



# **BUDGET ESTIMATES FISCAL YEAR 2023**

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## **PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**

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SUBMITTED FOR THE USE OF  
THE COMMITTEE ON APPROPRIATIONS

**U.S. DEPARTMENT OF TRANSPORTATION**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**FY 2023 BUDGET REQUEST**  
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# **I: Overview**

**U.S. DEPARTMENT OF TRANSPORTATION  
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION  
FY 2023 ADMINISTRATOR'S OVERVIEW**

The Pipeline and Hazardous Materials Safety Administration (PHMSA) **requests \$339.0 million. Combined with the \$200 million in advance appropriations provided in Division J of the Bipartisan Infrastructure Law (BIL), PHMSA anticipates total budgetary resources of \$539 million** to continue its critical work improving safety and preserving our climate. PHMSA works to advance the Secretary's priorities of safety, equity, protecting the environment, responding to the adverse impacts of climate change, and enabling economic growth.

For **Pipeline Safety**, PHMSA's request supports the improved safety standards called for in the recently enacted *Protecting Our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act of 2020* with new investments in safety standards and regulations, added safety inspectors to oversee national pipeline facility operations, and new investments to attract and retain the best and brightest safety engineers.

Authorized in the Infrastructure Investment and Jobs Act (IIJA), the **Natural Gas Distribution Infrastructure Safety and Modernization Grant Program** provides a multi-year investment for the replacement and repair of older pipeline systems and infrastructure often in underserved areas. PHMSA will make its second set of awards in FY 2023 which will continue to ensure safer pipeline systems, reduced methane emissions, and affordable energy to those who most need it.

For **Hazardous Materials Safety**, PHMSA registers and sets safety standards for more than 40,000 companies transporting regulated hazardous materials, including the packaging and delivery of energy products and other hazardous product, by air, highway, rail, and water. These products annually account for more than 3.3 billion tons of regulated hazardous products transported with a value of more than \$1.9 trillion.

Following are highlights of PHMSA's FY 2023 Budget request:

- **\$17.1 million increase in the Hazardous Materials Emergency Preparedness Grants (Hazardous Materials Safety)** to provide resources to communities and first responders which are often in underserved and low-income areas. These added resources will help keep first responders and communities safe by preventing incidents and training first responders on how to manage hazardous materials transportation accident scenes.
- **\$13.5 million increase in Pipeline Safety Operations to improve safety checks and reduce adverse climate and environmental impacts from pipelines (Pipeline Safety).** The request will enable PHMSA to advance the President's climate change agenda by helping to reduce methane emissions in the oil/gas sector, including expanded Liquefied Natural Gas (LNG) oversight, and mitigating safety and environmental damage from releases and incidents. This includes hiring an additional 29 inspection, enforcement, and safety staff and hiring the remainder of the eight added regulatory staff to reach the FY 2023 prescribed levels called for by Congress in the PIPES Act of 2020. PHMSA also requests six additional

staff working difficult pipeline facility issues related to climate change mitigation. Finally, the request includes new investments in retention programs such as tuition reimbursement and student loan repayment for inspection and enforcement staff called for in the PIPES Act of 2020 for hard to recruit pipeline inspection engineers.

- **\$5.5 million to restore PHMSA Research and Development (Pipeline Safety and Hazardous Materials Safety)** to the FY 2020 level and allow for groundbreaking research in climate response for both hazardous materials packaging and shipping as well as pipeline operations. Research at PHMSA has informed better safety standards, solved complex emerging threats in transportation, and developed smart inspection tools for the complex pipeline facilities.
- **\$2.2 million for Hazardous Materials Planning Outreach (Hazardous Materials Safety)** to fully staff the additional 20 positions requested in the FY 2022 budget, to address economic inequity and reduce transportation costs through Hazardous Materials Planning Outreach to economically disadvantaged communities. Through the Emergency Preparedness grants program, PHMSA will outreach to Local Emergency Planning Communities (LPECs), which are often in economically distressed areas, allowing them to make better and safer decisions about managing hazardous materials transportation risk, thereby keeping communities safer.
- **\$1.0 million to increase the Hazardous Materials State Inspection Program (Hazardous Materials Safety)** that helps states fund the inspection of packagers of hazardous materials within their state. As the number of hazardous materials shipments continue to increase year-over-year (projected 44% increase in non-electric vehicle lithium batteries, and 38% increase in electric vehicle batteries by 2025), there is a much greater demand to ensure safe transport— this additional funding will allow states and localities and their first responders to keep up with demand.
- **\$860,000 increase in the Hazardous Materials Accident Investigation (Hazardous Materials Safety)** for an additional eight new positions (four FTE) to augment the current Accident Investigation Division providing a dedicated group to collect evidentiary findings, provide factual analysis and make recommendations for the agency to further improve hazardous materials transportation safety.
- **\$647,000 increase for the Hazardous Materials Check the Box Campaign (Hazardous Materials Safety)** to educate inadvertent offerors of undeclared hazardous materials and the public on what is considered hazardous materials, and understand how to ship their everyday items correctly, preventing serious incidents.
- **\$323,000 increase for adding Hazardous Materials Emerging Energy Expertise (Hazardous Materials Safety)** to improve the ability to address the safe transportation of emerging energy sources. Alternate energy sources such as hydrogen power cells, hydrogen fuel, lithium sodium batteries, and large lithium batteries are being increasingly used to reduce greenhouse gas and address climate concerns.

- **\$215,000 increase to the Office of Civil Rights (Operational Expenses)** to promote the Department’s strategic goal of equity, and fully support the Administration’s Executive Orders on Equity and inclusion, especially in the areas of the Equal Employment Opportunity program and the new Title VI Executive Order.

Following is a programmatic summary of PHMSA’s FY 2023 request:

**\$387.8 million for Pipeline Safety** consisting of 247 inspection and enforcement staff and 108 safety professionals. Important Pipeline Safety investments include:

- **\$200 million for the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program** provides a multi-year investment to municipally and community-owned utilities for the repair, rehabilitation or replacement of older gas distribution pipes and infrastructure, particularly in historically disadvantaged areas. The degrading nature of iron alloys, the age of the pipelines, and weak pipe joints design have increased the risk of accidents and climate damaging methane emissions, and this new program will accelerate their repair, rehabilitation or replacement, improving safety and access to energy in these communities.
- **\$107.2 million for operations** including resources needed to fulfill **the 36 mandates from the 2020 PIPES Act** and completing safety reviews for new Liquid Natural Gas (LNG) export facilities. The request supports **increased communication with those adversely impacted by pipelines, particularly in underserved communities**, as well as preventing excavation damage and approving special permits. Also, six new positions (three FTE) dedicated to climate change mitigation and alternative fuel sources that reduce pipeline-related greenhouse gas emissions.
- **\$65.6 million for grant programs** that fund the important state pipeline inspections and damage prevention work. PHMSA provides grants to states to support inspection and enforcement activities of the nation’s vast network of intrastate pipelines, including pipelines that operate in cities and neighborhoods, especially underserved communities. This includes the **State Pipeline Safety Grants (\$58.0 million), Underground Natural Storage Grants (\$5.0 million), State Damage Prevention Grants (\$1.5 million), and State One-Call Grants (\$1.1 million).**
- **\$15.0 million for research** including developing failsafe delivery systems that preserve the environment as America moves to cleaner and renewable energy sources. Pipeline Safety research will **focus on incidents caused by corrosion, material failure, and equipment failure**, which cause 55% of all pipeline incidents; as well as **a focus on containment of greenhouse gases (such as methane), transportation of alternative fuels including hydrogen, and improved leak detection.**

**\$121.0 million for Hazardous Materials Safety and Emergency Preparedness Grants** including the existing 80 regional inspectors and outreach staff, and 154 safety professionals. The request includes 20 outreach staff, hired in FY 2022, to respond to the rise in e-commerce

deliveries, biomedical waste and supply shipping, and movement of often hazardous renewables such as lithium-ion batteries. Important Hazardous Materials Safety investments include:

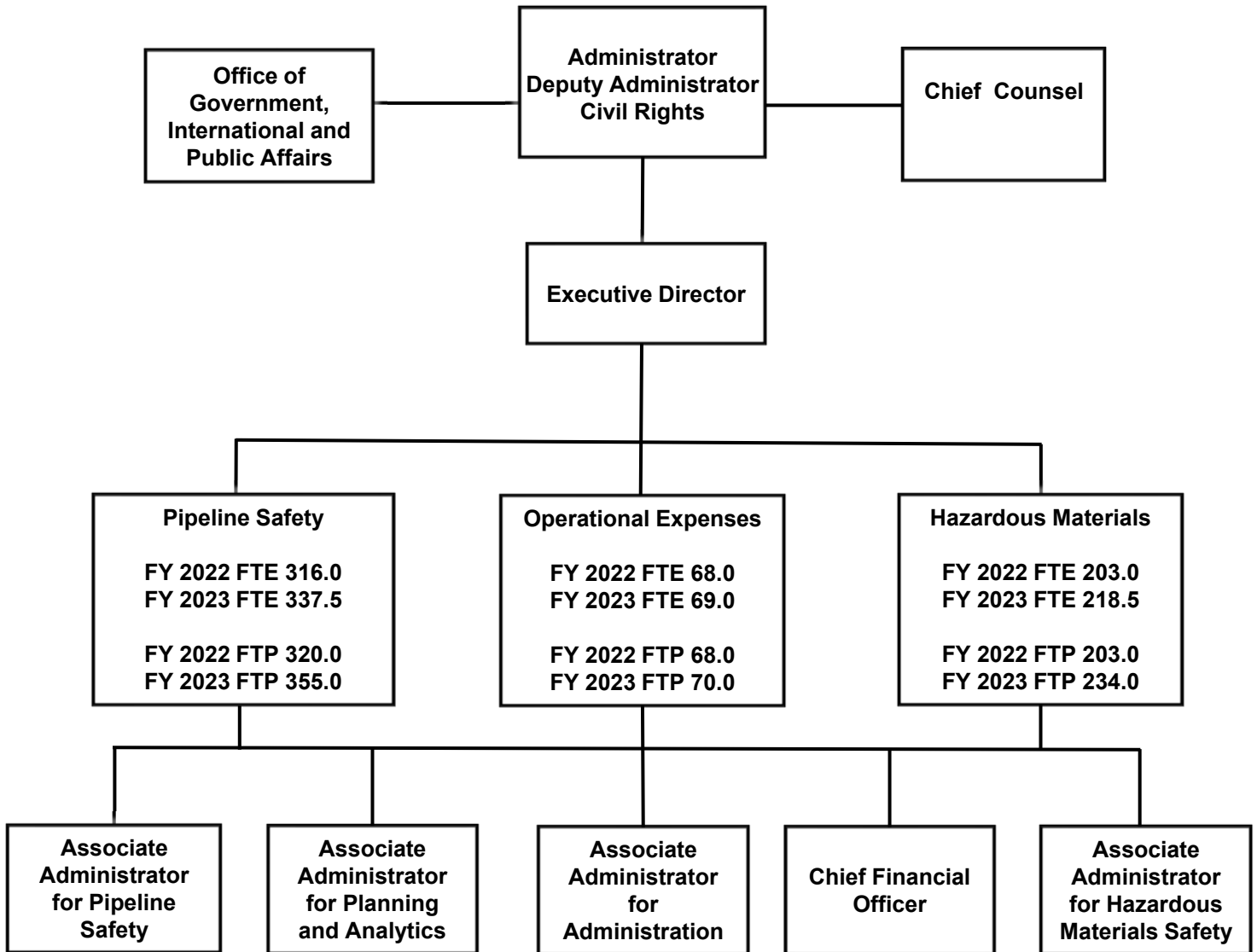
- **\$66.6 million for operations**, including increasing demand **for lithium-ion battery transportation, and new demand for electric vehicle batteries**. Included in this is **funding for the Hazardous Materials Planning Outreach initiative listed above**.
- **\$46.8 million for grants** to first responders and local governments faced with hazardous materials routes near their homes and businesses. These grants support **training of first responders, train-the-trainer programs, and safety training for incident response**. This funding supports the training of over 100,000 emergency responders annually and **increases funding allocation to states which will ensure that all communities, including underserved and low-income areas are informed, prepared, and trained to effectively respond to hazardous materials transportation incidents**.
- **\$7.6 million for research**, including work in cooperation with the US Census Bureau to **identify changes in hazardous materials commodity flow** volumes and patterns, supporting innovation in packaging, and enhancing shipping methods. One area of focus is **innovative packaging for lithium-ion batteries**, which will improve their safe transport.

**\$30.1 million for Operational Expenses** including 69 safety professionals working to improve safe deliveries by all modes of transportation including pipeline. Important investments include:

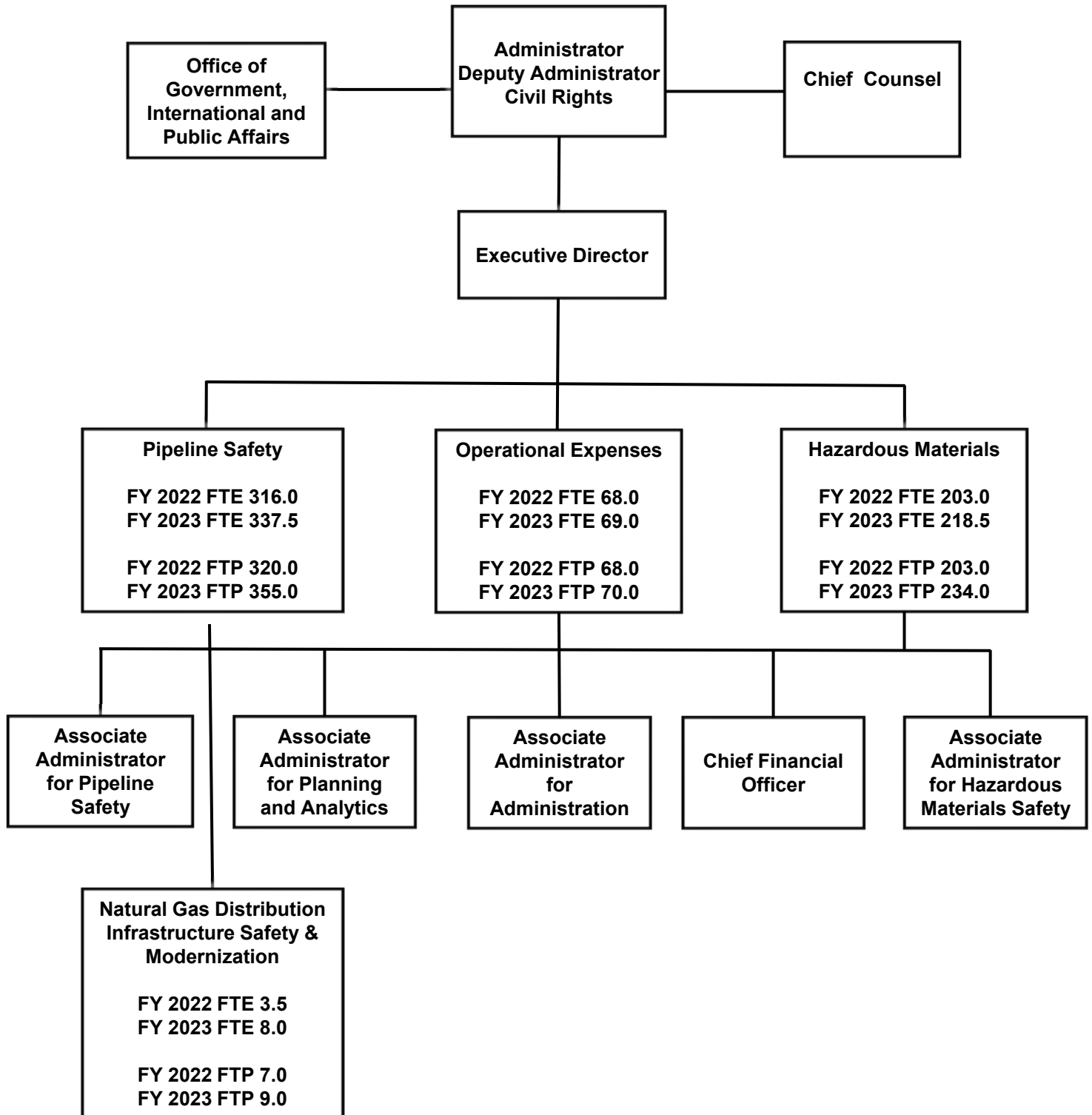
- **An increase of \$215,000 for an additional two positions (one FTE) to promote equity, and fully support the Administration's Executive Orders**, especially in the areas of the Equal Employment Opportunity program and the new Title VI Executive Order.
- **Continuing an investment in leadership development** by building a cadre of safety leaders for PHMSA in FY 2023 and beyond via new and existing agency-wide leadership development programs.
- **Developing recruitment and retention programs** to ensure that PHMSA can **attract and retain the highest-quality safety professionals**. The PIPES Act of 2020 directs PHMSA to provide recruitment and retention incentives such as tuition reimbursement, student loan repayment and special pay rates. PHMSA is focusing on standing up these critical programs.
- **Awarding Pipeline Emergency Response (ER) Grants (\$2.5 million) and Information Grants to Communities (\$2.0 million)**. These grants help local governments in vulnerable, underserved, and high consequence areas with pipeline facilities prepare for and respond to hazardous materials incidents.



