Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-176

Evolved Expendable Launch Vehicle (EELV)

As of FY 2016 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President’s Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Evolved Expendable Launch Vehicle (EELV)

DoD Component

Air Force

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References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated February 10, 2013

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated February 10, 2013

Mission and Description

The mission of the Evolved Expendable Launch Vehicle (EELV) program is to acquire launch services to provide critical space support required to satisfy DoD warfighter, national security, and other Government spacelift missions while fostering interagency and commercial cooperation. This mission includes the execution of flight worthiness certification processes and booster-to-satellite mission integration to maintain assured access to space and achieve 100% mission success.

The EELV system includes launch vehicles, launch capability, a standard payload interface, support systems, mission integration (includes mission unique requirements), flight instrumentation and range interfaces, special studies (alternative upper and lower stage rocket propulsion sub-systems, mission feasibility analysis, secondary payloads, dual integration, special flight instrumentation, loads analysis, etc.), post-flight data evaluation and analysis, mission assurance, infrastructure, critical component engineering, Government Mission Director support, system/process and reliability improvements, training, and other technical support. The system also includes launch site operations activities, activities in support of assured access, systems integration and tests, and other related support activities. Previous launch services were provided by Titan II, Delta II, Atlas II, and Titan IV launch vehicle systems. Additionally the program is working to develop two or more domestic, commercially viable, space launch providers that meet all National Security Space (NSS) launch requirements.

In accordance with section 2273 title 10, United States Code (USC) and 2013 US Space Transportation Policy the DoD is responsible for maintaining assured access to space. EELV is the foundation for the access for intermediate and larger class payloads for the foreseeable future. In accordance with policy, EELV maintains at least two families of space launch vehicles capable of reliably launching national security payloads.

Executive Summary

As a result of FY 2015 Congressional direction to transition off the Russian RD-180 engine, additional EELV RDT&E funds were added in the FY 2016 President's Budget. Due to the injection of RDT&E funds, the Current Estimate exceeded the APB threshold resulting in an APB Breach. The Launch Enterprise Director notified the Air Force (AF) PEO for Space, the Service Acquisition Executive and the DAE via a Program Deviation Report dated January 6, 2015.

The additional RDT&E funds come from three actions: an FY 2014 Omnibus reprogramming for a technical maturation and risk reduction program to invest in key propulsion technologies; the FY 2015 National Defense Authorization Act (NDAA) and Appropriations Act, 2015 for development of a Rocket Propulsion System; and additional funding in the FY 2016 PB to invest in one or more launch provider's emerging systems.

The Space and Missile Systems Center Launch Systems Directorate (SMC/LR) has completed analysis on a broad range of long-term approaches to transition from the Russian RD-180 engine used on the Atlas V that also improve US capabilities and competitiveness. The AF released a Request for Information in August 2014 and received input from 27 US space industry providers. In September 2014 the AF met with 21 US contractors to discuss potential solutions and capabilities that stimulate the US industrial base for booster propulsion systems and/or launch systems. Industry inputs were used to guide the analysis and develop the recommended investment strategy. The results were discussed at a series of Defense Space Council meetings and the Deputy's Management Action Group forum. The decision was to invest in one or more launch providers' emerging systems. This will allow the Government to transition from the RD-180 and achieve the goal of two or more domestic, commercially viable, space launch providers that meet all National Security Space (NSS) launch requirements.

Since the 2013 SAR (containing launch data as of April 10, 2014) there have been eight successful NSS EELV program launches and three commercially procured missions. Of those, eight were Atlas V launch vehicles and three were Delta IV launch vehicles: Global Positioning System (GPS) IIF-6 on May 16, 2014, National Reconnaissance Office Launch (NROL)-33 on May 22, 2014, Geosynchronous Space Situational Awareness Program (GSSAP) primary payload and Automated Navigation and Guidance Experiment for Local Space (ANGELS) as a secondary payload on July 28, 2014, GPS IIF-7 on August 1, 2014, WorldView-3 on August 13, 2014, CLIO on September 16, 2014, GPS IIF-8 on October 29, 2014, Orion for the National Aeronautics and Space Administration (NASA) on a Delta IV Heavy vehicle on December 5, 2014, NROL-35 on December 12, 2014, and Mobile User Objective System (MUOS)-3 on January 20, 2015. The remaining CY 2015 NSS missions include eight launches: six from the Eastern Range and two from the Western Range.

During the October 4, 2012 launch of GPS IIF-3, the Delta IV RL-10B-2 second-stage engine did not perform as expected. Despite delivery of the GPS IIF-3 satellite into its proper orbit a discretionary Accident Investigation Board was directed. On April 28, 2014 the contractor's Phase 2 investigation was completed. The Air Force technical team performed a thorough assessment of that investigation and concluded that all necessary risk mitigations had been addressed. These findings were presented to and approved by the Air Force Space Command Commander on July 29, 2014. The anomaly investigation has been closed.

