Independent Project Analysis, Inc. | Volume 17, Issue 1 | March 2025

IPA Newsletter

ALSO IN THIS ISSUE:

4 Big Challenges for Project and Engineering Leaders to Solve

By Nekkhil Mishra, IPA President and CEO

In most parts of the world, these are difficult times for the capital projects community. Hence, it is extremely challenging to run a projects and engineering (P&E) organization[1] in an industrial company today.

The returns on project opportunities are thin no matter what business lines our corporations want to grow (e.g., renewables, refining, oil and gas, some areas of mining, chemicals in general, and some specialty chemicals). The inflationary environment over the last few years, coupled with muted worldwide economic growth, has squeezed industrial firms from both sides, stagnating demand[2] and increasing the cost to build and run projects. If the IRR or NPV per project was the only concern, our path would be more straightforward. However, there are a lot of external factors raising the business case risk—legislation, permitting, tariffs and trade wars, local content, increasing cost of capital, lack of certainty around subsidies, and so on. The endless list means most projects today include multiple potential showstoppers.

These unusually uncertain risk configurations make business leaders anxious. This, in turn, makes the journey for the P&E organization to deliver an asset (or a project) for the business from start to finish quite challenging; it also makes the portfolios of projects in our industrial companies very difficult to execute. These risky configurations are the foundations upon which projects need to be done.

[1]These leaders in industrial companies are responsible for overseeing and guiding the entire engineering and projects organization within a company. Sometimes this includes the Technology and R&D area.

[2]The recent OECD interim report (March 2025) revised global growth downward for both 2025 and 2026.

IPANewsletter
Independent Project Analysis, Inc.
Volume 17, Issue 1
March 2025

I would like to talk through the 4 biggest challenges for project and engineering leaders to solve:

1. **Project organizations are slow in the front-end**
2. **Execution today is just a mess**
3. **Projects are too expensive to get going**
4. **Project governance is eroding**

These issues come directly from data and studies IPA has been doing over the last several years, along with multiple conversations with companies at the P&E leadership level. The goal is not to scare and shock, but to explain some of the root causes behind these challenges, so we can begin to tackle them as a projects community. Although some of these problems appear overwhelming, every P&E executive I have spoken with is excited to meet the challenges that lie ahead.

1. Project Organizations Are Slow in the Front-End

The biggest internal headache today is the delivery of owner companies' work. The most frequent complaint against projects is that the deliverables produced for the gate reviews are poor quality and routinely late, with too much time needed to complete the front-end work. IPA's data back this claim: P&E organizations are slow[3] in the front-end and the quality of the deliverables at the gates is degrading.

The root cause of this is people—we don't have enough people, we don't have the right competencies, we don't have the needed experience, and we don't have a middle to train the people we recruit. In our conversations with the owners of 25 industrial firms in a study done in 2024, two-thirds consider themselves to be understaffed—even anemic—and they are being asked to do more with less (see **Figure 1**).

Looking back, no single event triggered this situation. Owners faced a demographic issue prior to the pandemic and COVID only accelerated the issue. Further, the portfolio explosions after the pandemic that forced companies to transition quickly back to pre-COVID staffing levels left projects organizations with even more people problems.

For P&E executives today, it is essential to answer four basic questions about their projects organization:

- What does our long-term portfolio look like?
- How many people do we need for this portfolio?
- How many people do we have today?
- How do we close the gap?

When we can honestly answer these questions around resource planning, we can determine the right size either on the portfolio side or people side. However, as long as these two sides remain unsynchronized, we will continue to be slow in the front-end.

[3] Data from recent projects in IPA's database indicate that the time to take a project from the start of the scoping phase (FEL 2) to final investment decision (end of FEL 3) has increased by 15 percent since the pandemic for projects of the same complexity.

2. Project Execution Today Is a Mess

The same demographic challenges that owner companies face—multiple senior-level and entry-level personnel and not enough in the middle to train and manage staff—are affecting engineering, procurement, and construction (EPC) contractors. The EPC contractor demographic situation is only worsening as owners continue to steal and borrow personnel (e.g., IPMT[4] model) and contractors steal from each other. Our latest market trends survey[5] backs the hypothesis that the lack of resource availability and inexperience in the EPCs are the main reasons for the delays (see **Figure 2**).

The common complaints that owners have against contractors in execution is that the EPCs don't meet their field productivity or engineering delivery commitments. These complaints are valid. Engineering on engineering-intensive projects is now routinely late, and history shows that when engineering is late and out of sequence, it has major effects in the field. Our IBC 2025 database shows that engineering slip on onshore industrial projects averages about 50 percent and a routine onshore project is delivered 3 to 6 months late on average. That is shockingly weak performance.

This engineering slip is probably the most urgent problem that our community needs to address. We are getting more calls from clients to perform mid-execution cost and schedule risk analyses (CSRAs) of projects in execution. IPA is ready to step in and help no matter what stage a project is in, but unfortunately it is very difficult for owners to reverse the situation when the project goes off the rails in execution (though re-baselining and other actions can help prevent it from becoming worse). Any interventions will be hard and can be damaging. For P&E leadership, the focus in the short term must be to ensure that engineering is correct and slips as little as possible. There are ways to fix this: we need to beef up the number of engineers we are assigning to projects to monitor design progress and complete quality control (QC). If we don't reverse this trend in weak engineering, the typical large complex engineering project in execution today will inevitably last much longer than planned.

3. Projects Are Too Expensive to Get Going

What we hear from those executives whose portfolios include multiple projects in the front-end that haven't entered execution is this: "Projects are just too expensive to get going."

We know EPCs struggle to deliver on engineering quality and productivity in the field, but there is another area where things are out of control—supply chains and vendor delivery times.

