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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | | | | | R-1 Program Element (Number/Name) PE 1206853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD | | | | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| Total Program Element | 259.600 | 224.920 | 296.572 | 297.572 | 0.000 | 297.572 | 247.294 | 197.885 | 198.648 | 202.715 | 0.000 | 1,925.206 |
| 650006: Next Generation Launch System Investment | 259.600 | 224.920 | 296.572 | 297.572 | 0.000 | 297.572 | 247.294 | 197.885 | 198.648 | 202.715 | 0.000 | 1,925.206 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |
| Program MDAP/MAIS Code: 176 | | | | | | | | | | | | |
| <p>Note</p> <p>In FY2018, PE 0604853F, Evolved Expendable Launch Vehicle Program (SPACE) - EMD efforts were transferred to PE 1206853F, Evolved Expendable Launch Vehicle Program (SPACE) - EMD due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206853F.</p> <p>A. Mission Description and Budget Item Justification</p> <p>The Evolved Expendable Launch Vehicle (EELV) program is a space launch system that satisfies the government's National Launch Forecast (NLF) requirements to place National Security Space (NSS) space vehicles on orbit. EELV is a launch service, not a weapon system, which is primarily funded with production funds.</p> <p>This program, started in FY2015, funds research and development activities and related studies support to invest in new and/or upgraded launch systems to meet NSS launch needs leveraging two or more domestic commercial providers.</p> <p>The Air Force will invest in public-private partnerships for the development of new and/or upgraded domestic launch systems with launch providers. The end goal is two or more domestic, commercial launch providers that also meet all national security launch needs. In addition, the Air Force is continuing a technical maturation program to address the highest risks for rocket propulsion system (RPS) development. Development of the associated RPSs will continue under the Launch Service Agreement public-private partnerships. In 2017 launch service agreement was a new start.</p> <p>This program element is in Budget Activity 5, System Development and Demonstration, because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.</p> | | | | | | | | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | Date: May 2017 | | |
| Appropriation/Budget Activity | | R-1 Program Element (Number/Name) | | | | |
| 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | | PE 1206853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD | | | | |
| B. Program Change Summary (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | | 227.784 | 296.572 | 296.715 | 0.000 | 296.715 |
| Current President's Budget | | 224.920 | 296.572 | 297.572 | 0.000 | 297.572 |
| Total Adjustments | | -2.864 | 0.000 | 0.857 | 0.000 | 0.857 |
| • Congressional General Reductions | | 0.000 | 0.000 | | | |
| • Congressional Directed Reductions | | 0.000 | 0.000 | | | |
| • Congressional Rescissions | | 0.000 | 0.000 | | | |
| • Congressional Adds | | 0.000 | 0.000 | | | |
| • Congressional Directed Transfers | | 0.000 | 0.000 | | | |
| • Reprogrammings | | 0.000 | 0.000 | | | |
| • SBIR/STTR Transfer | | -2.864 | 0.000 | | | |
| • Other Adjustments | | 0.000 | 0.000 | 0.857 | 0.000 | 0.857 |
| Congressional Add Details (\$ in Millions, and Includes General Reductions) | | | | | | |
| Project: 650006: Next Generation Launch System Investment Congressional Add: Rocket Propulsion System Development | | | | | FY 2016 | FY 2017 |
| | | | | | | |
| | | | | | 143.346 | - |
| | | | | | 143.346 | - |
| Congressional Add Subtotals for Project: 650006 | | | | | 143.346 | - |
| Congressional Add Totals for all Projects | | | | | 143.346 | - |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | FY 2016 | FY 2017 | FY 2018 |
| Title: Rocket Propulsion System Development (1) | | | | 81.574 | 0.000 | 0.000 |
| Description: Continued to invest in providers of domestic rocket propulsion systems (RPS). This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion systems. Continued to execute Other Transaction Authority (OTA) agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15. | | | | | | |
| FY 2016 Accomplishments: Executed investments with providers of domestic rocket propulsion systems. This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion systems. Executed four Other Transaction Authority agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15. | | | | | | |
| FY 2017 Plans: | | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | | R-1 Program Element (Number/Name) PE 1206853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| NOTE: Starting in FY2017 the RPS activity will continue as part of the Launch Service Agreement. | | | | |
| FY 2018 Plans: N/A | | | | |
