ranging from early strategy and planning to project closeout and commissioning.

Given the size, scale, and complexity of many power and utility projects, organizations cannot afford to prepare and produce project reports in a reactive manner. Governing boards, shareholders, bondholders, and regulators are establishing high standards for project performance in order to help ensure that projects are delivered on time, within budget, and to the expectations established by the project's stakeholders. To help accomplish these goals, power and utility construction projects should implement leading project reporting systems tailored to their own industry while meeting the reporting needs of the project. Unfortunately, the vast amount of data available to be reported and the complexity of software systems used for project reporting have left many project management, engineering, and construction departments with few options other than to develop ad hoc tools that require manual reconciliation and duplicate data entry. This is often referred to as "project management by spreadsheet."

This paper discusses how implementation of an effective project reporting system can increase the likelihood of project success. The paper discusses the unique elements of an effective project reporting system, identifies how to determine the relevance and purpose of information to be reported, provides guidance on how to produce useful reports that are easy to understand, and outlines example formats and guidance on timing and report distribution.

Components of a Project Reporting System

Major construction projects, in which costs can exceed $1 billion, require years of planning, design, and construction. Projects of this magnitude require not only a team of experienced professionals, but also a set of extensive resources, tools, and systems. Major projects have a large volume of data and complex data sources and need a project management infrastructure capable of supporting the extensive regulatory, financial, management, and other stakeholder reporting requirements.

Transparency and Accuracy: The first major component of any project reporting system is transparency and accuracy. Senior management, board members, the audit committee, regulators, and other stakeholders demand accurate and transparent project information for making informed decisions and ensuring
compliance with statutes, debt covenants, and other project requirements.

There are several key elements to review when assessing/evaluating the transparency and accuracy of a construction project reporting system:

- **Ability to Drill Down by Layer** – To ensure that the information being reported by the project team is reliable, it is important to be able to drill down to the source data. There are multiple opportunities for erroneous data to creep into project status reports if subcontractors and sub-consultants generate the information and pass it along to contractors, architects and engineers, and finally to the construction manager. This is primarily due to information not being properly vetted before it is reported or passed along, but it may also be due to different project account coding, issues exporting data from different job cost reporting systems, and a misunderstanding as to what scope items are included in each cost category. Errors that are identified may take a considerable amount of time and effort to sort out.

- **Level of Redundant Input** – Many project reporting systems include redundant information or the same data reported by different sources. This often creates confusion and can lead to duplicate entries or misreporting of key data.

- **Amount of Manual Adjustments** – Manual adjustments are often necessary in order to produce reports that accurately reflect the current project status or situation. However, the volume of manual adjustments required to produce accurate project reports is often a red flag that indicates that a project reporting system requires further evaluation and remediation in order to determine the root cause or causes contributing to the high number of adjustments.

- **Relative size of Variances** – Project reporting results will often have variances from what the contract reports and from the project owner’s accounting system. However, generally large variances of total project costs are often red flags that indicate that the project reporting system requires further evaluation and remediation.

- **Number of Discrepancies** – Most major construction projects produce reports that communicate different information and provide different levels of detail. Discrepancies among reports are also red flags that indicate the project reporting system requires further evaluation and remediation.

**Clearly Defined Objectives and Purpose:** Another important component of an effective project reporting system is developing clearly defined objectives and purpose. With the advent of sophisticated and complex software programs and the ability to share and report large volumes of data on a real-time basis, there are almost limitless project reporting capabilities at an organization’s disposal. However, this can often overwhelm someone who is not intimately familiar with the project if the data is not presented in an organized and meaningful way. There are several key elements to review when assessing the objectives and purpose of a construction project reporting system:

- **Usefulness for Decision Making** – Effective project reporting systems facilitate effective management decision making, because they provide management with accurate and meaningful information. If management rates the usefulness of project reports as “not effective” or “not very effective,” this would indicate that the project reporting system requires further evaluation and remediation to determine the root cause of management’s concerns.

- **Usefulness and Ease of Comprehension/Understanding** – An effective project reporting system should be able to synthesize large volumes of data in simple and meaningful dashboards, snapshot reports, and summary reports. It should also facilitate knowledge sharing by providing information in simple, easy-to-understand formats. A stakeholder rating of “not effective” or “not very effective” regarding the ability of project reports to provide quick and meaningful project information is a red flag that the project reporting system requires further evaluation and remediation to determine why project stakeholders find the reporting ineffective.

- **Ability to Satisfy Regulatory Requirements** – The ability to provide quick and comprehensive support for electricity and natural gas rate cases and other regulatory proceedings (i.e., state and the Federal Energy Regulatory Commission (FERC)) is an important element of any construction project reporting system. An effective construction project reporting system should be able to produce the required information in a timely and efficient manner without the need for excessive ad hoc reports or manual preparation of information.

- **Level of Security and Data Integrity** – Large construction projects store project data in multiple formats and electronic systems, and each format has unique characteristics and levels
of sensitivity and security/privacy requirements. A lack of clearly defined data integrity and security protocols for project information is a red flag that the project reporting system requires further evaluation and remediation.

