

**USAF Scientific Advisory Board
FY 2010 Summer Study**

The Future of Launch Vehicle Systems for the US Air Force
Terms of Reference

Background

Domestic launch capabilities are integral to ensuring that U.S. space assets are available and responsive to meet warfighter needs. Moreover, robust and reliable launch vehicles are critical to emerging Air Force missions such as Operationally Responsive Space and sub-orbital ISR platforms. However increased reliance on foreign launch technology, industry consolidation, a decline in launch system production quantities, and an aging workforce has put the U.S. rocket launch industry at risk. Future launch requirements with necessary responsiveness, reliability, availability, efficiencies and affordability will likely need to transcend the current Evolved Expendable Launch Vehicle (EELV) construct; this may include partially or fully reusable stages, air-breathing stages, or both. A new approach to space launch is needed to fully enable US operations and emerging missions in space.

Study Products

Briefing to SAF/OS & AF/CC in July 2010. Publish report in December 2010.

Charter

This study will:

- Assess the adequacy of current domestic launch systems and infrastructure to meet future military needs.
 - Focus on rapid satellite replenishment, responsive space capabilities, ballistic missiles, and sub-orbital ISR platforms.
 - Include capabilities, plans, and perspectives of civil and commercial providers.
 - Identify gaps and dependence on foreign technology.
- Review and assess recent space launch reports, plans and roadmaps, including AFSPC's Spacelift Development Plan, to identify launch system gaps.
- Explore alternative launch vehicle system concepts to enable US space operations and emerging missions.
 - Include EELV, expendable/reusable rocket systems, and expendable/reusable systems with air-breathing stages.
 - Identify realistic technologies for operations in the near-, mid-, and far-term.
 - Assess the potential for US-based development/production of these concepts.
- Review the adequacy of the current and planned launch infrastructure to support the alternative launch concepts. Identify necessary changes and improvements.
- Assess the adequacy of planned Science and Technology (S&T) programs. Identify technology investments needed to mature propulsion technologies for launch and ballistic missile systems in the near-, mid-, and far-term.