From: Richard Westney <r_westney@westney.com>
Sent: Wednesday, July 7, 2010 6:02 PM
To: jasonkean@nlh.nl.ca
Cc: Jack Evans; Keith Dodson; Eric Briel; Kelly Clifton
Subject: Westney Overview SLides
Attachments: Jason Kean slides.pptx; Proxy NPV model.pdf

Jason

Great to talk with you today … hope you get some summer weather soon! It was very interesting to get the updates on the project, clearly a lot has happened.

As promised attached is a short slide deck with an overview of Westney Consulting Group and Risk Resolution®.

The overview deck omits most of the other Westney services of course, one that might interest you as you move forward with your EPCm contracting strategy is "Contractor Due Diligence", an independent, "behind the curtain" assessment of the strengths, weaknesses and capabilities of the contractors being considered for the work. The results of this process can also impact the allocation of work among contractors, the allocation of responsibility between owner and contractors, and the contract terms and conditions. Glad to discuss this if you like.

Also attached is a sanitized version of a recent proposal describing our approach to value-based strategic decision making (especially the

evaluation of development alternatives) using a Proxy NPV model together with our concepts of Risk Framing and Front End LEAN™. I'd be interested in knowing your comments on the article …. Know you are a good thinker on these topics and interested in what others are doing. As I mentioned, this modeling is Jack Evan's latest work and is proving quite valuable to clients.

I was also quite interested in your suggestion that Westney might be considered for a role in the Independent Project Review Team as you approach Gate 2. We have some very effective processes around Project Readiness Reviews that could also be useful here. Please keep us in mind as this progresses.

Please let me know if you need anything else in the way of overview slides.

Best regards,

Richard Westney

Founder/Chairman

Westney Consulting Group, Inc.

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How a Proxy NPV Model Enables Value-Based Project Decisions

Goals and Objectives

Goals:

The primary goal is to enable project teams and management to make value-based decisions at key points in the Front – End Loading process so that the optimal field development plan and design configuration is selected for FEED.

A secondary goal is to enhance the value-based decision process by providing a clear view of the upside and downside risks associated with each development alternative so that the optimum balance between risk and reward can be determined.

A third goal is to use the results of the risk-informed, value-based analysis of alternatives to develop an accelerated path to sanction by focusing on the work areas that contribute the most to value and/or to reducing risk.

Objectives:

To achieve these goals, the following objectives will be met:

- Develop a risk-informed "Proxy NPV Model" for use in evaluating the relative NPV associated with various field development alternatives.
- Facilitate discussions to establish ranges for each key NPV variable for use as input into the model.
- Run the Proxy NPV Model and prepare the required analyses to indicate the expected NPV associated with each alternative, the ranges of possible outcomes, and the drivers of risk and value.
- Develop a "Front-End LEAN™" plan for the recommended alternative, providing a time- and cost-efficient path to sanction.

The Importance of Value-Based Development Decisions

The "Influence Curve" has long been the foundation of best practice thinking for project development and the source of the industry's adherence to the concept of Front-End Loading (FEL). The best example of how operators make effective use of the early stages to have the maximum impact on project outcomes is the definition of alternative

development schemes during FEL 2 (often called the "select stage"), and the selection of the optimum scheme for definition during FEL 3 and eventual sanction.

Although everyone knows the importance of defining and selecting the optimum development alternative, few operators do this well. Some spend too much time ("analysis paralysis"), some too little ("just pick a scheme and run with it".) Both are likely to end up with a less valuable asset (i.e., lower NPV) than might have been the case if the optimum development alternative had been selected.

One reason for this is, as projects have become larger and more complex, so too has the difficulty of the selection process. Maximizing value is clearly the goal, yet the way the variables that drive value interact under different development scenarios is not always intuitive or self-evident. Making the selection process more difficult still is the fact that different alternatives carry different levels of risk and uncertainty.

Recognizing both the importance of developing and selecting the right alternative and the complexity of doing so, some project teams today are recognizing that a value – based methodology is needed. A value-based approach is the only way to integrate the project variables and provide a quantitative basis for decision-making. Using Net Present Value (NPV) as the metric for asset value, the team intends to apply a value-based analysis to the development alternatives currently being developed so that the optimal development scheme can be selected in September, and an accelerated path through FEED implemented to facilitate sanction at year-end.