SMC/LR continues working with multiple launch providers on the New Entrant Certification process, as detailed in the New Entrant Certification Guide (NECG). SMC/LR and Space Exploration Technologies Corporation (SpaceX) have executed the certification phases as defined in the Cooperative Research and Development Agreement (CRADA) on a compressed schedule to meet SpaceX's request for acceleration. The CRADA tailored the NECG requirements for the Falcon 9 version (v)1.1. Although certification was not achieved as of the end of December 2014, substantial progress has been made, and the program office will continue to vigorously pursue certification.

The EELV Phase 1A Acquisition Strategy and Request for Proposal (RFP) for competitive launch service awards were briefed to Congress on June 4, 2014 as required by the FY 2014 NDAA. The first competitive RFP, NROL-79, was released to industry July 15, 2014 and industry proposals were received August 14, 2014. All proposals were evaluated in the Government Source Selection process. On January 28, 2015, the AF rescinded the RFP for NROL-79 in the best interest of

the Government.

In preparation for the next phase of competitive launch service awards, two early integration studies are being conducted for the SpaceX Falcon 9 v1.1 launch system, one for the GPS III constellation and one for the Space-Based Infrared System (SBIRS) GEO constellation. Work began for the GPS III portion of the study on April 1, 2014, and work began for the SBIRS GEO portion of the study on July 1, 2014. Additionally, the AF is assessing potential missions as competitive opportunities FY 2015 and beyond.

On April 28, 2014, SpaceX filed a bid protest in the US Court of Federal Claims against the AF award of the sole-source contract to United Launch Alliance (ULA) on December 18, 2013. The case has since been dismissed. In a joint statement, AF and SpaceX reached an agreement on a path forward that improves the competitive landscape and achieves mission assurance for NSS launches. Under the agreement, the AF will work collaboratively with SpaceX to complete the certification process in an efficient and expedient manner. This collaborative effort will inform the Secretary of the AF directed review of the new entrant certification process. The AF also has expanded the number of competitive opportunities for launch services while honoring existing contractual obligations. Going forward, the AF will conduct competitions consistent with the emergence of multiple certified providers.

There are no significant software-related issues with this program at this time.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☑
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

The deviation is due to additional RDT&E funding required to transition off the Russian RD-180 engine. The breach is the cumulative effect of three actions: an FY 2014 Omnibus reprogramming for a technical maturation and risk reduction program to invest in key propulsion technologies; the FY 2015 National Defense Authorization Act (NDAA) and Appropriations Act, 2015 for development of a Rocket Propulsion System no later than FY 2019; and additional funding in the FY 2016 PB to invest in one or more launch provider's emerging systems. The breach will be resolved by updating the APB to incorporate the increased scope as soon as the DAE approves the revised baseline.

Schedule

Schedule Events				
Events	**SAR Baseline Production Estimate**	**Current APB Production Objective/Threshold**		**Current Estimate**
Milestone I	Dec 1996	Dec 1996	Dec 1996	Dec 1996
Milestone II	Jun 1998	Jun 1998	Jun 1998	Jun 1998
Tailored CDR	Oct 1999	Oct 1999	Oct 1999	Oct 1999
MLV First Operational Flight	Aug 2002	Aug 2002	Aug 2002	Aug 2002
HLV OLSD Flight	Dec 2004	Dec 2004	Dec 2004	Dec 2004
Initial & Full Operational Capability	Jun 2006	Jun 2006	Jun 2006	Jun 2006
HLV First Operational Flight	Nov 2007	Nov 2007	Nov 2007	Nov 2007
Milestone C Reapproval	Feb 2013	Feb 2013	Feb 2013	Feb 2013

Change Explanations

None

Acronyms and Abbreviations

CDR - Critical Design Review
HLV - Heavy-Lift Vehicle
MLV - Medium-Lift Vehicle
OLSD - Operational Launch Service Demonstration

Performance

Performance Characteristics				
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Performance Mass to Orbit				
LEO: 100nm X 100nm 63.4 deg (lbs)				
19,550	19,550	17,000	17,000	17,000
POLAR 1: 450nm x 450nm, 98.2 deg (lbs)				
5,060-8,050 (15%)	5,060-8,050 (15%)	4,400-7,000	4,400-7,000	4,400-7,000
POLAR 2: 100nm x 100nm, 90 deg (lbs)				
43,050	43,050	41,000	41,000	41,000
SEMI-SYNC: 10,998nm x 100nm, 55.0 deg (lbs)				
2,875-5,152 (15%)	2,875-5,152 (15%)	2,500-4,725	2,500-4,725	2,500-4,725
GTO: 19,324nm x 90nm, 27 deg (lbs)				
7,015-9,775 (15%)	7,015-9,775 (15%)	6,100-8,500	6,100-8,500	6,100-8,500
MOLNIYA: 21,150nm x 650nm, 63.4 deg (lbs)				
8,050	8,050	7,000	7,000	7,000
GEO: 19,323nm x19,323nm, 0 deg (lbs)				
14,175	14,175	13,500	13,500	13,500
Vehicle Design Reliability (%)				
>98	>98	98	98	98
Standardization				
Launch Pads				
Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site	Standardized and able to launch all configs of EELV for that site
Payload interfaces				
One std payload interface	One std payload interface	Std payload interface for each vehicle class (add'l interface rqmts met by payload adapter)	Std payload interface for each vehicle class (add'l interface rqmts met by payload adapter)	Std payload interface for each vehicle class (add'l interface rqmts met by payload adapter)

Requirements Reference

Operational Requirements Document (ORD) II dated September 15, 1998

Change Explanations

None

Notes

There have been 80 successful launches (50 NSS and 30 NASA and commercial).

