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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	79.887	266.514	347.304	0.000	347.304	497.741	606.643	679.961	690.590	Continuing	Continuing
645350: <i>Transition Prioritization</i>	-	79.887	266.514	62.247	0.000	62.247	87.361	87.827	87.376	87.366	Continuing	Continuing
645351: <i>Advanced Engine Development</i>	-	0.000	0.000	285.057	0.000	285.057	410.380	518.816	592.585	603.224	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Technology Transition Program (TTP) provides funding to demonstrate and/or experiment with technologies and concepts to enable or accelerate their transition to acquisition programs of record and operational use. It addresses the gap that exists between when a technology or concept is first developed and demonstrated to when it can be successfully acquired and implemented as an operational capability. TTP bridges that gap by providing funding and enabling integration and demonstration to continue beyond the laboratory. It allows acquisition program managers (the capability developers and providers) and warfighters (the capability recipients and end users) to prototype, integrate, demonstrate, and experiment with candidate technologies and assess them in an operational environment in partnership with PEOs, schoolhouses, simulation facilities, and development planning organizations. TTP includes research and development funds for the following transition activities: (1) experimentation campaigns to support Air Superiority 2030+ promising, high-priority concepts and technologies in an operational environment, (2) prototyping to lower acquisition risk by raising the technology readiness level and assessing implications to CONOPS, tactics, techniques, and procedures; (3) performing pre-acquisition systems engineering to facilitate transition of concepts and technologies from a demonstration program (e.g., Advanced Technology Demonstrations (ATDs), Joint Capability Technology Demonstrations (JCTDs)) into acquisition programs of record; (4) assessing external interface requirements of candidate concepts, technologies, and demonstration projects to better understand true engineering costs resulting from insertion of new technologies into the AF enterprise architecture; and (5) capturing data through information technology tools and databases to help formulate technology transition acquisition strategies and gather proposals for technology and prototype development that have the potential for application to the performance of Department of Defense missions. TTP is specifically designed to deal with technology transition opportunities throughout the fiscal year as they arise, resulting in a prioritized distribution of TTP funding over the course of the entire execution year.

The program provides funding to mature adaptive turbine engine technologies for next generation propulsion systems. The program will leverage adaptive turbine engine science and technology demonstrations to develop a multi-platform common adaptive engine built around a commercially derived core.

Starting in FY 2017 to improve reporting to Congress, Project 645351, Advanced Engine Development was created to capture all engine development activity that was previously performed under Project 645350, Transition Prioritization in this program.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0604858F / <i>Tech Transition Program</i>

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	79.004	246.514	288.148	0.000	288.148
Current President's Budget	79.887	266.514	347.304	0.000	347.304
Total Adjustments	0.883	20.000	59.156	0.000	59.156
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	20.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.400	0.000			
• SBIR/STTR Transfer	-1.517	0.000			
• Other Adjustments	0.000	0.000	59.156	0.000	59.156

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 645350: *Transition Prioritization*

Congressional Add: *Alternative Energy Research*

Congressional Add Subtotals for Project: 645350

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	20.000	20.000
	20.000	20.000
	20.000	20.000

Change Summary Explanation

Increase in FY 2015 reflects reprogramming to support Multi-Releasable Intelligence Product (MRIP) Generation.