**Exhibit I: Pipeline and Hazardous Materials Safety Administration (PHMSA)**  
**Full-Time Equivalents (FTE) and Full-Time Positions (FTP) for**  
**FY 2022 CR and FY 2023 Request**  
**FTE Totals: FY 2022 CR – 587.0 / FY 2023 Request – 625.0**  
**FTP Totals: FY 2022 CR – 591.0 / FY 2023 Request – 659.0**



**Exhibit I: Pipeline and Hazardous Materials Safety Administration (PHMSA)**  
**Full-Time Equivalents (FTE) and Full-Time Positions (FTP) for**  
**FY 2022 CR (w/IIJA Oblim.) and FY 2023 Request**  
**FTE Totals: FY 2022 CR (w/IIJA Oblim.) – 587.0 / FY 2023 Request – 633.0**  
**FTP Totals: FY 2022 CR (w/IIJA Oblim.) – 598.0 / FY 2023 Request – 668.0**



## **II: Budget Summary Tables**

**EXHIBIT II-1**  
**FY 2023 BUDGET AUTHORITY**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**(\$000)**

		(A)	(B)	(C)	(D)
ACCOUNT NAME	M / D	FY 2021 ENACTED	FY 2022 CR (w/ IJA Oblim)	FY 2022 ENACTED	FY 2023 PRES. BUDGET
<b>PIPELINE SAFETY</b>		\$ 168,000	\$ 168,000	\$ 182,650	\$ 187,800
Pipeline Safety Fund	D	137,000	137,000	146,600	151,400
Underground Natural Gas Storage Fund	D	8,000	8,000	8,000	7,000
Liquefied Natural Gas Siting Fund	D	-	-	400	400
Oil Spill Liability Trust Fund	D	23,000	23,000	27,650	29,000
<b>HAZARDOUS MATERIALS SAFETY</b>		\$ 62,000	\$ 62,000	\$ 66,829	\$ 74,211
General Fund	D	62,000	62,000	66,829	74,211
<b>EMERGENCY PREPAREDNESS GRANTS</b>		\$ 29,318	\$ 29,318	\$ 28,318	\$ 46,825
Emergency Preparedness Fund (Mandatory)	M	28,318	28,318	28,318	46,825
Emergency Preparedness Fund (Discretionary)	D	1,000	1,000	-	-
<b>OPERATIONAL EXPENSES</b>		\$ 28,715	\$ 28,715	\$ 29,100	\$ 30,150
General Fund	D	28,715	28,715	29,100	30,150
<b>Gross New Budget Authority</b>		\$ 288,033	\$ 288,033	\$ 306,897	\$ 338,986
<b>TOTAL BUDGETARY RESOURCES:</b>		<u>\$ 288,033</u>	<u>\$ 288,033</u>	<u>\$ 306,897</u>	<u>\$ 338,986</u>
[Mandatory BA]		28,318	28,318	28,318	46,825
[Discretionary BA]		259,715	259,715	278,579	292,161
<b>Supplemental Funding</b>					
IJA Supplemental (Division J)		\$ -	\$ 200,000	\$ 200,000	\$ 200,000
Natural Gas Distribution Infrastructure Safety & Modernization	D	-	200,000	200,000	200,000
<b>Grand Total, All Appropriations</b>		<u>\$ 288,033</u>	<u>\$ 488,033</u>	<u>\$ 506,897</u>	<u>\$ 538,986</u>

**EXHIBIT II-2**  
**FY 2023 TOTAL BUDGETARY RESOURCES BY APPROPRIATION ACCOUNT**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

<u>ACCOUNT NAME</u>	<u>M / D</u>	<u>(A)</u> <u>FY 2021</u> <u>ENACTED</u>	<u>(B)</u> <u>FY 2022 CR (w/</u> <u>IIJA Oblim)</u>	<u>(C)</u> <u>FY 2022</u> <u>ENACTED</u>	<u>(D)</u> <u>FY 2023 PRES.</u> <u>BUDGET</u>
<b>PIPELINE SAFETY</b>		\$ 168,000	\$ 168,000	\$ 182,650	\$ 187,800
Pipeline Safety Fund	D	137,000	137,000	146,600	151,400
Underground Natural Gas Storage Fund	D	8,000	8,000	8,000	7,000
Liquefied Natural Gas Siting Fund	D	-	-	400	400
Oil Spill Liability Trust Fund	D	23,000	23,000	27,650	29,000
<b>HAZARDOUS MATERIALS SAFETY</b>		\$ 62,000	\$ 62,000	\$ 66,829	\$ 74,211
General Fund	D	62,000	62,000	66,829	74,211
<b>EMERGENCY PREPAREDNESS GRANTS</b>		\$ 29,318	\$ 29,318	\$ 28,318	\$ 46,825
Emergency Preparedness Fund	M	28,318	28,318	28,318	46,825
Emergency Preparedness Fund (General Fund)	D	1,000	1,000	-	-
<b>OPERATIONAL EXPENSES</b>		\$ 28,715	\$ 28,715	\$ 29,100	\$ 30,150
General Fund	D	28,715	28,715	-	30,150
<b>TOTAL BASE APPROPRIATION</b>		<b>\$ 288,033</b>	<b>\$ 288,033</b>	<b>\$ 306,897</b>	<b>\$ 338,986</b>
Gross New Budgetary Resources		288,033	288,033	306,897	338,986
Rescissions		-	-	-	-
Transfers		-	-	-	-
Offsets		-	-	-	-
<b>TOTAL BUDGETARY RESOURCES:</b>		<b>\$ 288,033</b>	<b>\$ 288,033</b>	<b>\$ 306,897</b>	<b>\$ 338,986</b>
[Mandatory]		28,318	28,318	28,318	46,825
[Discretionary]		259,715	259,715	249,479	292,161
[Obligation Limitation]		28,318	28,318	-	-
<b>Supplemental Funding</b>					
IIJA Supplemental (Division J)		\$ -	\$ 200,000	\$ 200,000	\$ 200,000
Natural Gas Distribution Infrastructure Safety and Modernization	D	-	200,000	200,000	200,000
<b>Grand Total, All Appropriations</b>		<b>\$ 288,033</b>	<b>\$ 488,033</b>	<b>\$ 506,897</b>	<b>\$ 538,986</b>

**EXHIBIT II-3**  
**FY 2023 BUDGET REQUEST BY DOT STRATEGIC AND ORGANIZATIONAL GOALS**  
**Appropriations, Obligation Limitation, and Exempt Obligations**  
**Pipeline and Hazardous Materials Safety Administration**  
**(\$000)**

	Safety	Economic Strength and Global Competitiveness	Equity	Climate & Sustainability	Transformation	Organizational Excellence	Total
Pipeline Safety	\$ 182,650	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 182,650
Hazardous Materials Safety	\$ 66,829	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 66,829
Emergency Preparedness Grants	\$ 28,318	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 28,318
Operational Expenses	\$ 29,100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 29,100
IIJA Supplemental (Division J)							
Natural Gas Distribution Infrastructure Safety & Modernization	60,000	40,000	40,000	60,000	-	-	200,000
<b>TOTAL</b>	<b>\$ 366,897</b>	<b>\$ 40,000</b>	<b>\$ 40,000</b>	<b>\$ 60,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 506,897</b>

<p><b>Safety:</b> Make our Nation's transportation system including pipelines and the shipment of hazardous materials are safer for all people. Work toward a future where transportation-related serious injuries and fatalities are eliminated.</p>	<p><b>Economic Strength and Global Competitiveness:</b> Grow an inclusive and sustainable economy. Invest in our transportation system to provide American workers and businesses reliable and efficient access to good-paying jobs, resources, and markets.</p>	<p><b>Equity:</b> Reduce inequities. Support and engage people and communities to promote safe, affordable, and accessible, and multimodal access to opportunities and services while reducing transportation-related disparities, adverse community impacts, and health effects.</p>	<p><b>Climate &amp; Sustainability:</b> Tackle the climate crisis by ensuring that transportation plays a central role in the solution. Substantially reduce greenhouse gas emissions and transportation-related pollution and build more resilient and sustainable transportation systems to benefit and protect communities.</p>	<p><b>Transformation:</b> Design for the future. Invest in purpose-driven research and innovation to meet the challenge of the present and modernize a transportation system of the future that serves everyone today and in the decades to come.</p>	<p><b>Organizational Excellence:</b> Strengthen our world class organization. Advance the Department's mission by establishing policies, processes, and an inclusive and innovative culture to effectively serve communities and responsibly steward the public's resources.</p>
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**EXHIBIT II-4**  
**FY 2023 OUTLAYS**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**(\$000)**

		(A)	(B)	(C)
	<b>M / D</b>	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/ IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
<b>PIPELINE SAFETY</b>		<u>\$ 168,327</u>	<u>\$ 199,780</u>	<u>\$ 206,592</u>
Pipeline Safety Fund	<i>D</i>	142,197	180,776	174,652
Oil Spill Liability Trust Fund	<i>D</i>	26,130	19,004	31,940
<b>HAZARDOUS MATERIALS SAFETY</b>	<i>D</i>	\$ 59,147	\$ 70,138	\$ 78,434
<b>EMERGENCY PREPAREDNESS GRANTS</b>		<u>\$ 20,888</u>	<u>\$ 41,531</u>	<u>\$ 46,289</u>
Mandatory	<i>M</i>	20,888	41,161	45,939
Discretionary	<i>D</i>	-	370	350
<b>OPERATIONAL EXPENSES</b>	<i>D</i>	\$ 23,319	\$ 31,314	\$ 32,102
<b>TOTAL</b>		<u><u>\$ 271,681</u></u>	<u><u>\$ 342,763</u></u>	<u><u>\$ 363,417</u></u>
Mandatory		20,888	41,161	45,939
Discretionary		250,793	301,602	317,478
<b>IIJA Supplemental (Division J)</b>	<i>D</i>	\$ -	\$ 1,000	\$ 80,000
Natural Gas Distribution Infrastructure Safety and Modernization		-	1,000	80,000
<b>Grand Total, Outlays from all Appropriations</b>		<u><u>\$ 271,681</u></u>	<u><u>\$ 343,763</u></u>	<u><u>\$ 443,417</u></u>

**EXHIBIT II-5**  
**SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE**  
**Pipeline and Hazardous Materials Safety Administration**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

PIMSA Summary	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	Annualization of		FY 2023 Pay Raises (4.6%)	Adjustment for		WCF Increase/ Decrease	Baseline Changes		FY 2023 Baseline Estimate	Program Increases/ Decreases	FY 2023 Request
			Prior Pay Raises (2.7%)	new FY 2022 FTE		Compensable Days (260 days)	GSA Rent		Other Adjustments to Base				
PERSONNEL RESOURCES	556.0	590.5	7.5							598.0	35.0	633.0	
Direct FTE	556.0	590.5	7.5							598.0	35.0	633.0	
FINANCIAL RESOURCES													
OPERATIONS													
Salaries and Benefits	\$	100,137 \$	676 \$	1,073 \$	3,532 \$	-	\$	-	\$	3,271 \$	109,189 \$	9,005 \$	118,194
Travel		5,047		90		-	-	-		102	5,281	420	5,701
GSA Rent		7,152		98		-	-	-		145	7,440	455	7,895
Communications, & Utilities		581		-		-	-	-		12	593	-	593
Other Services:													
-Other		9,463		285		-	-	-		28	6,892	727	7,619
-WCF		4,783		-		-	-	(96)		104	5,286	-	5,286
-WCF IT		7,638		-		-	-	1,085		11,470	-	-	11,470
Supplies		709		-		-	-	-		14	723	-	723
Equipment		239		68		-	-	-		344	723	-	723
										6	315	659	
Operations Subtotal	\$	135,749 \$	676 \$	1,613 \$	3,532 \$	-	\$	989 \$	3,905 \$	147,216 \$	10,922 \$	158,138	
PROGRAMS													
Contract Safety Programs													
Pipeline Safety	\$	18,271 \$	-	-	-	-	-	-	-	18,271 \$	23,962 \$	5,691 \$	23,962
Hazardous Materials Safety		11,598	-	-	-	-	-	-	-	11,598	1,672	1,672	13,270
Emergency Preparedness Grants		727	-	-	-	-	-	-	-	727	775	48	775
Natural Gas Distribution Infrastructure Safety and Modernization Grants													
Operational Expenses		3,248	-	(753)	(35)	-	-	-	(7)	2,453	(215)	2,238	2,238
Contract Safety Programs Subtotal	\$	35,168 \$	- \$	(753) \$	(35)	-	\$	-	(7)	37,621 \$	7,549 \$	45,170	45,170
Research and Development													
Pipeline Safety	\$	12,000 \$	-	-	-	-	-	-	-	12,000 \$	3,000 \$	15,000	15,000
Hazardous Materials Safety		5,070	-	-	-	-	-	-	-	5,070	2,500	7,570	7,570
Research and Development Subtotal	\$	17,070 \$	-	-	-	-	-	-	-	17,070 \$	5,500 \$	22,570	22,570
Grants													
Pipeline Safety	\$	66,558 \$	-	-	-	-	-	-	-	66,558 \$	(1,000) \$	65,558	65,558
Hazardous Materials Safety		1,000	-	-	-	-	-	-	-	1,000	-	1,000	1,000
Emergency Preparedness Grants		27,988	-	-	-	-	-	-	-	27,988	18,062	46,050	46,050
Natural Gas Distribution Infrastructure Safety and Modernization Grants													
Operational Expenses		196,000	-	-	-	-	-	-	-	196,000	-	-	196,000
Grants Subtotal	\$	4,500	-	-	-	-	-	-	-	4,500	-	-	4,500
	\$	100,046 \$	-	-	-	-	-	-	-	296,046 \$	17,062 \$	313,108	313,108
Programs Subtotal													
	\$	152,284 \$	- \$	(753) \$	(35)	-	-	-	(7)	350,737 \$	30,111 \$	380,848	380,848
TOTAL	\$	288,033 \$	676 \$	860 \$	3,498	-	-	989 \$	3,898 \$	497,953 \$	41,033 \$	538,986	538,986



