Independent Project Analysis, Inc. | Volume 13, Issue 2 | June 2021

IPA Newsletter

IPA's Part in the Global Energy Transition Journey

The climate change discussion will not abate. Recent events have strikingly highlighted the need for traditional energy producers to reconstruct their business models to support a clearly defined climate strategy that also returns value to shareholders. It is no longer possible for oil and gas companies to operate under the vision of ever-expanding hydrocarbon resources to power the world's energy systems over the long term. Some of the world's largest energy sector companies have recently been reminded by legal and investor demands to take decisive and aggressive action to reduce carbon emissions.

It is in this environment of rapid transition that owner companies across the energy marketplace are reshaping the industry. Investments in the construction of renewable energy assets, proven and yet to be commercialized low-carbon power sources, and various emissions abatement technologies are setting the scene for the build out of new energy systems over the coming decades. However, as businesses and project teams rush the planning and execution of the clean energy projects of the future, they will encounter unanticipated pitfalls and complexities not uncommon to new technology and fast-tracked projects.

Indeed, uncertainty is high in today's clean energy and emissions mitigation projects. Project sponsors are finding that even proven renewable energy concepts, for instance, are not as uncomplicated and easy to deliver as envisioned. Unbiased recognition of the uncertainties to the business case and willingness to reduce such risks should put the planned investments on a better footing for success. This needs to be done early on in the project investment cycle, before much of the design and execution plans for development have been formulated. This is when the sponsoring business is

ALSO IN THIS ISSUE:

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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IPANewsletter

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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.

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required to shape the opportunity, considering contextual elements such as comparative advantage, government regulations, partner issues, financing mechanisms, technology challenges, supply chain availability and constraints, and social and environmental requirements, among other business (not project) controlled issues.

When opportunity shaping is not fully completed, a business case is certainly not robust enough to support successful project development. For example, IPA has seen too many examples of poorly considered terms and conditions established among Joint Venture partners in the earliest stages of a project – sometimes many years before execution begins. These oversights, which are often caused by the rush to secure a deal, fully derail a project in execution due to unintended consequences. So, shaping is the first significant challenge that we see in energy organizations across the globe, and insight into the project cost and schedule consequences of deal terms is the value IPA provides to early investment planning.

Shaping plays a major role in offshore wind projects, for instance, with the development and siting phase of a wind project being challenging work. Owners need to find the right combination of wind conditions, favorable topography, and access to power transmission lines and land. Failure to close shaping issues can make or break a project. Even onshore, where the physical environment may be more benign, the supply chain and commercial challenges remain and give rise to levels of uncertainty that threaten many business cases. The trend of increased risk transfer from EPC firms to owner companies makes the scenario more worrisome.

The next set of challenges arises at project development. Many energy owner operators and investors do not have organizations and teams with the minimum core competencies to develop successful assets. Owners' and contractors' abilities to develop quality engineering, execution plans, and estimates with high levels of confidence are limited, and have been for many years in the construction industry. These gaps—compounded by the projected sheer amount of investment in new energy areas, project fast-tracking, and a stressed supply chain—constitute a recipe for disappointing outcomes. As IPA studies have shown repeatedly in the last 30+ years in the boom-and-bust cycle of industrial capital investment, when markets for a particular sector heat up, businesses lack clarity to assess the competitiveness of the projects in their portfolios and to plan effectively to meet the intended targets. Our studies of past hot markets show how and where the supply chain becomes overwhelmed, which aids decision making for our clients.

Hydrogen, another one of the much recently touted sources of clean energy, faces technology and technical unknowns that, for now, make it of limited use. Yet there is significant investment lined up for hydrogen projects in different regions of the world, with Europe and Asia leading in this respect. Undisciplined project systems and underprepared project organizations and teams will struggle to manage their growing hydrogen portfolios effectively given the risks associated with applying or scaling up new technology. IPA has recently worked with a major energy company on an options analysis for its hydrogen development program, looking at how the value chain for hydrogen should be developed.

Join IPA's Offshore Wind Industry Cost and Schedule Benchmarking Study

Independent Project Analysis (IPA) is launching a multi-client study to establish cost and schedule benchmarks for both recently completed and currently ongoing offshore wind projects that are in development. The companies that participate in this study will gain insights into how their projects' cost and schedule performance and estimates compare to the competition, and how to set competitive, yet achievable targets for future investments.

The International Renewable Energy Agency forecasts average annual offshore wind investments to reach US$61 billion per year until 2030. As investments grow, governments will be paying closer attention to the sector's ability to deliver reliable, timely, and cost-effective assets. Although the cost of new offshore wind projects have been steadily falling over the past few years, concerns are growing that further cost improvement will not follow a similar steep trend. Projects will move further offshore into deeper waters; the supply chain will become more constrained due to rising demand; and technology improvements, like blade size, might be reaching their upper limits.

