1.0 Purpose and Need for Action

In 1998, the U.S. Air Force issued a *Final Environmental Impact Statement, Evolved Expendable Launch Vehicle Program* (1998 FEIS) that assessed the potential environmental impacts resulting from the development, deployment, and operation of the Evolved Expendable Launch Vehicle (EELV) program. In that document, two baseline vehicle configurations were evaluated, Concept A and Concept B. The EELV program evaluated under the 1998 FEIS included small-, medium-, and heavy-lift variants designed to deliver payloads of varying sizes and masses to Earth orbit. In "Concept A," now called the Atlas V system, Lockheed Martin Corporation (LMC) proposed vehicles that have a liquid-oxygen / kerosene core booster. In "Concept B," now referred to as the Delta IV system, McDonnell-Douglas Corporation, a wholly owned subsidiary of The Boeing Company (Boeing) proposed vehicles that have a liquid-oxygen / liquid-hydrogen booster core. The 1998 FEIS "Concept B" analysis also considered the use of small, strap-on, solid rocket motors (SRMs) on some commercial launches of the medium-lift Delta IV system. Implementation of both Concept A and Concept B vehicles (Concept A / B) was also evaluated in the 1998 FEIS. Following issuance of the Record of Decision (ROD) for the 1998 FEIS in June 1998, the Air Force awarded development agreements and initial launch services contracts to LMC and Boeing. In addition, the Air Force entered into real property agreements with both contractors, permitting the use of Air Force facilities for the deployment of EELVs. As a result of these actions, future launch forecasts outlined in this document reflect both the Atlas V system with SRMs and the Delta IV system with larger SRMs for expected commercial and potential government missions.

1.1 Purpose and Need

Both LMC and Boeing have proposed the use of medium-lift vehicle (MLV) configurations in the EELV using SRMs to help them meet changing launch service demands. LMC's proposed use of SRMs was not considered in the 1998 FEIS, and Boeing has now proposed larger SRMs than were analyzed in the original 1998 FEIS. As a result, both of these new proposals are being considered in this *Final Supplemental Environmental Impact Statement, Evolved Expendable Launch Vehicle Program* (FSEIS). The rationale for both launch vehicle contractors (LVCs) to develop these SRM-augmented vehicles stems from two trends in spacecraft size. Commercial payloads are growing in size beyond the capabilities of MLVs, while the government, through miniaturization advances and simpler spacecraft design, is requiring fewer heavy-lift launches, such as the Titan IV. The Commercial Space Transportation Advisory Committee (COMSTAC) attributes this trend to an increased demand for commercial communications capability in orbit. This demand is being satisfied with larger, more powerful communication satellites, or with the deployment of multiple, smaller satellites from the same launch vehicle. LMC and Boeing have proposed using SRMs to allow them to serve larger payloads with SRM-augmented MLVs, rather than putting the payloads on more costly, heavy-lift vehicles (HLVs).

LMC has proposed an Atlas V vehicle that uses up to five SRMs to augment the liquid-oxygen / kerosene core booster on its medium-lift variant. Boeing has proposed the use of either two or four larger SRMs on their MLV—larger than those originally proposed in the 1998 FEIS. Incorporating SRMs would allow both EELV programs to offer intermediate-lift vehicles with the performance needed to bridge the lift-capability gap between existing medium- and heavy-lift variants.

Implementation of these upgraded launch vehicles is consistent with the U.S. Government's desire to encourage the United States commercial launch industry [42 U.S.C. 26 Sec 2465b and P.L. 103 - 272, Sec. 1 (e), July 1994, 108 Stat. 1330, the Commercial Space Launch Act as codified in 49 U.S.C. Sec 70101, January 26, 1998, and National Space Policy (NSP) Directive No. 1, November 2, 1998]. In doing so, the Air Force is evaluating in this FSEIS the most current status of the systems proposed by the launch vehicle contractors. This current status does not include certain facilities and launch vehicle configurations that were analyzed in the 1998 FEIS, but are now no longer proposed by the launch vehicle contractors. These facilities and vehicle configurations were previously analyzed in the 1998 FEIS and allowed for implementation by the Record of Decision (ROD). Use of the previously analyzed configurations in combination with activities specifically analyzed in this FSEIS (e.g., a previously analyzed upper stage employing hypergolic fuels mated to a newly analyzed SRM-augmented launch vehicle), however, would be subject to additional environmental analysis, as necessary.

The Air Force is addressing the impacts of these proposals in this FSEIS because of the potential use of Air Force facilities and property for the new variants, as well as the potential that these variants may carry Air Force and other government payloads in the future.

1.2 Decisions to be Made

This FSEIS will support the Air Force decision whether or not to:

- Allow additional and larger SRMs to be used at Vandenberg Air Force Base (AFB) and Cape Canaveral Air Force Station (CCAFS) for EELV program launches of commercial and / or government payloads
- Authorize use of government property for supporting the use of additional and larger SRMs for the EELV program

1.3 Scope

This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969; the President's Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA; Air Force Instruction (AFI) 32-7061, The Environmental Impact Analysis Process; Department of Defense (DoD) Regulation 5000.2-R, Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs, (Includes Change 3), March 23, 1998.