We keep close tabs on how the supply chain is affecting capital projects by analyzing a combination of IPA project evaluation data and public data, as well through our Market Trends Survey,

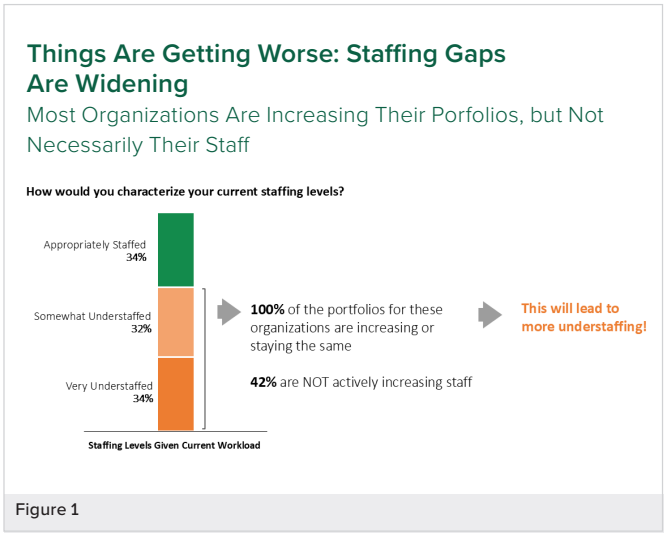


Figure 1

Figure 2

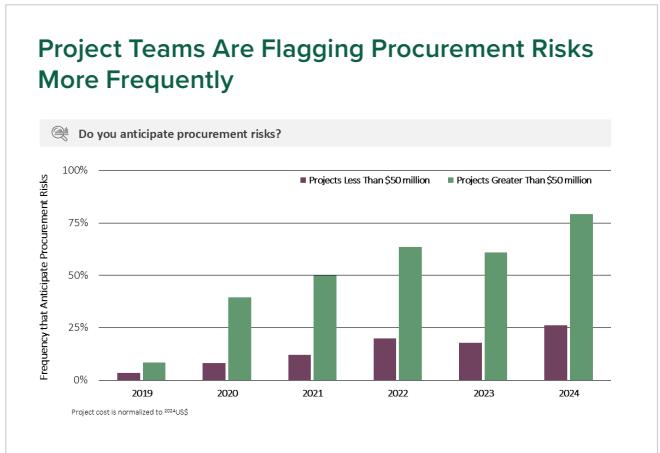


Figure 3

[4] An integrated project management team (IPMT) brings together functions with different areas of expertise to deliver complex projects.

[5] Since the pandemic, IPA routinely surveys owner organizations on the state of the EPC market, including the supply chains. We routinely gather survey responses from over 35 industrial companies across the globe in all industrial sectors working in major capital projects. areas of expertise to deliver complex projects.

and both measures tell the same story. Supply chain issues continue to persist as they have still not snapped back post-COVID, and these issues continue to be the primary driver of risk on projects. Over 75 percent of the projects IPA looked at costing over US$50 million in 2024 flagged procurement as the major risk on their projects, and this number has steadily climbed since 2020 (see **Figure 3**.)

Anecdotally, equipment with an 18-month lead time pre-COVID now takes 24 months to deliver. We hear that suppliers are stretched and not investing in capacity expansions. It is becoming increasingly clear that it is time to accept that supply chains will not snap back: Do not expect a return to shorter lead times anytime soon.

The problems in execution, coupled with the problems in the supply chain, mean that these EPC contractors have become extremely risk averse.

Driven by the problems contractors are facing today, including their own struggles, they seek to avoid lump-sum contracts, even though the construction/fabrication market is not overheated and commodities prices are not high or rapidly increasing.

P&E executives then are stuck with thinning bid lists, fewer bidders, extreme push back on terms and conditions, and long negotiations, and any risk they try to transfer is priced in with higher premiums. We live in a world of sticker shock: When the bids come in at FID, we have the "OMG at FID" phenomenon as we realize that our projects are not affordable and we can't get them off the ground.

Given today's contracting environment and fear of risk, IPA's contracting experts have been helping our clients design their contracting strategies for projects in FEL 2 by bringing historic data to bear on the current context. For P&E executives, we have strongly been advocating that owner firms take a deep dive into their terms and conditions, looking closely at risk transfer, liability terms, and liquidated damages to find ways to make projects less risky for the contractors and hence more affordable. We also are also actively helping companies via deep benchmarking in the early phases to help them get the scope cost right the first time around.

4. Project Governance Is Eroding

In large, complex projects, especially those tagged as strategic, schedules are frequently based on working backward from an end date. This means that at some point, projects need to start execution no matter how well or poorly defined they are on the front-end. The supply chain issues that are elongating delivery times also mean many more long-lead items need to be ordered prior to the final investment decision (FID), so more and more projects are committing a larger percentage of their total CAPEX prior to FID.

All of these issues are a problem, as discipline in the front-end seems to be eroding. We are seeing that investment decision gates no longer hold the same authority and, as project governance erodes, projects are being pushed through into execution with weaker definition.

P&E executives need to be able to communicate clearly with their leadership that these are very difficult times. Driving project schedules from start to finish without good foundational owner-controlled practices will ultimately result in execution nightmares and shareholder wealth destruction.

In certain companies, that message can't be delivered because of the way P&E is organized—they essentially see the business as their client versus their partner. If you find yourself in one of these companies, it is important that the P&E organization elevates itself to have a seat at the executive table. If P&E executives do not sit at the leadership table, they won't be able to solve the deep problems facing today's projects organizations.

What's Next?

Although we know that these are difficult times for the projects community, it is essential that we don't get discouraged. Rough patches are nothing new to our industrial sectors—we haven't exactly been here before, but we have gone through similar periods. We need to lay out long-term plans and keep working hard to meet these challenges, including helping the contractors. We need to keep educating the businesses around the reality of today's markets and how projects work. If you are a P&E leader or executive, be excited by the challenges that lie ahead of you. Big problems are always fun to solve!

Author Spotlight

Nekkhil Mishra, IPA President and CEO

Nekkhil oversees all aspects of the IPA's global business operations and works closely with company leadership and the Board of Directors to implement the corporate strategy. He also serves on the IPA Board of Directors.

Low-Carbon Projects: What Have We Learned From the First Wave?

By Paul Barshop, IPA Global Director for Sustainability

While some important decarbonization sectors and technologies have succeeded in the marketplace (including onshore wind, solar, electric vehicles, and more recently battery storage), other important sectors—biofuels, CCS, green and blue hydrogen, and decarbonization of steel and cement—are nowhere near self-sustaining at this time. These sectors rely on chemical process technology and are implemented through large, complex engineering projects. In this article, I will refer to this set of technologies as "*low-carbon projects*."