Performance Characteristics were not designed to represent any specific satellite mission. Demonstrated Performance has been verified via Government review and analysis.

Acronyms and Abbreviations

add'l - additional
configs - configurations
deg - degree
GEO - Geosynchronous Earth Orbit
GTO - Geosynchronous Transfer Orbit
lbs - pounds
LEO - Low Earth Orbit
MOLNIYA - A highly inclined, highly elliptical orbit first used by the Russian MOLNIYA satellite
NASA - National Aeronautics and Space Administration
nm - nautical mile
NSS - National Security Space
POLAR - Polar Orbit
rqmts - requirements
SEMI-SYNC - Semi-Sychronous Orbit
Std - Standard

Track to Budget

General Notes

In December 2014, the Office of Management and Budget directed the DoD to establish a new space procurement appropriation as a five-year availability account. Beginning in FY 2016, Air Force major procurement funding formerly under appropriation 3020F (Missile Procurement, Air Force) BA 05 will now be under 3021F (Space Procurement, Air Force) BA 01. The FY 2016 PB justification books reflect the new 3021F appropriation, and the SARs for programs impacted by this new appropriation also reflect this change.

RDT&E

Appn		BA	PE	
Air Force	3600	04	0603853F	
	Project		**Name**	
	650006		EELV Pre-EMD	(Sunk)
	Notes:		FY 1995-1998	
Air Force	3600	05	0604853F	
	Project		**Name**	
	650004		EELV EMD	(Sunk)
	650006		Next Generation Liquid Rocket Engine	

Notes

The program also received funding from Defense Advanced Research Projects Agency (Defense-Wide PE 0603226E) and National Reconnaissance Office (Sunk).

Procurement

Appn		BA	PE	
Air Force	3020	05	0305953F	
	Line Item		**Name**	
	MSEELC		Evolved Expendable Launch Vehicle Infrastructure	(Sunk)
	MSEELV		Evolved Expendable Launch Vehicle	(Sunk)
Air Force	3021	01	0305953F	
	Line Item		**Name**	
	MSEELC		Evolved Expendable Launch Capability	
	MSEELV		Evolved Expendable Launch Vehicle	

Notes

The program also receives funding from Navy for procurement of EELV Launch Services (ELS) for Mobile User Objective System (MUOS) spacecraft (APPN 1507, BA 02, PE 0303109N, Line Item 243300), as well as from the National Reconnaissance Office and international customers.

In December 2014, the Office of Management and Budget directed the DoD to establish a new space procurement appropriation (appn) as a five-year availability account. Beginning in FY 2016, Air Force major procurement funding

formerly under appn 3020F (Missile Procurement, Air Force) Budget Activity (BA) 05 are now under 3021F (Space Procurement, Air Force) BA 01.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2012 $M			BY 2012 $M	TY $M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	2365.1	2365.1	2601.6	2834.1[1]	1962.1	1962.1	2470.7
Procurement	59078.3	59078.3	64986.1	54166.1	67367.3	67367.3	62309.1
Flyaway	--	--	--	54166.1	--	--	62309.1
Recurring	--	--	--	54166.1	--	--	62309.1
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	61443.4	61443.4	N/A	57000.2	69329.4	69329.4	64779.8

[1] *APB Breach*

Confidence Level

Confidence Level of cost estimate for current APB: 50%

This Independent Cost Estimate (ICE), like all life cycle cost estimates developed by the Office of the Secretary of Defense Cost Assessment and Program Evaluation (OSD CAPE), is built upon a product-oriented work breakdown structure, based on historical actual cost information to the maximum extent possible, and most importantly, based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which the Department has been successful.

It is difficult to calculate mathematically the precise confidence levels associated with life cycle cost estimates prepared for Major Defense Acquisition Programs (MDAPs). Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	1	1	1
Procurement	151	151	164
Total	152	152	165

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	1952.4	225.6	84.4	59.5	49.6	49.6	49.6	0.0	2470.7
Procurement	18950.6	2210.2	2161.0	2434.3	2404.7	2711.8	2434.9	29001.6	62309.1
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2016 Total	20903.0	2435.8	2245.4	2493.8	2454.3	2761.4	2484.5	29001.6	64779.8
PB 2015 Total	20881.7	2090.1	2299.4	2220.3	2410.0	2700.3	2862.9	32157.7	67622.4
Delta	21.3	345.7	-54.0	273.5	44.3	61.1	-378.4	-3156.1	-2842.6