1.3.1 Public Participation Process

The public participation process provides an opportunity for public involvement in the development of an EIS. In the case of an FSEIS, useful public information may also be derived from the original scoping process. The public scoping process for the 1998 FEIS began when the Notice of Intent (NOI) to prepare an EIS for the development and deployment of the EELV program was published in the *Federal Register* on February 19, 1997. Notification of public scoping for the original EELV program EIS was also made through the local media, as well as through letters to federal, state, and local agencies and officials; and interested groups and individuals. The Air Force held two public meetings during the original EELV program public scoping period to solicit comments and concerns from the general public: one in Cape Canaveral, Florida, on March 11, 1997 and one in Lompoc, California, on March 13, 1997. In addition to oral comments received at these meetings, written comments were also received during the scoping process. The public comment period for the original Draft EIS was 45 days (between December 1997 and February 1998), and included public hearings in Cape Canaveral, Florida on January 13, 1998 and Lompoc, California, on January 15, 1998.

The NOI to prepare the Draft SEIS assessing the use of additional and larger SRMs for the EELV program was published in the *Federal Register* on April 12, 1999. The public scoping period for the EELV program Draft Supplemental Environmental Impact Statement (DSEIS) began on April 13, 1999, and ended May 31, 1999. The Air Force used comments received during the original scoping process and public comment period, as well as NEPA requirements and information from previous Air Force programs, to determine the scope and direction of studies/analyses necessary for this FSEIS. Appendix M lists the recipients of the Notice of Availability of the DSEIS. Additional information on the public hearing process for the DSEIS is in Section 9, including copies of all the comments received and responses to those comments.

1.3.2 Scope of the FSEIS

The Council on Environmental Quality Regulations implementing NEPA, specifically 40 CFR 1502.9(c), states: "…an agency shall prepare supplements to either draft or final environmental impact statements when substantial changes in the proposed action are made relevant to environmental concerns." The Proposed Action (to permit the use of EELV program vehicles with additional or larger strap-on SRMs) might be considered a substantial change to the action previously analyzed in the 1998 FEIS. Under the Proposed Action, LMC would add SRMs to the Atlas V system MLV configuration, while Boeing would increase the number and size of SRMs used on the Delta IV MLV. Both LVC's rationale for using SRMs is to capture a larger share of the global launch market. As a result, changes in commercial launch forecasts through 2020 are being considered in this FSEIS, along with potential changes in government launch forecasts.

The Air Force has prepared this supplemental document to analyze the potential environmental impacts associated with the use of additional and/or larger SRMs on EELV program MLVs. The scope of this FSEIS is limited to activities directly associated with the use of SRMs in the EELV program (e.g., facilities modifications, launch base processing, and launches). The environmental effects of satellites using SRM-augmented vehicles are not

addressed in this document. Additional NEPA analysis would be conducted for each of the satellite programs, as required.

Because SRMs are intended to be used for both government and commercial payloads, this FSEIS describes both types of launches. Future launch operations are estimated in this document for purposes of analysis; these operations, however, may be increased, reduced, or modified, depending on actual commercial markets and depending on government requirements (should the government elect to use these vehicles). If actual launch rates exceed those projected in this FSEIS, additional NEPA analyses may be required.

The potential impacts associated with use of the launch vehicles and facilities proposed in this FSEIS have been assessed using the most current information available. Additional environmental documentation will be prepared, as necessary, if any changes occur to the vehicles, facilities, or SRM-related activities outlined in this document.

Operational processing facilities at CCAFS and Vandenberg AFB not related to the use of SRMs, but still discussed in this FSEIS, would be used for other aspects of the EELV program.

1.3.3 Cooperating Agencies

Licensing of commercial launch operations is considered a major federal action and is subject to NEPA requirements. The Federal Aviation Administration, Office of the Associate Administrator for Commercial Space Transportation (FAA/AST), assesses the potential environmental impacts of a license applicant's proposed actions. Because of the commercial EELV program activities, the FAA is serving as a cooperating agency in the preparation of this FSEIS. The FAA may also use the FSEIS to fulfill its NEPA requirements associated with commercial licensing requirements for the EELV program.

The National Aeronautics and Space Administration (NASA) is also serving as a cooperating agency for this EELV program FSEIS. Several potential NASA payloads are included in the mission planning for the EELV program.

1.4 Relevant Federal Permits, Licenses, and Entitlements

The representative federal permits, licenses, and entitlements that could be required of the EELV program are presented in Appendix N. More detailed discussions of environmental regulations are provided in the 1998 FEIS, and Sections 3.0 and 4.0 of this FSEIS.