For asset owners, project developers, and capital investors, remaining competitive in this environment requires decision making based on reliable industry data rather than incomplete, non-normalized public data.

How to Join the Study

Participating in this first phase of the study is free of charge, but companies are required to provide data to receive the benchmarks. The study is scheduled to kick off later this year. **Contact IPA Associate Project Analyst Anna Pivovarova at apivovarova@ipaglobal.com** to express interest in joining.

While the energy landscape transitions to cleaner sources and carbon-containment approaches, traditional oil and gas projects still need to be developed and executed effectively to meet the world's energy demands for years to come. Oil and gas operators are expected to focus on faster cycle times, lower cost opportunities, hub projects, subsea tie-backs, enhanced oil recovery, site and sustaining capital projects and revamps, and natural gas plays in the interim. Moreover, for owners in the fuels manufacturing and transportation sectors, managing their sustaining and maintenance portfolios cost effectively in a constantly changing energy market will save millions in capital that can be applied to future investments.

Like its energy sector clients, IPA has been preparing for the global energy transition for some time. IPA has been actively collaborating with energy industry clients and groups to promote the capital competitiveness of clean energy and GHG emissions abatement projects. The IPA Carbon Working Group is a voluntary group whose membership includes some of the E&P industry's most recognized companies, has already produced useful GHG management tools and is actively working to create new tools and research. More information about the group can be found on page 5. A new study is about to get underway to develop industry average capital cost benchmarks for the development and construction of offshore wind farms. More information about the upcoming study is available above. Readers of this newsletter can expect to see regular updates on the project evaluation and risk assessment services, new research, and cost and schedule estimating tools available to the wide spectrum of energy-related projects.

For over three decades, IPA has been the "go-to" company in helping companies improve the competitiveness of capital project systems across the oil and gas, chemicals, mining, and other capital-intensive sectors. Energy industry leaders have long recognized IPA's role in providing the industry benchmarks and ground-breaking research necessary for assessing the competiveness of their capital projects. As we navigate the energy transition landscape, IPA will remain diligent in advancing its benchmarking and research capabilities to continue supporting our clients in the traditional energy industry. We welcome inquiry from firms involved in the planning and construction of new energy and low carbon projects to learn how IPA partners hand in hand with operators to improve the effectiveness of their capital project delivery in constantly evolving and increasingly competitive project markets.

—IPA Staff Writer Geoff Emeigh contributed to this article

Performance Assurance Challenges for Renewable Projects

This case study looks at how a company can deliver better projects by making time to assess in detail the adequacy of existing agreements and project assurance work.

The Problem—Execution Schedule Slip

When a company acquired a renewables project already under construction, it also acquired the contracts and power purchasing agreements signed by the previous owner with a set effective delivery date. The new owner company for the capital project renegotiated the engineering, procurement, and construction (EPC) contract for the project and power purchase agreements, resetting schedule commitments and adding contingency, but leaving the project's scope unchanged. However, even though the EPC contract was renegotiated, the project team's due diligence in approving EPC work was insufficient. Unforeseen environmental conditions, in particular, degraded field productivity, increasing costs. The company was forced to modify the EPC contractor work plan to improve field productivity. Mechanical completion and commencement of power transmission were eventually achieved, but more than 6 months later than planned.

The Causes

1–No Work Process Gates

Yes, the team went back and renegotiated EPC contracts and power off-take agreements. However, even though some development work was redone, there were no development stage gates for decision makers to ensure the cost and schedule estimates and designs were well defined and aligned with the project's business objectives. Instead, the next stage of development or phase of construction commenced as soon as deliverables for the previous phase were complete. This is common across the renewables industry.

In most industries, business hands an opportunity to a project team to develop in accordance with the company's project development and execution work process and practices. However, renewable companies are known to combine business shaping/planning and Front-End Loading (FEL) work in the course of planning asset acquisitions or making a commercial deal. A due diligence process is usually followed before and during the acquisition, and often requires the establishment of clear targets for operation, cost, and schedule at acquisition. Project teams, however, lacking early FEL data must be informed during FEL 2 of important priorities, trade-offs, and constraints affecting project cost, schedule, and operability performance in order for them to build more accurate cost and schedule estimates and improve project definition.

