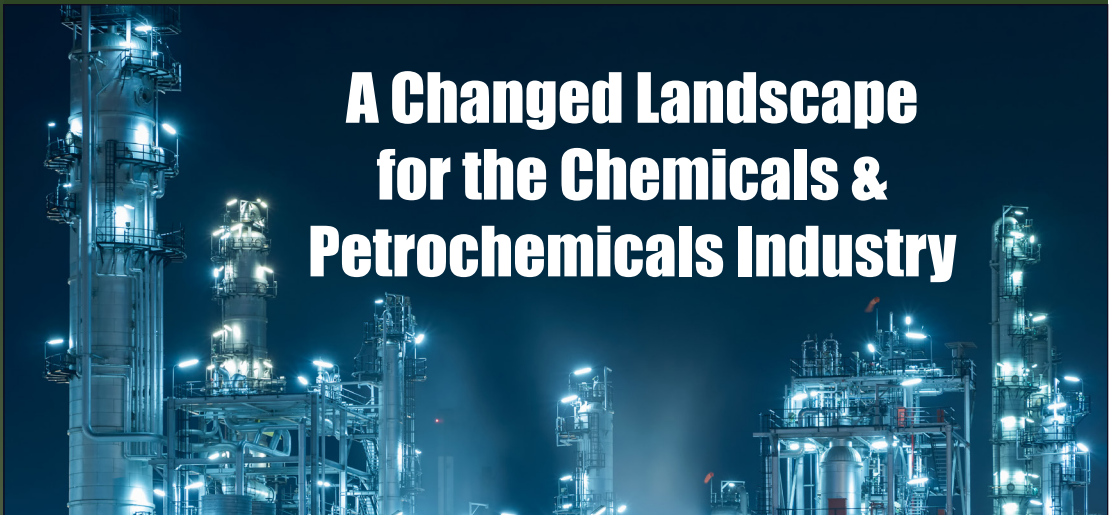


Independent Project Analysis, Inc. is the preeminent organization for quantitative analysis of capital project effectiveness worldwide. At IPA, we identify Best Practices to drive successful project outcomes.

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A Changed Landscape for the Chemicals & Petrochemicals Industry

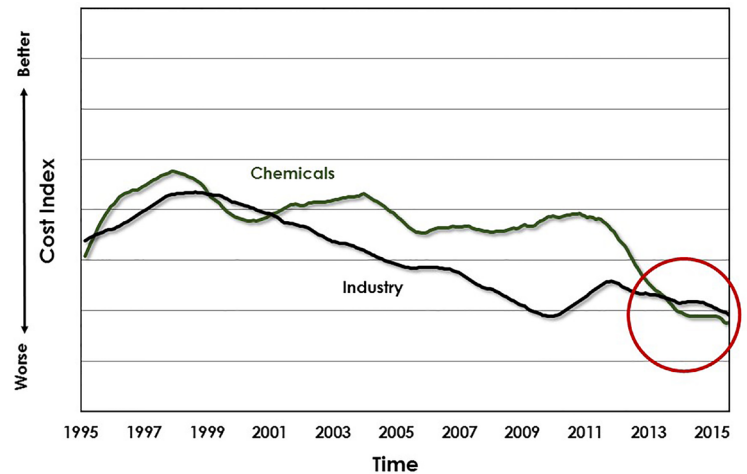
By Natalia Zwart, IPA Manager, Chemicals, Life Sciences, and Nutrition

These are challenging times for the Chemicals Industry. Access to new sources of low cost feedstock has led to an increase in capital project activity, especially in the United States. Companies have authorized large capital investments—some the largest in a company's history—to take advantage of opportunities. Executing large capital projects is always challenging, but it is evident today that many companies have underestimated the complexities of the current supply chain for capital projects.

To cope with increased project market risks and business pressure, project teams in recent years have increased the conservatism of their project cost targets. As a consequence, the Chemicals Industry has recently lost its competitive edge against its peers in the capital projects industry when it comes to spending capital effectively. It was not so long ago that the rest of Industry looked up to the Chemicals Industry as the standard bearer for delivering cost effective projects. Chemicals projects are giving up 10 to 15 percent more capital than they were 10 years ago. This is a serious issue for an Industry where capital effectiveness is an historical imperative. For chemical companies, capital effectiveness is vital to long-term success, i.e., protecting narrow business profit margins and gaining or preserving market share.

To gain a better perspective of the challenges facing Industry, it is

Story continued on page 6



State of Decline: Once the leader among industry peers, IPA data show the Chemicals Industry has lost its competitive edge in capital project cost effectiveness.



Data Show ‘Imperative’ Need to Staff E&P Project Organizations Correctly

Snap Decisions to Reduce Project Staff Pose Risks

By Timothy Mumford, IPA Senior Project Analyst

Significant reductions to capital and operating expenditure budgets across the oil and gas industry are taking a toll on the exploration and production (E&P) workforce. Decisions to decelerate developments and cancel capital projects and curb production levels at operating facilities reportedly resulted in 250,000 job losses industry-wide in 2015. The Industry has found no reprieve in 2016, as expenditure and headcount reductions are being announced regularly.