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	1	0	0	0	0	0	0	0	0	1
Production	0	68	8	8	7	6	7	7	53	164
PB 2016 Total	1	68	8	8	7	6	7	7	53	165
PB 2015 Total	1	68	7	7	7	6	7	7	53	163
Delta	0	0	1	1	0	0	0	0	0	2

Cost and Funding

Annual Funding By Appropriation

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	9.8
1995	--	--	--	--	--	--	30.0
1996	--	--	--	--	--	--	110.6
1997	--	--	--	--	--	--	62.9
1998	--	--	--	--	--	--	92.3
1999	--	--	--	--	--	--	242.0
2000	--	--	--	--	--	--	321.8
2001	--	--	--	--	--	--	388.0
2002	--	--	--	--	--	--	321.8
2003	--	--	--	--	--	--	55.8
2004	--	--	--	--	--	--	7.5
2005	--	--	--	--	--	--	21.0
2006	--	--	--	--	--	--	19.1
2007	--	--	--	--	--	--	29.9
2008	--	--	--	--	--	--	18.3
2009	--	--	--	--	--	--	33.3
2010	--	--	--	--	--	--	43.9
2011	--	--	--	--	--	--	53.8
2012	--	--	--	--	--	--	14.5
2013	--	--	--	--	--	--	29.9
2014	--	--	--	--	--	--	46.2
2015	--	--	--	--	--	--	225.6
2016	--	--	--	--	--	--	84.4
2017	--	--	--	--	--	--	59.5
2018	--	--	--	--	--	--	49.6
2019	--	--	--	--	--	--	49.6
2020	--	--	--	--	--	--	49.6
Subtotal	1	--	--	--	--	--	2470.7

Annual Funding 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1994	--	--	--	--	--	--	13.2
1995	--	--	--	--	--	--	39.7
1996	--	--	--	--	--	--	143.6
1997	--	--	--	--	--	--	80.6
1998	--	--	--	--	--	--	117.5
1999	--	--	--	--	--	--	304.9
2000	--	--	--	--	--	--	399.4
2001	--	--	--	--	--	--	474.8
2002	--	--	--	--	--	--	389.7
2003	--	--	--	--	--	--	66.7
2004	--	--	--	--	--	--	8.7
2005	--	--	--	--	--	--	23.9
2006	--	--	--	--	--	--	21.1
2007	--	--	--	--	--	--	32.1
2008	--	--	--	--	--	--	19.3
2009	--	--	--	--	--	--	34.6
2010	--	--	--	--	--	--	45.1
2011	--	--	--	--	--	--	54.2
2012	--	--	--	--	--	--	14.4
2013	--	--	--	--	--	--	29.1
2014	--	--	--	--	--	--	44.3
2015	--	--	--	--	--	--	213.5
2016	--	--	--	--	--	--	78.5
2017	--	--	--	--	--	--	54.4
2018	--	--	--	--	--	--	44.5
2019	--	--	--	--	--	--	43.6
2020	--	--	--	--	--	--	42.7
Subtotal	1	--	--	--	--	--	2834.1

The FY 2014 Omnibus funds provide for a technical maturation and risk reduction program to invest in key propulsion technologies. The EELV program office is developing a new acquisition strategy to enable two commercially viable, domestic launch providers that can meet National Security Space requirements. The FY 2015 Authorizations and Appropriations Acts added $220M to develop a Rocket Propulsion System no later than FY 2019. These funds will be used to complete the rocket propulsion technical maturation, risk reduction efforts and to initiate implementation of the new acquisition strategy. In addition, the FY 2016 PB provided funds to invest in one or more launch provider's emerging systems.

Quantity of one represents the Heavy-Lift Vehicle (HLV) Operational Launch Service Demonstration (OLSD), also referred to as the Heavy Demo, launched in December 2004.

Included in the previous years funds above are Defense Advanced Research Projects Agency (DARPA) and National Reconnaissance Office (NRO) provided funding. Previously stated in past SARs as Advanced Research Projects Agency (ARPA) and National User.

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2000	1	68.1	--	--	68.1	--	68.1
2001	5	518.4	--	--	518.4	--	518.4
2002	--	--	6.1	--	6.1	--	6.1
2003	1	200.2	--	--	200.2	--	200.2
2004	7	1094.2	--	--	1094.2	--	1094.2
2005	4	670.6	--	--	670.6	--	670.6
2006	1	721.7	--	--	721.7	--	721.7
2007	3	1013.1	--	--	1013.1	--	1013.1
2008	5	1586.0	--	--	1586.0	--	1586.0
2009	6	2213.2	--	--	2213.2	--	2213.2
2010	5	1558.5	--	--	1558.5	--	1558.5
2011	8	2097.9	--	--	2097.9	--	2097.9
2012	9	3070.5	--	--	3070.5	--	3070.5
2013	7	2254.8	--	--	2254.8	--	2254.8
2014	6	1877.3	--	--	1877.3	--	1877.3
2015	8	2210.2	--	--	2210.2	--	2210.2
Subtotal	76	21154.7	6.1	--	21160.8	--	21160.8

