Deconstructing Project Risks

The New Reality of Risk-Sharing to Create Competitive Advantage

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Earlier in our 103-year history
$25 billion in energy assets, reserves
>$10 billion in projects in last 3 yrs
Infrastructure opportunities abound; billions in capital flowing to projects

- Shale-energy revolution
  - Gas pipelines
  - NGL pipelines
  - Gas-processing facilities
  - NGL fractionation
  - Export facilities
  - NGL storage
  - Water treatment plants

- Natural gas-fired power generation

- Large industrials

- Petrochemical renaissance in North America
  - Fueled by U.S. shale-gas revolution
  - Vast, long-lived feedstock that provides ~3x cost advantage over crude oil
  - Follow-on manufacturing

- Canadian oil sands development

- Deepwater Gulf of Mexico development
Massive infrastructure opportunities still to come from shale gas

- Large-scale facilities with pipeline access to markets
- Long-term contracts support capital investments
- For producers, liquids create major economic uplift and lower net cost of production
- Global market dynamics drive advantage
- Shale gas revolution = U.S. petrochemical renaissance
Infrastructure – idea to in-service

Project Lifecycle

- **Discover**: Multiple options, very large expenditures
- **Select**: Business Case
- **Define**: Operations Handoff
- **Commitment**: Project Charter
- **Deliver**: Lessons Learned
- **Integrate**: Project Plan

Detailed design and construction
Defining the project – looking at risk

**Project Plan**
- Estimate
- Baseline schedule
- Work breakdown structure
- Detailed scope of work
- Risk register/mitigation plan
- Contracting plan
- Progress control plan
- System Integrity Program requirements

**Business Case**
- Strategic alignment
- Commercial deal structure
- Agreements
- Key success factors
- Timing of expenditures
- Financing assumptions
- Major risks
- Major assumptions
- Economics
- Greenhouse gas implications

Supports executive management and board of directors review and approvals for commitment to invest capital.
Analyzing financial risk

- Example Project -

$200 Million Capital Expenditure
Generating $100 Million of Net Present Value at Expected Case
Comparing investment options

Internal Rate of Return

Example projects X, Y, and Z

Risk vs. Return

Risk Score

Lower Revenue, volume, and construction risk assessments

Higher

Interpreting the circles

Size
Proportionate to expected net present value

Shade
Low Case (light) to High Case (dark)
E&C can be part of risk mitigation, value opportunity – and path to commitment

- Example Project -

Capital Project Business Case

Confidential

The current market situation is one where time is of the essence. From a market perspective, there are significant advantages to being one of the earlier expansions in place. Additionally, we have a turnaround scheduled. This will require a 50-day outage of the plant. At current profitability levels, a month of plant downtime costs us operating profit of $[redacted] million. Thus, we have a large incentive to tie much of the work to our turnaround schedule. Due to these timing constraints, the best way to accomplish the timing goals are to utilize a single source firm for design and construction to ensure maximum use of time available. To break the project into smaller sections and bid it out would add four to six months to the schedule. The potential savings from a longer bidding process would likely not rise to the same levels as lost profits for the delay. The estimated cost of a four to six month delay is $[redacted] in lost operating profit. As an example, a 10% reduction in labor rates by bidding out the expansion project would save only $2 million. Additionally, delaying the turnaround to meet the added four to six month timeline may put current operations at a higher risk level by exceeding [redacted] year period between turnarounds.
Timing, capital and market risk

- Example Project -

Strategy-aligned bidding and contracting strategy

Months in cycle eliminated

Incremental operating profit

In service months/years ahead of

= $13% equal to

of total project cost

>80% of other capacity additions
Complexity also creates opportunities for competitive differentiation

Permitting

Complex
Public
Multi-layered
  • Federal
  • State
  • Agency by agency
  • Town by town
Contentious
Crucial to schedule

Marcellus Shale
NE U.S.

People in the U.S.

Opposed to all new development

Source: 2011 Saint Index
Evolving view of E&C risk – opportunity for differentiation

New Reality

- Contracting before final engineering is complete
- Share permitting and mandated design changes
- Share upside of early project bounty

Low Risk

Contracting when final engineering is nearly complete

100% Engineered, Construction Ready

► Share permitting and mandated design changes
► Share upside of early project bounty
Table stakes and value-adds

- Safety
- Expertise
- Relationship
- Size
- Reputation – yours and the protecting of ours
- Relevant experience
- Flexibility
- Creativity
The new reality – here today

Understanding, sharing risk creates real opportunities for differentiation and competitive advantage

Opportunity set: Massive, long-lived infrastructure build-outs in the U.S. related to newly economic domestic energy

Flexibility, agility and partnering relationships will win the day