Although of little consolation to individuals affected by the cuts, E&P organizations are responding rationally to pressures from restless shareholders to maintain large profit margins. With oil prices as of May 27, 2016, a little below \$50 per barrel, many E&P organizations are continuing to reevaluate the structure and the magnitude of resources available to deliver returns on the capital employed, particularly with respect to project organization staffing. The tendency is to simply default to project organization workforce reductions.

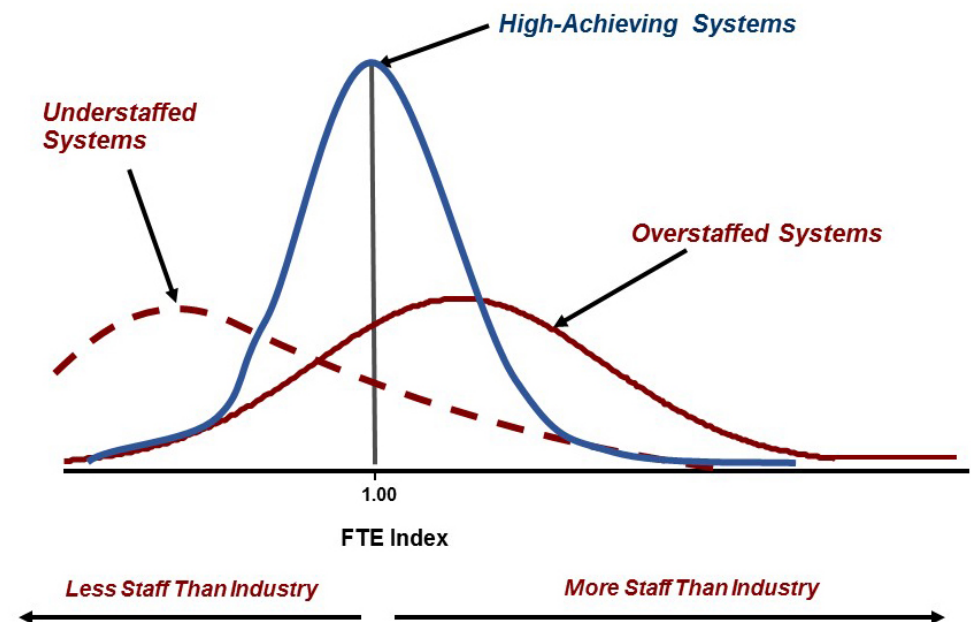
Recent IPA research, however, confirms and provides detailed metrics on what we, as an Industry, thought to be true: *staffing your project portfolio correctly is critical to portfolio success.* Understaffing, both in total and for various functions, strongly correlates with sub-optimal results on a portfolio-level.

So it must be asked, as leaders of individual E&P organizations and by Industry as a whole: *Are we making a mistake by cutting more project people? And, will this choice hurt us in the medium- to long-term?*

In particular, are we taking into full account:

- The risk that making additional headcount reductions to project teams will cause capital effectiveness to suffer?
- How staffing reductions or increases in certain functional areas could improve capital effectiveness?
- How we are able to measure the residual outcomes of our staffing choices?
- The implications of our staffing choices in terms of portfolio performance?

Are we inadvertently throwing crucial experience and lessons learned about capital project improvements out the door by responding to expenditure cutbacks with headcount reductions?



Optimal Staffing: Full-time equivalent (FTE) Index distribution for high-achieving systems is vastly different from the rest of Industry.

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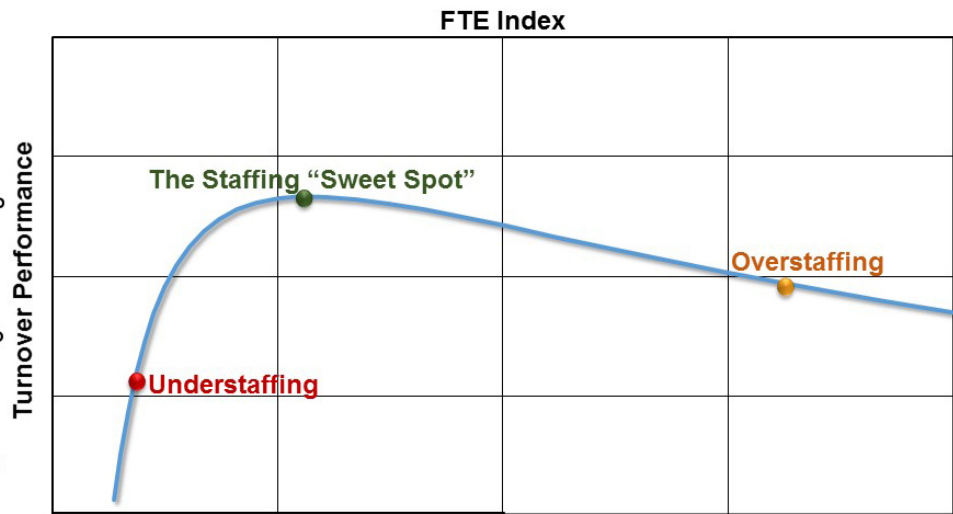
These questions are not easily answered without data. In reality, E&P organizations struggle to mobilize resources and measure how project organization layoffs affect project system performance. For instance, how does a project organization’s full-time equivalents (FTEs) staffing level affect a project system’s overall cost performance? What about project schedules? Could the number of FTEs belonging to a project organization drive an increase or decrease in the likelihood of project execution slip? These are among several project organization staffing issues IPA has examined for its clients.