**EXHIBIT II-5**

## Baseline Changes

**EXHIBIT II-5**

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**EXHIBIT II-5**  
**SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE**  
**Pipeline and Hazardous Materials Safety Administration**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

Hazardous Materials Safety Account	FY 2021 ENACTED	FY 2022 CR (w/ ILJA Oblim)	Baseline Changes					FY 2023 Estimate	Program Increases/ Decreases	FY 2023 Request
			Annualization of Prior Pay Raises (2.7%)	FY 2023 Pay Raises (4.6%)	Adjustment for Compensable Days (260 days)	GSA Rent	WCF Increase/Decrease			
<b>PERSONNEL RESOURCES (FTE)</b>	<b>191.0</b>	<b>203.0</b>								
Direct FTE	191.0	203.0						203.0	15.5	218.5
								203.0	15.5	218.5
<b>FINANCIAL RESOURCES</b>										
<b>Operations</b>										
Salaries and Benefits	\$ 33,501	\$ 33,501	226	\$ 1,164	\$ -	\$ -	\$ -	\$ 37,423	\$ 2,217	\$ 39,640
Travel	1,399	1,399						1,427	186	1,613
GSA Rent	2,418	2,418						2,466	202	2,668
Communications, & Utilities	173	173						176		176
Other Services:										
-Other	2,086	1,313						1,339	589	1,928
-WCF	1,955	1,818					83	1,939		1,939
-WCF IT	2,629	3,539					473	4,092		4,092
Supplies	108	108						110		110
Equipment	63	63						64	140	204
<b>Operations Subtotal</b>	<b>\$ 44,332</b>	<b>\$ 44,332</b>	<b>226</b>	<b>\$ 1,164</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 556</b>	<b>\$ 49,038</b>	<b>\$ 3,333</b>	<b>\$ 52,370</b>
<b>PROGRAMS</b>										
<b>Contract Safety Programs</b>										
Hazmat Information and Analysis	\$ 2,017	\$ 2,017						\$ 2,017	\$ -	\$ 2,017
Investigation and Enforcement	3,307	3,307						3,307	-	3,307
Outreach, Training and Compliance	3,140	3,140						3,140	647	3,787
State Hazardous Materials Safety Training	2,500	2,500						2,500	1,025	3,525
Hazmat Registration Program	634	634						634	-	634
<b>Contract Safety Programs Subtotal</b>	<b>\$ 11,598</b>	<b>\$ 11,598</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 11,598</b>	<b>\$ 1,672</b>	<b>\$ 13,270</b>
<b>Research &amp; Development</b>										
Research & Development Subtotal	\$ 5,070	\$ 5,070						\$ 5,070	\$ 2,500	\$ 7,570
<b>Grants</b>										
Community Safety Grants	\$ 1,000	\$ 1,000						\$ 1,000	\$ -	\$ 1,000
<b>Grants Subtotal</b>	<b>\$ 1,000</b>	<b>\$ 1,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,000</b>	<b>\$ -</b>	<b>\$ 1,000</b>
<b>Programs Subtotal</b>	<b>\$ 17,668</b>	<b>\$ 17,668</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 17,668</b>	<b>\$ 4,172</b>	<b>\$ 21,840</b>
<b>TOTAL</b>	<b>\$ 62,000</b>	<b>\$ 62,000</b>	<b>226</b>	<b>\$ 1,164</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 556</b>	<b>\$ 66,706</b>	<b>\$ 7,505</b>	<b>\$ 74,211</b>

**EXHIBIT II-5**  
**SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE**  
Pipeline and Hazardous Materials Safety Administration  
Appropriations, Obligation Limitations, and Exempt Obligations  
(\$000)

	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	Annualization of Prior Pay Raises (2.7%)	Annualization of new FY 2022 FTE	FY 2023 Pay Raises (4.6%)	Adjustment for Compensable Days (260 days)	GSA Rent	WCF Increase/ Decrease	Inflation and		FY 2023 Baseline Estimate	Program Increases/ Decreases	FY 2023 Request			
									Other Adjustments to Base							
Emergency Preparedness Account																
<b>PERSONNEL RESOURCES (FTE)</b>																
Direct FTE	-	-	-	-	-	-	-	-	-	-	-	-	-			
<b>FINANCIAL RESOURCES</b>																
<b>Operations</b>																
Technical Assistance	\$	141	\$	141	-	-	-	-	-	-	\$	141	\$	9	\$150	
Emergency Response Guidebook		586		586	-	-	-	-	-	-		586		39	625	
<b>Operations Subtotal</b>	<b>\$</b>	<b>1,330</b>	<b>\$</b>	<b>1,330</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$</b>	<b>1,330</b>	<b>\$</b>	<b>(555)</b>	<b>\$</b>	<b>775</b>
<b>PROGRAMS</b>																
Hazardous Materials Emergency Preparedness Grants	\$	21,988	\$	21,988	-	-	-	-	-	-	\$	21,988	\$	17,062	\$39,050	
Hazardous Materials Instructor Training (HMIT) Grants		4,000		4,000	-	-	-	-	-	-		4,000		1,000	5,000	
Supplemental Public Sector Training Grants		1,000		1,000	-	-	-	-	-	-		1,000		1,000	2,000	
Assistance for Local Emergency Response Training (ALERT)		1,000		1,000	-	-	-	-	-	-		1,000		(1,000)	-	
<b>Programs Subtotal</b>	<b>\$</b>	<b>27,988</b>	<b>\$</b>	<b>27,988</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$</b>	<b>27,988</b>	<b>\$</b>	<b>18,062</b>	<b>\$</b>	<b>46,050</b>
<b>TOTAL</b>	<b>\$</b>	<b>29,318</b>	<b>\$</b>	<b>29,318</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$</b>	<b>29,318</b>	<b>\$</b>	<b>17,507</b>	<b>\$</b>	<b>46,825</b>

EXHIBIT II-5  
SUMMARY OF REQUESTED FUNDING CHANGES FROM BASE  
Pipeline and Hazardous Materials Safety Administration  
Appropriations, Obligation Limitations, and Exempt Obligations  
(\$000)

Operational Expenses Account	Baseline Changes										Inflation and		Program Increases/ Decreases	FY 2023 Request
	FY 2021 ENACTED	FY 2022 CR (w/ IIJA Oblim)	Annualization of Prior Pay Raises (2.7%)	Annualization of new FY 2022 FTE	FY 2023 Pay Raises	Adjustment for Compensable Days (260 days)	GSA Rent	WCF Increase/ Decrease	Other Adjustments to Base	FY 2023 Baseline Estimate				
PERSONNEL RESOURCES (FTE)														
Direct FTE	66.0	68.0									68.0	1.0	69.0	69.0
FINANCIAL RESOURCES														
Operations														
Salaries and Benefits	\$	13,648 \$	13,648 \$	92	\$	474			\$	150 \$	14,364 \$	143	\$	14,507
Travel		59	59							1	60	12		72
GSA Rent		894	894							18	912	13		925
Communications & Utilities		140	140							3	143	-		143
Other Services:														
-Other		3,288	2,991							(34)	2,957	38		2,995
-WCF		547	598					6		12	616	-		616
-WCF IT		917	1,163					118		26	1,307	-		1,307
Supplies		110	110							2	112	-		112
Equipment		40	40							1	41	9		50
Operations Subtotal	\$	19,643 \$	19,643 \$	92	\$	474 \$	- \$	- \$	124 \$	179 \$	20,512 \$	215	\$	20,727
PROGRAMS														
Contract Safety Programs														
Information Technology and Modernization	\$	4,572 \$	4,572							\$	4,572 \$	352	\$	4,924
Contract Safety Programs Subtotal	\$	4,572 \$	4,572 \$	-	\$	- \$	- \$	- \$	- \$	- \$	4,572 \$	352	\$	4,924
Grants														
Information Grants to Communities	\$	2,000 \$	2,000							\$	2,000	-	\$	2,000
Emergency Response Grants		2,500	2,500								2,500	-		2,500
Grants Subtotal	\$	4,500 \$	4,500 \$	-	\$	- \$	- \$	- \$	- \$	- \$	4,500 \$	-	\$	4,500
Programs Subtotal	\$	9,072 \$	9,072 \$	-	\$	- \$	- \$	- \$	- \$	- \$	9,072 \$	352	\$	9,424
TOTAL	\$	28,715 \$	28,715 \$	92	-	\$	474	-	\$	179	29,584 \$	567	\$	30,150

**EXHIBIT II-6**  
**WORKING CAPITAL FUND**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**(\$000)**

	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/ IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
<b>DIRECT:</b>			
Pipeline Safety	\$ 2,281	\$ 2,862	\$ 2,731
Commodity Shared Services and WCF IT	4,092	5,458	6,071
Hazardous Materials Safety	1,955	1,818	1,939
Commodity Shared Services and WCF IT	2,629	3,539	4,092
Operational Expenses	547	598	616
Commodity Shared Services and WCF IT	917	1,163	1,307
<b>TOTAL</b>	<b>\$ 12,421</b>	<b>\$ 15,438</b>	<b>\$ 16,756</b>

**EXHIBIT II-7**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**PERSONNEL RESOURCE -- SUMMARY**  
**TOTAL FULL-TIME EQUIVALENTS**

	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/ IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
<b><u>DIRECT FUNDED BY APPROPRIATION</u></b>			
Pipeline Safety	299.0	316.0	337.5
Hazardous Materials Safety	191.0	203.0	218.5
Operational Expenses	66.0	68.0	69.0
<b>SUBTOTAL, Direct Funded</b>	<b>556.0</b>	<b>587.0</b>	<b>625.0</b>
<b>BASE TOTAL FTEs</b>	<b><u>556.0</u></b>	<b><u>587.0</u></b>	<b><u>625.0</u></b>
<b><u>SUPPLEMENTAL FUNDED FTE's</u></b>			
IIJA Supplemental Funding			
Natural Gas Distribution Infrastructure Safety & Modernization	-	3.5	8.0
<b>SUBTOTAL, Supplemental Funded</b>	<b>-</b>	<b>3.5</b>	<b>8.0</b>
<b>TOTAL FTEs</b>	<b><u>556.0</u></b>	<b><u>590.5</u></b>	<b><u>633.0</u></b>

**EXHIBIT II-8**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**RESOURCE SUMMARY – STAFFING**  
**FULL-TIME PERMANENT POSITIONS**

	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/ IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
<b><u>DIRECT FUNDED BY APPROPRIATION</u></b>			
Pipeline Safety	299	320	355
Hazardous Materials Safety	191	203	234
Operational Expenses	66	68	70
<b>SUBTOTAL, Direct Funded</b>	<b>556</b>	<b>591</b>	<b>659</b>
<b>BASE TOTAL POSITIONS</b>	<b>556</b>	<b>591</b>	<b>659</b>
<b><u>SUPPLEMENTAL FUNDED FTP's</u></b>			
IIJA Supplemental Funding			
Natural Gas Distribution Infrastructure Safety & Modernization	-	7	9
<b>SUBTOTAL, Supplemental Funded</b>	<b>-</b>	<b>7</b>	<b>9</b>
<b>TOTAL POSITIONS</b>	<b>556</b>	<b>598</b>	<b>668</b>



**EXHIBIT II-9**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**HISTORY OF APPROPRIATIONS**  
**Pipeline Safety**

<u><b>YEAR</b></u>	<u><b>REQUEST</b></u>	<u><b>ENACTED</b></u>
2013	\$155,500,000	\$86,884,000
2014	\$133,000,000	\$100,014,000
2015	\$140,000,000	\$126,000,000
2016	\$155,604,000	\$124,500,000
2017	\$156,943,000	\$154,580,000
2018	\$132,263,326	\$139,000,000
2019	\$127,200,000	\$142,000,000
2020	\$127,000,000	\$145,000,000
2021	\$141,000,000	\$145,000,000
2022	\$145,000,000	
2023	\$158,800,000	

**EXHIBIT II-9**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**HISTORY OF APPROPRIATIONS**  
**Trust Fund Share of Pipeline Safety**  
**(Oil Spill Liability Trust Fund)**

<u><b>YEAR</b></u>	<u><b>REQUEST</b></u>	<u><b>ENACTED</b></u>
2013	\$21,510,000	\$17,602,000
2014	\$18,573,000	\$18,573,000
2015	\$19,500,000	\$19,500,000
2016	\$19,500,000	\$22,123,000
2017	\$19,500,000	\$20,288,000
2018	\$22,080,944	\$23,000,000
2019	\$23,000,000	\$23,000,000
2020	\$22,000,000	\$23,000,000
2021	\$22,000,000	\$23,000,000
2022	\$23,000,000	
2023	\$29,000,000	

**EXHIBIT II-9**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**HISTORY OF APPROPRIATIONS**  
**Hazardous Materials Safety**

<u><b>YEAR</b></u>	<u><b>REQUEST</b></u>	<u><b>ENACTED</b></u>
2013	\$50,673,000	\$40,123,000
2014	\$51,801,000	\$45,000,000
2015	\$52,000,000	\$52,000,000
2016	\$64,254,000	\$55,619,000
2017	\$68,249,000	\$57,000,000
2018	\$55,513,268	\$59,000,000
2019	\$52,070,000	\$58,000,000
2020	\$53,000,000	\$61,000,000
2021	\$61,000,000	\$62,000,000
2022	\$62,000,000	
2023	\$74,211,000	

**EXHIBIT II-9**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**HISTORY OF APPROPRIATIONS**  
**Operational Expenses**

<u><b>YEAR</b></u>	<u><b>REQUEST</b></u>	<u><b>ENACTED</b></u>
2013	\$20,047,000	\$19,295,000
2014	\$20,154,000	\$20,154,000
2015	\$20,725,000	\$20,725,000
2016	\$21,000,000	\$21,000,000
2017	\$22,188,000	\$22,500,000
2018	\$20,960,079	\$23,000,000
2019	\$23,710,000	\$23,710,000
2020	\$24,215,000	\$24,215,000
2021	\$24,215,000	\$28,715,000
2022	\$28,715,000	
2023	\$30,150,000	

**EXHIBIT II-9**  
**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**  
**HISTORY OF APPROPRIATIONS**  
**Emergency Preparedness Grants**  
**(Obligation Limitation)**

<u><b>YEAR</b></u>	<u><b>REQUEST</b></u>	<u><b>ENACTED</b></u>
2012	\$28,318,000	\$28,318,000
2013	\$28,318,000	\$26,865,000
2014	\$28,318,000	\$26,293,000
2015	\$28,318,000	\$26,265,000
2016	\$28,318,000	\$26,405,000
2017	\$28,318,000	\$26,364,058
2018	\$28,318,000	\$26,449,012
2019	\$28,318,000	\$26,562,000
2020	\$28,318,000	\$26,704,000
2021	\$28,318,000	\$29,318,000
2022	\$29,318,000	
2023	\$46,825,000	

## EXHIBIT III-1a

## All PHMSA Accounts

## SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023

## Appropriations, Obligations, Limitations, and Exempt Obligations

(\$000)