Annual Funding 3020 | Procurement | Missile Procurement, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2000	1	83.6	--	--	83.6	--	83.6
2001	5	629.7	--	--	629.7	--	629.7
2002	--	--	7.3	--	7.3	--	7.3
2003	1	236.4	--	--	236.4	--	236.4
2004	7	1264.6	--	--	1264.6	--	1264.6
2005	4	753.6	--	--	753.6	--	753.6
2006	1	788.2	--	--	788.2	--	788.2
2007	3	1079.4	--	--	1079.4	--	1079.4
2008	5	1659.5	--	--	1659.5	--	1659.5
2009	6	2283.2	--	--	2283.2	--	2283.2
2010	5	1585.2	--	--	1585.2	--	1585.2
2011	8	2090.5	--	--	2090.5	--	2090.5
2012	9	3007.9	--	--	3007.9	--	3007.9
2013	7	2154.3	--	--	2154.3	--	2154.3
2014	6	1765.1	--	--	1765.1	--	1765.1
2015	8	2051.0	--	--	2051.0	--	2051.0
Subtotal	76	21432.2	7.3	--	21439.5	--	21439.5

Cost Quantity Information 3020 | Procurement | Missile Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2000	1	83.6
2001	5	629.7
2002	--	--
2003	1	236.4
2004	7	1264.6
2005	4	753.6
2006	1	1789.1
2007	3	2125.4
2008	5	1636.1
2009	6	2097.1
2010	5	1509.4
2011	8	2131.1
2012	9	2858.7
2013	7	2115.5
2014	6	1012.8
2015	8	1189.1
Subtotal	76	21432.2

Annual Funding 3021 | Procurement | Space Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	8	2161.0	--	--	2161.0	--	2161.0
2017	7	2434.3	--	--	2434.3	--	2434.3
2018	6	2404.7	--	--	2404.7	--	2404.7
2019	7	2711.8	--	--	2711.8	--	2711.8
2020	7	2434.9	--	--	2434.9	--	2434.9
2021	8	3273.4	--	--	3273.4	--	3273.4
2022	6	2619.7	--	--	2619.7	--	2619.7
2023	6	2975.3	--	--	2975.3	--	2975.3
2024	6	3252.0	--	--	3252.0	--	3252.0
2025	6	3088.0	--	--	3088.0	--	3088.0
2026	8	3549.4	--	--	3549.4	--	3549.4
2027	8	3884.6	--	--	3884.6	--	3884.6
2028	5	2908.0	--	--	2908.0	--	2908.0
2029	--	1699.2	--	--	1699.2	--	1699.2
2030	--	1752.0	--	--	1752.0	--	1752.0
Subtotal	88	41148.3	--	--	41148.3	--	41148.3

Annual Funding 3021 | Procurement | Space Procurement, Air Force							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	8	1969.5	--	--	1969.5	--	1969.5
2017	7	2176.8	--	--	2176.8	--	2176.8
2018	6	2108.7	--	--	2108.7	--	2108.7
2019	7	2331.3	--	--	2331.3	--	2331.3
2020	7	2052.2	--	--	2052.2	--	2052.2
2021	8	2704.9	--	--	2704.9	--	2704.9
2022	6	2122.2	--	--	2122.2	--	2122.2
2023	6	2363.1	--	--	2363.1	--	2363.1
2024	6	2532.2	--	--	2532.2	--	2532.2
2025	6	2357.3	--	--	2357.3	--	2357.3
2026	8	2656.4	--	--	2656.4	--	2656.4
2027	8	2850.3	--	--	2850.3	--	2850.3
2028	5	2091.9	--	--	2091.9	--	2091.9
2029	--	1198.4	--	--	1198.4	--	1198.4
2030	--	1211.4	--	--	1211.4	--	1211.4
Subtotal	88	32726.6	--	--	32726.6	--	32726.6

All EELV launch services are fully funded in the year ordered, two or three years prior to launch, depending on vehicle configuration, and are fixed price. Launch support and capability costs are funded on an annual basis.

The Air Force missions, purchased with Missile (3020) and Space (3021) Procurement funds, comprise 103 of the 164 total launches. The remaining missions in the table above include funding and quantities from other sources to include the National Reconnaissance Office, the Department of the Navy and one Cooperative Agreement purchase by the Australian Government. Navy funding is for procurement of launch services for 11 Mobile User Objective System (MUOS) spacecraft. Navy procurement funding and quantities were first included in the December 2003 EELV SAR; however, the MUOS program baseline also includes these funds. There is one additional Air Force mission, the Heavy-Lift Vehicle Demonstration mission, that was purchased with RDT&E (3600) funds.