2–Poor Construction Management Integration

Although a development team managed the project's engineering and cost estimating review when evaluating the viability of the asset purchase and its subsequent sale, the construction management team was not adequately integrated into the project team early enough in FEL to address and potentially head off the execution schedule slip risks that arose during execution. For instance, the owner team should have done constructability reviews before the EPC award and updated before authorization. In practice, constructability reviews are frequently done by the contractor because owner resources are not available or because reviews are already underway at acquisition. A better practice is for the owner team or an independent group to conduct constructability reviews before EPC award (or updates) prior to project authorization. The construction engineering function had some input into EPC work prior to the project's authorization, but had almost no say after construction began, forcing the adoption of EPC contract improvement plans.

IPA's Renewables Database

Since 1987, IPA has been a trusted advisor to companies in all energy sectors and has helped clients improve their capital project performance. We have been at the forefront of the energy transition within the capital projects industry.

IPA works with project owners, developers, and investors—including new energy investors, independent power producers, and Fortune 500 companies—as well as governments and vendor firms focused on renewable power generation. We have helped organizations improve their work processes, understand and improve key factors of cost and schedule performance, and invest shareholder capital effectively.

IPA Carbon Working Group Advances GHG Performance Metrics, New Research Initiatives

By Adi Akheramka, IPA Advanced Associate Research Analyst

An IPA-led industry group is spearheading the development of standard metrics and tools to bring clarity to cost versus carbon emissions trade-off decisions associated with capital projects.

Formed in April 2020 to bring consistency and reliability in GHG performance management for projects, the IPA Carbon Working Group (CWG) comprises the world's leading integrated energy and E&P companies. After an IPA survey found significant inconsistencies between corporate ambitions and how capital project teams tackle GHG risks and emission-reduction practices in their project development systems, several of the industry's largest owner operators turned to IPA to assist in advancing Industry's low-carbon agenda in a standard manner. The CWG has already been successful in developing standardized metrics and benchmarking tools to increase the effectiveness of GHG performance management. The free and voluntary working group is working fast to develop new datasets and tools.

The IPA CWG's main activities include identifying the common challenges and issues facing capital projects in their low-carbon journey and providing regular inputs and guidance to develop solutions to address these challenges. The CWG also provides a platform to align on standard practices for project-related emissions data collection and management, estimation methodologies, and target setting at a portfolio and individual project level.

Knowledge-sharing sessions throughout 2020 contributed to establishing the GHG Performance Toolkit. Unveiled at the Upstream Industry Benchmarking Consortium (UIBC) 2020, the toolkit comprises four capabilities: GHG Intensity Benchmarking, a Carbon Capital Effectiveness Index, a GHG Estimate Maturity Index, and a Carbon Optimization and Readiness Assessment.

The working group agreed at its April 2021 meeting to continue developing more detailed concept-specific GHG Intensity benchmarking capabilities. It also agreed to continue identifying and validating industry Best Practices to deliver low-carbon projects using the Carbon Optimization and Readiness Assessment framework. Working group members also expressed a strong interest in initiating several multi-client research studies. The first one planned will help project teams assess the subsurface complexity for long-term CO2 storage and identify industry Best Practices to manage this uncertainty. The second study will explore the development of early cost screening metrics to help decision makers assess the feasibility of different carbon capture technologies across different industries. Work is also in progress to help project teams address GHG performance issues for LNG projects.

Given the importance of decarbonization in the industry, the scope of the CWG is broadening and more diverse topics are being identified by all members. Through this industry working group, IPA will support the endeavors of business sponsors and project teams to improve their GHG performance management.

For more information, **contact Adi Akheramka at aakheramka@ipaglobal.com.**

The Project Sponsor Role Still Does Not Get the Attention It Demands: IPA Research

By Allison Aschman, Director, IPA Capital Solutions, and Alexey Rasseykin, IPA Associate Project Analyst

Years of capital projects research and consulting work with owner companies has fortified IPA's understanding of the project sponsor's role in generating and maintaining conditions that maximize a project's business value. Unfortunately, IPA's research also confirms that project organizations are not doing enough to define and bolster the sponsor's role.

IPA's latest Industry Benchmarking Consortium (IBC) research study on the topic, *Getting the Project Sponsor Role Right*, examines the sponsor role for a recent set of major projects. In our study, more than one-quarter of the project teams recently surveyed by IPA were not even sure their project had a designated sponsor. The reasons vary—some companies do not define the sponsor role; in others, the role is "shared" across multiple personnel with unclear, and sometimes conflicting, direction and accountabilities; and some project teams look to their internal projects group leadership to provide the sponsor role.