For the last several years, IPA has conducted research linking characteristics of project organizations and teams to project system performance. For instance, IPA has completed research demonstrating how owner companies can achieve better project outcomes by aligning project team members’ skills and abilities with the project needs. This research, however, has not extended to portfolio system staffing and portfolio performance. IPA is now able to investigate how portfolio staffing affects project outcomes.

As the graph above illustrates, IPA research has identified a portfolio staffing “sweet spot” that drives many project system improvements, but this ultimately begs the question: Does the upside of capital saved by axing projects people quickly become negated when we look at cost performance on a portfolio-level? IPA data show that the above question is more relevant today than ever: portfolio cost performance is significantly worsened when we understaff.

Cost is not the only outcome IPA has investigated. IPA has tangibly measured and correlated staffing levels to a number of desirable portfolio-level outcomes, including schedule slip, turnover, late changes, cost growth, and operability. Staffing levels are analyzed at a wider, portfolio level all the way down to individual functions.

Some may argue that with all of the layoffs in the past year, the pool of available talent looking for work is



Staff Performance: Companies need to identify the “sweet spot” for staffing their portfolio of projects. Beginning from understaffing, portfolio performance improves moving up the curve until reaching an inflection point beyond which overstaffing causes portfolio performance to decline.

large. There is also a notion that a company’s projects organization is somehow transient, scalable, and transferable. The former argument assumes workers are not opting to leave the workforce for good, given the industry’s uneven job stability track record. This later notion, meanwhile, has been extensively challenged by industry observers. One only needs to consider the post-global financial crisis “hot market” in United States or the LNG hot market on Australia’s east coast, where owners were driven to staff from contractors, one another, or other specialists just to find that the results were sub-optimal.

IPA research on portfolio staffing vs. portfolio performance is made even more imperative given the fact that the E&P Industry is facing a demographic cliff. Some of the most experienced projects professionals are ready to or have already retired and younger professionals do not yet possess the skills needed.

Whether oil prices remain low or increase over the next year, the onus is on oil and gas company leaders to decide the worth of proper project organization staffing in terms of project system performance.

For more information about E&P company FTE staffing level research, please contact Timothy Mumford at tmumford@ipaglobal.com or Neeraj Nandurdikar, Director, IPA Oil & Gas Practice, at nnandurdikar@ipaglobal.com.





Cost Database Benchmarking for Site-Based Projects

Maximizing Data Retention, Use of Historical Cost Data

By Yinyan Zhao, IPA Associate Project Analyst, and Melissa Matthews, IPA Associate Research Analyst

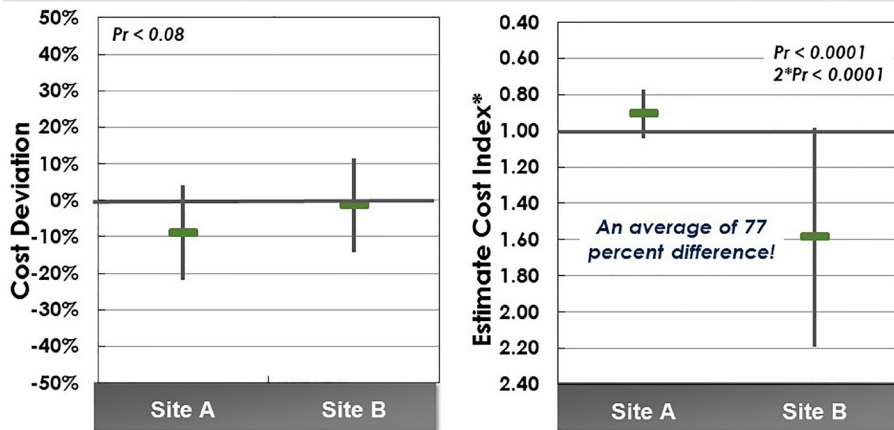
Cost management professionals have traditionally defined “good cost estimates” for site-based projects as estimates that are accurate and consistent across an entire portfolio of projects. But to provide a realistic view of how much a project should cost, estimates also have to be competitive with industry average cost outcomes.

IPA research conducted a few years ago highlights the problem of relying on accurate and consistent site-based project estimates only. Owner companies’ site projects were consistently delivering actual cost underruns because cost engineers, under pressure to avoid overruns, were consistently preparing overly conservative cost estimates. This is a concern for owner companies, as conservative cost targets have the effect of reducing capital effectiveness and the promised value of the projects delivered. As the top two graphs below show, Site B delivered estimates that were more accurate and just as consistent as Site A’s estimates, but Site B’s estimates were very conservative and uncompetitive with Industry—and likely less cost competitive.

Site-based project management professionals need access to current, reliable, and detailed project information to prepare realistic “should cost” estimates. A recent IPA assessment of industry estimating competence found that companies that maintain their own historical detailed cost databases have success in delivering on-target cost estimates. The bottom two graphs on the left show the effect of well-maintained detailed cost databases on project cost predictability. Companies that at least have access to a central database of project costs see less variable estimate versus actual project cost outcomes. But how can a company know how well the quality of their projects database stacks up against Industry?