| Title: Launch Service Agreement Description: Invest in providers of domestic Launch Services. This investment enables the transition from the use of non-Allied space launch engines to commercial launch services that also meet NSS needs. Award Other Transaction Authority (OTA) agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15. FY 2016 Accomplishments: N/A FY 2017 Plans: Initiate investments with public-private partnerships with domestic launch providers for the development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercially-viable launch providers that also meet NSS requirements. Includes continuation of the Rocket Propulsion System Investment and associated technical maturation and risk reduction activities. Per the FY15 NDAA as amended, the Air Force will fence all but 31% of the appropriation, but no more than \$220M, for boost stage RPS efforts only. Any appropriation above the fenced portion will be used for any LSA or RPS activity. FY 2018 Plans: Continue investments with public-private partnerships with domestic launch providers for the development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercially-viable launch providers that also meet NSS requirements. Includes completion of the Rocket Propulsion System Investment and associated technical maturation and risk reduction activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. | | 0.000 | 296.572 | 297.572 |
| Accomplishments/Planned Programs Subtotals | | 81.574 | 296.572 | 297.572 |
| | | FY 2016 | FY 2017 | |
| Congressional Add: Rocket Propulsion System Development FY 2016 Accomplishments: Executed investments with providers of domestic rocket propulsion systems. This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion | | 143.346 | - | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | | | | R-1 Program Element (Number/Name) PE 1206853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD | | | | | | | |
| | | | | | | | FY 2016 | FY 2017 | | | |
| systems. Executed four Other Transaction Authority agreements and various industry solutions utilizing public-private partnerships. Continued the technical maturation and risk reduction activities started in FY15. | | | | | | | | | | | |
| Congressional Adds Subtotals | | | | | | | 143.346 | - | | | |
| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • SPAF BA01: Line Item # MSEELV: Evolved Expendable Launch Veh (Space) | 679.851 | 737.853 | 606.488 | 0.000 | 606.488 | 864.099 | 1,266.067 | 847.193 | 1,176.357 | 16,094.997 | 22,272.905 |
| • SPAF: BA01: Line Item # MSEELC: Evolved Expendable Launch Capability | 571.076 | 768.586 | 957.420 | 0.000 | 957.420 | 678.071 | 0.000 | 0.000 | 0.000 | 0.000 | 2,975.153 |
| Remarks | | | | | | | | | | | |
| E. Acquisition Strategy | | | | | | | | | | | |
| The Department intends to pursue a strategy to competitively invest in two or more domestic launch providers' development of new launch systems or upgrades to existing systems for future NSS launch service. This shared investment approach may also leverage commitments to a portion of the planned launch services (between FY2020 and FY2025) to decrease the required up front Government investment. | | | | | | | | | | | |
| F. Performance Metrics | | | | | | | | | | | |
| Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | | | | | | | | | | |

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | | Date: May 2017 | | | |
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| Appropriation/Budget Activity 3600 / 5 | | | | | | R-1 Program Element (Number/Name) PE 1206853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD | | | | Project (Number/Name) 650006 / Next Generation Launch System Investment | | | | | |
| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | | | |
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Aerojet Rocketdyne OTA | C/Various | Aerojet Rocketdyne : Canoga Park, CA | 52.200 | 121.787 | Mar 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 173.987 | - |
| United Launch Service OTA | C/Various | United Launch Service : Centennial, CO | 26.345 | 20.285 | Jul 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 46.630 | - |
| Orbital ATK OTA | C/Various | Orbital ATK : Magna, UT | 46.968 | 39.768 | Feb 2017 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 86.736 | - |
| Space X OTA | C/Various | Space X : Hawthorne, CA | 33.660 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 33.660 | - |
| Rocket Propulsion System Development | C/TBD | Various : TBD | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - |
| Broad Agency Announcement Technical Maturation Studies | C/Various | Various : TBD | 34.619 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 34.619 | - |
| NASA Advance Booster Engine Demonstration Risk Reduction (ABEDRR) | SS/ Various | Various : TBD | 32.587 | 2.540 | Oct 2016 | 0.000 | | 0.890 | Oct 2017 | 0.000 | | 0.890 | 0.000 | 36.017 | - |
| Georgia Tech Combustion Stability Technical Maturation UARC | SS/ Various | Various : TBD | 7.740 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 7.740 | - |