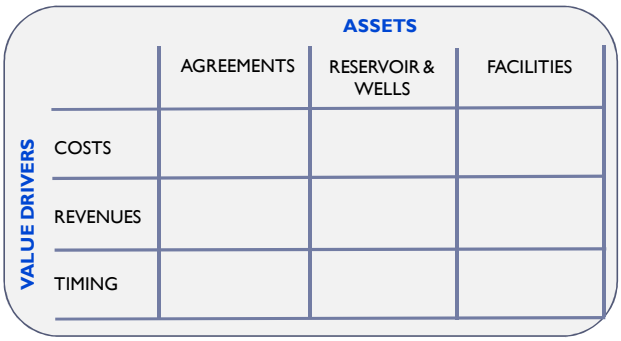
A Value-Based Approach to FEL Decision-Making

Mapping Value Assets and Drivers

An upstream development typically has assets in the form of:

- Commercial and Financial Agreements
- A Reservoir and Wells
- Production Facilities

The value (NPV) of these assets is determined by the value drivers: costs, revenues, and timing. This is illustrated by the Value Matrix below.



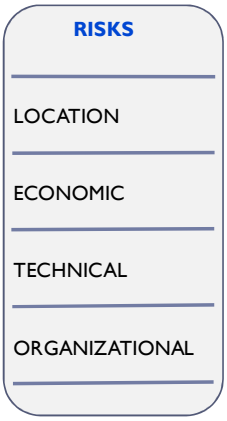
Each development alternative will have a unique Value Matrix. The project's NPV for each alternative is determined by how each of these assets impacts each of the value drivers. For example,

- Certain agreements might specify how costs and revenues are shared, as well as the required timing for first oil, or the expiration of a lease.
- The size, composition, and potential flow rates of the reservoir, as well as the number of wells, impact both development costs and revenues.
- The size of the facilities, and the timing of their engineering and installation, impact both cost and revenues.

One can add value by improving the terms of agreements, increasing the definition or performance of the reservoir, or optimizing the facility design.

Assessing Risks to Value Assets and Impacts on Value Drivers

Development alternatives differ in another significant way: the sources and extent of risks they present. These risks act upon the various assets and impact the value drivers of costs, revenues and timing. While there are many ways to categorize risks, Westney Risk Resolution® uses the taxonomy shown below. Location and Economic risks are, of course, external whereas Technical and Organizational risks are internal.



These risk categories are described as follows:

1. Location Risks
    a. Geo-Political Risks – these can be local or regional
    b. Regulatory Risks
    c. Local Conditions – this addresses location related risks such as logistics, weather, labor supply etc.

2. Economic & Market Risks
    a. Project Cost Risks - this addresses how market conditions impact the capital cost of the facilities and drilling.
    b. Product Price – this addresses how variations in the price of product impact project economics

3. Technical Risks
    a. Technology – risks associated with new or significantly improved technology, or an existing technology being used under new conditions
    b. Completeness – risks associated with how well the project scope and design has considered everything that could potentially be required
    c. Definition – risks associated with how well the expected facilities have been defined.

4. Organizational Risks: Governance & Competencies
    a. Owner's organization – risks associated with the owner organization's ability to execute all aspects of the project. In JVs, this includes partner organizations as well.
    b. Owner team – risks associated with the specific project team's (operator and partner) ability to execute all aspects of the project.
    c. Contractor – risks associated with ability of the various contractors, selected or potentially selected, to execute the engineering, procurement, installation, and commissioning.

