DOWNLOAD PDF DEPARTMENT OF ENERGY RISK MANAGEMENT

Chapter 1 : Energy Department to Release Enterprise Risk Management Framework â€“ MeriTalk

The risk management model reflects the organization as a three-tiered structure and provides a comprehensive view for the electricity sector organization and how risk management activities are undertaken across the organization.

The value of management flexibility increases in direct proportion to the uncertainty in the project. To paraphrase a quotation attributed to General Eisenhower, who said after D-day: A flexible decision-making structure requires that project managers be active and show initiative. Under these circumstances, project managers should not be constrained by organizational culture, bureaucratic restrictions, fear, self-interest, or those who are likely to apply rigid management principles rather than initiative and flexibility. Many DOE projects experience high levels of uncertainty in many critical project components. Most of these uncertainties cannot be significantly reduced through project planning alone. They require risk management approaches different from those used for traditional projects. Some of them cannot be adequately characterized and optimal actions chosen during front-end project planning. This is common when uncertainties will be reduced only over time or through the execution of some project tasks. For example, uncertainty about the presence or strength of specific chemicals in a groundwater supply or solid waste may be reduced only after project initiation and partial completion. Under these circumstances, committing to specific risk management actions during planning makes project success a gamble that the uncertainty will be resolved as assumed in planning. A classic example of commitment to a specific course of action and the maintenance of that course without developing alternative plans is the In-Tank Precipitation project at Savannah River GAO, Strategic flexibility can provide tools for effectively planning for and mitigating such risks. Incorporating flexibility into risk management plans can reduce project costs and durations. Flexibility can be incorporated into project planning in several ways. For example, if the size of a to-be-developed piece of equipment is not known, other components such as the facilities to house and service the equipment could be oversized to accommodate the 95th percentile equipment size. However this approach can generate conflicting constraints from different uncertain components, can commit the project during planning to a single action, and can be very costly in time, money, or both. The National Academies Press. Purposefully and strategically postponing some risk management decisions and incorporating flexibility into risk management can improve project performance. However, postponing important risk management decisions without plans for when and how those decisions will be made invites failure by allowing inappropriate reaction to short-term conditions or ad hoc decision making. Additionally, postponing decisions might be less cost effective than committing to specific actions when needed. DOE needs to take a flexible approach in managing risk because of the high levels of uncertainty. To be effective in risk management, flexibility should be structured. A process is needed for designing, assessing, evaluating, and implementing risk-management alternatives that include decisions made during front-end project planning and decisions made after project initiation. DOE should develop cutting-edge abilities to manage high-risk projects. It should adopt a process of identifying, designing, evaluating, and selecting risk management alternatives. The process should explicitly include and address alternatives that take advantage of opportunities for the partial resolution of important uncertainties after project initiation. Reviews at critical decision points should always entertain Plan B, that is, the alternatives to be pursued if the primary approach is adversely affected by subsequent information or events. Mocknick, ; IPA, DOE briefings, too, have implied that risks should be allocated to the parties best able to manage them, which is difficult to accomplish when DOE has no quantitative assessment of the risks. Under some circumstances, risk allocation can degenerate into attempts by project participants to shift risks to others instead of searching for equitable allocation. There are two critical starting points for risk allocation: There is a price that the DOE can but not necessarily should pay a project participant to accept the gains or losses generated by specific uncertainties, but to determine this price, it is necessary to quantify the risks. Hence, quantitative risk assessment is essential to effective contracting. An objective assessment is essential to performance-based contracting, to assure that DOE does not shift to other project participants risks that it should retain or vice versa, or shift risks at more cost than they are worth. Page 45 Share Cite Suggested

