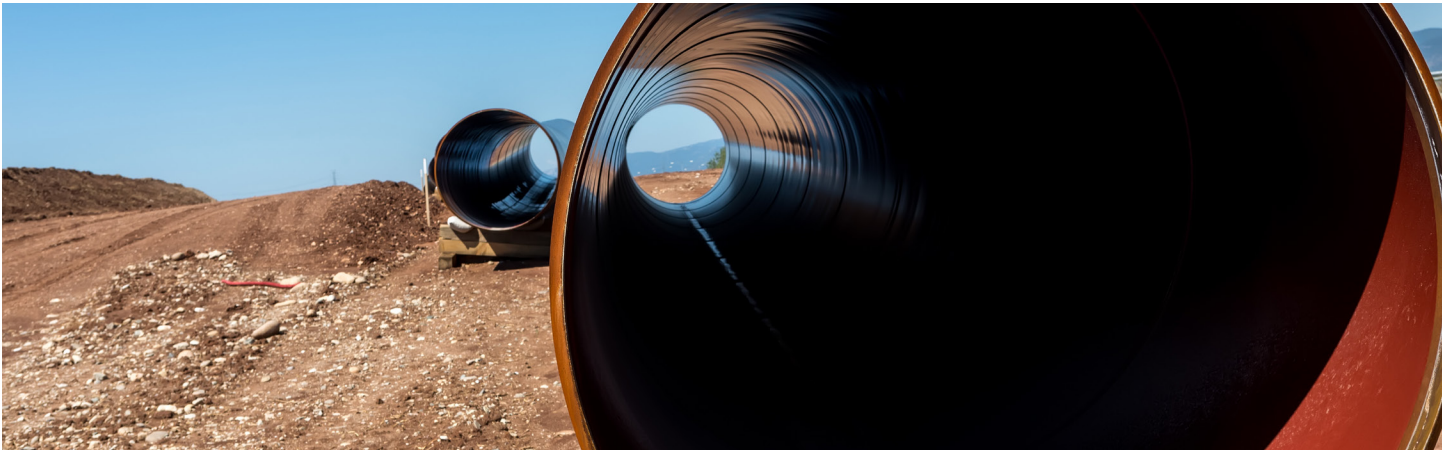


# Exploring EPC Partnered Planning Benefits for Pipeline Projects

By David Hanks and PJ Kolnik, PE

As pipeline project activity intensifies and capital spend increases, pipeline owners need an execution process they can trust. EPC partnered planning provides owners with the critical upfront planning, estimating and design to increase project efficiency and drive successful project outcomes.



With almost 3 million miles of existing gas and liquid pipelines traversing the country and strong growth expected throughout North America for natural gas pipeline construction, according to North American Oil & Gas Pipelines, pipeline project activity is on the rise. Infrastructure improvements, maintenance, new pipelines and gas processing facilities are ideal project candidates that can benefit from the partnered planning process.

Progressive engineer-procure-construct (EPC) models that use upfront partnered planning can help improve outcome certainty in an era of increasingly challenging requirements.

## Driving Pipeline Project Efficiency

As pipeline projects grow larger and capital spend increases, owners encounter many new challenges. With a desire to leverage existing resources and avoid costly hiring, owners want to secure the right design, supply and construction knowledge to see that projects are developed to the highest standards. Owners also want to maintain team continuity and commitment throughout the entire process to increase efficiency while still being involved in key project

decisions. Projects also must address challenging timelines that can be influenced by permitting, regulatory hurdles, environmental concerns, land and right-of-way acquisition issues and procurement lead times. On the financial side, owners seek definitive pricing or reliable estimates to secure project financing or funding with transparency of costs for a cost-efficient project.

To meet the unique demands of large projects, EPC project delivery can be a great solution. EPC handles overall responsibility of a project in a single package, while also performing complementary services such as studies, permitting and right-of-way (ROW).

With an integrated EPC contractor, project design can be completed with an overlap of procurement and construction to expedite the schedule and meet critical project timeframes. Staff can be leveraged by being in a review and oversight mode instead of managing the daily interactions required between the different project interfaces. The EPC contractor takes on and reduces the overall project risk by managing these interfaces.

Partnered planning identifies, transfers and reduces risk early for pipeline operators — no matter the EPC model.