Assessing Value Using the Proxy NPV Model

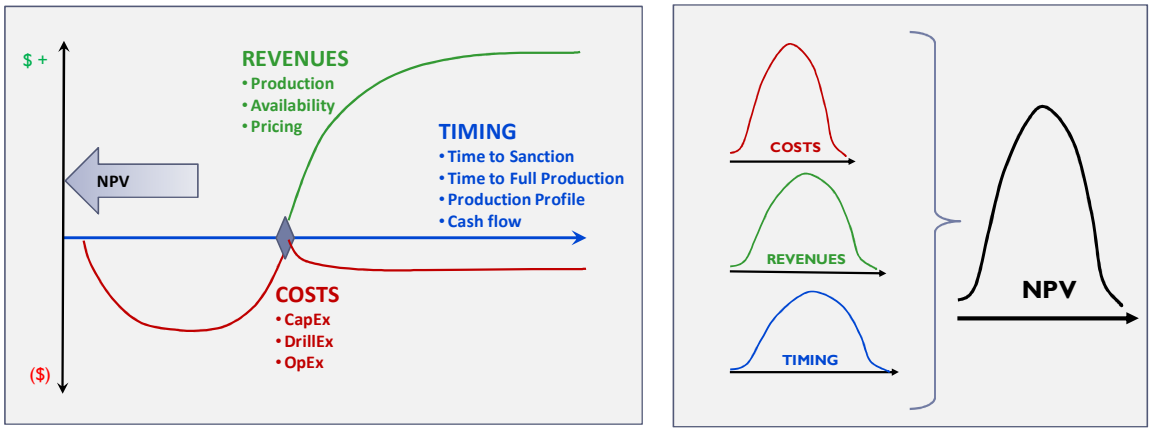
How do risks interact with assets to determine value/NPV and enable development alternatives to be accurately compared? The answer is with the Proxy NPV Model.

The Proxy NPV Model, as the name indicates, is a project economic model built for use in making project decisions in which alternatives are compared based on their relative, risk-informed, NPV. It is a "proxy" model in that:

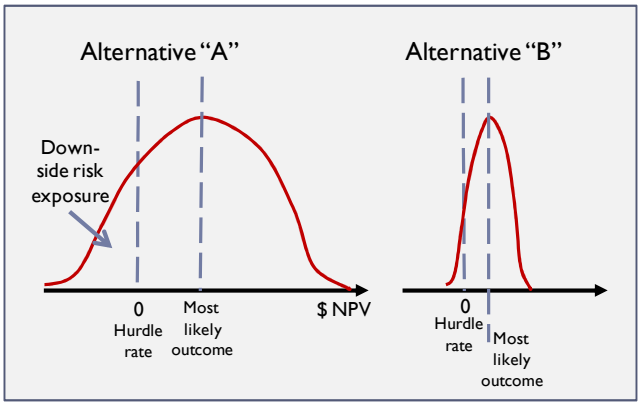
- It DOES NOT replace, duplicate or in any way substitute for the more complex and formal models the company's planning and economics function uses to determine the true value of the investment to the company.

- It DOES provide project organizations with:
  - A valid way to measure the relative value/NPV of various development alternatives
  - A modeling capability so that all manner of planning and development decisions can be made based on their potential impact on value and risk
  - A planning capability to develop an accelerated path to sanction by knowing the most important areas to work on in order to maximize value and reduce risk.

The Proxy NPV Model works on the principles illustrated below.



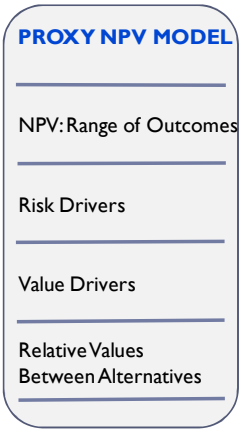
On the left, we see a classic NPV curve showing the Value Drivers of Costs, Revenues, and Timing. These are inputs to the model, for each alternative. The chart on the right illustrates the fact that each of these Value Drivers has a risk profile which varies with each alternative. The combined effect of these risk profiles is a probabilistic view of NPV for each alternative. This probabilistic view is very important when decisions are being made as is illustrated by the chart below.



