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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Missile Defense Agency **Date:** May 2021

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	70.735	181.569	133.000	0.000	-	0.000	-	-	-	-	-	-
MD41: <i>Homeland Defense Radar - Hawaii (HDR-H)</i>	70.735	174.756	133.000	0.000	-	0.000	-	-	-	-	-	-
MD40: <i>Program-Wide Support</i>	-	6.813	0.000	0.000	-	0.000	-	-	-	-	-	-

Program MDAP/MAIS Code: 362

Note

Decrease from FY 2021 to FY 2022 reflects the \$133.0 million Congressional Plus Up (CPU) to continue development of the Homeland Defense Radar-Hawaii.

A. Mission Description and Budget Item Justification

The HDR-H Program Element (PE) 0604672C is comprised of a persistent discrimination sensor for the Missile Defense System (MDS). HDR-H addresses United States Northern Command (NORTHCOM) and United States Indo-Pacific Command (INDOPACOM) operational requirements for a near term persistent solution against advancing threats and closes capability gaps. HDR-H provides 24 hours a day, 7 days a week, and 365 days a year tracking and discrimination capability against increasingly complex threats, improves capability of Ballistic Missile Defense (BMD) interceptors, and supports multi-mission areas (e.g., Space Domain Awareness). The radar will leverage development efforts from other sensor projects to enhance discrimination, tracking, and hit assessment to maximize interceptor usage. The Missile Defense Agency (MDA) is reevaluating the HDR-H schedule for earliest radar delivery should a deployment decision be made in the future and the program is budgeted.

B. Program Change Summary (\$ in Millions)

	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	188.480	0.000	0.000	-	0.000
Current President's Budget	181.569	133.000	0.000	-	0.000
Total Adjustments	-6.911	133.000	0.000	-	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	133.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-4.659	0.000			
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	-2.252	0.000	0.000	-	0.000

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>
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Change Summary Explanation

Increase in FY 2021 provides a \$133.0 million Congressional Plus Up (CPU) for the continued development of the Homeland Defense Radar-Hawaii.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency										Date: May 2021		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii				Project (Number/Name) MD41 / Homeland Defense Radar - Hawaii (HDR-H)			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MD41: Homeland Defense Radar - Hawaii (HDR-H)	70.735	174.756	133.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

The FY 2021 Defense Appropriation included a \$133 million Congressional Plus Up (CPU) for the continued development of the Homeland Defense Radar-Hawaii.