It is old news that companies are slowing investment in low-carbon projects. IPA's numbers bear out the trend. IPA evaluated several low-carbon projects that were sanctioned in 2022. The number of sanctioned projects dropped by half in 2023. In 2024, there was only one. Moreover, the slowdown was underway well before the results of the recent US election.

Problems with the market and with industrial and regulatory policy across the globe needed to support these projects mean there is too much uncertainty to justify the investment in low-carbon projects. However, development of low-carbon projects is not completely dead. For example, Japan's hydrogen subsidy program is driving multiple companies to work on low-carbon hydrogen projects. But, for many companies, projects have been abandoned in front-end loading (FEL) or put on a slow simmer waiting for conditions to improve.

The benefit of this slowdown is that it gives us a chance to study how industry performed on the low-carbon projects that were sanctioned. The lessons learned can then be adopted for the next phase of capital investment once conditions are in place to drive investment.

Low-Carbon Project Failure

From a project cost and schedule perspective, the results of the first phase of low-carbon projects have been terrible. The low-carbon projects reviewed by IPA that were sanctioned and completed had massive amounts of cost growth and schedule slip. Of the 12 completed projects that we evaluated, the projects averaged 31 percent cost growth and almost 50 percent schedule slip from their sanction estimates.

These projects were sanctioned between 2017 and 2022. During this period, of course, the project supply chain was buffeted by the pandemic and made worse by trade and physical wars. In fact, project supply chain problems continue today with no signs of ending.

However, the pandemic and subsequent issues were not the cause of failure for these projects—they vaporized large amounts of shareholder capital on their own merits. The 31 percent cost growth is in real terms because IPA removes the effect of post-COVID project price increases from actual costs. We also adjust project schedules to account for pandemic delays and supply chain disruptions while projects were in execution.

Figure 4 demonstrates that the project failures were not caused by the pandemic or supply chain disruption. I compared the outcomes of the low-carbon projects to a set of non-low-carbon projects with similar levels of technical complexity that were started and finished during the same period. The table shows that the 436 contemporary projects averaged no cost growth and had 25 percent schedule slip, better results than the similar low-carbon projects.

Project size and technical innovation also did not cause the failure for this first wave of projects.

These projects were not that big. The average project cost at authorization was approximately $100 million. There is only one megaproject in the sample.

This set of 12 projects used commercially proven technology as part of their scope. Eventually, new technologies for biofuels, carbon capture, and electrolysis will emerge to significantly reduce costs, but these first phase projects used proven technologies. Half the projects did use technology that was new to the company, but the project histories show that the cost growth and schedule slip was not caused by technical problems.

Why Did the Low-Carbon Projects Fail?

If not the pandemic and continuing subsequent supply chain issues or project complexity, what caused these projects to fail? The answer appears to lie in the use of government subsidies. Governments are using multiple types of climate policy to drive decarbonization. Market-based climate strategy takes the form of carbon taxes or cap and trade systems. Industrial policy aims to provide incentives in the form of grants, low-cost loans, tax credits, and price support mechanisms to offset the higher operating and capital costs needed to build the facility.

The low-carbon projects in this sample targeted a stack of subsidies that included grants, low-cost loans, and tax credits. Some of these subsidies came with schedule requirements. For example, some have statutory deadlines for completion to show progress against government decarbonization goals. For other subsidy schemes, governments have a limited pool of money to be disbursed on a first come, first-served basis. Some incentive stacks had both elements. These incentives caused the projects to be schedule driven.

The evidence that these projects were schedule driven is obvious when we compare two key project drivers of the low-carbon and non-low-carbon projects. **Figure 5** shows that the low-carbon projects were planned to finish execution 14 percent faster than average and were authorized with *Poor* FEL, lagging not only the industry average of *Fair* but also the *Best Practical* level of definition (see **Figure 6** for more information on IPA's FEL Index).

	Cost Deviation	Execution Schedule Deviation
Low Carbon Projects	31%	46%
Industry Projects	0	25%

Figure 4

	Planned Execution Schedule Duration	FEL Index Rating at FID
Low Carbon Projects	14% faster than Industry	Poor
Industry Projects	Average	Fair

Figure 5

Level of Definition

IPA measures a project's level of definition, or Front-End Loading (FEL), based on a scale from *Inadequate* (not defined) to *Best Practical* (optimal definition to move forward)

Front-End Loading (FEL) Index

Figure 6

Let's say the industry average execution time for a particular project is 30 months. At 14 percent faster than average, the low-carbon project would expect to finish in 26 months. A similar non-low-carbon project would expect to finish in the usual amount of time of 30 months. As mentioned earlier, these projects did not meet their schedule targets—the 46 percent schedule slip made them 7-8 months longer than industry average and about 1 year later than planned!

Planning to go 4 months faster may not seem like a lot, but the low-carbon projects were also less ready to start execution when they were sanctioned. The average low-carbon project was sanctioned with a *Poor* level of FEL while the comparison set had *Fair* FEL. These projects had cost and schedule estimates with higher levels of uncertainty, putting project teams in a weak position to identify and mitigate project risk. The typical path to failure was the discovery that the project scope was underestimated as engineering design progressed. The additional engineering and procurement work cascaded into construction delays and lower productivity made worse by the project team's inability to control the project.

What to Do?

All this leads to a catch-22 situation. Low-carbon projects are only viable with government support. Yet, government support often causes us to adopt a project strategy of taking on risk and hoping for the best. One option is to walk away, and many companies have done that by canceling or putting their projects on hold. Yet, many businesses cannot entirely walk away. The European Union and other countries have climate and circularity targets backed by legislation. While these deadlines may be delayed, businesses must continue to develop projects to maintain their social license to operate.

Also, it is hard for businesses to walk away when they perceive an opportunity to create shareholder value. A constant over my 30 years of studying projects is that businesses really want to do projects. They should. Their job is to identify investment opportunities that involve risk but with sufficient potential to create value.

Often the problem is that the plug is not pulled until every option has been explored, negotiating leverage has been lost, and there is no path to a viable business case. Large sunk costs are incurred when this happens during the FEL 3 phase. The cost of completing the FEL 2 and FEL 3 phases is between 5 and 10 percent of the eventual total installed cost or somewhere between $50 million to $100 million for a billion-dollar project, a significant chunk of change even for a big company with billions in profits.