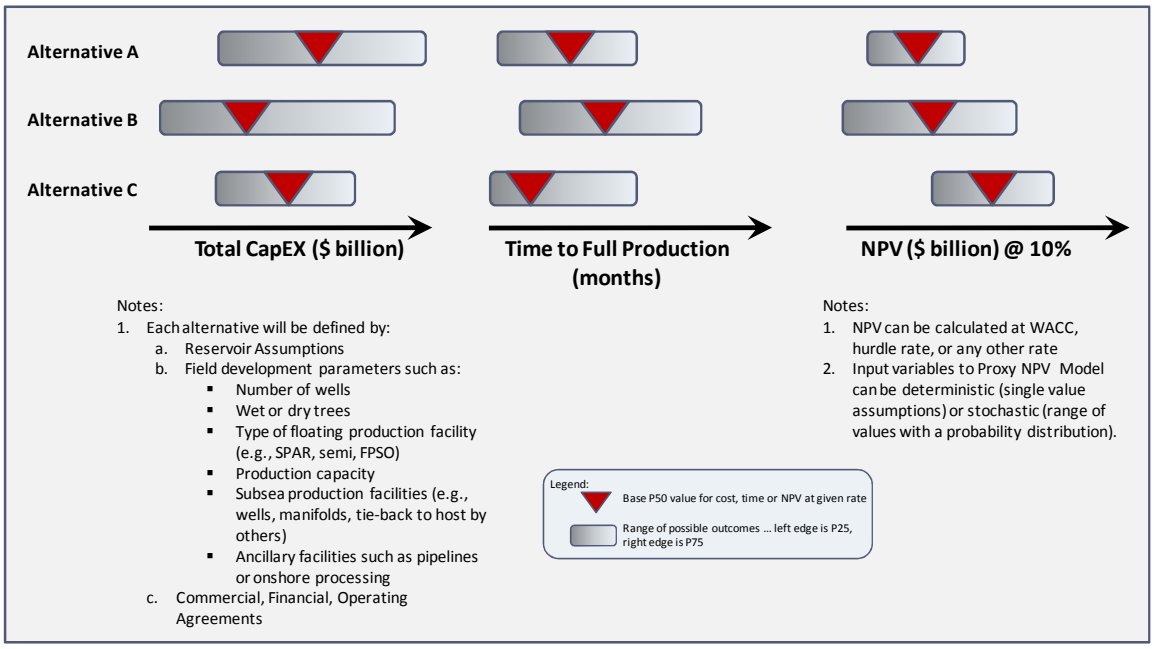
In the absence of a probabilistic view, Alternative A would appear to be preferred as it clearly has the higher most likely NPV. However, the probabilistic view shows that, Alternative A also has considerable downside risk, whereas Alternative B is almost certain to at least meet the hurdle rate.

Which of these alternatives is the best choice? While there is no "right" answer, one might use the results of the analysis to develop ways to improve Alternative A so that its downside risk is reduced.

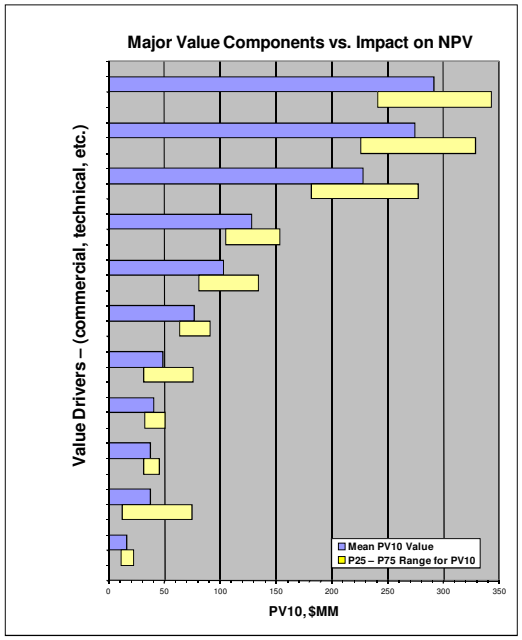
These elements of the Proxy NPV Model are summarized by the illustration below.



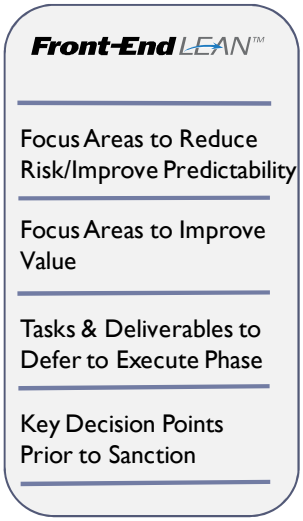
The primary purpose of the model is a comparative analysis of alternatives. The illustration below shows how modeling results will be used to indicate how each alternative creates value and how the value created compares. Note how the band around each base value indicates the level of uncertainty; the wider the band, the greater the uncertainty. Note that the analysis is not intended to determine the correct choice; it is intended to provide value- and risk-informed information for executive decision-making.