A. Mission Description and Budget Item Justification

The Homeland Defense Radar-Hawaii (HDR-H) is a 24 hours a day, 7 days a week, 365 days a year persistent tracking and discrimination radar that will provide additional capability to the Ballistic Missile Defense System (BMDS) to support the defense of Hawaii. HDR-H will operate in complex countermeasure environments, and improve defensive capability of Ground-Based Midcourse Defense (GMD). The HDR-H will support multi-mission areas (e.g. Space Situational Awareness (SSA)). The HDR-H is a Solid State, Phased Array, S-Band Radar that is scalable and extensible from initial capability to keep pace with advancing threats. The radar will be integrated into the BMDS architecture through Command and Control Battle Management and Communications (C2BMC) and will provide for the defense of Hawaii using In-Flight Interceptor Communications System Data Terminal (IDT). The HDR-H is comprised of an antenna base, HDR-H Equipment Shelter (HES), a Mission Control Facility (MCF), and Thermal Control System (TCS). The Radar Prime Contractor will be responsible for design, development, erection, and fielding of the HDR-H radar, as well as construction of the HES. An environmental impact statement (EIS) will be completed and used as the basis to determine final site selection. MDA is reevaluating the HDR-H schedule for earliest radar delivery should a deployment decision be made in the future and the program is budgeted.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022
Title: Homeland Defense Radar - Hawaii (HDR-H)	174.756	133.000	0.000
Articles:	-	-	-
Description: The HDR-H program includes requirements development activities associated with systems engineering, hardware and software development, discrimination improvements, design reviews, testing, and Modeling and Simulation (M&S) efforts for radar development. Efforts include site activation and preparation of site infrastructure for construction activities. The program will develop and integrate C2BMC systems for HDR-H functionality. The program will develop and deliver radar software releases and will conduct Independent Verification and Validation (IV&V) testing of tactical software. The program includes procurement of radar long lead materials, initiation of production for radar components and sub-assemblies, and test of long lead components.			
Specific and/or unique accomplishments to each FY are as follows:			
FY 2021 Plans:			
-Continue long lead procurements of critical radar components			
-Continue Environmental Impact Statement (EIS) effort, site selection, and radar site planning			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii	Project (Number/Name) MD41 / Homeland Defense Radar - Hawaii (HDR-H)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022
-Continue radar design and support facility design -Continue Planning and design of HDR-H Command and Control, Battle Management & Communications -Initiates development of HDR-H common software			
FY 2022 Plans: -No funding requested for this effort in FY 2022			
FY 2021 to FY 2022 Increase/Decrease Statement: No funding is requested in FY 2022 for HDR-H.			
Accomplishments/Planned Programs Subtotals	174.756	133.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,275.414	1,219.261	745.144	-	745.144	-	-	-	-	-	-
• 0603884C: Ballistic Missile Defense Sensors	348.356	265.803	224.750	-	224.750	-	-	-	-	-	-
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	550.513	645.741	603.448	-	603.448	-	-	-	-	-	-
• 0604673C: Pacific Discriminating Radar	2.921	0.000	0.000	-	0.000	-	-	-	-	-	-
• 0604873C: Long Range Discrimination Radar (LRDR)	131.135	138.317	133.335	-	133.335	-	-	-	-	-	-
• 0604879C: Ballistic Missile Defense Sensor Test	96.082	64.245	77.428	-	77.428	-	-	-	-	-	-
• 32199903: MILCON PLANNING and DESIGN	35.472	0.000	0.000	-	0.000	-	-	-	-	-	-

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>	Project (Number/Name) MD41 / <i>Homeland Defense Radar - Hawaii (HDR-H)</i>

D. Acquisition Strategy

An acquisition strategy was approved in December 2017 for the procurement of a single Homeland Defense Radar (HDR) for Hawaii. In May of 2018, this acquisition strategy was updated to include the procurement of up to three Homeland Defense Radars. A competitively awarded multiple-award indefinite delivery, indefinite quantity (IDIQ) contract was awarded in July 2018 to three contractors. The first IDIQ delivery order was competitively awarded on December 18, 2018 for the development, construction, integration and testing, and delivery of one HDR to be sited in Hawaii. The HDR-H delivery order contract includes fixed price and cost-reimbursable line items that properly balance acquisition costs and risks. Performance and cost incentives were included to motivate contractor performance. The HDR-H delivery order contract includes the requirement for the radar prime to deliver a full technical data package (TDP) that will enable the Government to effectively and affordably sustain the system. MDA is reevaluating the HDR-H schedule for earliest radar delivery should a deployment decision be made in the future and the program is budgeted.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii	Project (Number/Name) MD41 / Homeland Defense Radar - Hawaii (HDR-H)
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Homeland Defense Radar - Hawaii (HDR-H) - Civilians/Travel	Allot	MDA : Various	0.972	2.537	Oct 2019	2.565	Sep 2021	0.000		-		0.000	0.000	6.074	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Communications Integration	SS/CPIF	Lockheed Martin : AL	0.057	2.921	Mar 2020	4.370	Sep 2021	0.000		-		0.000	0.000	7.348	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Contractor Support Services	C/CPFF	MDA Various : AL	2.389	7.720	Oct 2019	4.120	Sep 2021	0.000		-		0.000	0.000	14.229	0.000
Homeland Defense Radar - Hawaii (HDR-H) - FFRDC/UARC	MIPR	GTRI, JHU/APL, MITRE : GA, VA, AL	2.031	3.044	Oct 2019	1.350	Sep 2021	0.000		-		0.000	0.000	6.425	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Lead Service Cell	C/CPFF	MDA Various : AL, CO	0.308	0.000		0.000		0.000		-		0.000	0.000	0.308	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Prime Contractor	C/FPIF	Lockheed Martin : NJ	61.151	148.259	Jan 2020	103.000	Jun 2021	0.000		-		0.000	0.000	312.410	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Radar Material	MIPR	Air Force : GA	0.175	0.000		0.000		0.000		-		0.000	0.000	0.175	0.000
Homeland Defense Radar - Hawaii (HDR-H) - Site Activation & Studies	MIPR	Various : AL, HI	3.652	10.275	Mar 2020	17.595	Sep 2021	0.000		-		0.000	0.000	31.522	0.000
Subtotal			70.735	174.756		133.000		0.000		-		0.000	0.000	378.491	N/A