	<u>\$000</u>	<u>FTE</u>
<b>FY 2022 CR</b>	\$ 488,033	590.5
<b>ADJUSTMENTS TO BASE:</b>		
Annualization of Prior Pay Raises (2.7%)	676	-
Annualization of new FY 2022 FTE	860	7.5
FY 2023 Pay Raises (4.6%)	3,498	-
GSA Rent	-	-
Working Capital Fund	989	-
Adjustment for Compensable Days (260 days)	-	-
Inflation and Other Adjustments to Base	3,898	-
<b>SUBTOTAL, ADJUSTMENTS TO BASE</b>	<b>9,921</b>	<b>7.5</b>
<b>PROGRAM REDUCTIONS</b>		
<b>Pipeline Safety</b>		
Underground Natural Gas Storage Grants	(1,000)	-
<b>Natural Gas Distribution Infrastructure Safety and Modernization Grants</b>		
Pipeline Infrastructure Modernization	(215)	-
<b>Emergency Preparedness Grants</b>		
ALERT Grants	(1,000)	-
Operations - Other	(555)	-
<b>SUBTOTAL, PROGRAM REDUCTIONS</b>	<b>(2,770)</b>	<b>-</b>
<b>PROGRAM INCREASES</b>		
<b>Pipeline Safety</b>		
Inspection and Enforcement 29 Positions (14.5 FTE)	3,118	14.5
Climate Change Experts 6 Positions (3.0 FTE)	645	3.0
Contract Safety Programs /1	5,691	-
Research & Development	3,000	-
Costs of hiring and retention incentives I&E positions /2	4,000	-
<b>Pipeline Safety Subtotal</b>	<b>16,454</b>	<b>17.5</b>
<b>Hazardous Materials Safety</b>		
Emerging Energy Experts 3 Positions (1.5 FTE)	323	1.5
Outreach Staff 20 Positions (10 FTE)	2,150	10.0
Outreach, Training and Compliance	647	-
Accident Investigation 8 Positions (4TE)	860	4.0
Research & Development	2,500	-
Investigation and Enforcement	-	-
State Hazardous Materials Safety Training	1,025	-
Hazmat Registration Program	-	-
<b>Hazardous Materials Safety Subtotal</b>	<b>7,505</b>	<b>15.5</b>
<b>Emergency Preparedness Grants</b>		
Hazardous Materials Emergency Response Grants	17,062	-
Supplemental Public Sector Training Grants	1,000	-
Hazardous Materials Instructor Training Grants	1,000	-
<b>Emergency Preparedness Grants Subtotal</b>	<b>19,062</b>	
<b>Natural Gas Distribution Infrastructure Safety and Modernization Grants</b>		
Costs of hiring additional program specialists (1 FTE)	215	1.0
<b>Natural Gas Distribution Infrastructure Safety and Modernization Grants Subtotal</b>	<b>215</b>	<b>1.0</b>
<b>Operational Expenses</b>		
Civil Rights Staff 2 Positions	215	1.0
Contract Safety Programs	352	-
<b>Operational Expenses Subtotal</b>	<b>567</b>	<b>1.0</b>
<b>SUBTOTAL, PROGRAM INCREASES</b>	<b>43,803</b>	<b>35.0</b>
<b>FY 2023 REQUEST</b>	<b>\$ 538,986</b>	<b>633.0</b>

/1 An increase of \$2M was added to support completion of the 36 mandates in the PIPES Act 2020, finishing rule makings and regulatory actions.

/2 Salaries and benefits: hiring and retention incentives I&amp;E positions - \$4M

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# **III: Budget Request by Appropriation Account Exhibits and Narrative Justification**



# **Pipeline Safety**

## **APPROPRIATIONS LANGUAGE**

### **PIPELINE SAFETY**

#### **(PIPELINE SAFETY FUND)**

#### **(OIL SPILL LIABILITY TRUST FUND)**

For expenses necessary to carry out a pipeline safety program, as authorized by 49 U.S.C. 60107, and to discharge the pipeline program responsibilities of the Oil Pollution Act of 1990, [\$168,000,000] *\$187,800,000*, to remain available until September 30, [2024] 2025, of which [\$23,000,000] *\$29,000,000* shall be derived from the Oil Spill Liability Trust Fund; of which [\$137,000,000] *\$151,400,000* shall be derived from the Pipeline Safety Fund; of which \$400,000 shall be derived from the fees collected under 49 U.S.C. 60303 and deposited in the Liquefied Natural Gas Siting Account for compliance reviews of liquefied natural gas facilities; and of which [\$8,000,000] *\$7,000,000* shall be derived from fees collected under 49 U.S.C. 60302 and deposited in the Underground Natural Gas Storage Facility Safety Account for the purpose of carrying out 49 U.S.C. 60141.

Note. -- A full-year 2022 appropriation for this account was not enacted at the time the budget was prepared; therefore, the budget assumes this account is operating under the Continuing Appropriations Act, 2022 (Division A of P.L. 117-43, as amended). The amounts included for Fiscal Year (FY) 2022 reflect the annualized level provided by the continuing resolution.

**EXHIBIT III-1**  
**Pipeline Safety**  
**Summary by Program Activity**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

	<b><u>FY 2021 ENACTED</u></b>	<b><u>FY 2022 CR (w/IIJA Oblim)</u></b>	<b><u>FY 2023 PRES. BUDGET</u></b>
Operations	\$ 89,442	\$ 89,442	\$ 107,242
Research and Development	12,000	12,000	15,000
Grants	66,558	66,558	65,558
<b>TOTAL</b>	<b><u>\$ 168,000</u></b>	<b><u>\$ 168,000</u></b>	<b><u>\$ 187,800</u></b>
FTEs			
Direct Funded	299.0	316.0	337.5

**Program and Performance Statement**

PHMSA oversees the safe transportation of energy products and hazardous materials through pipelines. PHMSA's pipeline safety program regulates an expansive network of approximately 2.8 million miles of gas and hazardous liquid pipelines within the United States, as well as facilities that liquefy natural gas and store natural gas underground. PHMSA establishes and enforces pipeline safety standards and conducts safety inspections in collaboration with state partners to monitor the construction, and operating safety of pipelines. The pipeline safety program is funded by fees collected from pipeline and underground natural gas storage facility operators, as well as by an annual allocation from the Oil Spill Liability Trust Fund.

**EXHIBIT III-1a**

**Pipeline Safety**  
**SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023**  
**Appropriations, Obligations, Limitations, and Exempt Obligations**  
**(\$000)**

	<b><u>\$000</u></b>	<b><u>FTE</u></b>
<b>FY 2022 CR</b>	<b>\$ 168,000</b>	<b>316.0</b>
<b>ADJUSTMENTS TO BASE:</b>		
Annualization of FY 2022 FTE	860	4.0
Annualization of Prior Pay Raises (2.7%)	358	-
FY 2023 Pay Raises	1,860	-
GSA Rent	-	-
Working Capital Fund	309	-
Inflation and Other Adjustments to Base	958	-
Adjustment for Compensable Days (260 days)	-	-
<b>SUBTOTAL, ADJUSTMENTS TO BASE</b>	<b>4,345</b>	<b>4.0</b>
<b>PROGRAM REDUCTIONS</b>		
Underground Natural Gas Storage	(1,000)	-
<b>SUBTOTAL, PROGRAM REDUCTIONS</b>	<b>(1,000)</b>	<b>-</b>
<b>PROGRAM INCREASES</b>		
Inspection and Enforcement 29 positions (14.5 FTE)	3,118	14.5
Climate Change Experts 6 Positions (3.0 FTE)	645	3.0
Research and Development	3,000	
Contract Safety Programs	5,691	
Hiring and retention incentives I&E positions	4,000	
<b>SUBTOTAL, PROGRAM INCREASES</b>	<b>16,454</b>	<b>17.5</b>
<b>FY 2023 REQUEST</b>	<b>\$ 187,800</b>	<b>337.5</b>

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## Detailed Justification for the Pipeline Safety Program

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### FY 2023 – Pipeline Safety Program Budget Request (\$000)

Program Activity	FY 2021 Enacted	FY 2022 CR (w/IIJA Oblim)	FY 2023 PRES. BUDGET
Operations	\$ 71,171	\$ 71,171	\$ 83,279
Contract Safety Programs	18,271	18,271	23,963
Research and Development	12,000	12,000	15,000
Grants	66,558	66,558	65,558
<b>Total</b>	<b>\$ 168,000</b>	<b>\$ 168,000</b>	<b>\$ 187,800</b>
<b>FTEs</b>	<b>299.0</b>	<b>316.0</b>	<b>337.5</b>

### What Is the Goal of the Pipeline Safety Program and What Does the Funding Level Support?

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#### Key Pipeline Safety Request Highlights:

- **\$14.04 million in unfunded PIPES Act of 2020 mandates (Pipeline Safety)**
  - \$9.69 million to complete the 36 new congressional mandates in PIPES Act of 2020 that include:
    - investments in recruiting and retaining the best safety inspection engineers including special pay rates, hiring incentives, tuition reimbursement, and student loan repayment to help maintain an inspection workforce in a highly competitive labor market.
    - professional support to complete expedited rulemakings and tracking to ensure rules are expedited.
    - additional quantitative reviews, studies, and reports to Congress.
    - Liquefied Natural Gas siting reviews.
  - \$4.35 million in baseline increases including the remaining cost to **add 8 regulatory positions to complete safety and environmental mandates.**

All of which will **strengthen pipeline safety nationally and reduce climate and environmental impacts**. This will enable PHMSA to **advance the President's climate change agenda** by **reducing methane emissions** in the oil/gas sector and mitigate environmental damage from spills and incidents.

- **\$3.12 million Increased Inspection Coverage** - The request includes an additional 29 positions (14.5 FTE) for inspection and enforcement as mandated in the PIPES Act of 2020.
- **\$3.0 million Research & Development (Pipeline Safety)** - Restore Pipeline Safety Research and Development to pre-FY 2021 levels. This will allow PHMSA to focus on **innovative, transformational pipeline safety research**, including in the areas of **cleaner fuel alternatives** such as hydrogen and bio-based fuels
- **\$645,000 increase in Climate Change Mitigation Staff** - In support of Executive Order (EO) 14008 (Tackling the Climate Crisis at Home and Abroad), PHMSA requests an additional six positions (3.0 FTE). These positions will bolster PHMSA's ability to research and analyze technologies and practices that most adversely impact climate, and to develop rulemaking and policies to mitigate climate change. As part of this hiring strategy, PHMSA is currently recruiting for a Climate Coordinator position who will coalesce and coordinate climate change mitigation measures through risk assessments, policies, and qualitative research and statistical analysis.

## **PHMSA's Oversight of an Expansive Network of US Pipelines**

**PHMSA's pipeline safety program promotes the safe delivery of energy products to market in a manner that protects people, property, and the environment.** Most gas and oil products move via pipeline from their sources to refineries and then to market. Since 2000, the United States' energy production has more than doubled, with nearly all energy products transported via pipelines to refineries and from refineries to market without significant incidents.

The United States operates the most expansive network of energy pipelines in the world. This network safely transports 65 percent of the energy consumed in the United States, helping to power nearly every facet of our daily lives, and providing significant economic benefits to the Nation. PHMSA's mission is to protect people and the environment by advancing the safe transportation of energy and other hazardous materials that are essential to our daily lives.

PHMSA administers a national regulatory safety program for approximately 2.8 million miles of interstate and intrastate pipelines in the United States. PHMSA oversees the safe operation of 229,000 miles of hazardous liquid pipelines, 302,000 miles of gas transmission pipelines, 2,284,000 miles of gas distribution mains and services, and 17,000 miles of gas-gathering pipelines. Some of these pipelines are part of an aging infrastructure network, and traverse through cities and neighborhoods, especially those that have been historically underserved. Going forward, modernization of old, less reliable pipeline networks with newer pipes that can pave the way for cleaner fuels, such as hydrogen and bio-blends, will be critical. For example, PHMSA's \$1 billion program under the Infrastructure Investment and Jobs Act of 2021 to repair or replace legacy leak-prone pipes, often in disadvantaged areas, will enhance pipeline safety and reduce methane emissions from these pipelines.

Additionally, PHMSA oversees the safe operations of 165 liquefied natural gas (LNG) plants with a total storage capacity of nearly 58 million barrels, and 403 underground natural gas storage facilities with a total capacity of nearly 6 trillion cubic feet. PHMSA's safety program requires that pipeline operators design, construct, operate, and maintain their pipeline facilities in compliance with the federal pipeline safety regulations (PSR). To help ensure that operators comply with these regulations, PHMSA conducts inspections of pipeline facilities for compliance with the PSRs.

### **PHMSA's Oversight of the Safe Storage of Natural Gas Underground**

The PIPES Act of 2016 charged PHMSA with safety oversight of 403 underground natural gas storage facilities in 30 states. Natural gas is an important commodity worldwide, particularly for generating power and for domestic space heat. Underground storage facilities are a critical component of the United States' natural gas supply infrastructure.

Underground natural gas storage facilities are a major part of the US energy supply portfolio and involves the storage of natural gas in a depleted natural gas or oil reservoirs or salt caverns and aquifers. These different types of underground natural gas storage (see Figure 1 below) offer natural gas providers flexibility to manage seasonal variations in demand and provide a buffer for changing production levels. Local distribution companies, for instance, can quickly access large volumes of gas (stored off peak times) for end-users during periods of high demand, such as during a cold spell in the winter or a period of high electricity demand in the summer. Underground storage also allows natural gas to be stored safely after extraction while awaiting domestic use or export. Without underground natural gas storage facilities, additional pipelines would need to be constructed to meet daily peak demands. Thus, a benefit of underground natural gas storage facilities is a lesser environmental impact due to the need for fewer pipelines to meet energy demand. Fewer pipelines in the ground mean less digging, invasive construction underground, and impact to the environment.