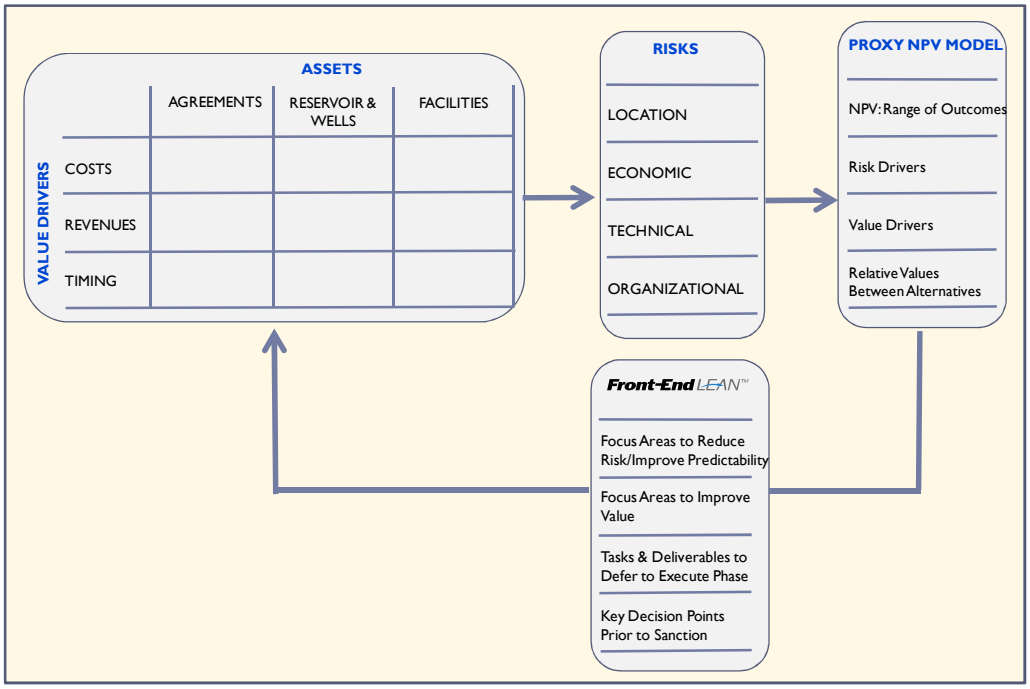
The second type of output from the model is an indication, for each alternative, of the relative contribution of each of the input variables to value and risk. The purpose is to indicate what areas need to be focused on in order to increase the value and reduce the risk of that alternative. This is illustrated by sample output shown below.



This NPV "tornado chart" is very valuable in re-focusing the team; our experience indicates that the information is often not what the team had expected, and useful re-direction of effort occurs. It provides the basis for Westney's Front-End LEAN™ process, developing a plan for the balance of FEL 2 (Pre-FEED) and FEED that focuses on the main drivers of value and predictability. This is illustrated below.



We now combine these elements to show the proposed process.



- The first step (Assets and Value Drivers) provides the basis for the Proxy NPV Model.
- The second step (Risks) provides a range of values for the model.
- The third step is to run the model for each alternative and provide an analysis as illustrated below.
- The fourth step in the process is mapping a fast track path to sanction.

Westney Consulting Group

Overview Slides for Nalcor

7/7/10

Risk Resolution®

Predictability Calibration™

Front-End LEAN™

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Westney Consulting Group brings a distinctive approach in assessing technical risks and deep understanding of international engineering and construction of major energy facilities

2

Long-term expertise advising energy companies worldwide

- Client base includes government agencies for energy development, international owners including power, oil & gas – upstream, midstream and downstream, and engineering & construction service providers
- Executive-level decisions on capital project investments and strategies often based on results of Westney risk & strategy reviews

Distinctive approach in assessing risks and implementing strategies

- Risk Resolution® methodology identifies cost and schedule risk exposure and mitigation strategies.
- Due diligence capabilities identify contractor/developer strengths and weaknesses not otherwise apparent
- Project readiness reviews assess maturity and completeness of design and planning and associated investor risks