As the analysis shows, the sunk cost fallacy also creates pressure to move forward with projects that should be killed and that eventually end up in disaster.

Managing Sunk Cost Risk With Shaping Strategy

One way to manage the risk of sunk costs is with a robust shaping strategy. Ed Merrow describes shaping "as the project sponsor's work that takes an opportunity and fashions it into a business venture and asset."[6] A key element of managing sunk cost risk is developing hold points based on condition precedents.[7] The condition precedents are to ensure work across the commercial, project, and engineering work streams does not get out of sequence or proceed past a point where the chances of success are too low to justify additional spending. The hold points allow the sponsor to pivot strategies or to cut their losses before too much money is spent and you are stuck in a forward-looking economic trap.

Roger Miller and Donald Lessard put the goals of shaping succinctly: "Successful sponsors start with project ideas that have the possibility of becoming viable. They then embark on shaping efforts that are most likely to unleash this value during a long front-end process. Successful firms, however, cut their losses quickly when they recognize that a project has little possibility of becoming viable." [8]

Here is one example from a low-carbon project IPA evaluated. At the end of FEL 1, the project team developed condition precedents for a number of workstreams including the basis of offtake agreements, GHG storage license, land purchase agreements, environmental permit submission, and technology license. A roadmap of activities, decisions, and approvals necessary to meet the requirements was developed for each condition precedent. The roadmaps also identified the uncertainties and risks that had to be transformed to achieve the requirements for each workstream. Each workstream was not allowed to proceed past a certain point unless all the conditions precedent for all workstreams were met.

The bad news is that this project never made it past the first hold point. There was too much uncertainty in the offtake

[6] Edward W. Merrow, *Industrial Megaprojects*, 2nd Edition, 2024, Wiley and Sons, Inc.
[7] A condition precedent is a stipulation that defines certain conditions that must either occur or be met by either party to ensure progress or execution of a contract.
[8] Roger Miller and Donald R. Lessard, *The Strategic Management of Large Engineering Projects*, 2000, Massachusetts Institute of Technology.

agreements and regulatory and permitting requirements to justify additional work on the project. The good news is that the shaping strategy worked, and the project was killed before too much time and money was wasted.

Climate Policy and Capital Projects

We need climate policy that creates markets in which firms can find a way to assemble a profitable low-carbon project.

The authors of *Making Climate Policy Work* say that a combination of reforms to existing market-based carbon pricing policies and to industrial policy is necessary to overcome the challenges to transitioning to near-zero emissions. Carbon markets alone will not produce carbon prices high enough to incentivize the R&D and deployment programs needed to develop the new chemical processing technologies that slash the costs of decarbonization. Industrial policy in multiple forms will be needed for deep decarbonization.[9]

Climate policy will always be tied to political goals, but political goals can clash with the realities of capital project development and create levels of uncertainty and risk that make assembling a profitable project impossible.

To achieve their goals, policymakers and lobby groups cannot ignore the drivers of capital project success as they design climate policy. We have already seen that tying project completion to unrealistic milestones will not work. Another example of how policy requirements create project risk is that the applications for government subsidies that are submitted during a project's FEL 2 phase may require an FEL 3 level of engineering design. As a result, project developers are forced to do engineering design with incomplete technical and site information data. It also does little good to create incentives to build projects without the comprehensive regulatory and permitting reform necessary to make it possible to get construction and operating permits in a reasonable timeframe.

These are just some examples of what governments need to do to create markets and incentives to get these sectors to be self-sustaining.

Project Developers Focus on Comparative Advantage

As climate policy evolves, project developers also need to understand their comparative advantage that will enable them to create value.

Biofuels, CCS, low-carbon hydrogen, steel, and cement plants are heavy industrial facilities with hazardous operations. IPA has consulted on a number of these projects where the developer had a very limited understanding of how to design and operate the facility safely and efficiently. There was no chance they could get their project to sanction.

Until deep product markets exist, companies with the capability to shape and execute these complex projects will have an advantage over less-capitalized project developers. Smaller players will find profitable niches based on their ability to contribute to a value chain without adding cross-organizational risk.

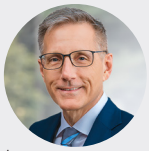
Even now, before markets exist, companies are competing on price. Bidders in the Japanese contract for different schemes must submit a breakdown of their operating and capital costs to justify their blue ammonia cost bids. IPA has evaluated five planned blue ammonia projects located across the world over the past 2 years. Each was designed to produce ammonia at similar carbon intensity levels. Blue ammonia is already a commodity and, in commodities, the low-cost producers win. Comparative advantage can be derived in many ways using combinations of the cost advantages from location, access to low-cost renewable power, and manufacturing technology to keep a company on the low side of the industry cash curve.

Looking Forward

It is easy to be discouraged about the current state of decarbonization. There is so much work to be done to reach near-zero emissions.

I am no expert in climate policy, but there is ample data available to policymakers, regulators, NGOs, and investors on what has worked and not worked to direct investment to low-carbon projects. Capital projects are a means to an end, but deep cuts in global emissions will not occur until the climate policy solutions also enable successful capital projects.

Author Spotlight



Paul Barshop, IPA Global Director, Sustainability

Paul works with IPA clients to understand their vision of carbon management and provides leadership on IPA's research and development efforts to provide strategies and measurable performance indicators for sustainability and carbon reduction on capital projects.

[9] Danny Cullenward and David G. Victor, *Making Climate Policy Work*, 2001, Polity Press.

Introducing the IPA Platform

Independent Project Analysis (IPA) software applications give users direct access to powerful capital projects data and insights to improve collaboration and decision-making, increase efficiency, and achieve better project outcomes. Coming soon in early 2025, IPA software users will get a new and improved experience with the all-new IPA Platform! The IPA Platform will bring IPA's five most popular software applications into one shared environment:

- Site Portfolio Tool: cost and schedule competitiveness insights for site and sustaining capital projects
- CEC Validator: cost and schedule estimate validation for large projects
- FEL Toolbox: project risk self-assessment for site and sustaining capital projects
- TrueCost: upstream oil & gas opportunity benchmarking
- Project Data Portal: secure data transfer for IPA project evaluations

The Official Gateway to IPA's Projects Database

Think of the IPA Platform as the official gateway to IPA's renowned capital projects database. With the IPA Platform, users can log in to all their licensed IPA applications with just one username and password. The IPA Platform will also streamline user management by enabling company admins to set up users and assign permissions across all licensed IPA applications from the platform home page. Bringing all IPA applications into a common environment will enable rapid deployment of future updates across all applications, possible integration between the applications, and much more.