Citation: DOE should explicitly identify all project risks to be allocated to the contractors and all those that it will retain, and these risks should be made known to prospective bidders. To use a market-based approach to allocating risks and to avoid unpleasant surprises and subsequent litigation, it is necessary that all parties to an agreement have full knowledge of the magnitude of risks and who is to bear them. This practice has contributed to serious project performance problems, such as at the National Ignition Facility, where some major risks were not recognized or were ignored after project initiation until the budget and schedule problems they created forced rebaselining. A passive and reactive approach is often used in which risks are generally ignored until undesired events occur, at which time solutions are sought that often assume the availability of additional resources. Such an approach precludes preventing some undesirable events and increases the costs of addressing others. Inadequate front-end risk management planning and a tradition of budget increases may be the primary contributors to these behaviors and may deter proactive risk management during projects. Risks need to be rigorously and aggressively managed during projects. Planning for risk mitigation is an important aid for this but is not sufficient. Rigorous risk management includes monitoring every risk factor and assigning management and mitigation responsibility to project parties. One tool for this purpose is a project risk registry. This management tool is initially constructed during project planning by identifying all types of uncertainties that could impact project performance e. These estimates are used for prioritizing uncertainties for managerial focus, contingency sizing, and decision making. If funds appropriated are less than requested, the project risk registry acts as a basis for rescoping or redesigning the project, so that it remains consistent with the funds allocated. After the project has started, the project risk registry provides a tool for allocating managerial responsibility for specific uncertainties and reporting and monitoring their status. The most effective use of this tool includes regular and frequent reporting on each risk until the project passes the point where the risk is no longer an issue. Risks, as the term is used here, are distinguished from work packages, which can contain risks but are not typically defined to reflect them. The consequences of inadequate risk management were amply demonstrated by highly visible projects such as Pit 9, in-tank precipitation, and TWRS. DOE project risks are not aggressively managed after project initiation. Risk management during projects is an inadequately developed project management capability at DOE. DOE should initiate a program to improve the knowledge, skills, and abilities of project managers and develop tools and information needed to manage risk throughout the life of a project. Project participants who manage risks actively and achieve successful project performance should be appropriately rewarded. Further, the committee observed a deficiency in DOE risk management methods. DOE has a need to manage risks to project schedules, cost, and scope. Doing so would prevent unpleasant surprises, enable remedial action, and avoid breaching baselines. The committee believes that DOE should conduct a risk analysis of all ongoing large projects to establish their risks and vulnerabilities with respect to schedule, cost, and performance. The analysis could be used to establish a department-wide assessment of the risks remaining in each project and for the department as a whole, as well as to identify projects that are the most vulnerable and need the most attention. Because consistency is necessary for department-wide, cross-project comparisons, it is recommended that this risk study be led by OECM. DOE should conduct an immediate and thorough risk assessment of all ongoing DOE projects with significant remaining time and costs. Such an assessment would establish, on a consistent basis, the risks and vulnerabilities of projects with respect to schedule, cost, and performance. The assessment should evaluate the risks of future scope shortfalls and budget and schedule overruns. Page 47 Share Cite Suggested Citation: The successful management of these risks is often critical to project success. However, traditional risk management tools, methods, and practices may be inadequate. The committee believes that the methods in the draft PPM and PMP documents are inadequate if applied in a piecemeal fashion to the task of assuring successful project management practices under the conditions pervading DOE projects. Given the circumstances, new risk management tools and methods should be developed, tested, and implemented within DOE. Several existing tools and methods, such as those cited earlier and below, and the successful or unsuccessful management of risks in engineering projects that match DOE projects in size and duration Miller and Lessard, can guide this effort and form the basis for developing risk management excellence at DOE. DOE has funded the development of a number of risk models Diekmann, ; Parnell et al. The DOE could set up