Cost Quantity Information 3021 | Procurement | Space Procurement, Air Force		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2016	8	2832.4
2017	7	2803.6
2018	6	1875.2
2019	7	2593.9
2020	7	2312.3
2021	8	2709.5
2022	6	2144.5
2023	6	2376.8
2024	6	2534.9
2025	6	2376.9
2026	8	2676.3
2027	8	2864.6
2028	5	2625.7
2029	--	--
2030	--	--
Subtotal	88	32726.6

Low Rate Initial Production

There is no LRIP for this program.

Foreign Military Sales

None

Nuclear Costs

None

Unit Cost

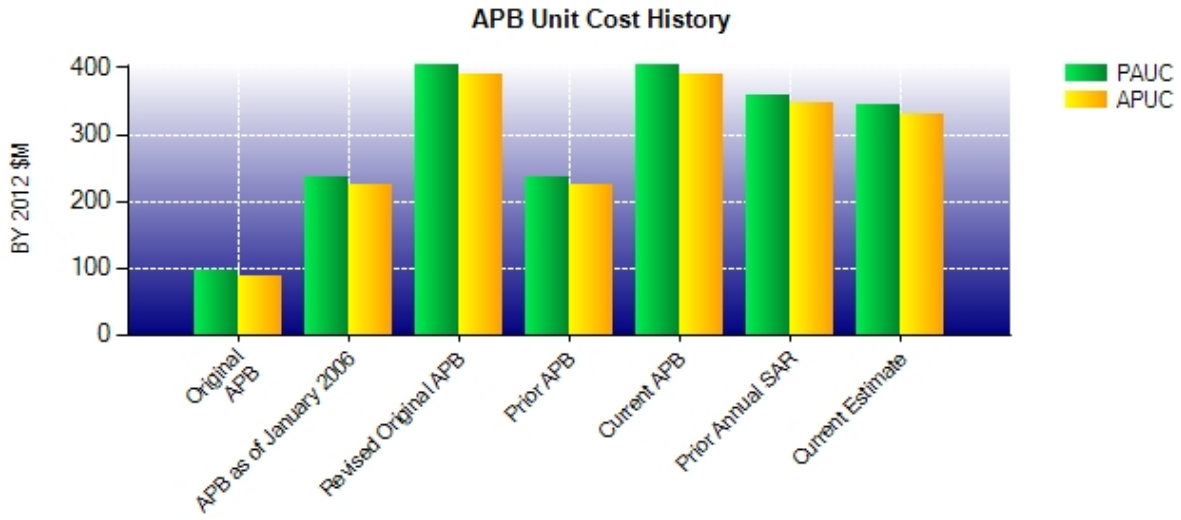
Unit Cost Report

Item	BY 2012 $M Current UCR Baseline (Feb 2013 APB)	BY 2012 $M Current Estimate (Dec 2014 SAR)	% Change
Program Acquisition Unit Cost			
Cost	61443.4	57000.2	
Quantity	152	165	
Item	404.233	345.456	-14.54
Average Procurement Unit Cost			
Cost	59078.3	54166.1	
Quantity	151	164	
Unit Cost	391.247	330.281	-15.58

Item	BY 2012 $M Revised Original UCR Baseline (Feb 2013 APB)	BY 2012 $M Current Estimate (Dec 2014 SAR)	% Change
Program Acquisition Unit Cost			
Cost	61443.4	57000.2	
Quantity	152	165	
Unit Cost	404.233	345.456	-14.54
Average Procurement Unit Cost			
Cost	59078.3	54166.1	
Quantity	151	164	
Unit Cost	391.247	330.281	-15.58

Average unit cost figures reported above are a combination of each of three different launch vehicle configurations and annual launch capability requirements. The average unit cost will vary due to shifts in payload weight and volume, mission-unique services, number of missions per year and other factors.

Unit Cost History



Item	Date	BY 2012 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Oct 1998	97.147	87.193	95.844	87.827
APB as of January 2006	Jul 2004	236.886	223.191	230.358	219.571
Revised Original APB	Feb 2013	404.233	391.247	456.114	446.141
Prior APB	Aug 2007	236.886	223.191	230.358	219.571
Current APB	Feb 2013	404.233	391.247	456.114	446.141
Prior Annual SAR	Dec 2013	359.302	347.097	414.861	405.501
Current Estimate	Dec 2014	345.456	330.281	392.605	379.934

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
95.844	-6.787	55.829	-1.019	1.510	310.650	0.087	0.000	360.270	456.114

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
456.114	3.644	-19.270	1.542	0.000	-49.425	0.000	0.000	-63.509	392.605

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
87.827	-6.789	54.306	-1.026	0.000	311.823	0.000	0.000	358.314	446.141

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
446.141	3.657	-18.595	1.551	0.000	-52.820	0.000	0.000	-66.207	379.934

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	Dec 1996	Dec 1996	Dec 1996	Dec 1996
Milestone II	Jun 1998	N/A	Jun 1998	Jun 1998
Milestone III	Jul 2003	N/A	N/A	N/A
IOC	TBD	TBD	N/A	Jun 2006
Total Cost (TY $M)	2000.0	17347.8	69329.4	64779.8
Total Quantity	N/A	181	152	165
PAUC	N/A	95.844	456.114	392.605