What IPA Software Users Can Expect

Each IPA application and its corresponding data will be migrated to the new IPA Platform individually over the next several weeks.

When the IPA Platform launches, all usernames will remain the same and all passwords will default to your Project Data Portal password. Users who do not have a Project Data Portal password will need to create a new password upon their first time logging in to the new IPA Platform.

Users do not need to worry about updating their browser bookmarks to the new IPA Platform URL (platform.ipaglobal.com). As each IPA software application is rolled into the IPA Platform, the application's URL will automatically redirect to the new IPA Platform URL.

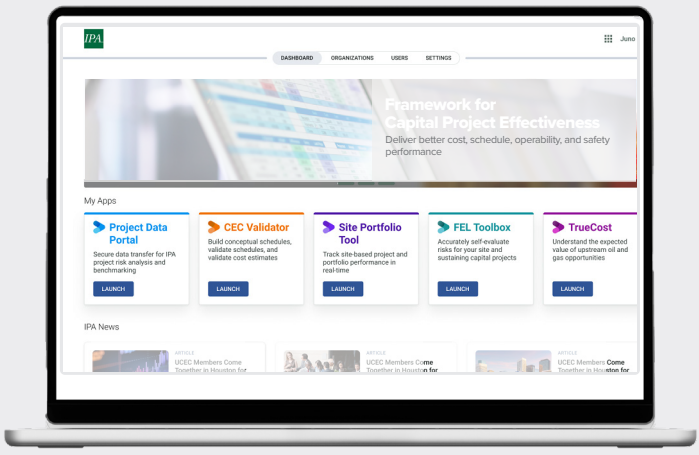
More details will be shared with users directly before each application is migrated to the IPA Platform.

Launching Soon: The IPA Platform

The official gateway to IPA's renowned capital projects database!

- 5 powerful applications on 1 shared platform
- 1 password for your IPA applications
- Streamlined user management

LEARN MORE »



Site Portfolio Tool Gets a Significant Update

IPA's Site Portfolio Tool provides users with a robust kit of cost and schedule competitiveness and predictability KPIs for site and sustaining capex projects under US$20 million. Powered by IPA's unmatched capital projects database, the Site Portfolio Tool enables real-time tracking of site and sustaining capital portfolio performance, trends analysis, and informed decision-making. Coming soon in early 2025, users will get a new and improved version of the Site Portfolio Tool when it relaunches on the all-new IPA Platform!

New Cost Gap Analysis Metrics

The newly added cost metrics enable Site Portfolio Tool users to compare estimates to industry norms on a much more granular level. Users get a quick and definitive comparison of a given project's cost per phase for all key summary cost categories, from total cost down to detailed engineering, project management, direct and indirect labor, and more. Seeing how your project portfolio stacks up against real industry norms simplifies the identification of risks and opportunities.

New Estimate and Schedule Progression Reports

New reports available in the Site Portfolio Tool provide a clear visualization of how your cost and schedule progression looks as your project moves through the life cycle, and make it easy to identify project performance patterns.

Improved User Interface

IPA's software team has redesigned all Site Portfolio Tool charts, tables, and metrics to provide better clarity. The new and improved Project Outlook page shows more cost and schedule data and insights than ever before to inform data-driven decision making.

Site Portfolio Tool and the IPA Platform

The Site Portfolio Tool is just one of five applications available on the new IPA Platform, along with CEC Validator, FEL Toolbox, TrueCost, and the Project Data Portal. The IPA Platform enables users to log in to all licensed IPA applications with just one username and password, while also streamlining user setup and permissions management. From a development perspective, the IPA Platform enables IPA to rapidly deploy future updates across all applications, makes integration between the applications possible, and much more.

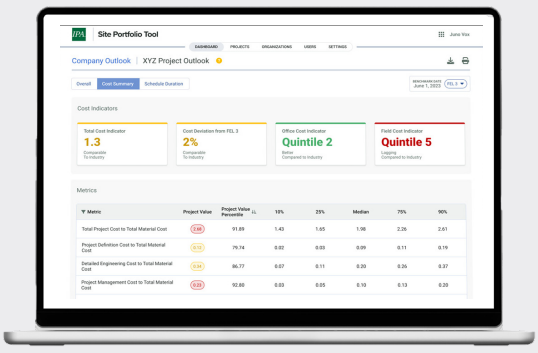
For Current Site Portfolio Tool Users

The Site Portfolio Tool and all corresponding data will migrate to the new IPA Platform in the coming weeks.

When the Site Portfolio Tool launches on the IPA Platform, all usernames will remain the same and all passwords will default to your IPA Project Data Portal password. Users who do not have a Project Data Portal password will need to create a new password upon their first time logging in to the Site Portfolio Tool on the new IPA Platform.

Users do not need to worry about updating their browser bookmarks to the new IPA Platform URL (platform.ipaglobal.com). When the Site Portfolio Tool is made available on the IPA Platform, the application's URL will automatically redirect to the new IPA Platform URL.

More details will be shared with Site Portfolio Tool users directly before the application moves to the IPA Platform.



Site Porfolio Tool

Updated version coming soon!

- New cost analysis metrics
- Estimate and schedule progression reports
- Improved user interface

LEARN MORE »

CEC Validator FAQs

IPA's CEC Validator software simplifies the cost and schedule estimate validation process to help capital project teams prevent costly overruns and delays. Users get industry-level metrics and insights throughout the project life cycle to understand how realistic and competitive their estimates are at every step of the way. Below, IPA's cost engineering experts answer the most frequently asked questions from current CEC Validator users.

Where do the underlying data in CEC Validator come from?

CEC Validator leverages IPA's onshore database of 5,000 recently completed large projects, featuring detailed project data collected directly from more than 100 owner companies around the world. Large projects are defined as projects with total design and construction costs of more than US$20 million. The help section within the CEC Validator application provides more information about the breakdown of the CEC Validator dataset by various project characteristics.