a project simulation program that would let project managers simulate the activities in a project before doing it. This was done successfully in private industry as well as in the military. Simulation could be manual or computerized or both. A project simulation facility might be expensive, but it would certainly be less expensive than making big mistakes on real projects and would pay for itself in the long run. Computer simulation models have been used to study the feedback loops and the effects of change in projects, and they have been used successfully to describe and to predict project completion rates and costs. High-risk projects are not well described by conventional critical-path network models which prohibit recycling , and efforts to apply conventional methods inappropriately to these projects can lead to incorrect conclusions and counterproductive solutions. One approach to developing useful computer project simulations is system dynamics. This computer simulation modeling methodology can specifically depict the characteristics of dependencies among project processes, resources, and management and their impact on project performance. By focusing on specific issues, modeling can clarify and test the assumptions used by project participants and be used to design and test existing and proposed project process improvements and managerial policies. Innovative, cutting-edge, and exceptional risk management abilities are needed by DOE to identify and address the risks in many of its projects. DOE needs to develop expertise and excellence in managing very risky development projects. The DOE complex has the intellectual, computational, and other resources necessary to produce significant improvements in this area. Page 48 Share Cite Suggested Citation: DOE should develop more expertise and improved tools for risk management. Nontraditional and innovative approaches, tools, and methods should be investigated for their adaptability to DOE project conditions and use in DOE risk management. They would include those cited earlier in this report and in the Phase II report NRC, , Appendix B , such as systems analysis, event trees, causal loop diagrams, system dynamics, and stochastic simulation, which have been tested and shown to be valuable on similar projects or in addressing similar challenges. It is often said that project budgets and contingencies should be based on risk assessments, that is, on probabilities. Although probabilistic statements are impossible to verify on the basis of a single observation, DOE performs a large number of projects, so that statistical statements could in principle be verified over the population of all projects. The following is an elementary example. The committee has been informed that the appropriate level of authorization for a project, assuming that the uncertainty in the ultimate project cost can be described by a probability distribution, is some value that has been called the risk-adjusted cost estimate RACE. This might be, as one example, the dollar value at, say, the 85th percentile or confidence level. That is, using this number, there would be an 85 percent probability that the project will actually cost less than the RACE and a 15 percent probability that it will cost more. So, if there are such projects, all funded at their respective RACEs, one would expect that 85 of these projects would be completed within their budgets and 15 would return to Congress for additional funds. In other words, if budgets are set at the RACE of the 85th percentile, statistically, 85 percent of the projects should return some unused funds to the treasury. This does not appear to be the case. No systematic data were available to the committee, as DOE does not seem to track contingency funds or management reserves.

Chapter 2 : Speakers - Energy Risk USA

This tool is the process of continuous and iterative identification and control of project risks and opportunities. Risks can be technical, financial, or programmatic.

Since then, Sarah has held a number of Commodity Risk leadership roles within the trading organization with a career spanning multiple commodities as well several geographies including London, UK and Calgary, AB. Sarah moved to Houston with her family in and is currently the Head of Commodity Risk for the North American natural gas trading business. Through the course of her tenure with BP, Sarah has worked with several ETRM systems and has been actively involved in a number of system transformation and implementation initiatives. Prior to joining FERC, as an attorney at various firms, he represented investor-owned utilities, project developers, public power entities, state commissions, regional organizations, and others on a broad array of issues arising throughout the United States related to the regulation of electric utilities, natural gas pipelines, and hydroelectric projects, as well as the development of wind and nuclear projects. Tim started his career in Compliance in and was one of the first regulatory compliance officers in the U. Tim combines a detailed understanding of the underlying mechanics of physical and financial commodity transactions with in-depth knowledge of the letter and intent of the rules that govern these transactions to help mitigate the risk of non-compliance. Tim is a member of New England Patriots Nation, but does not publicize this for obvious reasons. Marc has extensive experience with issues concerning the marketing, trading and financing of power, natural gas, oil, coal, LNG, weather, and environmental commodities. He has a particular understanding of the issues impacting a company active in the international energy and commodity markets, including US and European regulation and the structuring and financing of cross-border transactions. Prior to his in-house work with E. He also studied law in Germany and France. He is fluent in German. She leads the coordination and oversight of U. S regulatory change management and global impact. Caroline is a member of various governance forums and advises senior management and the business, control functions, and other stakeholders on regulatory matters. Tuncay has over 25 years of international experience in executive leadership, risk and commercial management in multinational corporations including Fortune companies. During his career, he has successfully established multiple company-wide risk management frameworks for both public and private companies in the United States. His experience covers commodities, power, foreign exchange, interest rates and credit. His areas of expertise include portfolio risk management and analytics, risk quantification and risk metrics, hedge optimization, large-scale Monte Carlo simulation systems and risk management policies. Tuncay earned his Ph. He graduated from Bogazici University in Istanbul with a M.

Chapter 3 : The Risk Assessment Information System

The Department undertook responsibility for long-term, high-risk research and development (R&D) of energy technology, federal power marketing, some energy conservation activities, the nuclear weapons programs, some energy regulatory programs, and a central energy data collection and analysis program.