Increase in FY 2017 due to emphasis on Air Force Experimentation and Prototyping capabilities.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program				Project (Number/Name) 645350 / Transition Prioritization			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
645350: Transition Prioritization	-	79.887	266.514	62.247	0.000	62.247	87.361	87.827	87.376	87.366	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under Transition Prioritization, funding is provided to demonstrate and/or experiment with technologies and concepts to enable or accelerate their transition to acquisition programs of record and operational use. It addresses the gap that exists between when a technology or concept is first developed and demonstrated to when it can be successfully acquired and implemented as an operational capability. Transition Prioritization includes research and development funds for the following transition activities: (1) experimentation campaigns to support Air Superiority 2030+ promising, high-priority concepts and technologies in an operational environment, (2) prototyping to lower acquisition risk by raising the technology readiness level and assessing implications to CONOPS, tactics, techniques, and procedures; (3) performing pre-acquisition systems engineering to facilitate transition of concepts and technologies from a demonstration program (e.g., Advanced Technology Demonstrations (ATDs), Joint Capability Technology Demonstrations (JCTDs)) into acquisition programs of record; (4) assessing external interface requirements of candidate concepts, technologies, and demonstration projects to better understand true engineering costs resulting from insertion of new technologies into the AF enterprise architecture; and (5) capturing data through information technology tools and databases to help formulate technology transition acquisition strategies and gather proposals for technology and prototype development that have the potential for application to the performance of Department of Defense missions.

Starting in FY 2017 all activities previously performed under this Project in the Propulsion Technology Transition effort will be reported under Project 645351, Advanced Engine Development within 0604858F, Tech Transition Program.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017
Title: Propulsion Technology Transition	56.737	234.714	0.000
Description: Next generation jet engine technology.			
FY 2015 Accomplishments: Completed preliminary design reviews of engine concepts to mature adaptive engine technologies and manufacturing readiness. Purchase materials and hardware to support adaptive engine component rig tests and future adaptive engine core tests.			
FY 2016 Plans: Complete adaptive engine component rig tests. Begin and complete adaptive engine core tests. Initiate detailed design activities and continue to mature adaptive engine technologies and manufacturing readiness. Complete preliminary design update and requirements compatibility review.			
FY 2017 Plans: For FY 2017 and beyond, the work for this effort will be performed under Project 645351, Advanced Engine Development.			
Title: Sustainment Technology Transition	0.750	1.800	0.368

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Product support and sustainment technologies.</p> <p>FY 2015 Accomplishments: Continued prototype of high-priority concepts and technologies in an operational or operational-like environment.</p> <p>FY 2016 Plans: Prototype high-priority concepts and technologies in an operational or operational-like environment.</p> <p>FY 2017 Plans: Prototype high-priority concepts and technologies in an operational or operational-like environment.</p>				
<p>Title: Experimentation and Prototyping</p> <p>Description: Execution of experimentation campaigns to support Air Superiority 2030+, CAS, Directed Energy, and other emerging capabilities, high-priority concepts, and technologies in an operational environment.</p> <p>FY 2015 Accomplishments: Stood up Close Air Support experimentation campaign to reduce the kill chain time and increase the effectiveness of CAS missions across a range of military operations. Began development of Data to Decisions, Directed Energy, and Defeat of Agile Intelligent Targets experimentation campaigns.</p> <p>FY 2016 Plans: Continue with experimentation campaigns and prototyping in support of AS 2030+ initiatives, CAS, Directed Energy, and other emerging capabilities.</p> <p>FY 2017 Plans: Continue with experimentation campaigns and prototyping in support of AS 2030+ initiatives, CAS, Directed Energy, and other emerging capabilities.</p>		2.400	10.000	61.879
Accomplishments/Planned Programs Subtotals		59.887	246.514	62.247
		FY 2015	FY 2016	
<p>Congressional Add: Alternative Energy Research</p> <p>FY 2015 Accomplishments: Conducted congressionally directed effort.</p> <p>FY 2016 Plans: Conduct congressionally directed efforts.</p>		20.000	20.000	
Congressional Adds Subtotals		20.000	20.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>
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C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

Technology Transition Program (TTP) enables a more effective and prioritized transition of technologies to the warfighter. It allows more accurate cost estimating and more comprehensive systems integration to occur through the use of prototypes, experimentation campaigns, and user assessments until the sponsoring major command can incorporate the technology into their subsequent budget submission. The Air Force, through appropriate program offices, will manage the acquisition and development process for the integration and fielding of TTP projects.