## Types of Underground Storage Facilities

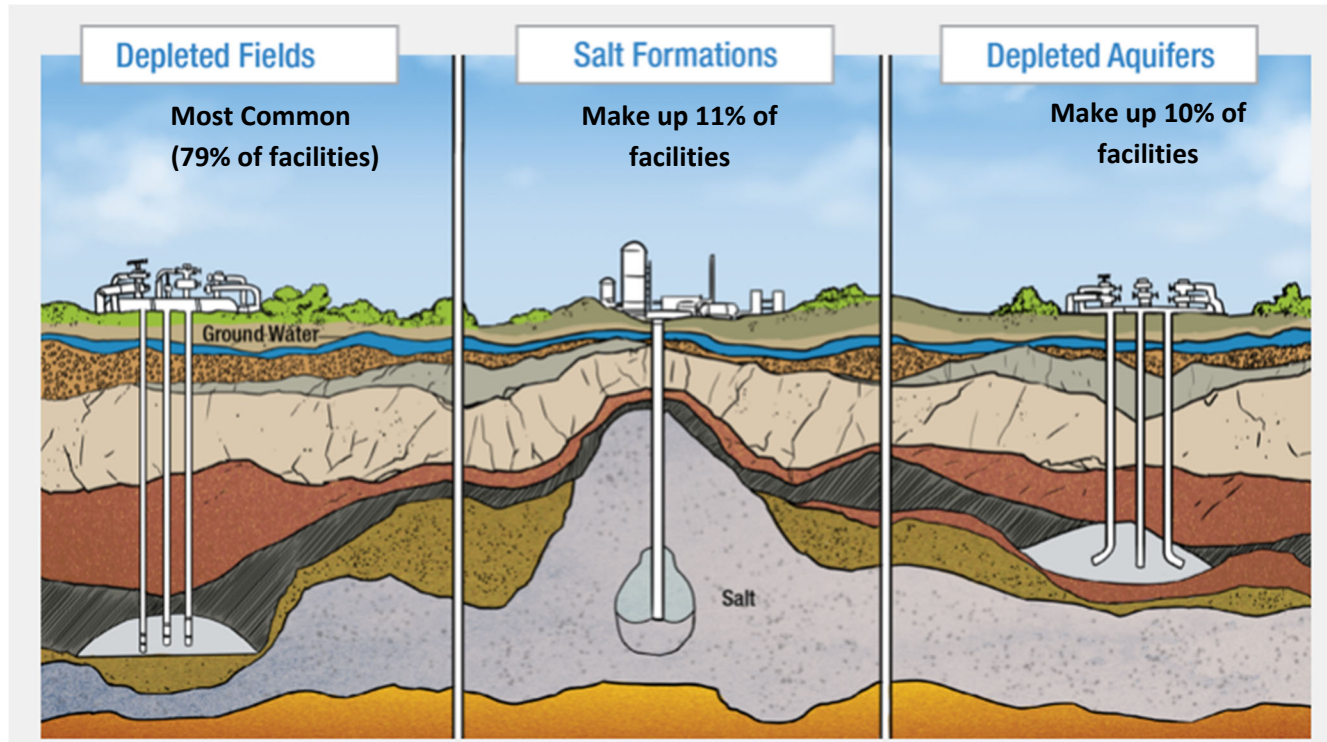
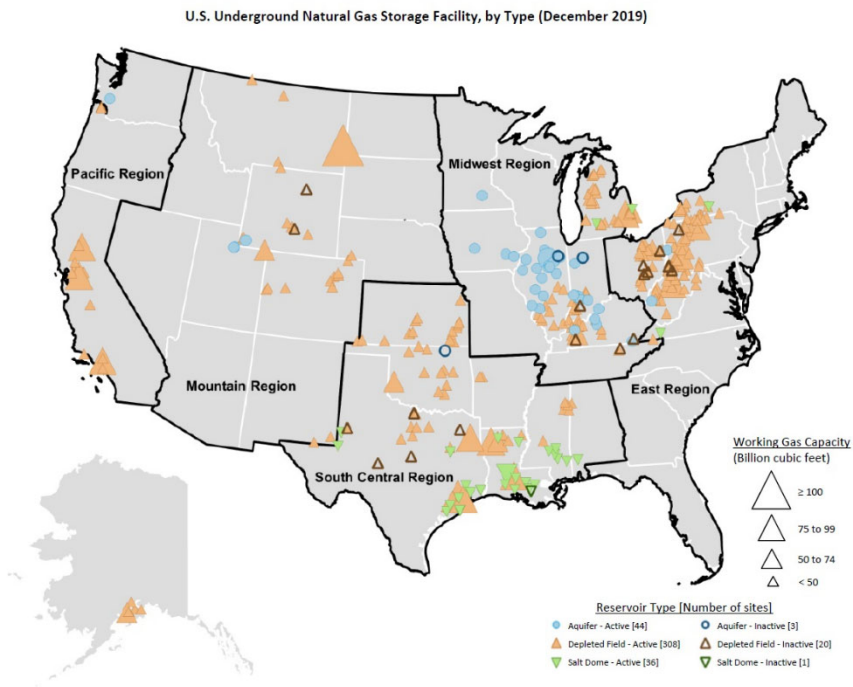


Figure 1: Natural Gas Storage Types (Source: [www.energyinfrastructure.org](http://www.energyinfrastructure.org))

An estimated 85 percent of underground natural gas storage facilities in the United States hold natural gas in depleted oil and gas reservoirs, while the rest remain stored in salt caverns and depleted aquifers. PHMSA develops safety standards for containment within these natural formations and conducts periodic inspections.





## Operations: \$83.28 million

PHMSA's FY 2023 budget request funds 355 positions (337.5 FTE) and covers costs of salaries, benefits, travel, training, supplies, and equipment (including personal protective equipment for all inspectors). Of the 355 positions, 247 are inspection and enforcement staff working across the country through a network of regional offices. The remaining staff support the Pipeline Safety Office including subject matter experts in engineering, research and development, rulemaking, and enforcement as well as administrative support staff.

PHMSA continues to manage a very robust regulatory agenda with demonstrated results. Since 2011, PHMSA has completed 17 pipeline final rules. Pursuant to the PIPES Act of 2020 and the Leonel Rondon Act, PHMSA plans to issue regulations that will enhance pipeline safety such as: (1) requiring leak detection on gas and hazardous liquid pipelines; (2) imposing safety requirements for idled natural gas and hazardous liquid pipelines; (3) updating minimum safety standards for permanent, small scale liquefied natural gas (LNG) pipeline facilities; (4) ensuring gas distribution inspection and maintenance plans contribute to public safety, the reduction of leaks and natural gas releases, and protection of the environment; (5) and requiring that state authorities have sufficient qualified inspectors. In furtherance of its rulemaking efforts and in accordance with the PIPES Act of 2020, PHMSA has begun hiring eight full-time employees to help finalize outstanding rulemakings and fulfill congressional mandates.

PHMSA's Office of Pipeline Safety is headquartered in Washington, D.C., with eight field offices located in West Trenton, NJ; Atlanta, GA; Kansas City, MO; Houston, TX; Lakewood, CO; Chicago, IL; Ontario, CA; and Anchorage, AK. PHMSA also operates a national training center and accident investigation office located in Oklahoma City, OK. PHMSA's staff conducts inspections, investigations, outreach, and enforcement activities. PHMSA's staff also works alongside its state partners and participates in spill response drills led by the Environmental Protection Agency, U.S. Coast Guard, Department of Interior's Bureau of Safety and Environmental Enforcement, and oil pipeline operators. Important investments in FY 2023 include:

**Hiring and Retention Incentives for Hard-to-Fill Positions:** PHMSA relies on specially trained engineers to conduct inspection and enforcement activities. PHMSA competes with the private sector to attract and retain qualified pipeline inspectors, accident investigators, and engineering analysts. The commercial energy industry and at least one other federal agency offers candidates higher salaries and provides incentives, placing PHMSA at a disadvantage in recruiting and retaining the best staff. In recent years, PHMSA has focused significant efforts on recruiting and retaining highly qualified inspectors and engineers. In recognition of the critical nature of these positions, the PIPES Act of 2020 authorized PHMSA to provide recruitment and retention incentives such as tuition assistance, student loan repayment, and special pay rates. PHMSA is requesting \$4.0 million in FY 2023 to fully fund these important initiatives.

**Increase Inspection and Enforcement Staff:** The PIPES Act of 2020 called for PHMSA to maintain 247 inspection and enforcement staff in FY 2023, an increase of 29 positions. These professionals staff inspection teams that visit the expanse of pipelines, enforce actions when

violations are found, and investigate accidents so they do not re-occur.

**Climate Change Mitigation Staff:** In support of EO 14008 (Tackling Climate Change at Home and Abroad), PHMSA requests an additional 6 positions (3 FTE). These positions will improve PHMSA's research and analysis, and lead to better rulemaking and policies to mitigate adverse impacts of climate change.

**Underground Natural Gas Storage Facilities:** The storage of natural gas at underground facilities buffers seasonal variations in demand for natural gas. The PIPES Act of 2016 required PHMSA to issue minimum safety standards for these facilities and to conduct inspections. The PIPES Act of 2016 also provides grants-in-aid to state pipeline safety inspection programs to inspect these facilities. In FY 2023, \$2.0 million will fund 10 full-time positions assigned to inspect these facilities.

**Liquefied Natural Gas Facilities:** PHMSA evaluates proposed LNG plants' siting, design, construction, operational, and maintenance plans and records as part of its safety inspections during facility construction and operation. Currently, 26 LNG plants require compliance inspections by PHMSA; PHMSA inspects operational facilities an average of once every 3 years. PHMSA is also conducting on-going inspections of 10 LNG plants<sup>1</sup> under construction to ensure compliance with regulatory standards and will inspect other facilities as these are developed and built.

Section 111 of the PIPES Act of 2020 mandated that PHMSA study and develop a report not later than 18 months after the Act on a potential National Center of Excellence for Liquefied Natural Gas Safety (NCELNG). The study's primary purpose is to determine the resources necessary to operate the potential NCELNG and determine how such a facility would operate to carry out its mission. The primary purpose of the NCELNG would be: (1) furthering the expertise of the federal government in the operations, management, and regulatory practices of LNG facilities; (2) developing a repository of information on best practices for the operation of LNG facilities; and (3) facilitating collaboration among LNG stakeholders. As described in Section 111, the functions of the NCELNG shall enhance the United States as the leader and foremost expert in LNG operations by furthering the expertise of the federal government in LNG facilities' oversight and improve stakeholder engagement, collaboration and coordination on state-of-the-art LNG operational practices. PHMSA is developing the NCELNG report, and aims to complete it by June 2022.

In addition, Section 110 of the PIPES Act of 2020 mandated that PHMSA review the minimum operating and maintenance standards specified in 49 U.S.C. 60103(d) and use results of the review to update the standards applicable to large-scale LNG facilities no later than three years after the date of the Act. PHMSA is currently reviewing its operations and maintenance regulations under 49 CFR Part 193 along with other requirements regarding location, design, construction, fire protection, security, and personnel training relative to LNG facilities. PHMSA will use the results of the review to facilitate updates to the regulations for LNG facilities.

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<sup>1</sup> As of February 2022, PHMSA conducts construction inspections of nine interstate LNG facilities and assists its State Partners with one LNG facility construction inspection.

## **Contract Safety Programs: \$23.96 million**

Contracts for pipeline safety programs support PHMSA's inspection and compliance activities, thus helping ensure the safe movement of hazardous materials through the Nation's pipeline network. PHMSA collects and analyzes data to inform safety standards, and trains both Federal and state inspection and enforcement staff. Contract funds also support PHMSA's efforts to increase communication with those impacted by pipelines, particularly in underserved and vulnerable communities, as well as support excavation damage prevention efforts, and assist PHMSA in the review of special permits and approvals. The Office of Pipeline Safety's contracted safety programs include:

### **Safety Compliance including Pipeline Integrity Management Oversight, \$12.34 million:**

PHMSA issued safety standards and regulations that operators must follow to properly design, construct, operate and maintain their pipelines. PHMSA conducts compliance inspections of more than 560 unique pipeline companies, many who operate multiple pipeline systems. Additionally, operators must regularly update their pipeline integrity management plans to assess the condition of the pipelines and implement preventative and mitigative actions to ensure safety and prevent incidents that could injure people, harm property or degrade environmental resources such as drinking water.

In FY 2023, PHMSA plans two important investments in climate change mitigation and data analytics:

#### *Climate Change Mitigation Studies*

As mandated by the PIPES Act of 2020 and in support of EO 14008 (Tackling Climate Change at Home and Abroad), PHMSA will conduct a study on Best Technologies or Practices to Minimize or Prevent Natural Gas Releases in FY 2022. This will inform decision making on initial investments in hydrogen and emerging fuels research and development in FY 2023 and will allow PHMSA to evaluate progress made and determine additional necessary investments. In addition, the report will assist PHMSA with identifying potential R&D gaps in preventing or minimizing the release of natural gas without compromising pipeline safety when making planned repairs, replacements, maintenance, or when the operator intentionally vents or releases natural gas. This will assist in tackling climate change by reducing methane emissions.

#### *Enhanced Data Analytics and Visualization*

PHMSA has invested in establishing and maintaining an exceptional Pipeline Data Mart (PDM) that provides data on regulated pipelines and PHMSA activities to include pipeline assets and locations, inspection and enforcement activities, accidents and incidents, and notifications from operators on construction, acquisitions, and divestitures. In FY 2023, PHMSA will enhance analysis functions for the Office of Pipeline Safety to use data analytics and visualization tools to integrate PDM data with other sources to better enable us to identify and communicate trends in pipeline safety performance and to become more predictive in determining regulatory priorities, risk-based enforcement decisions, research and development, and technology investments.

**Training, Information and Community Assistance Services, \$8.05 million:** To enhance pipeline safety, PHMSA funds training, information-sharing, and community assistance services

for internal and external stakeholders. PHMSA facilitates communication among pipeline stakeholders, including the public, operators, and government officials. PHMSA also participates with the Common Ground Alliance on pipeline damage prevention efforts and maintains representatives in each region who inform communities about pipeline safety risks, answer questions from the public, and address complaints. In FY 2020, PHMSA participated in approximately 125 outreach and engagement activities, and expects to continue this level of engagement going forward.

To meet its responsibilities, PHMSA will provide training in Risk Management, Integrity Management Assessment Tools and Data Analysis, and Security and Cyber Training. Risk Management and Integrity Management Assessment Tools and Data Analysis Training occurs every five years and is provided to all PHMSA inspectors and investigators to address emerging threats to the aging pipeline infrastructure and educate staff on the most current integrity assessment technology not covered by the standard inspector training program. This training will require the use of subject matter experts which may change every five years. Additionally, the Security and Cyber Training will be provided to federal and state Pipeline Inspectors/Investigators to acquaint them with the basics of cyber hygiene. This training is intended to increase awareness of proper security and cyber protocols among federal and state inspectors/investigators and is needed to improve the cyber hygiene of pipeline facilities to help prevent cyber incidents, such as the 2021 Colonial Pipeline attack.

PHMSA coordinates and collaborates on cyber and physical security, safety, and energy supplies with DHS, TSA, DOE, FBI and other federal agencies. PHMSA and partner agencies jointly share information to address cyber and physical threats related to the pipeline sector. In collaboration with federal partners, PHMSA continues to provide an approach for sector owners and operators to help reduce cyber risks by characterizing their current cyber security posture, identifying opportunities for enhancing existing cyber risk management programs, finding existing tools, standards, and guides to support implementation of cyber standards, and communicating their risk management issues to internal and external stakeholders.

PHMSA and its state pipeline safety partners are working to address the nexus between cybersecurity and safety oversight of pipeline control rooms. Funding and hosting by PHMSA will ensure consistency in curriculum and will prevent individual states from needing to develop and host their own training, allowing States direct more resources towards inspection and enforcement.

**Mapping and Information Systems, \$1.80 million:** PHMSA's National Pipeline Mapping System (NPMS) is designed to assist federal, state, and local government officials as well as pipeline operators with displaying and querying data related to gas transmission and hazardous liquid pipelines, liquefied natural gas plants, and breakout tanks. In the PIPES Act of 2011, Congress mandated PHMSA to provide high consequence area geographic information systems (GIS) data sets to pipeline operators once every two years. This system helps ensure safety of the pipeline network and avoid adverse environmental impacts.

**Implementing the Oil Pollution Act, \$1.38 million:** The 1990 Oil Pollution Act (OPA 90) requires that operators who store, handle, or transport oil maintain spill response plans and

adequate resources in place to minimize the environmental impact of oil spills and improve public- and private-sector response. PHMSA's review and approval of oil spill response plans identifies errors and assists pipeline operators to better plan and implement improvements to response procedures before, during, and after an oil spill. PHMSA reviews response plans submitted by operators of onshore oil pipelines to ensure compliance, maintaining approximately 560 response plans, and reviewing 250 plans annually. PHMSA approves compliant plans and requires operators with deficient plans to make corrections. The agency reviews all corrected plans before issuing an approval. Of the 560 response plans, PHMSA has approved 482, issued letters of corrections for 28, and have 50 under review. This critical function ensures protection of the onshore environment.

The National Preparedness for Response Program (PREP) establishes a workable exercise program for pipeline operators to meet exercise requirements under OPA 90-mandated federal oil pollution response exercise requirements. PHMSA conducts PREP exercises to address requirements for oil pollution response plans and evaluates compliance with federal regulations. PHMSA uses PREP exercises to evaluate response plans and pipeline operator's response systems. PHMSA conducts 30 PREP exercises per year evaluating operator compliance with federal regulations and capability to prepare, prevent, respond, and recover from oil spills and impacts to the environment.