The report came to the following conclusions: World oil peaking is going to happen, and will likely be abrupt. World production of conventional oil will reach a maximum and decline thereafter. Some forecasters project peaking within a decade; others contend it will occur later. Peaking will happen, but the timing is uncertain. Oil peaking will adversely affect global economies, particularly the U. Over the past century, the U. The economic loss to the United States could be measured on a trillion-dollar scale. Aggressive fuel efficiency and substitute fuel production could provide substantial mitigation. Oil peaking presents a unique challenge. Without massive mitigation, the problem will be pervasive and long-term. Previous energy transitions wood to coal and coal to oil were gradual and evolutionary. Oil peaking will be abrupt and revolutionary. The problem is liquid fuels for transportation. The lifetimes of transportation equipment are measured in decades. Rapid changeover in transportation equipment is inherently impossible. Motor vehicles, aircraft, trains, and ships have no ready alternative to liquid fuels. Mitigation efforts will require substantial time. Waiting until production peaks would leave the world with a liquid fuel deficit for 20 years. Initiating a crash program 10 years before peaking leaves a liquid fuels shortfall of a decade. Initiating a crash program 20 years before peaking could avoid a world liquid fuels shortfall. Both supply and demand will require attention. Sustained high oil prices will cause forced demand reduction recession and unemployment. Production of large amounts of substitute liquid fuels can and must be provided. The production of substitute liquid fuels is technically and economically feasible. It is a matter of risk management. The peaking of world oil production is a classic risk management problem. Mitigation efforts earlier than required may be premature, if peaking is long delayed. On the other hand, if peaking is soon, failure to initiate mitigation could be extremely damaging. Government intervention will be required. The economic and social implications of oil peaking would otherwise be chaotic. Expediency may require major changes to existing administrative and regulatory procedures. Economic upheaval is not inevitable. Without mitigation, the peaking of world oil production will cause major economic upheaval. Given enough lead-time, the problems are soluble with existing technologies. New technologies will help, but on a longer time scale. More information is needed. Effective action to combat peaking requires better understanding of the issues. Risks and possible benefits of possible mitigation actions need to be examined. Three scenarios[edit] Waiting until world oil production peaks before taking crash program action leaves the world with a significant liquid fuel deficit for more than two decades. Initiating a mitigation crash program 10 years before world oil peaking helps considerably but still leaves a liquid fuels shortfall roughly a decade after the time that oil would have peaked. Initiating a mitigation crash program 20 years before peaking appears to offer the possibility of avoiding a world liquid fuels shortfall for the forecast period. Applicability beyond the US, critical remarks[edit] The Hirsch Report urged a crash program of new technologies and changes in manners and attitudes in the US and as well implying more research and development. The report cites a peaking crude oil supply as the main reason for immediate action. During the significant oil price rise through , a theme among several industry observers was that the price rise was only partially due to a limit in crude oil availability peak oil. For example, an article by Jad Mouawad cited an unusual number of fires and other outages among U. Indeed, if the refineries were unable to process available crude oil then there should be a crude oil glut that would reduce crude prices on international crude oil markets. Then again, sharp changes in crude oil prices can also be due to stock market volatility and fear over the security of future supplies, or, on the other hand, an anticipation by investors of a rise in the value of crude oil once refining capacity picks up again. An average car in Germany uses about 8. So far a part of the changes ultimately requested by Hirsch for the US have been already implemented in Europe and cum grano salis in Asia. The difference had been much smaller at the start of the 70s. Europe adapted more after the various oil shocks and enhanced the changes by introducing much higher taxes on gasoline. The differences now are not

only a lack of energy saving technologies, in car building and usage, and passive insulation of buildings in the US. The traditional significant differences in the setup and density of settlements, share of suburbs, use of public transport and consumer behavior have been widening. Taking this into account, a peak oil shock as outlined by Hirsch will have a much more severe outcome in the US compared to other parts of the world, especially Europe.

Chapter 4 : Hirsch report - Wikipedia

What GAO Found. The Department of Energy (DOE) manages the risk of fraud and improper payments through its internal controls program, which includes, among other things, prepayment invoice reviews and post payment audits.