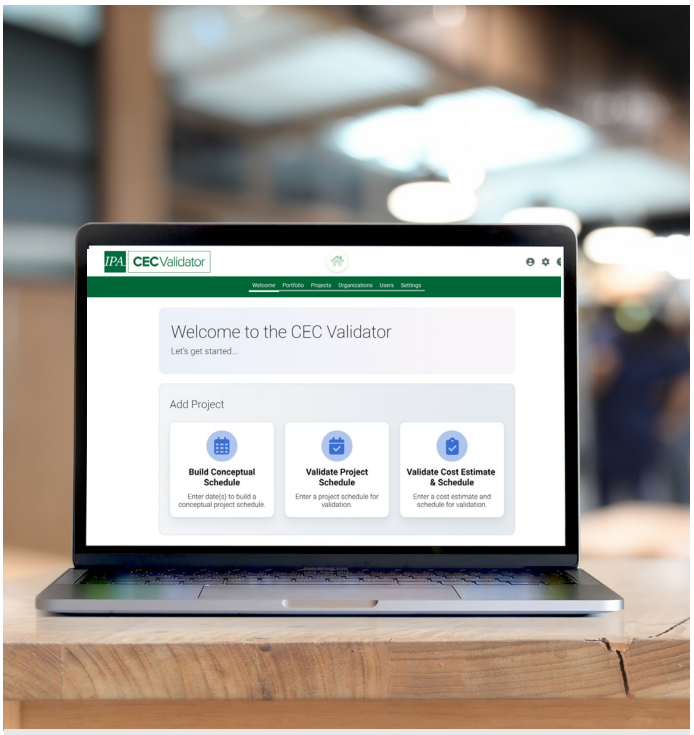
Where do the industry norms in CEC Validator come from?

The industry norms included in CEC Validator reports are generated using multi-variable regressions on industry-specific subsets of the overall Validator database described above. In other words, the industry norms reflect the effects of project characteristics like process, project type, and the amount of bulk materials and major equipment. In addition, the effects of currency exchange rates, time, and location (regional all-in wage rates and craft productivity) are all normalized to make industry norms specific to your project.

How do the CEC Validator industry norms compare to CEC metrics tables?

The CEC Validator outputs are a more refined version of the CEC metrics from Excel-based metrics tables. Validator uses multi-variable regression to account for multiple characteristics of your project, as well as to account for the currency, time, and location differences.

Visit www.ipaglobal.com read more frequently asked questions about the CEC Validator software.



IBC 2025 Features New Research on **Engineering Quality, Effective Resource Deployment, Project Controls,** and More!

By Cheryl Burgess, IPA Senior Editor and Staff Writer

The 2025 annual meeting of the Industry Benchmarking Consortium (IBC 2025) was held exclusively for members at the Lansdowne Resort in Leesburg, Virginia, from March 17 to 19, 2025. The IBC's objective is to drive continuous capital project system improvement for the world's leading companies in the manufacturing, energy, and infrastructure industries.

The IBC 2025 agenda featured a keynote speech by IPA President & CEO Nekkhil Mishra, new industry research study presentations, industrial sector breakout sessions, and project performance competitiveness briefings for large and site and sustaining capital projects. Attendees had opportunities to network with and learn from their counterparts at other member companies. Member companies have the opportunity to expand knowledge sharing throughout their organizations in the weeks following IBC by participating in exclusive IPA-hosted webinars on selected topics.

Continue reading for summaries of some of the exclusive research studies and focused presentations delivered at IBC 2025.

Achieving Project Controls Excellence

Decades after creating the Project Control Index (PCI), IPA is providing an update to better define what makes good project controls so beneficial. This study covers project controls practices across the industry and their effect on project outcomes, focusing on resource utilization, estimate validation, and progress measurement Best Practices. At the conclusion of this session, IPA presented the new Project Control Index and provided recommendations on how to use this study to strengthen project controls effectiveness.

Commercializing New Technology

After two decades of a steady decline in innovation, new technology is back at the forefront for IBC companies. Sustainability has generated the need for new technology, but are companies ready to manage the risks associated with new technology and do they have the discipline to make new technology projects successful? In this study, we revisit old lessons about how to commercialize new technology successfully and find some new ones in the data as well.

Fundamentals: A Diagnostic Study of Engineering Quality

IPA clients have struggled with engineering quality on their projects for many years. This study analyzes engineering design quality issues, major late changes, and engineering slip to describe the current state of the industry and how these factors affect typical project outcomes. This research illustrates broad trends and provides specific insights—part of the study looks at the most common design quality issues and major late changes that projects face in execution. These buckets allow companies to target key issues on future projects. Finally, this study provides recommendations for actions owner companies can take to mitigate and reduce these engineering quality struggles, both in FEL and execution.

Advanced Work Packaging (AWP) Step Forward

IPA is initiating research on the effect of AWP practices on project performance (cost and benefits). IPA has partnered with CII and Insight-AWP to propose an industry standard metric that describes the degree of AWP implementation at the project level. This session focused on seeking owner input and confirmation on what detectable activities take place (over and above good FEL) when using AWP practices.

Owner Construction Manager

The owner construction manager oversees a large part of a capital project. However, over the last few decades,

many owners have outsourced construction management to EPC/EPCm contractors and, as a result, have lost much of their "hands-on" construction management capabilities. Today's changing contracting market, erosion of contractor capabilities, shifting demographics, and rebounding portfolios have forced owners to examine their construction management capabilities. This study looks at the value of staffing the owner core team with an owner construction manager early in FEL. We interviewed clients about the owner construction manager's role and value they bring to every project stage. As part of the interviews, we also discussed the current market for hiring construction managers. The objective is to provide IBC member companies with an industry perspective on the role of the owner construction manager as they evaluate their capabilities in delivering effective capital projects.

Introducing the Constructability Review Implementation Metric

IBC has sponsored three studies over the years evaluating how Industry implements Constructability Reviews during FEL. These studies measured the benefits of Constructability Reviews and identified Best Practices that contribute to more effective results. This presentation introduces a modified method for measuring how project teams apply this key Value Improving Practice. IPA will begin to report and benchmark Constructability Reviews using this updated metric. Additionally, all member representatives received a document that outlines Best Practices for Constructability Reviews part of the IBC 2025 package.