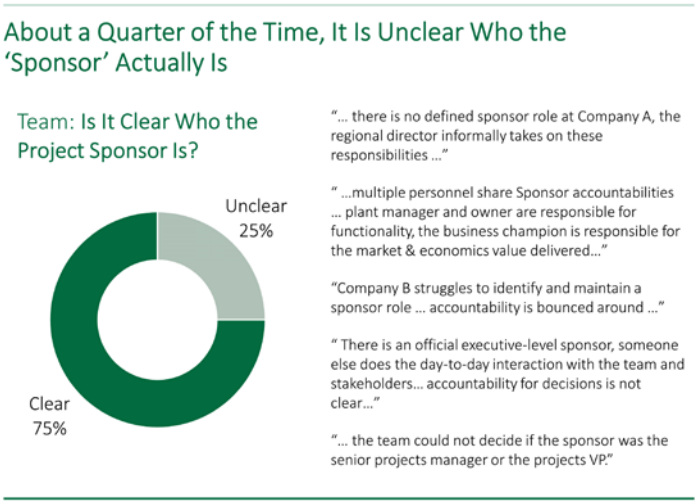


Figure 1

Our data show that without a single point of accountability to establish and communicate business objectives, teams are far less able to articulate the priorities and trade-offs, a necessary component of defining and planning projects to maximize business value. More telling, however, are the insights IPA gleaned from surveys and interviews with the sponsors themselves about how empowered they are to succeed.

The sponsor is the primary proponent for the project—the person who wants to obtain business value from the project and the person who promises the value from capital spent. The project sponsor ensures the conditions are set to maximize value by providing the project team with the guidance, resources, and support necessary to achieve its business objectives. Of course, if the role of the sponsor is to actively integrate the entire organization around the project, then it requires the sponsor to have the position and capability—and time!—to do so.

However, IPA's latest research shows that project sponsors often do not see themselves as being in a position to set the conditions for project success across the entire life cycle. The majority of project sponsors IPA surveyed, approximately 70 percent, are in the role by default (based on the current functional position and core responsibilities of that position) and most could not describe how their background and experience would enable them to be successful in this role. This is in contrast with the 30 percent of sponsors appointed to the sponsor role, who could all clearly articulate the reasons why they were qualified to deliver the investment's promised value.

Whether designated as the sponsor by appointment or by default, less than half of the sponsors IPA surveyed said they were provided with documented roles and responsibilities (R&Rs) instructing them on how to carry out the function and what they were accountable for achieving, and less than one-quarter of those surveyed received any kind of project sponsor training.

Sponsors operating without documented R&Rs tended to discount their role in providing business value trade-off decisions during project development and in ensuring the project team has the necessary resources to succeed. And, we find that teams' assessments of their own functionality—particularly the cohesiveness and communication among team members on roles, project management, and project vision—are significantly better when the sponsor role is documented.

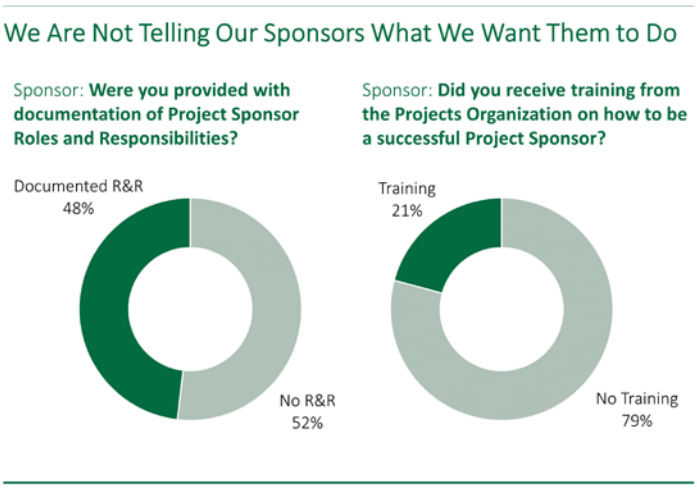


Figure 2

The most telling relationship, however, is between the defined sponsor role and project definition work done in FEL 2. Clearly articulating the sponsor role (i.e., telling the sponsor what they should be doing) means that sponsors know what teams need (in terms of understanding of objectives, decisions, etc.), enabling them to complete critical FEL 2 phase work.