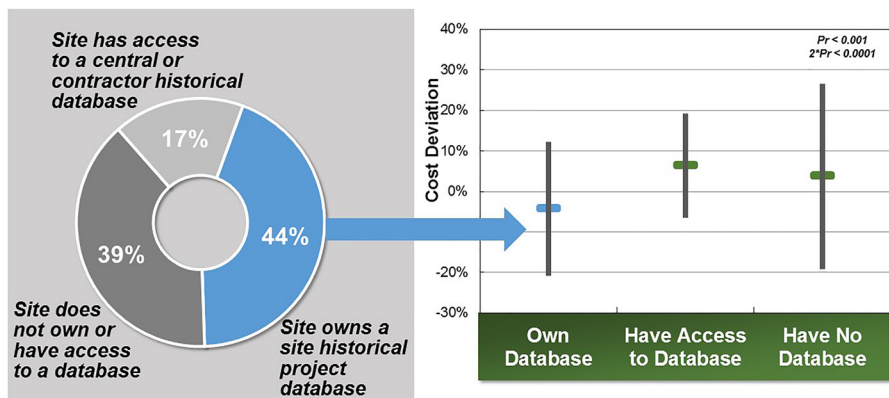
Based on the recent assessment findings, IPA is able to conduct database valuations for its clients. We benchmark a company’s data retention capabilities and processes to “state of the art” company-owned historical project databases. This allows us to identify the gaps and opportunities within a client’s current database structure. Specifically, we

Comparison of Two Sites



* Estimate Cost Index= Project Estimate / Industry Benchmark
 Pr < 0.05: Difference in mean is statistically significant
 2*Pr < 0.05: Difference in standard deviation is statistically significant

Historical Project Databases Enable Teams to Use Cost Information to Produce Better Outcomes



Controlled for other estimating practices and scope changes

Continued from previous page

examine the information being collected, how it's collected, who owns the information and process, and how the data is accessed. From our benchmarking, we identify opportunities to improve data retention and maximize its utility within the organization.

Having the capability to reference actual prices, quantities, and productivities is proven to improve both the accuracy and competitiveness of future estimates. In addition to preparing their own estimates, cost engineers can depend on accurate and reliable cost data to validate contractors' estimates. Project managers can have greater confidence in their project risk assessments. And other project management functions can perform tasks such as cost and cycle time performance evaluations. The applicable range for this information is virtually unlimited.

From estimate development to root cause analysis, accurate and trusted project cost databases that are properly maintained provide the necessary information to improve cost outcomes.

For more information about IPA's data valuation capabilities, please contact Luke Wallace, Director, IPA Cost Analysis Center, at llwallace@ipaglobal.com.

Improving Project Performance During Turnarounds

IPA's Capital Project & Turnaround Integration Workshop

By Lynn Dickey, IPA Senior Project Analyst

Many projects require significant construction and tie-in work during a turnaround shutdown period when plant production comes to a halt. But sometimes the project team is left in the dark as to when the turnaround work will take place and how long its duration will be, making planning difficult. It is the need for integrated planning between the project and turnaround teams that gets overlooked. A Capital Project and Turnaround Integration Workshop can serve to highlight to all parties (the project and turnaround teams and management) the importance of integrating planning and identifying specific activities that should be performed.

During the workshop, small groups of project and turnaround team members review "road maps" of integration activities displayed in optimal sequences and with optimal timings, measured in months, before a turnaround start. Each group reports back on activities that have been overlooked or that have not been performed early enough. From these reports, a list of action items, complete with dates due and team member responsibilities, is developed. In addition, the workshop establishes joint project team/turnaround team meetings, as their need becomes apparent.

IPA facilitates these 1-day workshops immediately following a capital project prospective interview. The workshops can take place as early as 18 months before the planned turnaround start date or as late as 4 months prior to the turnaround; the most advantageous time for this workshop is highly dependent on the total turnaround (maintenance plus project) size, measured in craft labor hours. Attendees should be roughly split between project team members and turnaround team members, with at least 10 but no more than 20 participants in the group.

For more information, please contact, Katherine Marusin, Manager, Site and Sustaining Capital, at kmarusin@ipaglobal.com.



Continued from page 1

important to take a step back to consider how the projects world has changed over the last decade.

Whereas businesses worried 10 years ago that their project teams were understaffed, many today are focused on headcount reductions. By the same token, chemical companies were ordinarily able to find experienced engineers and project managers to work on projects a decade ago. Today, it is more difficult to find the same levels of talent. IPA data show that chemical companies have less collective team experience as a whole relative to the past or even to other industrial sectors. Demographic challenges are partly to blame and so is the unwillingness of many owner companies to retain core project competencies. Specifically, owners have lost essential capability in cost engineering, construction management, and project controls.