The Role of the Project Management Office in Site Projects

IPA has long recognized the different ways sites use central resources and different ways central project groups engage with sites. This study defines the degrees of centralization and trade-offs inherent in different approaches. The study investigates where central and site organizations should come together to optimize resources—in terms of personnel and tools/processes—to deliver more successful projects across the project organization. Clients routinely ask what centralization for processes, tools, and resources looks like and what top performers do. Most client questions we receive focus on the source of various project services functions: controls, scheduling, and estimating. This study answers which (if any) of these specific functions, tools, and processes should be centrally supplied; where central involvement should augment site resources and tools; and how to best administer and manage associated processes.

Effective Resource Deployment

One of the biggest challenges capital project systems face today is how to effectively allocate project resources across their portfolios. Owners are short on experienced resources, and contractors have experienced similar competency declines. The purpose of this study is to arm project system leaders with actions they can take to strategically deploy resources across the project portfolio. This study identifies leveraging characteristics, such as experience levels and owner representation, that drive better performance across five key project functions: Project Manager, Engineering Lead, Construction Manager, Controls Lead, and Cost Estimator. The findings support owners in thinking strategically about where to assign project personnel based on portfolio characteristics.

Additional Topics

IBC 2025 also featured industry sector breakouts and focused sessions on the following topics:

- Site and Sustaining Capital Metrics and Trends
- Finding Opportunities to Improve Site-Based Projects in Refining
- Risk Analysis and Mitigation Strategies for Chemicals and Consumer Products Projects
- Lessons Learned from Brownfield Minerals and Metals Projects
- Assessing Owner Change Capability
- IPA's Bi-annual Market Trend Survey
- On-site demos of the CEC Validator and Site Portfolio Tool software applications

About the IBC

The IBC is a voluntary association of owner firms in the chemical, petroleum, minerals processing, food and consumer products, life sciences, pulp and paper, and power and infrastructure industries that employ IPA's quantitative benchmarking approach to improve the value from their capital project systems. Through benchmarkings of both large and site-based systems conducted by IPA, IBC member companies receive exclusive insights into how their capital project systems and project outcomes stack up against their industry peers with respect to safety, cost, schedule, and operational performance. Member companies agree to support the continuous improvement of their own capital processes through measuring and comparing performance metrics.

IPA Launching Three New Studies **to Address Key Mining and Metals Industry Concerns**

By Cheryl Burgess, IPA Senior Editor and Staff Writer

The Mining, Minerals, and Metals (MMM) Project Management (PM) Forum held in Perth, Australia, in November 2024 marked a revival of the IPA-led community of practice, which originated in 2003. It was a direct response to IPA's mining and metals clients who were looking for opportunities to collaborate more frequently with both IPA and peer owner organizations to address the challenges that the MMM industry is facing today.

IPA is now preparing to launch focused research studies to address key topics discussed at the forum and provide the insights our forum delegates are seeking. Continue reading below for high-level summaries of each study's proposed objectives as shaped by ongoing discussions with PM Forum delegates.

Environmental Permitting

The increasing complexity and duration of environmental permitting processes is creating significant project delays and uncertainties for MMM projects. The study aims to answer critical questions that mining executives and project leaders are grappling with: How long are permitting schedules really taking across different jurisdictions? What are the true costs and schedule effects of permitting delays? Most importantly, what specific strategies can companies implement to improve their permitting success rates?

As we continue to frame up this study with participants, we expect to focus on the following insights, among others:

- Benchmarking data on permitting durations across different regions and project types
- Analysis of success/failure rates for projects with different permitting approaches
- Identification of Best Practices that reduce appeals and delays
- Exclusive access to permitting trend data that can inform strategic planning and project scheduling

This time-sensitive study offers participating companies a unique opportunity to gain a competitive advantage in an increasingly challenging permitting environment while helping shape future industry Best Practices.

Operational Readiness

In today's complex mining environment, achieving rapid and consistent operational performance is crucial for project success. The Operational Readiness study addresses a critical industry need: understanding the true costs, timelines, and Best Practices for ensuring new mining operations achieve peak performance quickly and safely.

This multi-client study will leverage IPA's extensive project database, along with new participant data, to deliver unprecedented insights into operational readiness benchmarks across the MMM sector. For the first time, mining companies will have access to validated industry data on operational readiness costs, timelines, and success factors, enabling them to make confident decisions about operational readiness investments and implementation strategies.

Gender Diversification in Project Organizations

This multi-client study addresses one of the mining industry's most pressing organizational challenges: understanding and improving gender diversity across capital project organizations. This study follows a preliminary study done in 2024 and will dig deeper into this topic. It is intended help companies achieve their diversity goals and strengthen their project delivery capabilities by delivering critical intelligence that mining executives and HR leaders need: What are the current benchmarks for female representation across different project roles? Where are the gaps in leadership positions? What organizational structures and practices lead to better gender diversity outcomes? Most importantly, what specific strategies can companies implement to attract, retain, and promote female talent in project organizations?

What's Next for the MMM PM Forum

The MMM PM Forum meets periodically to enable owner organizations to share issues affecting their delivery of capital projects in an informal setting and to allow networking across peers. The next MMM PM Forum is planned for later in Q2 2025 with a focus on sustaining capital portfolios (influenced by client feedback). IPA will share more details on this event soon.

For More Information

If you would like to express interest in participating in the MMM PM Forum or any of the three multi company studies described above, please send a message to **MMM@ipaglobal.com**

IPA Announcements

Nekkhil Mishra Named IPA President and CEO, Edward Merrow Steps into New Role as Executive Chairman

IPA is pleased to announce two important leadership changes within the company. Nekkhil Mishra is now officially President and CEO of IPA, as ratified by the shareholders of the company at its annual meeting on January 23, 2025. Edward Merrow, who previously held both roles, has transitioned to Executive Chairman.

Nekkhil stated, “I am deeply honored and extremely grateful to Ed and the board to be given this opportunity to lead this prestigious organization. IPA has an excellent customer base who look to us to help support positive change. The world of projects and project systems has never been more interesting, with numerous challenges and opportunities ahead. With our leadership team and staff, we are well positioned to help to conduct the research and provide the products and services our customers need to navigate the future.”

