GREATER EXPECTATIONS:

Sustainability in the Acquisition Process

"The vision for this initiative is to make sure everyone in the acquisition business analyzes the human health and environmental impacts and life cycle costs associated with alternative choices of energy, chemicals and materials, and other natural resources. Such analyses will lead to more informed decisions and systems that are more sustainable with lower total cost of ownership."

— Paul Yaroschak, P.E., Deputy for Chemical & Material Risk Management, Office of the Deputy Under Secretary of Defense (Installations & Environment)
Executive Summary

At Lockheed Martin, we define sustainability as fostering innovation, integrity and security to protect the environment, strengthen communities and propel responsible growth. Our largest customers are focusing on sustainability by considering long-term impacts, efficiency and affordability – all while helping to support their critical missions.

The term sustainability is often confused with the defense-related term “sustainment,” which focuses on the customer’s ability to operate and maintain a system once it is deployed. In the context of Department of Defense (DoD) acquisitions, sustainability means the efficient and safe use of resources to minimize human health and environmental impacts and costs over a system’s life cycle.

Many of the large military systems and platforms Lockheed Martin develops can have a life cycle of 30 years or more. Resources are costly and, in some cases, limited. In addition, choices in resources such as energy sources, chemicals and materials can have a significant impact on human health, the environment and associated life cycle costs.

Without a full understanding of the product life cycle impacts, significant impacts and costs may be unintentionally inserted during development and design phases of acquisition and later incurred by the logistics, installations and operational communities. Early sustainable design choices can make a significant difference in these costs, which can translate to savings for our customers, for our bottom line and for preservation of natural infrastructure.

Government Taking Action

Sustainability in Government Acquisitions

To integrate sustainability into products and processes, the government is considering the entire life cycle from design through product use and end of life. A sustainability analysis can help uncover human health and environmental impacts and their related life cycle costs to better inform design decisions when making choices among alternatives and long-term supportability requirements. The application of sustainability analyses across DoD is expected to result in (1) lower total ownership costs for systems for our customers and ourselves and (2) sustainable systems – those that use fewer and safer resources and have reduced human health and environmental impacts. A sustainability analysis consists of two parts: life cycle assessment (LCA) and life cycle costing.

The DoD released draft guidance, “Streamlined Life Cycle Assessment Process for Evaluating Sustainability in DoD Acquisitions,”¹ in June 2013. The guidance describes how to apply a consistent, practical and flexible method for conducting life cycle assessments throughout the acquisition process. The streamlined life cycle assessment will be integrated into the systems engineering process and will help inform trade space and supportability analyses.

¹DENIX - DoD Environment, Safety and Occupational Health Network and Information Exchange
www.denix.osd.mil/esoacq/
What’s Possible
What Does this Mean for Lockheed Martin?

At Lockheed Martin our customers’ missions are our first priority. It is imperative that we consider the total cost of ownership and how the decisions we make today may impact our customers in the future. Operational efficiency, material selection and chemical use are all significant factors in the long-term sustainability of the products we develop. As the DoD furthers its guidance and research into program life cycle costs and impacts, as well as emerging contaminant risks, these topics will become more and more prevalent in contract requirements. As the leading provider of products and services to this critical customer, we must proactively anticipate their needs and incorporate our strong culture of innovation and sustainable thinking into our program decisions.

Mitigating Chemical & Material Risks
In addition to the DoD’s Streamlined LCA guidance, the DoD has also developed an Emerging Contaminants Program that looks “over-the-horizon” to identify and assess chemicals and materials with evolving risks. Emerging contaminants (ECs) either lack sufficient information about human health and environmental effects or our understanding about their effects is evolving. These changes may be due to new science, detection limits or exposure pathways. ECs can have significant negative impact on people, the environment, DoD acquisition programs, and the operation, maintenance and disposal of DoD assets.

The core of the EC Program is a three-tiered process called “scan-watch-action.” To date, more than 600 chemicals and materials have been screened by the DoD using this process. Completed actions for risk management actions have greatly reduced chemical and material risks. For example, a major policy requiring the minimization of hexavalent chromium was issued across the DoD. As a follow-on action, DoD issued a Defense Federal Acquisition Rule that minimizes the use of hexavalent chromium in any new procurements. This rule governed many decisions that were made in the Aerospace and Defense industry.

Naval Sea Systems Command (NAVSEA) has also created the Prohibited and Controlled Chemicals List (PCCL). The PCCL categorizes chemicals into three tiers: (1) Prohibited, (2) Controlled, and (3) Chemicals of Concern. Approximately half of U.S. Navy programs are currently using the PCCL; eventually, the PCCL restrictions will be flowed to Lockheed Martin Navy contracts. The DoD EC Program and PCCL can guide our product development efforts and help identify risks and reduce costs in our bills of materials.

Examples of Lockheed Martin Incorporating Sustainable Design Decisions

**TF-39 Engine**
Engine refurbishments doubled time on wing, reducing engine removals by more than 60 percent. The program received Excellent U.S. Air Force Ratings for 12 consecutive years - proving our ability to support mission readiness.

**F-22/F-35 Hazardous materials reduction programs**
Hazardous materials reduction program eliminated ozone depleting substances (ODSs) from the aircraft and manufacturing process and greatly reduced the use of hexavalent chromium and cadmium plating. The F-22 Program was awarded the Stratospheric Ozone Protection Award for Leadership in Ozone Protection by the U.S. EPA.

**Joint Light Tactical Vehicle (JLTV)**
Superior fuel efficiency, high reliability, and low logistical support costs reduce the total lifecycle cost of the vehicle. With a focus on remaining light, the Lockheed Martin team removed more than 40 percent of its original weight.

**Partnering for Success**
Lockheed Martin is one of three founding sponsors of the National Center for Defense Manufacturing and Machining (NCDMM) Mission Ready Sustainability Initiative (MRSI). The vision of MRSI is to create a new generation of mission ready sustainable products and services that generate economic value and address environmental imperatives for the DoD the military services. The team, which includes representatives from private sector companies as well as the DoD, is working to expand and build working relationships to enhance greater efficiency and technologies that create economic opportunities while benefitting the warfighter and the environment.