## Owner Reduces Involment



Figure 1: Potential EPC contract models.

### Improved EPC Partnerships

Some typical challenges of EPC project delivery often will deter a pipeline owner from selecting this delivery method. These challenges include a complicated RFP process, a feeling of loss of control over the process or lack of details in the early stages of a project that can lead to changes. While using the EPC method can offset many of these potential issues, pipeline owners may be hesitant to ask an external contractor to own the majority of the project EPC tasks. Limiting risk is a top priority and owners may not feel comfortable relying on external voices to provide the clarity and assurances needed.

A great solution to this is EPC partnered planning. Partnered planning is similar to front-end planning (FEP) — the process of developing sufficient strategic information with which owners can

address risk and make decisions to commit resources in order to maximize the potential for a successful project, as defined by the Construction Industry Institute (CII) — and is often used in the oil and gas industry on large processing and refining facilities. While there are many similarities between the two, partnered planning is becoming the next variation of preparing for EPC for areas of the industry that may not be familiar with a design-build project delivery method.

There is a direct correlation between effective planning and predictable project success (scope, schedule, budget). Partnered planning can be used as a “stage and gate” process to gain stakeholder alignment where decision points are identified at critical stages, such as financing and funding, or regulatory approvals and customer commitments, before proceeding. The owner can

## DESIGN-BUILD/EPC APPROACH

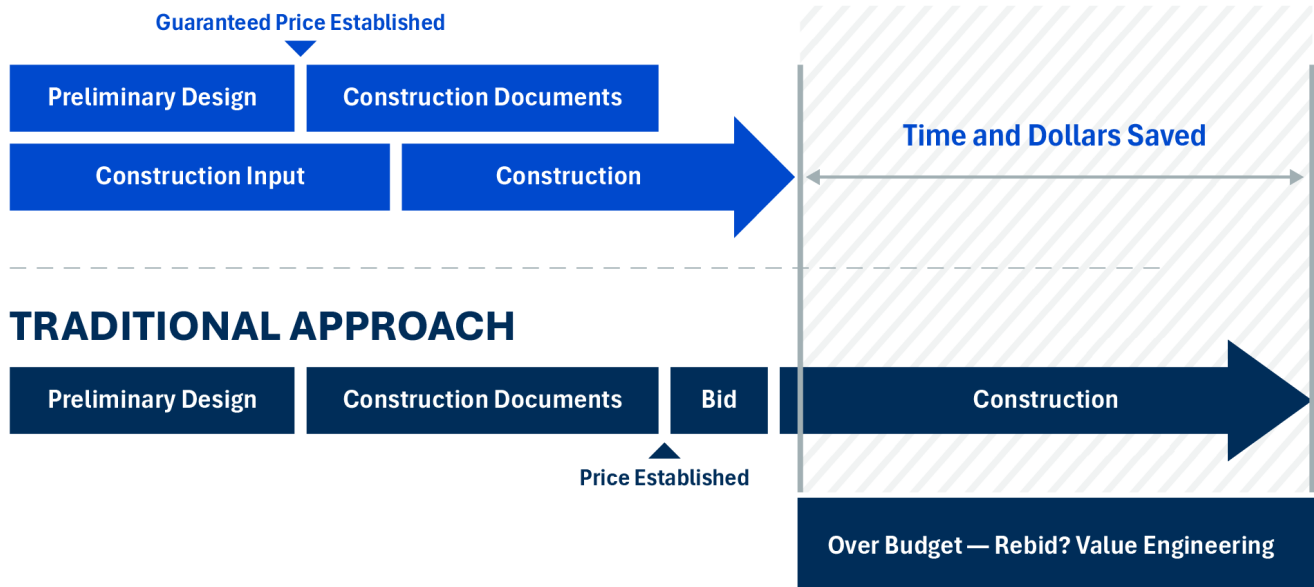


Figure 2: Negotiated EPC with a guaranteed price established.

be involved in key decisions and work with the EPC contractor to determine the technical and commercial impact of project decisions before fully committing.