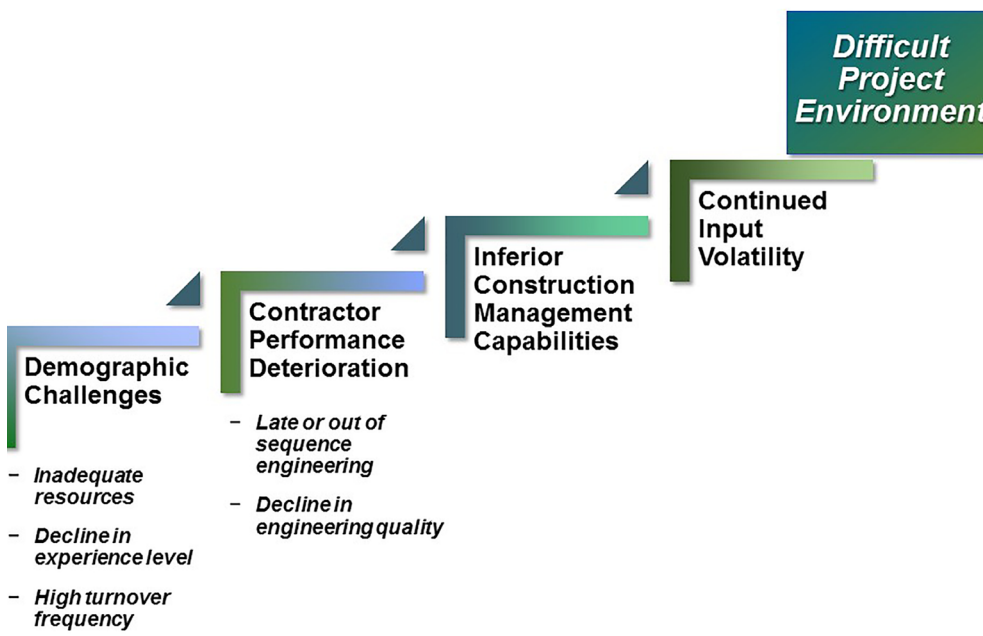
Similarly, the quality of engineering, procurement, and construction (EPC) contractors specific to the management and execution of capital projects was much stronger a decade ago. The current engineering quality level is the poorest the Industry has ever seen. The error rate on engineering drawings from engineering contractors has increased by over 50 percent since 2006. The decline in engineering quality makes it difficult to achieve planned schedules. IPA's data show that more than 80 percent of chemical projects start to slip their schedules in engineering. The average chemical

project slips the estimated date for completing detailed engineering by 32 percent. Such slip creates an almost equal delay in the overall project completion. Engineering packages either do not arrive in the field on time or contain errors or both. Construction plans need to be reworked, and construction work is done out of sequence. This results in labor productivity losses and construction rework, which, in turn, result in schedule delays and cost growth. A project that slips engineering by 30 percent or more usually suffers 5 to 10 percent overall cost growth because of the effect on the construction.

Moreover, a decade ago, many businesses understood that to be competitive, some projects in the portfolio would overrun their targets; today, they appear to be much more risk averse and place greater value on predictability. This shift of focus is a manifestation of businesses' limited understanding of estimate progression and its accuracy ranges at different stages of project development. The end result is very conservative authorization estimates.

To make matters worse, many chemicals companies have lost the ability to effectively control project execution in the field. Experienced construction managers and project controls professionals are in short supply. Poor physical progressing of engineering and field activities make it difficult to be able to truly measure progress and understand project status and risks ahead and develop mitigation plans.

IPA sees these trends reflected in the project benchmarks. These less experienced project teams take longer to conduct project definition, and the quality of project planning and definition work for the average chemical project has declined significantly, essentially falling to the level of other industrial sectors. The product of the project definition phase is an estimate that is more conservative than historical norms, indicating a level of compensation for the limitations and uncertainty. Incomplete project definition



Obstacles: Characteristics of today's challenging capital projects environment.

Continued from previous page

and planning combined with lower EPC contractor capabilities and a weaker owner control function drives a much higher chance of project cost growth and schedule slip.

To respond to the challenges facing projects today, the Chemicals Industry must begin focusing on a few key areas for improving their existing organizational systems and capabilities. Stronger systems need to focus on maintaining their capabilities, while weaker ones need to devote time and resources to building (and in some cases re-building) owner strength in core competencies and processes. Unfortunately, many companies today report that they are ill prepared to deal with resource shortages. IPA's recent survey of over 25 chemical companies shows that one in two believe their company does not currently employ people with the right skill sets or experience, especially for project controls, estimating, and construction management. An additional 30 percent believe companies cannot buy these skills on the market

place.

This means intensive in-house training is paramount to improve project performance. IPA's data show that additional training pays off handsomely as better trained teams achieve better project definition at authorization and deliver better projects. However, only 30 percent of the respondents had plans in place for training and mentoring. Another 20 percent planned to rely on contractors to do the work, and the remaining 50 percent were not aware of any formal company programs to address the issue.

There's no turning away from what the data show; the projects market has changed. If the Chemical Industry wants to get serious about regaining its position as the leader in delivering capital effective projects, companies need to focus on strengthening their project teams and system capabilities.

For more information, contact Natalia Zwart at nzwart@ipaglobal.com.



Petrochemical Engineering and Construction Conference to Feature Talks Led by IPA's Paul Barshop and Natalia Zwart

Paul Barshop, IPA Director of Capital Solutions, and Natalia Zwart, IPA Manager of Chemicals, Life Sciences, and Nutrition, are set to speak at the Petrochemical Engineering & Construction Conference & Expo in New Orleans on June 7 to 8, 2016.