E. 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: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program	Project (Number/Name) 645350 / Transition Prioritization
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Sustainment Technology Transition	C/Various	Various : Various	-	0.750	Jul 2015	1.800	Jul 2016	0.368	Aug 2016	0.000		0.368	Continuing	Continuing	-
Propulsion Technologies	C/CPIF	GE and P&W : Various	-	56.737	Oct 2014	234.714	Jun 2016	0.000		0.000		0.000	Continuing	Continuing	-
Experimentation and Prototyping	C/CPAF	Various : Various	-	2.400	Sep 2015	10.000	Aug 2016	61.879	Aug 2017	0.000		61.879	Continuing	Continuing	-
Congressional Add	C/CPAF	Various : Various	-	20.000	Aug 2016	20.000	Jun 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	79.887		266.514		62.247		0.000		62.247	-	-	-

Remarks

For FY 2017 and beyond, the work under Propulsion Technologies will be reported under Project 645351, Advanced Engine Development.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>			Project (Number/Name) 645350 / <i>Transition Prioritization</i>				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	79.887	266.514		62.247	0.000	62.247	-	-	-

Remarks
N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Sustainment Technology Transition	
Propulsion Technology Transition	
Experimentation and Prototyping	
Congressional Add	

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Sustainment Technology Transition	1	2015	4	2021
Propulsion Technology Transition	1	2015	4	2016
Experimentation and Prototyping	1	2015	4	2021
Congressional Add	1	2015	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program	Project (Number/Name) 645351 / Advanced Engine Development
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
645351: <i>Advanced Engine Development</i>	-	0.000	0.000	285.057	0.000	285.057	410.380	518.816	592.585	603.224	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under Advanced Engine Development, the Adaptive Engine Transition Program (AETP) is maturing fuel efficient adaptive engine component technologies and reducing associated risk in preparation for next-generation propulsion system development for multiple combat aircraft applications. Adaptive engine technology enables next generation combat aircraft capabilities by combining the efficiency of high bypass turbofans used by commercial airlines with the performance demanded of military fighter engines. This technology has undergone initial development under the auspices of the Air Force Research Laboratory through the ADVENT and AETD programs.

Project 645351, Advanced Engine Development is new for FY 2017. Work from this effort was previously performed under Project 645350, Transition Prioritization within the same Program 0604858F, Tech Transition Program.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017
Title: Advanced Engine Development	-	-	285.057
Description: Adaptive Engine Transition Program (AETP).			
FY 2017 Plans: In FY 2015 and FY 2016, the work for this effort originally was performed under Project 645350, Transition Prioritization in the effort, Propulsion Technology Transition. Conduct detailed design activities and next-generation propulsion studies. Complete multiple adaptive engine component rig tests and purchase long-lead hardware for future engine tests.			
Accomplishments/Planned Programs Subtotals	-	-	285.057

C. Other Program Funding Summary (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Line Item • N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Advanced Engine Development</i>
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D. Acquisition Strategy

The Air Force will award two limited source contracts to P&W and GE due to their unique qualifications to design an adaptive high performance turbine engine in the thrust class for the Adaptive Engine Turbine Program (AETP). The primary purpose for AETP is to mature fuel efficient adaptive engine component technologies and reduce associated risk in preparation for next-generation propulsion system development for multiple combat aircraft applications.

E. 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: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program	Project (Number/Name) 645351 / Advanced Engine Development
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Advanced Engine Development	C/CPIF	PW and GE : Various	-	0.000		0.000		285.057	Oct 2017	0.000		285.057	Continuing	Continuing	-
Subtotal			-	0.000		0.000		285.057		0.000		285.057	-	-	-

Remarks
In FY 2015 and FY 2016, the work for Advanced Engine Development originally was performed under Project 645350, Transition Prioritization in the cost category, Propulsion Technology Transition.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	285.057	0.000	285.057	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Advanced Engine Development</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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 Engine Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Advanced Engine Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Advanced Engine Development	1	2017	4	2021