Effective Project Reports: The final component of an effective project reporting system is the layout, timing, level of detail, and distribution of project reports. A complex project reporting system with elaborate reports and graphs does not necessarily mean that the project reporting system is effective and meets the needs of management, project stakeholders, and the project team. There are several key elements to review when assessing/evaluating the project reports for a construction project reporting system:

- **Types of Reports and Format** – The report layout impacts the ability to communicate the underlying information effectively and is often as important as the information being reported. There are many specialized and required reports on major construction projects covering safety, environmental, and other quality and cost information. These reports are often the easiest to prepare and target specific stakeholders. Summary and status reports are much more challenging but can also prove invaluable if designed and presented in an effective manner. Below is a list of several summary and status reports that should be common to all major construction projects:

  - **Project Dashboard** – A good project dashboard includes the important project metrics presented on a single page. If a project dashboard takes more than a few minutes to comprehend or requires a lot of explanation and other supporting information, it has not served its purpose to provide quick, meaningful, and actionable information to management and other key stakeholders.

  - **Summary Management Report** – Summary project management reports can be very useful to project support personnel, public relations personnel, outside stakeholders, and management personnel that need to be highly informed about the project. Most summary management reports are prepared on a biweekly or monthly basis and include quick summaries or snapshots of all major project categories such as safety, budget and cost information, work progress, schedule, risks/issues, quality, contract status, and other key information deemed important by the project team. The challenge with monthly reports is to spend less time and effort preparing the report, so the reporting process does not detract from other important project management activities.

  - **Summary Cost Report** – Preparing summary cost reports is one of the most challenging project reporting activities for most large construction projects. This is due to the challenge of reconciling and summarizing data from several sources and presenting accurate financial information in a well organized and consistent manner. Payment information and procurement/contract information often reside in separate systems, and budget information, if not approved at a detailed level, may require redistribution over many cost categories.

  - **Risk Report** – Formalized risk reporting has been around for a while, but it has recently emerged as a standard and valuable tool in identifying, analyzing, tracking, and responding to project risks. Risk reporting may take the form of a simple risk register updated on a routine basis or a combination of risk dashboards, risk analysis, and meeting minutes discussing risk trends and other important risk management information. Project managers who reject formalized risk management approaches can be putting their projects, employers, and customers at risk.

  - **Milestone Schedule and Three-Week Look-Ahead** – Understanding and quickly disseminating a detailed project schedule for a major construction project is a challenging process, as it may have thousands of activities and require hundreds of pages to print. Project management teams should identify variances to key milestones and provide three-week look-ahead schedules at a minimum. The milestone report should provide a quick summary of project status and the three-week look-ahead should provide a snapshot of the upcoming project activities.

  - **Timing and Frequency** – The timing and frequency of project reports should correspond to dates required by management and stakeholders. If the project management team reports to senior management at established intervals, producing a dashboard report and a project status report immediately before the scheduled meeting will avoid having the team prepare ad hoc reports or interim updates.

  - **Distribution** – Determining which stakeholders need what reports is often a matter of debate among project team members. Some project team members want information to
be closely controlled and distributed on an as-needed basis only, while others prefer to distribute project reports on a much wider scale to facilitate knowledge sharing and collaboration and to avoid numerous information queries. No matter what the situation, all major construction projects should have an established communication plan that includes a distribution matrix for all project reporting documents. The lack of clearly defined project reporting distribution requirements is a red flag that the project reporting system requires further evaluation and remediation.

Project Reporting – An Example

A power and utilities company embarked on a major transmission project to provide access to renewable energy, a secure power supply, and lower costs for consumers. In addition to the size and scope of the project, the company identified major challenges in public perception and opposition to the project, the regulatory environment, project complexity, cost containment, and on-time delivery.

To address these challenges, the project management team decided to implement two new project reports. The first report was a “Risk Management Report” aimed at improving identification, analysis, tracking, and response to project risk. The information included in this report was based on updated information from the project risk register and was managed by a dedicated risk management team responsible for updating project risks and facilitating timely responses to risk events or risk triggers.

The risk report assisted management in identifying several major risks that might otherwise have gone undetected. More importantly, it helped project team members become more aware of the various risks facing the project and identify and communicate new risks on an ongoing basis. The risk report also facilitated communication and collaboration between various project groups as they discussed the potential impact of project risks and the various contingency plans and risk mitigation methods.

The project management team also implemented a real-time, interactive, Web-based project status reporting tool that permitted individuals to access project status information on all components of the transmission project. The tool provides the user with a real-time dashboard of project status for all project work components. For example, if interested in the status of land acquisition, a project team member would simply click on the land parcel to see if it had been purchased, was under negotiation, or in condemnation proceedings.

For the construction phase, the project management team also implemented warning systems to notify contractors in the field about potentially hostile property owners or other site-specific restrictions. The tool also has features that can access and report on other project work components such as foundations and towers and can produce dashboard reports indicating status by phase, work package, or other criteria. A contractor in the field that encounters a site issue can relay this information to a site coordinator who can update the information real time. If two crews are working in the same area, this information not only saves time but also helps crews to avoid costly mistakes, injuries, or other issues that often go undetected until it is too late to address them in a proactive manner.

The ability to access and share project data in real time has been invaluable to each and every project participant. While difficult to quantify, the added productivity, better communication, and proactive ability of site engineers, inspectors, field contractors, project managers, and support personnel at the home office to address project issues immediately as they arise has already drastically improved project performance as well as overall results.

Summary

With the tremendous volumes of data, complexity of data sources, and demanding project reporting requirements of power and utility projects today, providers and developers of energy projects cannot afford to be reactive while implementing their construction project reporting systems. Companies that have access to accurate, real-time construction progress information presented in a concise and meaningful way will be able to react to market dynamics, address public relations issues, and make informed decisions about their projects efficiently and decisively.

An organization will be better prepared to deal with construction issues, risks, and challenges by assessing its construction project reporting systems, identifying project reporting deficiencies, and applying some of the key elements outlined in this paper.