Cost Variance

Summary TY $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Production Estimate)	1962.1	67367.3	--	69329.4
Previous Changes				
Economic	+1.5	+1219.6	--	+1221.1
Quantity	--	+2505.0	--	+2505.0
Schedule	--	+238.3	--	+238.3
Engineering	--	--	--	--
Estimating	-32.4	-5639.0	--	-5671.4
Other	--	--	--	--
Support	--	--	--	--
Subtotal	-30.9	-1676.1	--	-1707.0
Current Changes				
Economic	-0.1	-619.8	--	-619.9
Quantity	--	+245.0	--	+245.0
Schedule	--	+16.1	--	+16.1
Engineering	--	--	--	--
Estimating	+539.6	-3023.4	--	-2483.8
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+539.5	-3382.1	--	-2842.6
Adjustments	--	--	--	--
Total Changes	+508.6	-5058.2	--	-4549.6
CE - Cost Variance	2470.7	62309.1	--	64779.8
CE - Cost & Funding	2470.7	62309.1	--	64779.8

Summary BY 2012 $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Production Estimate)	2365.1	59078.3	--	61443.4
Previous Changes				
Economic	--	--	--	--
Quantity	--	+1894.6	--	+1894.6
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-28.6	-4743.2	--	-4771.8
Other	--	--	--	--
Support	--	--	--	--
Subtotal	-28.6	-2848.6	--	-2877.2
Current Changes				
Economic	--	--	--	--
Quantity	--	+225.4	--	+225.4
Schedule	--	+0.1	--	+0.1
Engineering	--	--	--	--
Estimating	+497.6	-2289.1	--	-1791.5
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+497.6	-2063.6	--	-1566.0
Adjustments	--	--	--	--
Total Changes	+469.0	-4912.2	--	-4443.2
CE - Cost Variance	2834.1	54166.1	--	57000.2
CE - Cost & Funding	2834.1	54166.1	--	57000.2

Previous Estimate: December 2013

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.1
Additional funding from the FY 2014 Omnibus reprogramming for a technical maturation and risk reduction program to invest in key propulsion technologies. (Estimating)	+20.3	+21.2
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
Additional funding from the FY 2015 National Defense Authorization Act (NDAA) and Appropriations Act of 2015 for development of a Rocket Propulsion System no later than FY 2019. (Estimating)	+213.5	+225.6
Additional funding from the FY 2016 PB to invest in one or more launch provider's emerging systems allowing the Government to transition from foreign to domestic capability that meet all launch requirements. (Estimating)	+263.7	+292.7
RDT&E Subtotal	+497.6	+539.5

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-619.8
Quantity changed in Appropriation 3020 from 75 to 76 based on increased Satellite Vehicle requirements. (Quantity)	+116.0	+125.0
Quantity changed in Appropriation 3021 from 87 to 88 based on increased Satellite Vehicle requirements. (Quantity)	+109.4	+120.0
Launch service requirements by Satellite Vehicles shifted between years. (Schedule)	+0.1	+16.1
Adjustment to estimate for FY 2021 - FY 2030 with revised cost assumptions. (Estimating)	-2327.2	-3063.9
Adjustment for current and prior escalation. (Estimating)	+38.1	+40.5
Procurement Subtotal	-2063.6	-3382.1

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: FY13+ Phase I Buy
Contractor: United Launch Services, LLC
Contractor Location: 9501 East Panorama Circle
Centennial, CO 80112
Contract Number: FA8811-13-C-0003
Contract Type: Cost Plus Incentive Fee (CPIF), Cost Plus Fixed Fee (CPFF)
Award Date: June 26, 2013
Definitization Date: December 18, 2013

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1087.0	N/A	7	1741.9	N/A	0	1730.5	1730.5

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the completion of negotiations and definitization of the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2014)	+30.2	-11.0
Previous Cumulative Variances	--	--
Net Change	+30.2	-11.0

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to product and launch cycle time reductions.

The unfavorable cumulative schedule variance is due to maintenance delays.

Notes

Contract FA881-C-13-0003 is reported as two separate efforts to enable Cost and Schedule Variance reporting for the CPIF/CPFF efforts. Contract number FA881-C-13-0003/1 is the FFP portion, including the quantity, of the contract.

Contract Identification

Appropriation: Procurement

Contract Name: FY13+ Phase I Buy

Contractor: United Launch Services, LLC

Contractor Location: 9501 East Panorama Circle
Centennial, CO 80112

Contract Number: FA8811-13-C-0003/1

Contract Type: Firm Fixed Price (FFP)

Award Date: June 26, 2013

Definitization Date: December 18, 2013

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1946.2	N/A	14	1712.6	N/A	15	1712.6	1712.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the completion of negotiations and definitization of the contract, the addition of one procurement, and contract modifications.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

This is the first time this contract is being reported.