**Liquefied Natural Gas Facility Siting Reviews, \$400 thousand:** PHMSA determines whether the siting, design, construction, operations, maintenance, personnel qualification and training, fire protection, and security of certain Liquefied Natural Gas (LNG) facilities are effective and comply with federal safety standards. Recent expansion in the production of natural gas for consumption in the United States and for export has contributed to the expansion of liquefaction facilities and transportation of liquefied natural gas.

There are more than 160 LNG facilities operating in the United States. PHMSA is responsible for ensuring these and future facilities operate safely (Part 193 reviews). When a new facility is proposed that will cost more than \$2.5 billion to construct, PHMSA collects a siting review fee to offset the cost of the Part 193 safety siting review.

#### **Research and Development: \$15.00 million**

The Pipeline Safety Research and Development Program (R&D Program) carries out its mission through research awards to improve the safety of the Nation's pipeline transportation system and to protect people and the environment. In executing the program strategy, PHMSA forms public-private partnerships with stakeholders, as well as inter-agency partnerships with federal agencies which share PHMSA's safety objectives. PHMSA employs a coordinated and collaborative approach to address pipeline safety challenges, focuses on removing technical and regulatory barriers for given challenges, and measures research results, outputs, and outcomes. The actual research projects and scope of activities may change from year to year to address emerging problems based on data analysis and industry needs, and in response to Congressional mandates and specific pipeline incidents. As discussed above, PHMSA incorporates several components into its R&D Program in accordance with the Evidence Act of 2016.

In FY 2023, PHMSA will expand upon the FY 2022 initial efforts to address the Administration's strategic priorities of safety, economic recovery and rebuilding, climate change, and transportation as an engine for equity.

The Office of Pipeline Safety held the Pipeline Transportation: Hydrogen and Emerging Fuels R&D Public Meeting and Forum, on November 30 through December 2, 2021. The public meeting and forum served as an opportunity for pipeline stakeholders to discuss six research gap topics and identify challenges in pipeline safety and emerging fuels, including hydrogen transportation. The public meeting and forum served as a venue for PHMSA, public interest groups, industry, academia, inter-governmental partners, and the public to collaborate on PHMSA's future R&D agenda through panel discussions.

The following six research topic areas were discussed at the forum:

- 1) Rehabilitation of Aging Cast Iron Pipelines.
- 2) Integrity of Underground Natural Gas/Hydrogen Storage.
- 3) Utilization of Inspection tools on Hydrogen Pipelines.
- 4) Hydrogen Network Components.
- 5) Methane Mitigation— Construction and Operations.
- 6) Breakout Tanks— Methods to Prevent Corrosion of Tank Bottoms.

Over 300 individuals, including several from Canada and the United Kingdom attended the forum, and more than 60 presentations were given over 3 days. The November 2021 R&D Forum helped identify knowledge gaps and will guide PHMSA to better prioritize research for FYs 2022 and 2023.

PHMSA is preparing a report, as directed by the PIPES Act of 2020, on current Research and Development capabilities, root cause analysis of pipeline risks/failures, identification of key research objectives, and evaluating the necessity of an independent pipeline testing facility. PHMSA continues to work with the Department, OMB, and Congress on this key initiative.

While PHMSA improves pipeline safety through inspections, investigations, enforcement and regulations, these efforts do not address the root causes of all pipeline incidents. Many pipeline failure triggers are best identified and corrected through technological innovations, with examples of these being incidents caused by corrosion, material failure, and equipment failure. Together, these three causes were responsible for 61.7% of all pipeline incidents in 2021.

Research and Development projects are co-funded with the private sector and academia. Projects develop safety technology related to leak detection, mechanical damage detection, excavation damage prevention, pipeline system control improvements, monitoring and operations, and pipeline material improvements. In selecting Research and Development proposals, the Office of Pipeline Safety gives preference to projects likely to bring a product to market within five years. Since 2002, the Research and Development program has brought 33 new technologies to market.

Section 114(d) of PIPES Act of 2020 mandated PHMSA to develop a report outlining best available technologies or practices to minimize the release of natural gas to the environment. The report will focus on three areas: (1) The best available technologies or practices to prevent or minimize, without compromising pipeline safety, the release of natural gas when making planned repairs, replacements, or maintenance to a pipeline facility; (2) The best available technologies or practices to prevent or minimize, without compromising pipeline safety, the release of natural gas when the operator intentionally vents or releases natural gas, including blowdowns; and (3) Pipeline facility designs that, without compromising pipeline safety, mitigate the need to intentionally vent natural gas. The report is due to Congress by June 27, 2022. PHMSA will use the results of this report to determine follow-on actions, which would occur in FY 2023 and beyond.

In response to the Administration's 2030 and 2050 Net Zero goals, industry is considering expanded development and transportation of gaseous hydrogen and supercritical carbon dioxide. Both are integral to an increased reliance on green hydrogen from renewable fuels and blue hydrogen, where carbon dioxide is captured and stored or utilized so that it decreases climate impact of the fuel. Due to these potential increases in related transportation and need for either new or converted pipelines, a thorough evaluation of related pipeline safety regulations is necessary. This could involve studies of the current regulatory framework; studies and reports to compile pertinent research on related topics; and studies to support and direct our research program in these areas. Studies will need to consider overall pipeline safety and regulatory perspectives, and a focus on specific technical subject matter. This could include research of pipeline materials; hydrogen gas distribution systems; metering of hydrogen gas; in-line inspection tools; integrity management and risk analysis; leak detection; blending of hydrogen gas with natural gas; hydrogen gas storage; hydrogen terminals (import and export) and liquefaction.

Under the Competitive Academic Agreement Program (CAAP), PHMSA fosters partnerships to colleges and universities through awards to conduct innovative research. PHMSA will continue to make its CAAP program more inclusive by expanding its outreach communication of its funding opportunities and by ensuring all higher education institutions including Minority Serving Institutions, such as Historically Black Colleges and Universities, Hispanic-serving Institutions, and Asian American and Pacific Island Serving Institutions are notified of opportunities.

**Underground Natural Gas Storage (UNGS) and Liquefied Natural Gas (LNG) Facility Safety:** UNGS and LNG facility safety are also areas of increasing Research and Development importance because of the rapid growth in LNG use and PHMSA's regulatory responsibilities in UNGS. The Aliso Canyon storage gas leak, for instance, gained national attention and prompted new Research and Development initiatives in design and reliability improvements to UNGS equipment, such as tubing, packers, and subsurface safety valves, as well as knowledge generation on associated maintenance practices for UNGS wells. The incident also resulted in PHMSA initiating a new regulatory oversight program for UNGS. Underground gas storage research will support risk assessments, well-casing integrity, subsurface safety valve testing, and subsurface- and facility-level equipment analysis and monitoring. These advances will improve the safety of UNGS and protect the environment from damaging leaks.

The expansion of the domestic and international LNG transportation industry has highlighted the need to establish and implement the best safety practices. LNG transportation research will examine regulatory requirements and standards incorporated into the Code of Federal Regulations for LNG and performance gap analyses so that they can keep pace with the growing demand to export LNG. Further opportunities in this subprogram area include addressing performance-based risk reduction at every type of LNG facility during site location, design, construction, operations, maintenance, and fire protection activities.

### **Grants: \$65.56 million**

PHMSA provides grants to states to support inspection and enforcement activities of the Nation's vast network of intrastate pipelines, including pipelines that operate in cities and neighborhoods, especially in underserved communities. This partnership allows states to inspect pipeline systems, offer input into the design of community safety programs, and provide more economical oversight of intrastate facilities. The amounts requested for each of the programs are listed below:

**State Pipeline Safety Grants, \$58.00 million:** The State Pipeline Safety Grant program supports state inspections of pipeline facilities within a state. The grants also support nine states which act as agents for PHMSA, inspecting pipelines crossing state boundaries. PHMSA is authorized to reimburse states for up to 80 percent of the cost of carrying out their pipeline safety programs, including inspection staff and equipment costs. Reimbursement under this grant program is based on the costs incurred by a state and the effectiveness of its pipeline safety program, as determined by PHMSA's evaluation of the state's performance.

Each year, PHMSA evaluates the quality of state programs and the safe operation of intrastate pipelines by scoring state programs through the annual Program Evaluation and Progress Report. This evaluation includes an on-site review of the state's records and activities related to inspections, compliance, accident investigations, training, and excavation damage prevention. PHMSA also reviews the states' inspection of new pipeline construction and the implementation of pipeline operator integrity management programs designed to prevent accidents and spills.

Currently the State Pipeline Safety Grant program supports state economies by funding approximately 385 gas and 47 hazardous liquid pipeline safety state inspectors. All states, except Alaska and Hawaii, participate in PHMSA's pipeline safety program. Through PHMSA's support and partnership with states, pipeline incidents involving distributions systems have decreased, while infrastructure has increased. Since the early 2000s, distribution infrastructure has increased by 17 percent while distribution incidents have decreased by 42 percent. Additionally, excavation damages to pipelines measured per one thousand notices of excavation have decreased by 34 percent over the last 10 years. This reduction in incidents and increase in safety oversight supports reducing greenhouse gas emissions.

**Underground Natural Gas Storage Grants, \$5.00 million:** The Underground Natural Gas Storage (UNGS) grants ensure safety, promote a clean environment, and drive economic growth by allowing the safe and efficient storage and subsequent transportation of natural gas. PHMSA



reimburses inspection costs to states participating in the UNGS safety program. Twenty-four states have intrastate UNGS facilities. States may qualify for reimbursement if they are participating in PHMSA's UNGS safety program through a certification or agreement with PHMSA. As with the long-established State Pipeline Safety Grants program, UNGS grants pay up to 80 percent of the qualifying costs related to inspections, enforcement, personnel, and equipment. The number of total incidents for UNGS has decreased 57 percent over the last 5 years supporting a reduction in greenhouse gas emissions because of state and federal oversight.

**State Damage Prevention Grants, \$1.50 million:** The State Damage Prevention Grants were designed with a two-fold purpose: 1) establish comprehensive state programs to prevent excavation damage to underground pipeline facilities in states that lack these programs, and 2) improve and enhance existing state damage prevention programs. To qualify for this grant, stakeholders engage cooperatively as a group to evaluate and improve their state's damage prevention program and incorporate the nine elements of an effective damage prevention program.

Once the grantees receive their state damage prevention grants funds, it is their responsibility to execute the nine elements below:

- 1) Enhanced communication between operators and excavators.
- 2) Fostering support and partnership among all stakeholders.
- 3) Operator's use for performance measures for pipe locators *(equipment that help to locate pipes and cables underground easier and faster)*.
- 4) Partnership in employee training.
- 5) Partnership in public education.
- 6) Fair and consistent enforcement of the law.
- 7) Use of technology to improve the locating process.
- 8) Working with the Enforcement agency to resolve issues.
- 9) Data analysis to continually improve the program effectiveness.



**State One-Call Grants, \$1.06 million:** The State One-Call Grant program enhances public safety, protects the environment, minimizes risks to excavators, and prevents disruption of vital public services by reducing the incidence of excavation damage to underground facilities across the Nation including those that operate in cities, neighborhoods, and underserved communities. States must demonstrate their compliance and alignment with 49 U.S.C. 60106(a) goals for improving state damage prevention programs.

Goals of the program are to improve:

- 1) Overall quality and effectiveness of One-Call notification systems in the state.
- 2) Communications systems linking One-Call notification systems.
- 3) Location capabilities, including training personnel and developing and using location technology.
- 4) Record retention and recording capabilities for One-Call notification systems.

- 5) Public information and education.
- 6) Participation in One-Call notification systems.
- 7) Compliance and enforcement under the state one-call notification program.

In FY 2021, PHMSA awarded a total of \$1,058,000 in State One-Call Grants for 36 projects in 26 states.

Funding these grants will ensure an effective, efficient, and reliable underground utilities network. Additionally, excavation damages to pipelines measured per one thousand notices of excavation have decreased by 34 percent over the last 10 years and incidents caused by excavation damage have decreased by 51.6 percent since the inception of the grant in 1995 reducing greenhouse gas emissions.

**What benefits will be provided to the American public through this request and why is this program necessary?**

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Pipelines cross through thousands of communities in every state. Congress has entrusted PHMSA to protect the safety of millions of Americans who live and work around pipelines, especially those in underserved communities. It is anticipated that all the changes as detailed will have a positive impact on communities, and increase pipeline safety, environmental protection, and equitable distribution of grant resources nationwide. To that end, the requested funding will provide PHMSA with resources to support the safe delivery of energy and other products via 2.8 million miles of pipelines. This will protect the natural environment, help reduce greenhouse gas emissions, and promote economic and job growth. The combination of improving existing infrastructure and continuing groundbreaking, evidence-based R&D is anticipated to transform the pipeline industry and modernize delivery systems. The goal of this transformation is to spur the pipeline industry to pursue operational excellence that will enhance safety, environmental and climate change management, as well as reduce the potential for community impact by mishaps and incidents.

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# **Trust Fund Share of Pipeline Safety**

## **APPROPRIATIONS EXPLANATION**

### **TRUST FUND SHARE OF PIPELINE SAFETY**

#### **(OIL SPILL LIABILITY TRUST FUND)**

The Oil Spill Liability Trust Fund was created by the United States Congress to help fund efforts designed to minimize oil spills into the water and environmentally sensitive areas. Funding from the Oil Spill Liability Trust Fund pays for Hazardous Liquid costs of the Office of Pipeline Safety program including all oil spill response activities. This section provides additional information about the fund. Funding from the Oil Spill Liability Trust Fund is accounted for by an expenditure transfer from which obligations are made and tracked separately from other pipeline safety funds.

**EXHIBIT III-1**  
**TRUST FUND SHARE OF PIPELINE SAFETY**  
**Summary by Program Activity**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

	<u>FY 2021 ENACTED</u>	<u>FY 2022 CR (w/IIJA Oblim)</u>	<u>FY 2023 PRES. BUDGET</u>
Operations	\$ 11,000	\$ 11,000	15,000
Research and Development	3,000	3,000	3,000
Grants	9,000	9,000	11,000
<b>TOTAL</b>	<u><u>\$ 23,000</u></u>	<u><u>\$ 23,000</u></u>	<u><u>\$ 29,000</u></u>
FTEs			
Direct Funded	-	-	-

**Program and Performance Statement**

PHMSA has multiple responsibilities to inspect, investigate failures, regulate, and research hazardous liquid pipelines. In addition, PHMSA collects, and reviews oil spill response plans prepared under the Oil Pollution Act of 1990. Operators that store, handle, or transport oil are required to develop response plans to minimize the environmental impact of oil spills and improve incident response. PHMSA reviews these plans to make sure that they are submitted on time, updated regularly, and that they comply with regulations. PHMSA improves oil spill preparedness and incident response through data analysis, inspections, exercises, spill monitoring, pipeline mapping in areas unusually sensitive to environmental damage, and by advancing technologies to detect and prevent leaks from hazardous liquid pipelines. These activities are funded in part by the Oil Spill Liability Trust Fund.