Deep understanding of international engineering and construction

- Consulting staff represents owner, contractor, and developer experience in energy project development; knowing how bidders assess and price risk, make design decisions, and negotiate claims
- Add value to decision – making, strategic planning and organization development with an independent perspective that aligns stakeholders for improved predictability

Westney Consulting Group

Westney Consulting Group serves the major players in various industries

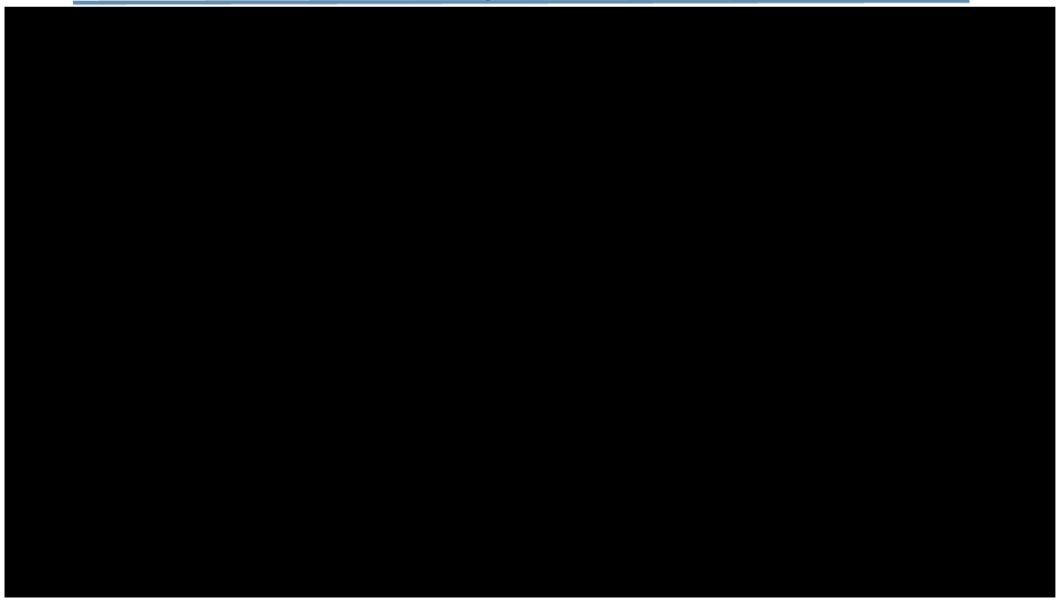
Company Profile

Founded in 1978, Westney Consulting Group has long been recognized for thought leadership and innovative solutions to the challenges of planning, developing and executing major capital projects in the energy industry.

Westney brings an independent, expert view of a project's plans, risk exposure, organizational effectiveness and likely cost and time to complete.

The company's Risk Resolution® methodologies for Project Risk Management, Due Diligence, Strategic Planning, Organization Development, and Performance Assurance improve the predictability of project outcomes.

Client profile



Service profile

Making Risk-Informed Capital Project Decisions

- Risk Discovery, Framing & Analysis
- Capital Project Due Diligence
- CapEx Portfolio Management (CapEx VaR®)

Developing Risk-Informed Capital Project Strategies

- Risk Mitigation & Opportunity Analysis
- Project Organization Due Diligence & Development
- Contractor Due Diligence
- Front-End LEAN™

Maintaining Control During Project Execution

- Threat Surveillance & Monitoring
- Front-End Definition Rating
- REAL-Progress™ Definition & Oversight

De-Risking the Investment with *Risk Resolution®*

4

Risk Resolution® can be performed at any time in the project's life-cycle.

Risk Discovery

- Focuses on risks undervalued or outside the base estimate
- Results of Predictability Calibration™ identify key risk drivers
- Basis for stress-testing assumptions and plans
- Facilitates partner alignment

Risk Analysis

- Tactical Risk Modeling ➡ Contingency Requirement
- Time Risk Modeling ➡ Completion Risk Exposure
- Strategic Risk Modeling ➡ Cost Risk Exposure
- Cash-flow Risk <Modeling ➡ Cash-flow Risk Exposure

Risk Management Planning

- Model potential reductions in risk exposure if mitigation steps are effective
- Evaluate net benefit of potential mitigation steps