| NASA Combustion Stability Technical Maturation Study | SS/ Various | Various : TBD | 5.910 | 0.890 | Oct 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 6.800 | - |
| AFRL Combustion Stability Technical Maturation Study | SS/ Various | Various : TBD | 2.557 | 0.141 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.698 | - |
| AFRL Hydrocarbon Boost Technical Maturation Demonstration | SS/ Various | Various : TBD | 3.041 | 7.650 | Feb 2017 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 10.691 | - |
| FFRDC Mission Assurance | SS/CPAF | Aerospace : El Segundo, CA | 7.934 | 12.731 | Oct 2015 | 0.000 | | 6.840 | Nov 2017 | 0.000 | | 6.840 | 15.514 | 43.019 | - |
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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | | Date: May 2017 | | | |
| Appropriation/Budget Activity 3600 / 5 | | | | | | R-1 Program Element (Number/Name) PE 1206853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD | | | | Project (Number/Name) 650006 / Next Generation Launch System Investment | | | | | |
| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | | | |
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Launch Enterprise System Engineering and Integration | C/FP | Various : TBD | 3.075 | 3.307 | Mar 2016 | 0.000 | | 4.039 | Mar 2018 | 0.000 | | 4.039 | 10.536 | 20.957 | - |
| Launch Service Agreement (Including the Rocket Propulsion System) | C/TBD | TBD : TBD | 0.000 | 0.000 | | 282.825 | May 2017 | 272.350 | Jan 2018 | 0.000 | | 272.350 | 788.379 | 1,343.554 | - |
| Subtotal | | | 256.636 | 209.099 | | 282.825 | | 284.119 | | 0.000 | | 284.119 | 814.429 | 1,847.108 | - |
| Remarks SE&I and Aerospace support costs for FY17 were moved to FY16 due to the FY17 New Start Restrictions during Continuing Resolution on the Launch Service Agreement funding. | | | | | | | | | | | | | | | |
| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | | | |
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Organic Civilian Support | Reqn | DOD : TBD | 0.000 | 2.086 | Apr 2016 | 0.000 | | 1.876 | Oct 2017 | 0.000 | | 1.876 | 3.878 | 7.840 | 9.723 |
| Subtotal | | | 0.000 | 2.086 | | 0.000 | | 1.876 | | 0.000 | | 1.876 | 3.878 | 7.840 | 9.723 |
| Remarks Civilian support costs for FY17 were moved to FY16 due to the FY17 New Start Restrictions during Continuing Resolution on the Launch Service Agreement funding. | | | | | | | | | | | | | | | |
| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | | | |
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | | Date: May 2017 | | | |
| Appropriation/Budget Activity 3600 / 5 | | | | | | R-1 Program Element (Number/Name) PE 1206853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD | | | | Project (Number/Name) 650006 / Next Generation Launch System Investment | | | | | |
| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | | | |
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| FFRDC | SS/CPAF | Aerospace : El Segundo, CA | 0.050 | 4.480 | Oct 2015 | 0.000 | | 2.014 | Oct 2017 | 0.000 | | 2.014 | 3.878 | 10.422 | 5.263 |
| Advisory and Assistance Services | Various | Various : TBD | 2.858 | 5.882 | Dec 2015 | 1.240 | May 2017 | 3.479 | Dec 2017 | 0.000 | | 3.479 | 6.841 | 20.300 | 15.258 |
| Other Support | Various | Various : TBD | 0.056 | 3.373 | Nov 2015 | 12.507 | Apr 2017 | 6.084 | Nov 2017 | 0.000 | | 6.084 | 17.516 | 39.536 | 1.254 |
| Subtotal | | | 2.964 | 13.735 | | 13.747 | | 11.577 | | 0.000 | | 11.577 | 28.235 | 70.258 | 21.775 |
| Remarks | | | | | | | | | | | | | | | |
| Some A&AS and Other Support costs for FY17 were moved to FY16 due to the FY17 New Start Restrictions during Continuing Resolution on the Launch Service Agreement funding. | | | | | | | | | | | | | | | |
| | | | Prior Years | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
| Project Cost Totals | | | 259.600 | 224.920 | | 296.572 | | 297.572 | | 0.000 | | 297.572 | 846.542 | 1,925.206 | - |
| Remarks | | | | | | | | | | | | | | | |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 5 | | R-1 Program Element (Number/Name) PE 1206853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i> | | | Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Advanced Booster Engine Demonstration Risk Reduction (ABEDRR) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NASA Combustion Stability | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rocket Propulsion System Development (RPS OTAs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Launch Service Agreement (Including Rocket Propulsion System) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 1206853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i> | Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i> | |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Advanced Booster Engine Demonstration Risk Reduction (ABEDRR) | 1 | 2016 | 4 | 2018 |
| NASA Combustion Stability | 1 | 2016 | 4 | 2017 |
| Rocket Propulsion System Development (RPS OTAs) | 1 | 2016 | 1 | 2018 |
| Launch Service Agreement (Including Rocket Propulsion System) | 3 | 2017 | 4 | 2022 |