IPA's interviews with project sponsors clearly indicate that they care about the projects they are sponsoring; they want to do a good job in the role. It is up to the projects organizations to give the sponsor role the attention it deserves:

- Formalize it—assign (whether appointed or "by default") based on capability and capacity to do the role well
- Train on it—document what they should be doing and why
- Establish accountability—measure performance from establishing business objectives, to owning the business case, to actual business results

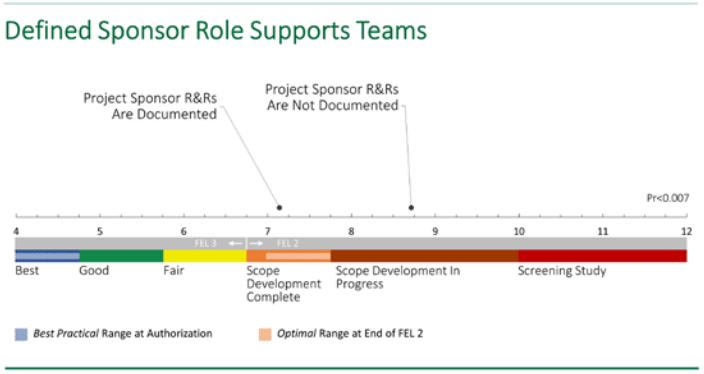


Figure 3

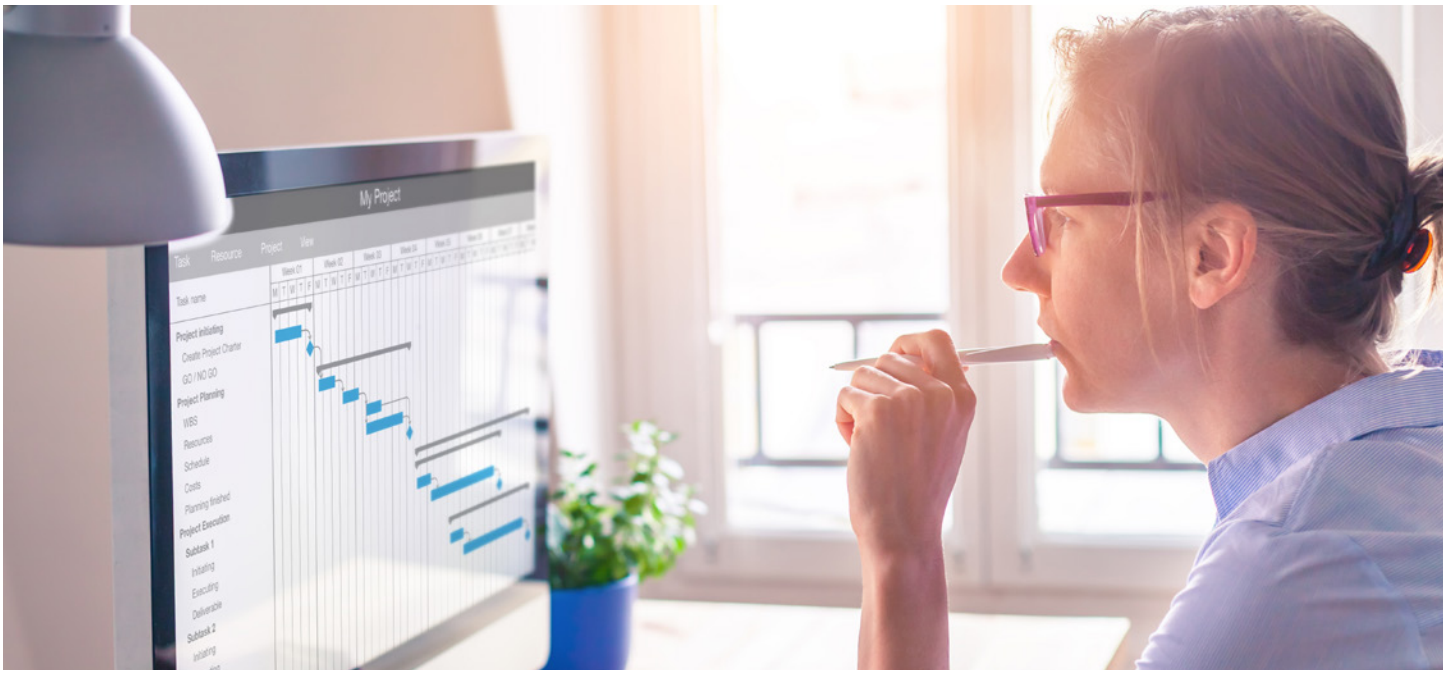
IPA's Capital Solutions group has devised a roadmap that owner companies can follow to give the sponsor role the attention it deserves. A new sponsor training class is available for clients seeking to strengthen the function within their project organization. IPA can also work alongside an organization to help get project sponsor R&Rs right to protect business value throughout a project's entire life cycle.

Contact Allison Aschman at aaschman@ipaglobal.com to learn more.