Barshop will deliver a keynote speech on June 7 titled *Adding Value—Strategies for Project Management Organizations to Better Serve Their Businesses*. The talk will focus on forming strong partnerships, communicating with businesses in terms they understand, and gathering the resources needed to support early business decision-making.

On the second day of the conference, Zwart will lead a panel discussion called *Develop the Right KPIs for Project Performance*. Other topics to be discussed include understanding the best approaches to measure performance using various data sources; quantifying cost, schedule, and other trade-offs in benchmarking your project; setting appropriate targets based on business

need; and understanding early warning signs of trouble ahead.

The conference aims to deliver new thinking on improving costs, predictability, and performance on major, plant-based, and smaller petrochemical projects.

Visit IPA's booth at the conference for additional details.



Paul Barshop



Natalia Zwart

Follow IPA's Company Page on [LinkedIn](#)

The Executive Role in Making Capital Projects Pay Off

10 Things to Know About the Stage-Gate Process for Projects

By Paul Barshop, IPA Director of Capital Solutions

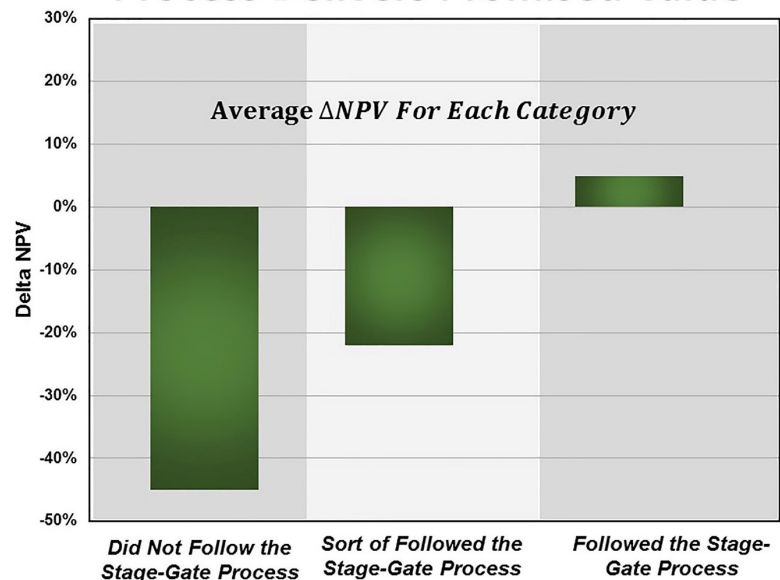
The executive role in delivering capital projects is often underestimated. Executives provide direction, supervision, and support to the teams responsible for developing and executing capital projects.

IPA's project evaluations and research for its clients, grounded in data from more than 17,000 downstream projects, has proven that executive involvement in delivering capital projects is critical to preserving capital value. The average project loses 22 percent expected net present value (NPV) at authorization, according to IPA project data. Only 60 percent of projects meet all their business objectives once they're completed. Fortunately, executives can do a lot to increase capital project effectiveness and generate the shareholder-pleasing profits they aim to deliver.

A prime area executives should concentrate on to improve capital projects is the stage-gate process. Executives should embrace the stage-gate process. As the chart to the right illustrates, IPA has definitive data showing that projects that follow the stage-gate process have much less deviation in delivering the opportunity value promised to shareholders. There is no getting around the fact that executives benefit from following a stage-gate process for delivering projects, but the process itself is not self-sustaining. It is up to executives to mandate that the project sponsor and team follow the process.

What some executives lack, however, is a sound understanding of the critical elements that make the stage-gate process work well. Here's a Top 10 List of what every executive should know about the stage-gate process:

The Stage-Gate Process Delivers Promised Value



10) The stage-gate process does not work without strong stage gates: Executives need to take stage gate decisions seriously, only allowing a project to proceed to the next stage if the project data continue to support the viability of the business case.

9) Cost = Project Scope = Cost: Cost estimates given to business executives need to be expressed as cost estimate ranges. There has to be room for cost deviation to accommodate changes in the project scope.

8) Rules for setting cost contingency: Too little contingency means cost overruns. Too much contingency leads to waste, reducing capital effectiveness.

7) Use risk management effectively: Risk management is an excellent tool, but make sure known risks are fully recognized for what they are. Be willing to accept some risk and develop mitigation plans for other risks.

6) Insist on effective steering committees: Steering committees provide direction for the project, but be sure they don't impede progress.

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5) Take project definition seriously: As anyone who has worked with IPA knows, we take the relationship between project definition and project risk very seriously. Executives must understand that authorizing funds for a project with weak definition is a strategic decision—they are accepting a higher degree of risk compared to a project with quality definition. Projects with weak definition, on average, erode 25 percent of the value expected when funds are authorized for execution.

4) Establish requirements for building and supporting the owner project team: Owner-led project teams deliver better performing and more cost effective projects.