Page 1 Share Cite Suggested Citation: The National Academies Press. Stakeholders represented were local citizens; Native American organizations; state, local, and federal governments; and the Department of Energy DOE and its contractors. Thus, parties responsible for the remediation and safety of the facilities, parties affected by the facilities, and the parties regulating the facilities were able to present their perspectives. Although those perspectives differ even within the same representative group , all parties seemed to agree on some points: The lack of trust in DOE and its site operators is a major impediment to reaching consensus not only on the type and degree of remediation needed, but also on the process to reach these decisions. The multiple concerned parties, or stakeholders, need to be involved throughout the whole process beginning with planning, not just in the review of the results. Page 2 Share Cite Suggested Citation: In spite of some recent successes in collaborative efforts in remediation activities by DOE, the states, and other stakeholders, the workshop presentations clearly showed the need for fundamental rethinking and restructuring of how sites are assessed and priorities are set and of how the stakeholders interact with each other throughout the process. The recommendations contained in this report are intended to assist the DOE in this rethinking and restructuring. Comments of the workshop were often directed at different factors influencing remedial action decisions. The committee has identified these as four different processes. They are risk assessment, risk management, the overall decision-making process which may or may not utilize issues of risk, but may include factors such as the economic benefit of remediation efforts within the local community , and public participation. The committee notes that these four processes axe all utilized in the remediatiation of DOE sites. These processes occur simultaneously and commonly interact with one another see Figure Each requires information from the others, and each needs to provide information to the others. Indeed, it can sometimes be difficult to distinguish the boundaries between them. Therefore, even though the committee focused its deliberations on risk assessment, we include the other processes in our recommendations because they are essential to the implementation of an effective environmental remediation program based on risk assessment. Risk assessment, which is the technical assessment of the nature and magnitude of risk, is always distinguished from risk management, which uses information from risk assessment together Page 3 Share Cite Suggested Citation: The differences between risk assessment and risk management are widely debated and controversial. The controversy centers on the degree to which risk assessment can be kept free from biases or values that typically are part of management decisions. The committee recognizes that some may view the effort to include public participation in the process of risk assessment as actually forcing on risk assessment the role of risk management. The committee believes that the public can contribute to the process of risk assessment as it has been traditionally defined. Based on its own deliberations after the workshop, the committee concludes that risk assessment concerning possible future outcomes at DOE weapons-complex sites has the following characteristics and benefits: It is feasible even in situations where current information is limited, as long as its purposes and limitations are defined. Risk assessment should be an iterative process. The earliest analysis might determine where more information is needed to support credible risk assessments in future iterations and provide limited guidance in reducing risks to health and the environment through risk management and in the continuing decision-making process associated with remediation. It can be effective in comparing different potential outcomes of possible future actions and their cost-effectiveness. It must involve the public in its many guises in the whole process, including the planning of the process and the definition of the scope of risk assessment. In so doing, risk assessment becomes an important element of consensus-building for remediation. It is a highly desirable component of the remediation decision-making process. It is especially useful in providing input for managing and reducing the risks encountered by workers and the local population during the remediation effort. If properly used, it is a manifestation of the scientific method in that it specifies how information is gathered systematically; how its uncertainty is determined; how potential future outcomes and

their impacts are explored in an objective and reproducible manner; and how the likelihood of these outcomes is displayed clearly and comprehensively. Risk assessment has its limitations, as well. These should be understood by DOE and stakeholders. Risk assessment is one of a number of elements in the decision-making process and should not be treated as the only one. It can be conducted in many organizational settings. Although a risk assessment group outside DOE and its site operators and prime contractors might have more credibility than DOE, the gain in credibility might come at a cost in time needed to organize the effort and to obtain background information. Ways should be sought to combine the advantages of easily accessible information and the credibility of an outside group. This comprehensive risk assessment process is absolutely essential for dealing effectively with the risks at DOE facilities. With rigorous, consistent, and continuous inclusion of stakeholder groups in the effort, risk assessment can become an important element of consensus-building for key decisions in the remediation of DOE sites. Through this consensus-building process and perhaps through a new organizational setting for risk assessment, the credibility of DOE can be improved.

Chapter 5 : Energy Risk Management - University of Houston

The Department of Energy's Cybersecurity Risk Management Framework. Submitting OIG: Department of Energy OIG. Date Issued: Department of Energy OIG.