

Stranded Gas Hearings (0508311336 Minutes)

Investment Decision-Making by Oil and Gas Companies

Barry Pulliam, Senior Economist, Econ One Research, Inc.

Anthony Finizza, Ph.D., Consultant, Econ One Research, Inc., August 31, 2005

CHAIR THERRIAULT called the committee back to order at 1:36 p.m.

MR. PULLIAM recapped the morning's presentation and said that now the presentation will turn to decision-making and possible results of [Econ One's] modeling efforts. He then turned the presentation over to Dr. Finizza.

DR. FINIZZA said he would be discussing decision making, which he suggested is more complicated than he can portray. He highlighted, on page 5-2, questions that oil and gas companies ask when looking at projects. Dr. Finizza opined that the key approach will be discounted cash flow in the evaluations. An estimate of cash flows, he explained, is taken to the firm and discounted at the expected rate of return that they will realize on similar investments of the same risk type. He highlighted the need to recognize the risk-return relationship and the importance of evaluating projects on a risk-adjusted cost of capital basis. He then clarified that this is for an incremental project, and a project with a positive net present value (NPV) is a candidate for acceptance. Dr. Finizza then turned to page 5-6, which presents a stylized cash flow table. In year one of the proposed project, the [expected project cash flow is negative \$16 billion capital investment, but from that point forward there are positive cash flows to 2042. That stream of cash flows can be analyzed and can be used to equate the NPV at a specific discount rate [as specified on page 5-6]. He then pointed out that there are variations on NPV in that someone may measure NPV per barrels of oil equivalent (BOE) found or used in the project [as mentioned on page 5-7]. However, since NPV is sensitive to price forecast, the measure would be the division of NPV by the total gas brought to market in the project. He highlighted that although [BOE] isn't a criterion that stands on its own because NPV has to be calculated to get [BOE], some people will look at the measure. Dr. Finizza relayed that \$1.00 per BOE is typical of high infrastructure, capital-intensive gas projects such as LNG. Therefore, one would probably look to see something greater than \$1.00 per BOE to be in the upper half of the range of projects.

DR. FINIZZA continued with page 5-8, which reviews the Internal Rate of Return (IRR) measure. He explained that the IRR is the discount rate at which the NPV of the cash flows is equal to zero. He informed the committee that a project with an IRR greater than the risk-adjusted cost of capital would be a viable project when there are no capital constraints. However, the year in which such a project is accepted may not be the year in which it's started. Without significant risk factors, IRRs in the 12-15 percent range are viewed as the threshold rate of return. He related his belief that energy companies are developing alternative projects in the 15-20 percent range.

DR. FINIZZA turned to page 5-9 regarding the Profitability Index (PI), which is helpful in examining the case when there are capital constraints. The PI is simply a ratio of the present value of cash inflows divided by the present value of cash outflows, which is referred to as the "biggest bang for the buck" by those who aren't economists. Therefore, any project with a positive NPV would have a PI greater than one. He highlighted that the main use of PI is to allocate capital when there are capital constraints, which can be accomplished by calculating the PI for all the projects in the portfolio, rate them from high to low, and choose the projects in sequence to the point of capital constraint. He cautioned the committee to be wary of different PI definitions as noted at the bottom of page 5-9. He then reviewed the chart on page 5-10, which illustrates one stylized way in which the profitability index could be done. The chart on page 5-11 discusses undiscounted cash flow criteria, which is the sum of all the cash flows in a project without discounting. The undiscounted cash flow isn't used for key investment decisions, although it's often used to present the magnitude of the project. He stressed that [the undiscounted cash flow] violates everything about discounted cash flow analysis and suffers from the failure to reward cash early. The graph illustrates that the NPV is 50 percent higher with the cash early at a 10 percent discount rate. Dr. Finizza

stated that in decision-making, one would always want to take [the project] with the highest NPV. He then reviewed [as related on page 5-12] how one might use the financial metrics he has discussed.

DR. FINIZZA pointed out that one could also compare a gasline proposal with another gasline proposal or with the status quo. Using NPV for the following comparison would be useful with the caveat that risk may differ between proposals, and therefore one should be cautious with that. The earlier discussed financial metrics could also be used to evaluate a delay in the gasline, which he indicated would use NPV rather than IRR. Dr. Finizza turned to risk and [incorporating it in the discount rate as reviewed on page 5-13]. He related that as a practical matter, people tend to review adjusting the discount rate. He then provided the committee with an idea of various alternative costs of capital, which are based upon market data and country credit ratings. As noted on page 5-13, the U.S. and other countries in the Organization for Economic Cooperation and Development (OECD) have similar [costs of capital]. However, lesser-developed countries such as Qatar and Venezuela produce [costs of capital] in the range of 21-25 percent. Therefore, using the same discount rate when comparing Qatar and the U.S. wouldn't be valuable. Dr. Finizza stressed the importance of comparing apples to apples, although he acknowledged the difficulty in doing so. He then related that riskier projects should provide greater return while less risk should be mirrored in a lower discount rate.

DR. FINIZZA acknowledged that companies making decisions of this magnitude won't rely on metrics alone [as specified on page 5-14]. Additional issues will be raised such as: does the company have the personnel and skill set to do the project at this time; does the project distract management from other things; does the project size offer economies of scale; is the project discretionary; what is the effect of a delay on project economics; are there contractual obligations that impact timing; does the project offer improved diversification; and does the company have a competitive advantage in the project?

DR. FINIZZA noted that Econ One has presented what it believes to be reasonable prices, but the question becomes what one would logically expect an oil and gas company to use for their economic evaluation. The price is key and is the most important part of the calculation. He noted that producers have been burned by high gas price projections, [and therefore] it's likely that producers will test projects at a price path below their most likely view. He explained, "In a sense, [producers] are high-grading their projects by picking a price that would be actually below what they really, really believe." Having watched oil and gas companies, Dr. Finizza opined that the price view of the oil and gas companies [are below] the market price view by several years on the way up, but correct quickly coming down. He further opined that the current view of most oil companies in evaluating projects would be \$24-\$26 oil that would translate to \$4.00-\$4.25 gas. Producers will also stress test the project against what is viewed as a low price, which may be \$3.50 [/mmBtu] that corresponds to about \$22 in oil prices. He attributed this, in part, to [the fact that] the consequences of error aren't symmetric. If a producer underestimates the future path of prices, it will not undertake high-risk projects. However, returns will skyrocket when the future prices come to bear. If a producer overestimates future prices, such as in the 1990s, the producer will miss opportunities but the misses won't be fully penalized by the market. The aforementioned lack of symmetry is illustrated in the chart on page 5-16.

REPRESENTATIVE KERTTULA returned attention to the graph on page 3-17, and asked if the graph includes federal and Canadian taxes.

DR. FINIZZA clarified that it's before income tax.

REPRESENTATIVE KERTTULA surmised then that it's before the federal taxes and thus would be the same on the Canadian side.