Nekkhil joined IPA in 2007 as a project analyst specializing in oil and gas projects. He has held several leadership roles throughout his IPA career, including client engagement leader; Deputy Director of Exploration & Production (E&P); and Director of Europe, Middle East, and Africa (EMEA). He was named President of IPA on May 1, 2024, and now takes on the additional role of CEO moving forward. In these roles, Nekkhil oversees all aspects of IPA’s global business operations and works closely with company leadership and the IPA Board of Directors to implement the corporate strategy.

At the transition, Edward Merrow said, “I am entirely confident that Nekkhil will lead IPA with a strong and steady hand. He has the right skills, the right temperament, and the vision to lead the company forward. I intend to spend my time conducting research and talking to clients, both of which are my passion.

Jonathan Walker has been promoted to the role of Research Deputy Director for IPA’s Project Research Division (PRD).

As Research Deputy Director, Jon will oversee R&D work supporting IPA Project Evaluation System (PES®) products as well as client-funded research.

Since joining IPA in 2010, Jon has performed extensive research in the gas and oil processing industry, authoring or co-authoring over 15 research studies. During his career, he has developed statistical models and tools aimed at evaluating oil and gas developments around the world, led the Upstream Cost Engineering Committee (UCEC) annual conference, and presented multiple research studies at various industry conferences. He previously served as a senior research analyst and the research team leader for IPA’s E&P and Renewables groups.

Gregory Ray has been promoted to the role of Manager, Industry Benchmarking Consortium (IBC).

In his new role, Gregory will manage both the IBC and UIBC annual conferences in conjunction with IPA’s Business Group.

Gregory has been working closely with long-time IBC Manager Andrew Griffith through the planning and execution of IBC 2025 held in March and now fully assumes IBC management responsibilities moving forward. Andrew had led the IBC since 2016 and was instrumental in delivering high value support to our members in their continuous improvement journeys. Andrew will continue in his role as Director, IPA Institute, another role he has held since 2013.

IPA Institute Course Schedule

THE IPA INSTITUTE
Advancing Project Knowledge

In-Person Courses	Dates	Language	Click to Register
Megaprojects: Concepts, Strategies, and Practices for Success* **Perth, WA, Australia**	April 1–3	English	REGISTER
Contracting Strategies for Major Projects* **London, England, UK**	April 7–8	English	REGISTER
Framework for Capital Project Effectiveness* **Houston, TX, USA**	May 13–15	English	REGISTER
Megaprojects: Concepts, Strategies, and Practices for Success* **Calgary, AB, Canada**	May 20–22	English	REGISTER
Best Practices for Site-Based Projects* **Houston, TX, USA**	September 9–10	English	REGISTER
Framework for Capital Project Effectiveness* **Calgary, AB, Canada**	September 23–25	English	REGISTER
Virtual Courses	**Dates**	**Language**	**Click to Register**
Gatekeeping for Capital Project Governance	April 15–17	English	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	April 22	English	REGISTER
Capital Project Execution Excellence and Project Controls	May 13–14	English	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	May 21	Portuguese	REGISTER
Front-End Loading and the Stage-Gated Process	May 27–29	Spanish	REGISTER
Front-End Loading and the Stage-Gated Process	June 3–5	English	REGISTER
Front-End Loading and the Stage-Gated Process	June 4–6	Portuguese	REGISTER
Project Stakeholder Alignment Through Successful BEAM Implementation	June 17	English	REGISTER
Front-End Loading and the Stage-Gated Process	October 27–29	Portuguese	REGISTER
Front-End Loading and the Stage-Gated Process	November 25-27	Spanish	REGISTER

***Group Discount Available:** Register 3 and send a 4th for free!*

MORE...

IPA Events and Presentations

Smart Energy Expo 2025
April 9-10, 2025
Sydney, Australia

IPA Senior Project Analyst Manjusha Thorpe will participate in a panel discussion on *Enhancing Regional Collaboration for Global Climate Action* at the Smart Energy Expo 2025 in Sydney, Australia. Visit **smartenergyexpo.org.au** for more information.

CEC + UCEC Roadshow
May 7, 2025
Sunbury, United Kingdom

Cost Engineering Committee (CEC) and Upstream Cost Engineering Committee (UCEC) members are invited to attend a one-day CEC + UCEC Roadshow in Sunbury, UK this May! This is a fantastic learning opportunity for CEC and UCEC members to gain exclusive insights and practices for strengthening project controls and capital management capabilities. Attendance is limited to CEC and UCEC members only. Please contact Poppy Garner at **EMEAreception@ipaglobal.com** with questions.

IBC EMEA Roadshow
May 19-20, 2025
London, United Kingdom

Industry Benchmarking Consortium (IBC) members are invited to attend an exclusive meeting specifically for companies operating in the Europe, Middle East, and Africa (EMEA) region! This year's meeting will be held in London on 19 to 20 May 2025! Attending member companies will compare key performance and practice metrics—for both large and site-based projects—to understand how well their capital efficiency improvement efforts compare to their peers. Attendance is limited to IBC members only. Please contact Greg Ray at **gray@ipaglobal.com** with questions.

Upstream Cost Engineering Committee (UCEC)
June 12, 2025
Houston, TX

UCEC members receive exclusive access to cost and schedule metrics and tools, which aid in unbiased conceptual cost and schedule estimating and validation for upstream oil and gas projects. The annual meeting is an opportunity for member representatives to hear the latest IPA research and industry trends, while also sharing insights and networking with other members. Attendance is limited to UCEC members only. Contact Shubham Galav at **sgalav@ipaglobal.com** to request more information.

Cost Engineering Committee (CEC)
September 16-17, 2025
McLean, VA

The CEC focuses on advancing the cost engineering and project controls capabilities of the world's leading industrial companies to drive improved business results for capital projects. CEC members get exclusive access to cost and schedule metrics and tools, in addition to cutting-edge IPA research and industry trends—all of which aid in unbiased conceptual cost and schedule estimating and validation. Attendance is limited to CEC members only. Contact Shubham Galav at **sgalav@ipaglobal.com** to request more information.