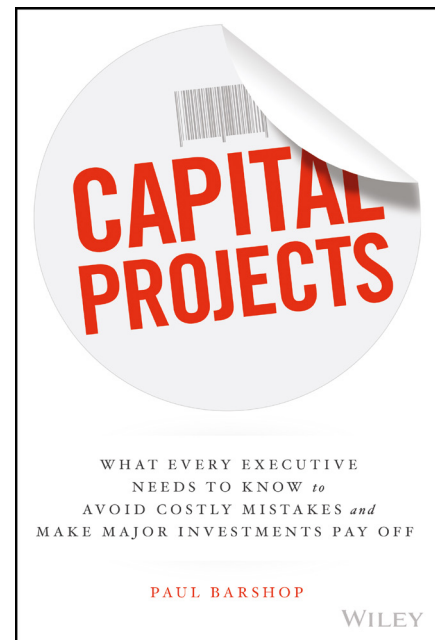
3) Take steps to develop clear business objectives: Undefined business objectives significantly increase the likelihood that a project's cost will grow due to late changes in execution. Business objectives need to clearly state the business needs for a project so the project team can understand and act on them with certainty.

2) Recognize the benefits of framing a project before identifying the scope: The project frame forces executives to be disciplined about how an opportunity for capital investment is defined.

1) Identify the project sponsor: Regardless of the size of the project, executives need to decide who among themselves is accountable for the value of the project delivered; that accountability falls on the project sponsor. This role is critical to the project success. A couple of years ago, IPA began asking whether the company's project system defined the role of the project sponsor. As it turns out, the project sponsor role was not defined or vaguely defined for 40 percent of project systems. When project teams are pressed, they usually tell IPA analysts that the project sponsor is the project manager or somebody else on the projects side of the project organization. But if you consider how most executives would feel about a project manager making business trade off decisions, you get a clear understanding of why the project manager cannot fill the project sponsor role.

In conclusion, the executive role is vital in delivering capital projects. The project sponsor role is responsible for guiding the project team and ensuring adequate resources are available to optimize value in a capital investment. The stage-gate process instills accountability and must be followed to improve capital effectiveness.

Paul Barshop will deliver a keynote speech at the Petrochemical Engineering & Construction Conference & Expo on June 7 titled *Adding Value—Strategies for Project Management Organizations to Better Serve Their Businesses*. Barshop is the author of a new book, *Capital Projects: What Every Executive Needs to Know to Avoid Costly Mistakes and Make Major Investments Pay Off* (Wiley), set for release this fall.



**Due out September 2016
(Wiley)**

**IPA Power Forum Highlights Document Available**

A free 12-page document with articles covering current issues affecting power companies and the development of power sector capital projects is now available. Featured articles address topics including bringing competitive benchmarking to the power sector and the status of power sector capital project performance. The document is available at: www.ipaglobal.com, search "Power Forum Highlights."



2016 Public Course Schedule

The IPA Institute, a division of Independent Project Analysis (IPA), develops and delivers educational seminars to further IPA's mission to improve capital effectiveness. IPA Institute courses are derived from IPA's extensive research and quantitative analysis of capital projects, linking statistically proven Best Practices to business value. To view full course descriptions, pricing, up-to-date registration details, and special discounts, please visit our website at www.IPAInstitute.com.

Megaprojects - Concepts, Strategies, and Practices for Success (24 PDU's)

July 19-21: Brisbane, Australia

September 13-15: Vancouver

Project Management Best Practices (24 PDU's)

July 12-14: Sao Paulo, Brazil

July 26-28: Johannesburg, South Africa

September 27-29: New Orleans

Delivering Value Growth Through Effective Oil & Gas Asset Developments (16 PDU's)

September 27-28: Rio de Janeiro

Best Practices for Small Projects (24 PDU's)

September 6-8: Singapore

September 20-22: Lyon, France

October 11-13: Orlando, Florida

October 18-20: The Hague, The Netherlands

November 1-3: Kuala Lumpur, Malaysia

On-Demand Webinars

- **Coping With Resource Limitations on Capital Projects**
- **An Agenda for the Lull: Coping Successfully in Volatile Times**
- **Gatekeeping: The Role and Limitations of Project Assurance**

Free
Webinars
Available

In-House Solutions

Whether you are looking for a tailored or off-the-shelf seminar, IPA Institute in-house training solutions provide a company-focused, cost-effective vehicle to educate large groups within an organization or project team. Improve your company's existing internal training program(s) by incorporating the IPA Institute's extensive experience in capital project research, training, and instructional design.

PMI Registered Education Provider

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To subscribe to the IPA Newsletter and to view an archive of all past issues, please visit our website at <http://www.ipaglobal.com/knowledge-ideas/subscribe>.

To be informed of upcoming IPA Institute programs and courses developed for capital project improvement, please visit the Institute's website at www.IPAInstitute.com.

Upcoming IPA Events & Presentations

May 31

Jacobs ZATE Forum

IPA Senior Project Analyst Mark Etchells will speak at a Jacobs ZATE forum in Al Jubail, Saudi Arabia, on opportunities to improve delivery of sustaining capital projects in the Al Jubail petroleum and chemicals industries. Etchells will speak on small project Best Practices. For more information about the event, contact Jacobs.