## Detailed Justification for the Trust Fund Share of Pipeline Safety

### What is the request and what funds are currently spent on the program?

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**FY 2023 – Oil Spill Liability Trust Fund Budget Request  
(Included in the Pipeline Safety Account)  
(\$000)**

<b>Program Activity</b>	<b>FY 2021 Enacted</b>	<b>FY 2022 CR (w/IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
Operations	\$ 11,000	\$ 11,000	\$ 15,000
Research and Development	3,000	3,000	3,000
Grants	9,000	9,000	11,000
<b>Total</b>	<b>\$ 23,000</b>	<b>\$ 23,000</b>	<b>\$ 29,000</b>

### What is this program and why is it necessary?

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The Oil Spill Liability Trust Fund was created by the United States Congress to finance efforts to prevent, remove, and mitigate damage from oil spills into the water and environmentally sensitive areas. Funding from the Oil Spill Liability Trust Fund is used to cover the costs of the following: Oversight responsibilities for hazardous liquid pipeline operators by PHMSA including pipeline integrity management; pipeline compliance inspection and enforcement; emergency preparedness related to pipeline spills and incidents; training, competency standards, and qualifications for inspection, enforcement and operation of pipelines; state pipeline safety grants for intrastate oil pipelines; and pipeline research and development. The Oil Spill Liability Trust Fund contribution amount is based on a reasonable share of the cost of these activities for pipelines in and around inland waterways.

The Oil Spill Liability Trust Fund is a source of funding for the Pipeline Safety Fund. It specifically funds costs related to PHMSA's hazardous liquid program including inspections, safety operations, regulations development, adjudication of violations and fines, grant programs that fund state inspections, and any responsibilities under the Oil Pollution Act.

In FY 2023, the Oil Spill Liability Trust Fund will contribute \$29.00 million to the overall Pipeline Safety Program. The amount funds any cost PHMSA incurs to regulate and check safe operation of hazardous liquids pipeline operators as well as funding grants to state partners' inspection programs, and research. Over the last 12 years the Trust Fund contribution has increased 22% while the pipeline user fees have increased 125%.

The FY 2023 Budget request proposes to increase the Oil Spill Liability Trust Fund share by \$6.0 million, reducing the pipeline operators' user fees by the same amount. This will better align trust fund contributions with the increase in operators' costs, thereby spurring economic recovery while still providing substantial environmental benefits.

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**Natural Gas Distribution**  
**Infrastructure Safety and Modernization**  
**Grant Program -**  
**Pipeline Replacement**

## APPROPRIATIONS LANGUAGE

### NATURAL GAS DISTRIBUTION INFRASTRUCTURE SAFETY AND MODERNIZATION GRANT PROGRAM (INCLUDING TRANSFER OF FUNDS)

For an additional amount for “Natural Gas Distribution Infrastructure Safety and Modernization Grant Program”, \$1,000,000,000, to remain available until expended for the Secretary of Transportation to make competitive grants for the modernization of natural gas distribution pipelines: *Provided*, That \$200,000,000, to remain available until September 30, 2032, shall be made available for fiscal year 2022, \$200,000,000, to remain available until September 30, 2033, shall be made available for fiscal year 2023, \$200,000,000, to remain available until September 30, 2034, shall be made available for fiscal year 2024, \$200,000,000, to remain available until September 30, 2035, shall be made available for fiscal year 2025, and \$200,000,000, to remain available until September 30, 2036, shall be made available for fiscal year 2026: *Provided further*, That grants from funds made available under this heading in this Act shall be available to a municipality or community owned utility (not including for-profit entities) to repair, rehabilitate, or replace its natural gas distribution pipeline system or portions thereof or to acquire equipment to (1) reduce incidents and fatalities and (2) avoid economic losses: *Provided further*, That in making grants from funds made available under this heading in this Act, the Secretary shall establish procedures for awarding grants that take into consideration the following: (1) the risk profile of the existing pipeline system operated by the applicant, including the presence of pipe prone to leakage; (2) the potential of the project for creating jobs; (3) the potential for benefiting disadvantaged rural and urban communities; and (4) economic impact or growth: *Provided further*, That the Secretary shall not award more than 12.5 percent of the funds available under this heading to a single municipality or community-owned utility: *Provided further*, That the Secretary shall issue a notice of funding opportunity not later than 180 days after each date upon which funds are made available under the first proviso: *Provided further*, That the Secretary shall make awards not later than 270 days after issuing the notices of funding opportunity required under the preceding proviso: *Provided further*, That not more than 2 percent of the amounts made available in each fiscal year shall be available to pay the administrative costs of carrying out the grant program under this heading in this Act: *Provided further*, That one-half of one percent of the amounts transferred pursuant to the authority in this section in each of fiscal years 2022 through 2026 shall be transferred to the Office of Inspector General of the Department of Transportation for oversight of funding provided to the Department of Transportation in this Act: *Provided further*, That such amount is designated by the Congress as being for an emergency requirement pursuant to section 4112(a) of H. Con. Res. 71 (115<sup>th</sup> Congress), the concurrent resolution on the budget for fiscal year 2018, and to section 251(b) of the Balanced Budget and Emergency Deficit Control Act of 1985.

**EXHIBIT III-1**  
**Natural Gas Distribution Infrastructure Safety and Modernization Grant Program**  
**Summary by Program Activity**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

	<u><b>FY 2021 ENACTED</b></u>	<u><b>FY 2022 CR (w/IIJA Oblim)</b></u>	<u><b>FY 2023 PRES. BUDGET</b></u>
Operations	\$ -	\$ 4,000	\$ 4,000
Research and Development	-	-	-
Grants	-	196,000	196,000
<b>TOTAL</b>	<u><u>\$ -</u></u>	<u><u>\$ 200,000</u></u>	<u><u>\$ 200,000</u></u>
FTEs			
Direct Funded	-	3.5	8.0

**Program and Performance Statement**

The Infrastructure Investment and Jobs Act of 2021 (IIJA) provided funding for the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program. Grant funds are made available to municipally or community-owned utility operators (not including for-profit entities) to repair, rehabilitate, or replace its natural gas distribution pipeline system or portions thereof or to acquire equipment to (1) reduce incidents and fatalities and (2) avoid economic losses. With the repair, rehabilitation, or replacement of legacy gas distribution pipelines, these systems will operate more safely, reduce methane emissions, and will serve as the building blocks of the infrastructure to transport fuels of the future.

**EXHIBIT III-1a**

**Natural Gas Distribution Infrastructure Safety and Modernization Grant Program**

**SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023**

**Appropriations, Obligations, Limitations, and Exempt Obligations**

**(\$000)**

	<b><u>\$000</u></b>	<b><u>FTE</u></b>
<b>FY 2022 CR</b>	<b>\$ 200,000</b>	<b>3.5</b>
<b>ADJUSTMENTS TO BASE:</b>		
Annualization of FY 2022 FTE	753	3.5
Annualization of Prior Pay Raises (2.7%)	-	-
FY 2023 Pay Raises (4.6%)	35	-
GSA Rent	-	-
Working Capital Fund	-	-
Inflation and Other Adjustments to Base	7	-
Adjustment for Compensable Days (260 days)	-	-
<b>SUBTOTAL, ADJUSTMENTS TO BASE</b>	<b>795</b>	<b>3.5</b>
<b>PROGRAM REDUCTIONS</b>		
Contract Support	(1,010)	-
<b>SUBTOTAL, PROGRAM REDUCTIONS</b>	<b>(1,010)</b>	<b>-</b>
<b>PROGRAM INCREASES</b>		
Program Specialist (1.0) FTE	215	1.0
<b>SUBTOTAL, PROGRAM INCREASES</b>	<b>215</b>	<b>1.0</b>
<b>FY 2023 REQUEST</b>	<b>\$ 200,000</b>	<b>8.0</b>

**Detailed Justification for the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program**

**FY 2023 – Program Budget Request  
(\$000)**

<b>Program Activity</b>	<b>FY 2021 Enacted</b>	<b>FY 2022 CR (w/IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
Operations	\$ -	\$ 752	\$ 1,762
Contract Safety Programs	-	3,248	2,238
Grants	-	196,000	196,000
<b>Total</b>	<b>\$ -</b>	<b>\$ 200,000</b>	<b>\$ 200,000</b>
<b>FTEs</b>	<b>-</b>	<b>3.5</b>	<b>8.0</b>

**What Is the Goal of the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program and What Does the Funding Level Support?**

**Key Request Highlights:**

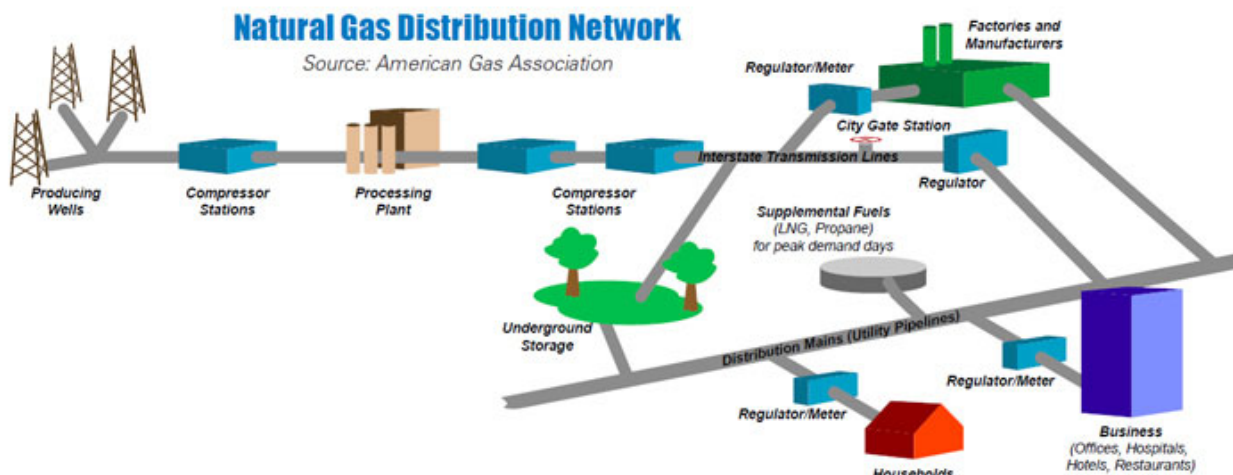
**PHMSA’s Oversight of an Expansive Network of US Pipelines**

The United States operates the most expansive network of energy pipelines in the world. This network safely transports 65 percent of the energy consumed in the United States, helping to power nearly every facet of our daily lives, and providing significant economic benefits to the Nation. PHMSA’s mission is to protect people and the environment by advancing the safe transportation of energy and other hazardous materials that are essential to our daily lives.

PHMSA administers a National regulatory safety program for approximately 2.8 million miles of interstate and intrastate pipelines in the United States. PHMSA oversees the safe operation of 229,000 miles of hazardous liquid pipelines, 302,000 miles of gas transmission pipelines, 2,284,000 miles of gas distribution mains and services, and 17,000 miles of gas-gathering pipelines. Some of these pipelines are part of an aging infrastructure network of legacy cast iron, bare steel, and legacy plastic— which are associated with higher incidents of fatalities and severe injuries as well as leaks that contribute to global climate change. Many municipally owned pipes travel through urban and rural cities, towns and neighborhoods, especially those that have been historically underserved. Going forward, modernization of old, less reliable pipeline networks with newer piping that can pave the way for cleaner fuels, such as hydrogen and bio-blends, will provide significant public benefits.

PHMSA’s \$1 billion program under the Infrastructure Investment and Jobs Act of 2021(IIJA) to

repair, rehabilitate, or replace legacy leak-prone pipes will enhance pipeline safety and reduce methane emissions from these pipelines, especially in older and more economically disadvantaged areas.



**Program Evaluation:** The program will have longstanding impacts on safety, with the replacement of aged lines; equity, with the addition of better service to often underserved communities; and climate change solutions, with new lines that better contain methane emissions. PHMSA is committed to using program evaluation to best manage the resources entrusted. Beginning in FY 2023, PHMSA will begin program evaluation activities upon the finalization of performance metrics and the development of reliable systems to collect near real time results to compare to these measures.

As the program matures, PHMSA will conduct reviews of program performance and use the findings and recommendations to shape the program beyond FY 2023. Specifically, program evaluation will review results and measure outcomes such as miles of pipeline repaired, rehabilitated, or replaced, number of persons served in underserved and non-underserved communities, and impact on reducing methane emissions.

### Operations: \$1.76 million

In FY 2023, PHMSA will expand upon the FY 2022 initial efforts to address the Administration's strategic priorities of safety, economic recovery and rebuilding, addressing climate change, and using transportation as an engine for equity.

During FY 2022, PHMSA expects to fill 7 positions to administer this grant program. PHMSA staff will develop program management tools and techniques including construction progress reporting and performance measurement systems to assess (1) impacts on safety, (2) disadvantaged communities, and (3) the impact of methane leak reduction projects on climate change and the economy.

PHMSA will conduct outreach events to assist applicants in designing the best and most

impactful applications. During FY 2023, PHMSA will issue a second Notice of Funding Opportunity and work with the initial award pool of grantees to ensure grantee performance and grant program results.

### **Contract Safety Programs: \$2.24 million**

PHMSA's request includes professional support services necessary to meet organizational goals and adhere to Congressional timelines for administering the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program. PHMSA requires analytic support to ensure compliance with the National Environmental Protection Act (NEPA) at the nation-wide, program level and to provide sufficient oversight in conducting NEPA reviews at the project-level, as well as support to ensure proper grantee oversight and management.

### **Grants: \$196.0 million**

#### **Natural Gas Distribution Infrastructure Safety and Modernization Grant Program:**

PHMSA provides grants to support modernization of the Nation's network of natural gas pipelines, owned and operated by municipalities and communities that provide gas service in cities, towns, and neighborhoods, especially underserved communities. This program funds competitive grants to municipally or community-owned utilities (not including for-profit entities) to repair, rehabilitate, or replace its natural gas distribution pipeline system or to acquire equipment needed to reduce incidents, fatalities, and economic losses. PHMSA uses a series of factors in determining the distribution of grant awards, such as: the risk profile of the project; potential job creation; benefits to disadvantaged communities; and impact on economic growth.

#### **What benefits will be provided to the American public through this request and why is this program necessary?**

Legacy natural gas distribution pipes pose a risk to life, severe injury, and the environment—throughout the country. The benefits of this program to the American public will be the repair, rehabilitation, or replacement of portions of the natural gas distribution pipeline system or to acquire equipment to (1) reduce incidents and fatalities and (2) reducing the presence of pipe prone to leakage; (3) the sustainment and creation of infrastructure related jobs; (4) increased benefit to disadvantaged rural and urban communities; and (5) positive economic impact or growth.

Congress recognized the need for this infrastructure investment and included the program requirement in Section 1015 of the Infrastructure Investment and Jobs Act of 2021.

These pipeline improvements will not only reduce incidents and fatalities from potential pipeline failures but also reduce fugitive emissions of greenhouse gases. The goals of this grant are to also ensure the awards support projects for creating jobs, as well as projects that benefit disadvantaged rural and urban communities, and spur positive economic impact or growth.

# **Hazardous Materials Safety**



## **APPROPRIATIONS LANGUAGE**

### **HAZARDOUS MATERIALS SAFETY**

For expenses necessary to discharge the hazardous materials safety functions of the Pipeline and Hazardous Materials Safety Administration, [\$62,000,000] *\$74,211,000* to remain available until September 30, [2024] 2025: Provided, That up to \$800,000 in fees collected under 49 U.S.C. 5108(g) shall be deposited in the general fund of the Treasury as offsetting receipts: Provided further, That there may be credited to this appropriation, to be available until expended, funds received from States, counties, municipalities, other public authorities, and private sources for expenses incurred for training, for reports publication and dissemination, and for travel expenses incurred in performance of hazardous materials exemptions and approvals functions.