Contract FA881-C-13-0003 is reported as two separate efforts to enable Cost and Schedule Variance reporting for the CPIF/CPFF efforts. Contract number FA881-C-13-0003/1 is the FFP portion of the contract.

Of the 15 launch procurements, 1 has been launched. Contract completion is estimated to be in 2019.

Contract Identification

Appropriation: Procurement

Contract Name: FY12 EELV Launch Services (ELS5)

Contractor: United Launch Services, LLC.

Contractor Location: 9501 East Panorama Circle
Centennial, CO 80112

Contract Number: FA8811-13-C-0002

Contract Type: Firm Fixed Price (FFP)

Award Date: May 02, 2011

Definitization Date: January 10, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1787.0	N/A	10	503.8	N/A	4	503.8	503.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the April 2013 contract de-scope, moving 6 missions to the FY 2011 EELV Launch Services (ELS4) contract FA8811-11-C-0001 and the completion of negotiations and definitization of the contract on January 10, 2014.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

Of the 4 missions, 2 have been launched. Contract completion is estimated to be in 2016.

Contract Identification

Appropriation: Procurement

Contract Name: FY11 EELV Launch Services (ELS4)

Contractor: United Launch Services, LLC.

Contractor Location: 9501 East Panorama Circle
Centennial, CO 80112

Contract Number: FA8811-11-C-0001

Contract Type: Firm Fixed Price (FFP)

Award Date: May 02, 2011

Definitization Date: April 04, 2013

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
575.0	N/A	3	1338.4	N/A	11	1338.4	1338.4

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to an increase in the quantity of missions included in the contract and contract modifications.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

Of the 11 missions, 10 have been launched. Contract completion is estimated to be in 2016.

This contract is more than 90% complete; therefore, this is the final report for this contract.

Contract Identification

Appropriation: Procurement

Contract Name: Initial Launch Services

Contractor: United Launch Services, LLC

Contractor Location: 9501 East Panorama Circle
Centennial, CO 80127

Contract Number: F04701-98-D-0001

Contract Type: Firm Fixed Price (FFP)

Award Date: October 16, 1998

Definitization Date: October 16, 1998

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
649.0	N/A	9	1630.0	N/A	16	1630.0	1630.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to an increase in the quantity of missions included in the contract and contract modifications.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

Of the 16 missions, 13 have been launched. Contract completion is estimated to be in 2016.

Deliveries and Expenditures

Deliveries				
Delivered to Date	**Planned to Date**	**Actual to Date**	**Total Quantity**	**Percent Delivered**
Development	1	1	1	100.00%
Production	50	50	164	30.49%
Total Program Quantity Delivered	51	51	165	30.91%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	64779.8	Years Appropriated	22
Expended to Date	18258.5	Percent Years Appropriated	59.46%
Percent Expended	28.19%	Appropriated to Date	23338.8
Total Funding Years	37	Percent Appropriated	36.03%

The above data is current as of February 05, 2015.

Operating and Support Cost

Cost Estimate Details

Date of Estimate: December 31, 2014
Source of Estimate: Headquarter Air Force Space Command
Quantity to Sustain: 0
Unit of Measure: Years
Service Life per Unit: 31.00 Years
Fiscal Years in Service: FY 2000 - FY 2030

Sustainment Strategy

EELV is a launch service procurement. The Government never takes possession of hardware, therefore has no sustainment strategy.

Antecedent Information

The EELV program provides launch services for all DoD and National Reconnaissance Office satellite vehicles. No single antecedent system covered EELV's combined launch capabilities. Previous launch services were provided by Titan II, Delta II, Atlas II, and Titan IV launch vehicle systems. Titan IV was selected as the program that was the closest representation of an antecedent system. Cost details were provided by the Air Force Total Ownership Cost database.

Annual O&S Costs BY2012 $M		
Cost Element	**EELV Average Annual Cost Per Years**	**Titan IV (Antecedent) Average Annual Cost Per Launch Vehicle**
Unit-Level Manpower	--	11.561
Unit Operations	--	67.656
Maintenance	--	12.638
Sustaining Support	--	0.003
Continuing System Improvements	--	--
Indirect Support	--	0.343
Other	40.500	--
Total	40.500	92.201

Item	Total O&S Cost $M			
	EELV			Titan IV (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	1256.8	1382.5	1255.5	N/A
Then Year	1388.3	N/A	1381.1	N/A

O&S funds support critical infrastructure at the Eastern and Western Ranges.

Equation to Translate Annual Cost to Total Cost

EELV unitized costs are calculated by using the Total O&S Cost divided by the Service Life: BY12 $1,255.5M divided by 31 years to equal the annual cost of $40.5M.

Total O&S Costs = service life per system * unitized cost.

Total O&S Costs = 31 year service life * $40.5M = $1,255.5M.

O&S Cost Variance		
Category	**BY 2012 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2013 SAR	1255.5	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	1255.5	

Disposal Estimate Details

Date of Estimate:

Source of Estimate:

Disposal/Demilitarization Total Cost (BY 2012 $M):

EELV is a launch service and therefore has no disposal costs.