IPA's Conceptual Schedule Duration Tool

Generate Accurate Schedule Targets Based on Key Project Characteristics

By Luke Wallace, IPA Senior Consultant



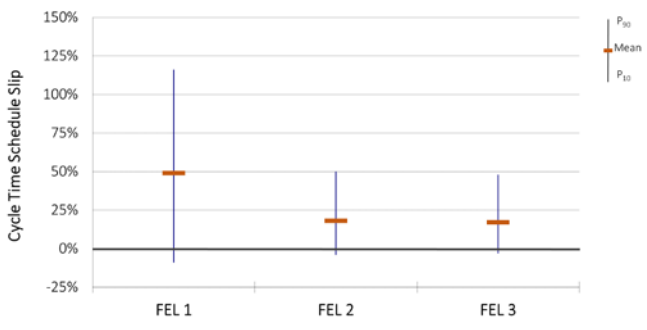
The capital projects industry has struggled to generate accurate project schedule targets. In looking out across IPA's database of projects, we see that irrespective of their development phase, projects tend to experience schedule slip and have much less predictable schedule outcomes than the expectations set at each of the major development decision gates. This is especially true for early schedule estimates for which the average slip of the targets set at FEL 1 is 50 percent. The 80 percent range (within which 80 percent of the data fall) for these estimates is over 120 percent. The performance improves in subsequent phases, but even our most detailed estimates (FEL 3) are off by 17 percent, on average. The fact is, schedule target accuracy is far less certain than advertised. The figure to the right, based on a recent sample of over 2,000 projects, illustrates the situation.

The challenge most owner organizations face is getting access to real and reliable capital project data to build a conceptual schedule. To know how long a project takes, particularly in advance of the conceptual design and FEED, requires having a sufficient sample of analogous projects. Further, a heavy amount of normalization is necessary to put comparison projects on the same basis (e.g., control for time, project size and complexity, location, etc.).

To help owners in this regard, IPA has tapped into its extensive proprietary database of completed projects and built a toolkit that reliably estimates project schedule durations based on a variety of inputs (e.g., industry, size, scope characterization, and project location).

Dozens of capital projects industry leaders—companies representing the energy, chemicals, refining, pharmaceuticals, and other sectors—have trusted IPA's conceptual schedule estimating toolkit to prepare reliable project schedule estimates for decision makers. The toolkit is

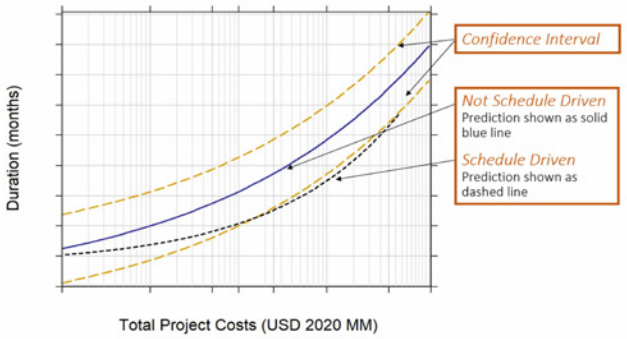
Industry FEL 1 Schedule Targets Are Highly Variable and Inaccurate; Slip From Early Schedule Targets Is Persistent Across FEL Phase



updated annually with a new tranche of schedule data from recent projects IPA has evaluated, ensuring that users are getting the latest schedule information from actual projects.

The schedule duration toolkit works by using a machine learning technique called regression. Using the actual durations from our sample of projects, the regression approach quantifies the relationships between the project characteristics and project duration. These relationships provide the basis for the prediction. A sample output for the relationship between project cycle time (duration between the start of FEL 2 [scoping] and mechanical completion) and project capital cost is shown below.

Total Cycle Time Duration vs. Total Project Costs (Sample Output)



In addition to total project duration, the toolkit provides duration estimates and prediction intervals for each of the major capital project phases: FEL Duration, Detailed Engineering Duration, Procurement Duration, Construction Duration, and Startup Duration.

Duration Estimates and Prediction Intervals by Project Phase (Sample Output)

IPA SCHEDULE DURATION METRICS TOOL PDF

Schedule Metric	Independent Variable	Your Project's Schedule	% Diff from Median	10%	25%	Median	75%	90%
Project Definition Duration	Project Cost	10.0	-17%	-	2.2	12.0	21.7	30.5
Detailed Engineering Duration	Project Cost	8.0	-18%	0.3	4.8	9.7	14.6	19.0
Procurement Duration	Project Cost	11.0	-18%	4.1	8.5	13.5	18.4	22.9
Construction Duration	Project Cost	8.1	-18%	3.3	6.4	9.9	13.3	16.5
Startup Duration	Project Cost	1.0	-31%	-	-	1.5	3.0	4.4
Execution Schedule Duration	Project Cost	14.0	-14%	8.5	12.2	16.3	20.4	24.1
Total Cycle Time Duration	Project Cost	27.0	-10%	12.4	20.7	29.8	39.0	47.2

This tool can be used in many different ways. Today, some owners use the tool to set schedule duration targets for early estimates. In fact, several users have told IPA that in their own internal studies of performance, the IPA Conceptual Schedule Duration Tool has consistently outperformed the project team in early estimates. Across the thousands of projects this tool has been tested on, the average difference between the actual and forecasted schedule durations generated by the tool is zero. In other words, the tool is highly accurate.