Remarks
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency								Date: May 2021			
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii				Project (Number/Name) MD41 / Homeland Defense Radar - Hawaii (HDR-H)			
	Prior Years	FY 2020		FY 2021		FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	70.735	174.756		133.000		0.000	-	0.000	0.000	378.491	N/A

Remarks
Award Dates reflect date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Missile Defense Agency **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>	Project (Number/Name) MD41 / <i>Homeland Defense Radar - Hawaii (HDR-H)</i>
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Significant Event Complete ▲	Milestone Decision Complete ★	Element Test Complete ◆	System Level Test Complete ●	Complete Activity ◆															
Significant Event Planned △	Milestone Decision Planned ☆	Element Test Planned ◇	System Level Test Planned ○	Planned Activity ◇															
					FY 2020		FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		
Homeland Defense Radar - Hawaii (HDR-H)					◇	◇	◇	◇	◇	◇	◇	◇							

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>	Project (Number/Name) MD41 / <i>Homeland Defense Radar - Hawaii (HDR-H)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Homeland Defense Radar - Hawaii (HDR-H)	1	2020	4	2021

Note

Based on the OUSD(C) FY 2022 President's Budget Submission Guidance, fiscal years covered in the justification material will include FY 2020 through FY 2022. Planned entries in the R4 may continue past FY 2022, out-years will be addressed in future budget submissions.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / Homeland Defense Radar-Hawaii	Project (Number/Name) MD40 / Program-Wide Support
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MD40: Program-Wide Support	-	6.813	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

No funding requested in FY 2021 and the outyears.

A. Mission Description and Budget Item Justification

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022
Title: Program Wide Support	6.813	0.000	0.000
Articles:	-	-	-
Description: PWS contains non-headquarters management costs in support of MDA functions and activities across the entire MDS. These functions include Government Civilians and Contract Support Services. This effort provides integrity and oversight of the MDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes personnel to support global deployments performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations worldwide. Other MDA wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations across multiple geographic locations; commercial and ancillary facility services; management of all facility aspects regardless of lifecycle stage; supplies and maintenance; compliance with statutory environmental requirements; data and unified communications support; materiel and readiness and central property management of equipment; Facilities Sustainment, Restoration and Modernization (FSRM) program, (formerly Real Property Maintenance) to keep the Department's inventory of			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022
facilities in good working order; and similar operating expenses. PWS is allocated on a pro-rata basis across most Agency PEs and therefore fluctuates per PE by fiscal year based on the total Agency budget in that fiscal year.			
FY 2021 Plans: N/A			
FY 2022 Plans: N/A			
FY 2021 to FY 2022 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals	6.813	0.000	0.000

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

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Missile Defense Agency **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>
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Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Program Wide Support - Agency Operations and Support Services	C/Various	Various : Multi: AL, CA, CO, VA	0.000	6.813	Dec 2019	0.000		0.000		-		0.000	0.000	6.813	0.000
Subtotal			0.000	6.813		0.000		0.000		-		0.000	0.000	6.813	N/A

Remarks
N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	6.813	0.000	0.000	-	0.000	0.000	6.813	N/A

Remarks
Award Date reflects date of first obligation. Additional obligations may incrementally occur throughout the year.

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Missile Defense Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604672C / <i>Homeland Defense Radar-Hawaii</i>	Project (Number/Name) MD40 / <i>Program-Wide Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program Wide Support	1	2020	4	2020

Note

Based on the OUSD(C) FY 2022 President's Budget Submission Guidance, fiscal years covered in the justification material will include FY 2020 through FY 2022. Planned entries in the R4 may continue past FY 2022, out-years will be addressed in future budget submissions.