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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force	DATE: February 2011
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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 1: <i>Basic Research</i>				PE 0601108F: <i>High Energy Laser Research Initiatives</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	12.388	13.198	14.258	-	14.258	14.094	14.326	14.554	14.816	Continuing	Continuing
615097: <i>High Energy Laser Research Initiatives</i>	12.388	13.198	14.258	-	14.258	14.094	14.326	14.554	14.816	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense (DoD) high energy laser (HEL) systems. The HEL Joint Technology Office (JTO) sends these funds to multi-disciplinary research institutes (MRIs) for projects on laser and beam control technologies. In addition, funding supports educational grants to stimulate interest in HELs. These educational grants are used for educational tools, scholarships, and summer intern employees in military laboratories. Through this program, the DoD invests in research directed toward increasing knowledge and understanding in those fields of science and engineering related to long-term national security needs. Efforts in this program have been coordinated through the Reliance 21 process to harmonize efforts and eliminate duplication. This program is in Budget Activity 1, Basic Research, because it funds scientific study and experimentation.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>
Previous President's Budget	12.781	13.198	14.258	-	14.258
Current President's Budget	12.388	13.198	14.258	-	14.258
Total Adjustments	-0.393	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-0.001	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.390	-			
• Other Adjustments	-0.002	-	-	-	-

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APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 1: <i>Basic Research</i>				R-1 ITEM NOMENCLATURE PE 0601108F: <i>High Energy Laser Research Initiatives</i>				PROJECT 615097: <i>High Energy Laser Research Initiatives</i>			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
615097: <i>High Energy Laser Research Initiatives</i>	12.388	13.198	14.258	-	14.258	14.094	14.326	14.554	14.816	Continuing	Continuing
A. Mission Description and Budget Item Justification This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense (DoD) high energy laser (HEL) systems. The HEL Joint Technology Office (JTO) sends these funds to multi-disciplinary research institutes (MRIs) for projects on laser and beam control technologies. In addition, funding supports educational grants to stimulate interest in HELs. These educational grants are used for educational tools, scholarships, and summer intern employees in military laboratories. Through this program, the DoD invests in research directed toward increasing knowledge and understanding in those fields of science and engineering related to long-term national security needs. Efforts in this program have been coordinated through the Reliance 21 process to harmonize efforts and eliminate duplication. This program is in Budget Activity 1, Basic Research, because it funds scientific study and experimentation.											
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Major Thrust 1.							8.375	8.838	9.349	-	9.349
Description: Improve the fundamental understanding of high-power laser sources, to include solid-state, free electron, and gas laser technologies.											
FY 2010 Accomplishments: Continued research on awarded topics in diode-pumped alkali, free electron, and solid state laser technologies. Established overseas efforts to leverage international technology advancements. Initiated a new call for innovative laser technologies.											
FY 2011 Plans: Complete research efforts on awarded topics in diode-pumped alkali, free electron, fiber laser and solid state laser technologies. Continue overseas efforts to leverage international technology advancements.											
FY 2012 Base Plans: Initiate a new call for innovative laser technologies in diode-pumped alkali, free electron, fiber laser and solid state technologies. Continue overseas efforts to leverage international technology advancements.											
FY 2012 OCO Plans:											
Title: Major Thrust 2.							3.299	3.610	4.159	-	4.159

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Description: Improve the fundamental understanding of beam control technologies, as they relate to high power laser applications. Conduct research in atmospheric characterization, metrology, control systems, algorithms and beam control component technology. FY 2010 Accomplishments: Continued mitigation of aero-optics effects to optimize HEL architectures; and optimize size, weight and complexity of the beam control system. Established overseas efforts to leverage international technology advancements. FY 2011 Plans: Complete mitigation of aero-optics effects to optimize HEL architectures; and optimize size, weight and complexity of the beam control system. Continue overseas efforts to leverage international technology advancements. FY 2012 Base Plans: Initiate a new call for innovative beam control architectures. Continue overseas efforts to leverage international technology advancements. FY 2012 OCO Plans:							
Title: Major Thrust 3. Description: Fund educational grants intended to stimulate interest in High Energy Lasers among students. FY 2010 Accomplishments: Provided scholarships and internships to support to college students studying HEL degrees. Provided grants to Service Academies to stimulate HEL studies among military cadets. Funded publication of journals and continuing education for professionals in the HEL field. FY 2011 Plans: Provide scholarships and internships to support to college students studying HEL degrees. Provide grants to Service Academies to stimulate HEL studies among military cadets. Fund publication of journals and continuing education for professionals in the HEL field. FY 2012 Base Plans:			0.714	0.750	0.750	-	0.750

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APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 1: <i>Basic Research</i>		R-1 ITEM NOMENCLATURE PE 0601108F: <i>High Energy Laser Research Initiatives</i>		PROJECT 615097: <i>High Energy Laser Research Initiatives</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Provide scholarships and internships to support to college students studying HEL degrees. Provide grants to Service Academies to stimulate HEL studies among military cadets. Fund publication of journals and continuing education for professionals in the HEL field. <i>FY 2012 OCO Plans:</i>					
Accomplishments/Planned Programs Subtotals	12.388	13.198	14.258	-	14.258

C. Other Program Funding Summary (\$ in Millions)										
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete
• Activity Not Provided: <i>Title Not Provided</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing
										Continuing

D. Acquisition Strategy N/A

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.