June 14-15



2016 INDUSTRY BENCHMARKING CONSORTIUM

Industry Benchmarking Consortium EMEA

IPA is hosting Industry Benchmarking Consortium (IBC) EMEA 2016 in The Hague, The Netherlands. This day-and-a-half conference will provide IBC 2016 members outside the United States an opportunity to hear about the performance metrics and practices of IBC member companies and to learn about key pieces of research. For more information about the conference, please contact Elke Skwirblies, IBC EMEA Coordinator, at eskwirblies@ipaglobal.com.

June 22-23



UCEC 2016 Meeting

The annual meeting of the Upstream Cost Engineering Committee (UCEC), an approved subcommittee of the Upstream Industry Benchmarking Consortium (UIBC), will be held in Houston. New IPA research will be presented at the meeting. New research topics include

- *External risks: The actual probabilities of certain external risks occurring and the real effect each one has on project cost and schedule will be examined.*
- *Offshore revamps: With the industry shift toward sustaining capital projects (revamps), companies need to understand the drivers of poor predictability and improve their ability to estimate revamp project cost and schedules outcomes.*

For more information, contact Jonathan Walker at jewalker@ipaglobal.com.

June 26-29

AACE International's 2016 Annual Meeting

IPA staff will be attending AACE International's Annual Meeting in Toronto. Alex Ogilvie, Deputy Director, IPA Project Research Division, will speak on his research that explores the concept of projects as chaotic systems by examining the outer tails of a cost growth histogram from more than 1,000 completed projects. Melissa Matthews, Associate Research Analyst, will present her research that looks at project estimates and practices to identify approaches that improve the accuracy of cost estimates during a project's scope development phase, also known as Front-End Loading 2 (FEL 2). IPA will also receive AACE's highest corporate honor, the Industrial Appreciation Award, at the meeting. For more information, visit <http://www.aacei.org/aboutUs/news/2016/2016-05-19.shtml>.

October 12

Calgary Energy Roundtable

IPA COO Elizabeth Sanborn will deliver remarks at the 13th annual Calgary Energy Roundtable. Industry leaders at the conference will examine how companies can survive and prosper in the region's volatile market landscape and review the strategies being deployed to deliver successful projects. For more information, visit <http://energyroundtable.net/calgary/>.

October 21

CURT Member Meeting, Singapore

IPA Advanced Associate Project Analyst Karine Cung, IPA's Singapore office team leader, will present at the International Construction Users Roundtables (CURT) Member Meeting in Singapore on the theme of labor productivity in Asia. Labor productivity improvement is possible when project organizations use Industry Best Practices, but the decision to use Best Practices must be made early. Visit <http://www.curt.org/Events.aspx> to register for the event.



IPA Recipient of AACE International's Highest Corporate Honor

Independent Project Analysis, Inc. (IPA) has been selected as the 2016 recipient of AACE International's top corporate honor, the Industrial Appreciation Award, in recognition of its service to the total cost management professional community.

In a letter announcing IPA's selection for the award, Jennie M. Cunningham-Amos, AACE International's Director, Marketing, Meetings, and Membership, wrote, "This is the Association's highest and most prestigious award given to a corporation and is intended to pay tribute for outstanding service to the cost management or cost engineering profession or to the public as a whole." Past award recipients include Jacobs; Chevron U.S.A., Inc.; the U.S. Department of Energy; Suncor Energy Services, Inc.; and the Government Accountability Office.

IPA will receive the award at AACE International's 2016 Annual Meeting, June 26-29, in Toronto, Canada.

"We are honored to receive this award," IPA President Edward Merrow said in accepting the tribute. Adding, "The director of IPA's Cost Analysis Center, Luke Wallace, has been the driving force behind much of the progress we have made in supporting and enhancing the cost engineering discipline over the past 5 years."

Wallace, in a separate statement, described cost engineers as being "critical" to project success. "They see the forest for the trees. Despite the unpredictable nature of projects—especially in recent years, cost engineers are providing reliable and competitive baselines and helping to maintain those targets in execution. Our data also show time and again that projects that have sufficiently staffed their estimating, planning, scheduling, and controls succeed, while projects that try to skimp routinely fail."

IPA will also be an active participant at AACE International's Annual Meeting, with staff presenting two industry research papers. Alex Ogilvie, Deputy Director, IPA Project Research Division, will speak on his research that explores the concept of projects as chaotic systems by examining the outer tails of a cost growth histogram from more than 1,000 completed projects. Melissa Matthews, Associate Research Analyst, will present her research that looks at project estimates and practices to identify approaches that improve the accuracy of cost estimates during a project's scope development phase, also known as Front-End Loading 2 (FEL 2).

Edward Merrow
 Founder and President

Elizabeth Sanborn
 Chief Operating Officer

Phyllis Kulkarni
 Regional Director,
 North America

Carlos Flesch
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Mary Ellen Yarossi
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IPA improves the competitiveness of our customers through enabling more effective use of capital in their businesses. It is our mission and unique competence to conduct research into the functioning of capital projects and project systems and to apply the results of that research to help our customers create and use capital assets more efficiently.



The IPA Institute's mission is aligned with the overall IPA mission to improve the capital productivity of its clients. The programs offered provide a forum for in-depth understanding of key elements of the capital project process and how to apply these learnings to effect positive changes and improvements, resulting in the more effective use of capital.