Upfront partnered planning can quickly identify and reduce risk, even if a pipeline project is undefined, with a very preliminary or extremely complex scope. Owners can rest easy that project success is achievable when incorporating comprehensive, innovative, upfront project planning. Partnered planning aligns incentives for both the operator and EPC contractor from the very beginning, allowing for a collaborative and teamed approach for overcoming each project's unique challenges. While gas pipeline projects, especially within the regulated utility industry, rely on cost transparency, capital spend targets and prudence, at-risk developers may not be motivated in the same way. Developers may have limited staff to manage a partnered planning effort or may even want to have a solid lump sum bid from the very beginning for project financing purposes.

Whatever the motivations of the project owner, EPC is a flexible contracting model that can incorporate partnered planning with as much or as little cost transparency desired.

### Leveraging All EPC Has to Offer

For pipeline projects, EPC can deliver design, procurement and construction services, including providing all interfaces between engineering, vendors and construction teams. The approach offers great leverage of resources to access knowledge, cross-industry experience, project management, safety and quality control.

Traditional design-bid-build approaches work to define the scope, execution details and budget in a linear way before establishing a reliable cost and schedule. But, as many projects have an undefined scope from the start, partnered planning provides the critical upfront estimating and design needed to streamline efforts and drive successful project execution.

### Wrangling Risk

Pipeline project risk comes in many forms. The partnered planning process leads the way to secure greater certainty in project costs while providing the transparency needed for the overall project.

### Construction Costs

Because extensive planning and preliminary design are undertaken at the outset, construction contractors, all materials and equipment can be competitively bid early on by agreed-upon suppliers. This early insight provides essential risk management benefits for the overall effort:

- As more than 90% of the project cost is obtained through a competitive bid process, value suppliers and subcontractors can be selected.
- Through extensive discussion and review, the bid process uses

existing operator standards or new bid and subcontractor standards can be defined during the planning stage.

- With clearly defined specifications, the project can leverage existing supplier and subcontractor relationships and incorporate approved suppliers and vendors where appropriate.
- As a team, supplier and subcontractor bids can be mutually solicited and evaluated.
- Active engagement among key team members and stakeholders for broad understanding and visibility of the EPC pricing process.

### Total Transparency Is Available

The partnered planning process provides a particular advantage for owners seeking price certainty through an integrated EPC model. Full transparency into supplier and subcontractor selection and price development based on the following approach:

- EPC professional services during the planning phase and subsequent phases are priced using agreed-upon labor rate sheets.
- Subcontractor construction price uses subcontractor labor and equipment rates plus an identified EPC fee.
- Engineered materials and equipment are procured at suppliers cost plus identified EPC fee.
- Visibility into the pricing for all major areas provides additional certainty for projects not clearly defined at the start and changes are easier to manage during execution.

### The Value of Secured Owner Involvement

For a chance of success in the EPC partnered planning approach, owner support of the process is key.

A cohesive team can create a structure that supports the overall goals and all parts of the project, not just individual areas of work. Team members may be empowered differently than a typical project and owners should select individuals that have the ability and time to support the project from pre-scoping through commissioning. If team members join late or there is team turnover, then the ability to influence the project will be limited and possibly disruptive or costly.

All stakeholders should be involved in the preliminary stages of the project to deliver a comprehensive approach. These stakeholders include engineering, planning, sourcing, permitting, environmental, land rights, construction, operations and maintenance personnel. External partners or customers impacted by the project, other utilities or landowners with shared ROW and any necessary permitting, environmental and other government agencies should also be engaged to reduce the likelihood of impacts later on in the project. Through active participation, the owner can influence the overall team structure and can also leverage external relationships



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### Gas Processing Facilities

Figure 3: EPC benefits scale with project magnitude.

#### Planning Goals

Scoping a pipeline project rests on productive in-person meetings that identify stakeholders and owners while critically evaluating and communicating the immediate and long-term pipeline operating requirements. Even before committing to a specific EPC approach, partnered planning will uncover:

- Equipment and material pricing
- Potential subcontractors
- Project schedule
- Project execution strategy
- Risk analysis
- Internal and external stakeholders

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#### Reliable Project Outcomes

Partnered planning thrives in otherwise less-than-ideal pipeline project scenarios. Whether the project scope is uncertain, technically complex, or the resources or execution bandwidth is not available, partnered planning combined with a tailored EPC approach is invaluable.

While EPC contractors may tout a detailed planning approach, owners should carefully examine the motivation for the methodology. EPC contractors that have a proven track record will bring forward the most robust process and the most reliable outcomes.

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