Beyond conceptual targets, many owner organizations continue to use the tool to validate the detailed schedules generated in FEL 2 and FEL 3. Given the industry-wide systemic optimism in schedules, the results from the tool have been instrumental to these owners in ensuring the targets are reasonable.

Please contact Luke Wallace at lwallace@ipaglobal.com for more information on how the Conceptual Schedule Duration Tool can help your organization.

FEL Toolbox Software Updated for 2021!

IPA's **Front-End Loading (FEL) Toolbox** software has been the gold standard for site and sustaining capital project self-assessment for nearly 20 years. We are excited to share that the 2021 release of the software includes significant improvements to the overall user experience:

Redesigned user interface and navigation
Improved page layout, graphics, and readability
Improved navigation
Enhanced security

IPA research has shown that FEL, or project definition, is one of the most significant drivers of success for capital projects. The FEL Toolbox software aids the project definition work process to help improve project outcomes and return on capital investments.

To request a demo, contact Katherine Marusin, IPA Manager, Site and Sustaining Capital, at kmarusin@ipaglobal.com.

UCEC 2021 Conference Virtual Sessions to Feature Three New Research Studies

Upstream Cost Engineering Committee (UCEC) 2021 virtual sessions will kick off in late June and continue through July 9, continuing IPA's practice of delivering updated cost and schedule metrics, tools, and new research for E&P companies committed to advancing their owner cost engineering and project controls capabilities.

A sub-committee of the Upstream Industry Benchmarking Consortium (UIBC), companies belonging to the UCEC range from super majors and national owner companies (including those with partial state ownership) to majors and independents. Because this year's annual conference is virtual, an unlimited number of company employees may attend each session. IPA will deliver each live webinar twice to accommodate different time zones. (The full agenda is available to member companies.)

Three research studies will be featured during UCEC 2021.

E&P Project Schedule Forensics: At a high level, we know what happens on projects that make them slip, and we know what the slip looks like at the phase level (i.e., FEL, DE, Procurement, Fabrication, T&I, HUC, etc.). In this study, we conduct a forensic evaluation of native schedules for E&P projects, more specifically projects for which subsea is the dominant concept. The purpose of the study is to characterize where the slip occurs at an activity level, and thus identify the main contributors to overall project slip. (Research by IPA Associate Project Research Analyst Andy Spragg)

Growth in Topside Weight: This study investigates offshore project topsides weight growth by comparing actual weights and estimated weights. The study will dissect the topsides weights at a more detailed level to understand what areas of the topsides experience growth from estimate to actual. This will help inform decisions for setting contingencies for topsides weights and understand offshore project cost efficiencies. (Research by IPA Research Analyst Krishna Jaitly)

Measuring Engineering Progress: This study looks into the techniques and tools used by Industry to measure engineering progress as a component of the overall project controls strategy. The goal of this phase of the study is to provide a comprehensive summary of the available methods for measuring engineering progress of capital projects based on actual data from industry projects and project systems. The summary will include complete descriptions of practices, preliminary data on the frequency of use by Industry, and qualitative descriptions of pros and cons for each approach. (Research by Consortia Membership and the IPA Institute Director Andrew Griffith.)

For more information about UCEC 2021, **please contact IPA Senior Research Analyst Shubham Galav at sgalav@ipaglobal.com.**

New Leading Complex Projects Course

Transform Your Organization's Project Managers into Project Leaders

THE IPA INSTITUTE
Advancing Project Knowledge

Strong project leadership—not just management—is one of the most influential factors in determining the success or failure of large, complex capital projects. The all-new Leading Complex Projects course helps transform project managers into leaders capable of successfully overcoming the challenges that cause complex projects to fail more than twice as often as smaller projects. This one-of-a-kind course combines groundbreaking research from Independent Project Analysis (IPA) that links leadership characteristics to project outcomes, and real-life experiences of successful leaders in the capital projects industry. Delivered as a private, in-house course, participants emerge with an understanding of essential project leadership skills and abilities and how to apply them to complex capital projects:

- Establishing a large, multi-functional organization from scratch
- Making complex decisions quickly
- Managing a diverse set of stakeholders effectively
- Addressing conflicts at the interpersonal, contractor, and third-party organization levels
- Succeeding under extreme pressure

Leading Complex Projects is currently only available as a private, in-house offering to enable the best possible learning experience within the context of a project organization. The course can be customized with additional elements to meet your company's specific needs. If your company has a need to prepare a group of project managers for the rigors of leading complex projects, **contact Sarah Sparks, IPA Product Development Leader, Organizations & Teams, at ssparks@ipaglobal.com** to start a discussion.

IPA Institute Public Virtual Training Courses

Course	Dates	Times	Language	Fee	Click to Register
Project Management Best Practices*	June 28 - July 2	9 a.m. to 12 p.m. (UTC-4)	English	$1,200 USD	REGISTER
Best Practices for Site-Based Projects*	July 12-16	9 a.m. to 12 p.m. (UTC-4)	English	$1,200 USD	REGISTER
Project Management Best Practices*	July 19-28	10 a.m. to 2 p.m. (UTC+10)	English	$1,650 USD	REGISTER
Project Execution Planning for Capital Projects	July 20 & 22	9 a.m. to 11 a.m. (UTC-4)	English	$400 USD	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	August 10-12	10 a.m. to 12 p.m. (UTC-4)	Spanish	$300 USD	REGISTER
Front-End Loading (FEL) and the Stage-Gated Process	August 24-26	10 a.m. to 12 p.m. (UTC-3)	Portuguese	$300 USD	REGISTER

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

IPA Events and Presentations

Upstream Cost Engineering Committee (UCEC)
June to July 2021
Virtual Meetings

The UCEC strives to improve upstream project and business results by providing metrics for better cost engineering. Member company representatives gather once a year to learn about and review new UCEC metrics packages prepared by IPA. The upstream metrics packages are used by companies to compare their upstream project cost and schedule outcomes with industry cost and schedule norms and, in general, boost business project estimate assurance and evaluation quality. Contact Andrew Griffith at agriffith@ipaglobal.com for more information.

IPA-MIMOSA OIIE Capital Project Working Group
July 7, 2021
Virtual Meeting

The IPA-MIMOSA Open Industrial Interoperability Ecosystem (OIIE) Capital Project Working Group is focused on defining the high-value interoperability use cases for digitalization standards in the capital project industry. In 2021, the interactive working group meets virtually on the third Tuesday of each month to continue developing value-driven requirements and guidance on international standardization efforts. Please contact Deb McNeil at dmcneil@ipaglobal.com for details on how to join.

IPA Carbon Working Group (CWG)
July 2021
Virtual Meeting

Launched in April 2020, the IPA-led CWG is a voluntary group of 15 owner firms that meets bi-monthly to advance the energy industry's low-carbon agenda. The work has quickly resulted in the launch of the Greenhouse Gas (GHG) Performance Toolkit, a suite of IPA project evaluations that helps companies adopt Best Practices to optimize the balance between GHG intensity and project costs. The group is currently prioritizing carbon management topics to explore through research. New member companies are welcome to join this free and voluntary initiative. Contact Adi Akheramka at akheramka@ipaglobal.com to request membership details.

Cost Engineering Committee (CEC)
Begins in September 2021
Virtual Meetings

The CEC is a working subcommittee under the Industry Benchmarking Consortium (IBC) that assists cost engineers by providing metrics and tools that offer an unbiased snapshot of industry cost and schedule estimates and trends. The CEC focuses on all aspects of cost (or investment) engineering, including cost estimating, scheduling, and project control practices and metrics, with the goal of expanding the owner cost engineer's capabilities. The primary vehicles for accomplishing these objectives are validation metrics, Best Practices research, and practice sharing. Contact Andrew Griffith at agriffith@ipaglobal.com for more information.

2021 ECC PerspECCtives Conference
September 8-11, 2021
Grapevine, TX

IPA Principal Deputy Director of Research Jason Walker will participate in a panel discussion at the annual Engineering Construction Contracting (ECC) conference. In the session, titled *Contracting Insights: Developing a Winning Contracting Strategy*, Walker and other industry experts will discuss the key enablers and desired outcomes for companies to focus on during contracting strategy development and execution for capital projects. IPA Manager, Fuels Manufacturing and Transportation Andras Marton will also participate in a Sponsor Only Strategic Issues Session. Marton will present on the state of capital projects in North America as it relates to the conference theme of *Performing While Transforming: Executing Now, Evolving for Tomorrow*. Visit www.ecc-conference.org for more details.