Note. -- A full-year 2022 appropriation for this account was not enacted at the time the budget was prepared; therefore, the budget assumes this account is operating under the Continuing Appropriations Act, 2022 (Division A of P.L. 117-43, as amended). The amounts included for Fiscal Year (FY) 2022 reflect the annualized level provided by the continuing resolution.

### EXHIBIT III-1

**Hazardous Materials Safety  
SUMMARY BY PROGRAM ACTIVITY  
Appropriations, Obligation Limitations, and Exempt Obligations  
(\$000)**

	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
Operations	\$ 55,930	\$ 55,930	\$ 65,641
Research and Development	5,070	5,070	7,570
Grants	1,000	1,000	1,000
<b>TOTAL</b>	<b>\$ 62,000</b>	<b>\$ 62,000</b>	<b>\$ 74,211</b>
FTEs			
Direct Funded	191.0	203.0	218.5

#### **Program and Performance Statement**

PHMSA's Hazardous Materials Safety program is responsible for the oversight of the safe transportation of hazardous materials. The program relies on comprehensive risk management to establish policy, standards and regulations for classifying, packaging, hazard communication, handling, training and transporting hazardous materials via air, highway, rail and vessel. The program uses inspection, enforcement, outreach and incident analysis in efforts to reduce incidents, minimize fatalities and injuries, mitigate the consequences of incidents that occur, train and prepare first responders, and enhance safety.

**EXHIBIT III-1a**  
**Hazardous Materials Safety**  
**SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023**  
**Appropriations, Obligations, Limitations, and Exempt Obligations**  
**(\$000)**

	<b><u>\$000</u></b>	<b><u>FTE</u></b>
<b>FY 2022 CR</b>	<b>\$ 62,000</b>	<b>203.0</b>
<b>ADJUSTMENTS TO BASE:</b>		
Annualization of FY 2022 FTE	-	-
Annualization of Prior Pay Raises (2.7%)	226	-
FY 2023 Pay Raises (4.6%)	1,164	-
GSA Rent	-	-
Working Capital Fund	556	-
Inflation and Other Adjustments to Base	2,760	-
Adjustment for Compensable Days (260 days)	-	-
<b>SUBTOTAL, ADJUSTMENTS TO BASE</b>	<b>4,706</b>	<b>-</b>
<b>PROGRAM REDUCTIONS</b>		
NONE	-	-
<b>SUBTOTAL, PROGRAM REDUCTIONS</b>	<b>-</b>	<b>-</b>
<b>PROGRAM INCREASES</b>		
3 Emerging Energy Experts positions (1.5 FTE)	323	1.5
20 Outreach positions (10.0 FTE)	2,150	10.0
8 Accident Investigation positions (4.0 FTE)	860	4.0
Research & Development	2,500	-
Outreach, Training and Compliance	647	-
State Hazardous Materials Safety Training	1,025	-
<b>SUBTOTAL, PROGRAM INCREASES</b>	<b>7,505</b>	<b>15.5</b>
<b>FY 2023 REQUEST</b>	<b>\$ 74,211</b>	<b>218.5</b>

## Detailed Justification for Hazardous Materials Safety

### FY 2023 – Hazardous Materials Safety Budget Request (\$000)

Program Activity	FY 2021 Enacted	FY 2022 CR (w/IIJA Oblim)	FY 2023 PRES. BUDGET
Operations	\$ 44,332	\$ 44,332	\$ 52,371
Contract Safety Programs	11,598	11,598	13,270
Research and Development	5,070	5,070	7,570
Grants	1,000	1,000	1,000
<b>Total</b>	<b>\$ 62,000</b>	<b>\$ 62,000</b>	<b>\$ 74,211</b>
<b>FTEs</b>	<b>191.0</b>	<b>203.0</b>	<b>218.5</b>

#### What is this program and what does this funding level support?

- **\$2.50 million Research & Development**—restore Hazardous Materials Safety Research and Development to pre-FY 2021 levels. This will allow PHMSA to focus on **innovative, transformational hazardous materials** research, including in the areas of **lithium batteries and emergency technologies**.
- **\$2.15 million Hazardous Materials Planning Outreach (Hazardous Materials Safety)**—for 20 positions (10.0 FTE) to **address economic inequity and reduce transportation costs** through Hazardous Materials Planning Outreach to **economically disadvantaged communities**. Through the Emergency Preparedness grants program, PHMSA will outreach to Local Emergency Planning Communities (LPECs), which are often in economically distressed areas, improving preparedness for hazardous materials transportation risk, thereby keeping communities safer.
- **\$1.03 million State Hazardous Materials Inspection Program (Hazardous Materials Safety)**—to conduct state-based **safety inspections of hazardous materials shippers**, which will leverage state resources to **improve safety of hazardous materials transport and reduce fatalities/injuries**. As the number of hazardous materials shipments continue to increase year-over-year (projected 44% increase in non-electric vehicle lithium batteries, and 38% increase in electric vehicle batteries by 2025), there is a much greater demand to ensure safe transport—this additional funding will allow states and localities and their first responders to keep up with demand.
- **\$860,000 Accident Investigation Programs**—The request includes an additional eight positions (4.0 FTE) to enhance our Accident Investigation Program. This program will

bridge incident knowledge gaps by providing a dedicated group to collect evidentiary findings, provide analysis of the facts and recommendations for the Agency to further improve hazardous materials transportation safety.

- **\$647,000 Check the Box Campaign** – PHMSA’s request in FY 2023 adds \$647,000 in funding for the Check the Box program to educate inadvertent offerors of undeclared hazardous materials and the public on what is considered a hazardous material (hazmat), and understand how to ship their everyday items correctly, preventing serious incidents. New funding will increase efforts to educate small businesses in minority communities.
- **\$323,000 Emerging Energy Expertise** -- The request also includes an additional three (1.5 FTE) to improve the Agency’s capability to address the safe transportation of emerging energy sources. Alternative energy sources such as hydrogen power cells, hydrogen fuel, lithium sodium batteries, and large lithium batteries are also being increasingly used to reduce greenhouse gas and address climate concerns. PHMSA requires three additional chemists/scientists to ensure the safe transportation of these emerging materials.

Many products used in homes and gardens, farms, vehicles, and industry are dangerous if improperly packaged or unsafely transported. The Hazardous Materials Safety program serves PHMSA’s safety mission by focusing on the classification, packaging, hazard communication, handling, training, and transport requirements for hazardous materials transported by air, highway, rail, and vessel in direct support of the Department of Transportation’s Safety priority.

In our interconnected and highly developed transportation network, hazardous materials move by all modes of transport and are transported in a number of ways— from bulk quantities of raw materials down to small consumer quantities of finished products. A single package may be transported by multiple modes from its point of origin to its destination. PHMSA’s guidance provides the critical connection that enables end-to-end safety, consistency and interoperability throughout the transportation system. Our work force fosters a high degree of transportation safety while facilitating trade and economic growth by eliminating the potential for overlapping regulatory burdens that could impede commerce, and by ensuring that products make it to their intended destination efficiently and safely.

The movement of hazardous materials is inherently dangerous. More than 3.3 billion tons of hazardous materials valued at more than \$1.9 trillion are transported annually by air, highway, rail, and vessel across the United States. On average, more than 1.2 million hazardous materials shipments occur every day. Every year approximately 20,000 incidents involving hazardous materials occur in transportation. In FY 2020, 27 of these incidents resulted in 7 fatalities and 33 hospitalizations. Led by domestic demand for lithium-ion battery powered electronics, electric vehicle batteries, and international demand for American energy products and chemicals, the total volume, number of shipments, and value of hazardous materials shipments is expected to continue increasing, especially with the recent rise of e-commerce during the COVID-19 pandemic.

PHMSA works to promote the safety of all who come in contact with hazardous materials and maintain a system where hazardous materials are packaged and shipped without incident. The program accomplishes this with a variety of packaging and transportation safety standards, safety checks, and outreach to the packaging and shipping industries. Hazardous materials shipped

include flammable liquids such as oil and gasoline, liquefied natural gas (LNG), explosives, flammable solids, oxidizing substances and organic peroxides, infectious substances (e.g. COVID-19 samples or cultures), lithium-ion batteries, corrosive substances, and radioactive materials.



PHMSA also oversees the safe transport of lithium-ion batteries that have become integral to almost everything we do and use, but that also pose risk during transportation. PHMSA convened a Federal Advisory Committee to examine the issues surrounding the safe transport of lithium-ion batteries and will consider the committee's recommendations, while also tracking new developments in battery technology, including emerging sodium-ion batteries. Through PHMSA's oversight, we help ensure the safety of everyone who comes in contact with lithium-ion batteries and promote economic growth throughout the Nation by the efficient transport of these products.

As the Nation's use of hazardous materials grows, so do the risks that come with transporting these materials. PHMSA is constantly challenged to develop new strategies for ensuring hazardous materials safety. The rise of e-commerce has increased hazardous materials transportation that traditionally occurred in large, bulk shipments that occupied whole trucks, train cars, or intermodal containers to include individual shipments that are being delivered directly to a consumer's home. These changes in buying, shipping, and transportation require new and innovative strategies to ensure the safety of the transportation system and the public.

PHMSA relies on two primary strategies to address safety. First, keep the hazardous materials in their packages by ensuring the material is properly classified and that packages for hazardous materials are constructed to rigorous safety standards and, where appropriate, are periodically tested to ensure continued viability. Second, PHMSA works to ensure that communities are aware and can plan for changes and first responders are adequately prepared to mitigate the consequences of any incidents through adequate information and training. This is especially important as many hazardous materials shipments originate or end in or transported through underserved communities. Meeting safety objectives requires that PHMSA continue to support safe packaging, train first responders, and invest in promising research and development that solves complex packaging and transportation safety challenges.

**PHMSA's Hazardous Materials Research and Development** program is designed to inform PHMSA's safety and regulatory strategies by solving complex problems in the packaging and

movement of hazardous materials. This includes researching and identifying best practices regarding hazardous materials transport with a better classification of the most dangerous products, development of new packaging materials and methods to contain those products and conducting engineering and scientific analysis to improve safety while promoting economic growth. Recently completed research has identified a “metal foam” that provides strength and strong thermal properties in a material that is significantly lighter than normal metals. This material has the potential to significantly increase hazardous materials safety while also allowing businesses to transport additional quantities.

Another recently completed research project on lithium-ion batteries has led to the development of a battery health monitoring device that can anticipate potential shipment issues without affecting packaging weight. PHMSA continues to review and communicate hazards tied to lithium-ion batteries in both cargo and passenger aircraft, as that mode of transportation poses the greatest threat to the public. Significant emphasis is placed on finding innovative ways to enhance safety and improve commerce.

Research for FY 2023 will focus on the following strategic areas:

- Risk management and mitigation,
- Package integrity,
- Emerging power sources and technologies, and
- Technical analysis to aid risk assessments.

Specific emphasis will be placed on emerging battery safety issues with lithium and sodium-ion batteries, examining the safety of “nurse” tanks that transport anhydrous ammonia to America’s farmers, continuing to look into safer methods for transporting energy products such as hydrogen and liquefied natural gas (LNG), and continuing to refine best practices for responding to hazardous materials incidents by updating the Emergency Response Guide Book. Much of PHMSA’s hazardous materials research is done cooperatively between government and industry entities with a focus on near-term solutions to evolving hazardous materials related transportation challenges.

To continue the safe movement of hazardous materials, PHMSA requests \$74.21 million for the Hazardous Materials Safety program as follows:

#### **Operating Expenses: \$52.37 million**

PHMSA’s fiscal year (FY) 2023 request includes \$52.37 million for hazardous materials safety-related operating expenses to support the cost of 234 positions: 80 inspectors and 154 safety program, scientific, safety standard development, and support staff. These staff work with the energy industry on the safe movement of energy products, and hazardous materials packagers and shippers of such products as lithium-ion batteries, electric vehicle batteries, fireworks, hand sanitizers, and dangerous goods such as chlorine and other toxic chemicals, radioactive, infectious substances, and explosives. Operating expenses cover salaries and benefits, travel, training, supplies, equipment and uniforms for all inspectors. The request also includes investments in PHMSA’s core business areas of Inspection, Investigation, Compliance, Safety Management, and Outreach and Engagement programs to educate the public, the industry, and

emergency responders on hazardous materials safety.

**PHMSA is requesting resources to support Local Emergency Planning Committees (LEPCs): 10.0 FTE/20 FTP, \$2.15 million for FY 2023.**

The funding request provides 20 positions (10 FTE) to address inequities by conducting outreach to disadvantaged communities to help connect them with the strategies and resources available to improve hazardous materials transportation planning and response plans. Local Emergency Planning Committees (LEPCs), particularly in economically disadvantaged communities, frequently do not have awareness of hazardous materials risks in transportation within their communities or the available tools to allow them to develop robust response plans, ensure emergency responders get appropriate training, and make informed generational decisions about siting critical infrastructure (hospitals, schools, senior living, assisted housing) away from transportation risk. Further, disadvantaged communities are disproportionately impacted as they are frequently located adjacent to major transportation routes (railways and interstate highways). PHMSA will use the requested staff to identify communities in need of assistance and provide education and technical assistance to those communities in developing and implementing robust emergency response plans.

**Accident Investigations** - The request includes an additional 8 positions (4.0 FTE) and \$860,000 to expand the Accident Investigation Program.

This request seeks to improve safety by expanding PHMSA's investigative and analytical staff - creating a team of professionals dedicated to incident investigations and using findings from this work to inform rulemakings, program evaluations, outreach, and enforcement. These types of detailed investigations and related analysis will help develop findings and recommendations for the Agency to further improve hazmat transportation safety. The work of this group will support robust program evaluations to help prevent hazardous materials incidents and accidents from occurring and when they do to provide safety to our first responders.

**Contract Safety Programs: \$13.27 million**

PHMSA's Contract Safety programs include the cost of contracted support as follows:

**The Investigation and Enforcement** program supports the PHMSA inspection and investigative staff, located mostly in the PHMSA regional offices. These contracts provide for package testing, technical support, uniforms, and equipment needed to test hazardous materials such as radioactive substances.

**State Hazardous Materials Safety Inspections.** PHMSA is requesting \$3.53 million to provide States with the resources to conduct safety inspections of hazardous materials shippers. In FY 2021, PHMSA received \$2.5 million to establish a State Hazardous Materials Safety Inspection Program. In FY 2022, PHMSA will complete work on the framework and information collection systems to support the program, continue funding inspections in the two States to join the program and bring on an additional one to three States.



For FY 2023, PHMSA expects to continue growing the program by adding additional States as interest and funding allows. Funding will provide reimbursement of shipper inspection costs, develop a certification for State hazardous materials packaging and shipping inspection programs, and develop and maintain information technology systems to support data collection and analysis of State hazardous materials inspection programs. This will improve the safety of hazardous materials shipments Nationwide.

**The Hazardous Materials Information and Analysis** program informs policy and decision-making by collecting and analyzing data from each of the approximately 20,000 hazardous materials transportation incident filings that are submitted to PHMSA every year. Upon receipt, these filings are reviewed in an ISO 9001:2015-compliant quality control workstream and subsequently augmented by data mining of public sources for unreported incidents. Data forensics are then performed to determine the root cause of the incident. This data is used to make data-driven decisions regarding enforcement and outreach activities, determining the efficacy of rulemakings, pushing innovation towards high-impact areas, and to evaluating programmatic success through PHMSA's key priority areas.

**The Outreach, Training and Compliance** program provides outreach, education, and training to communities and first responders on hazardous materials safety while also enhancing compliance by hazardous materials packagers and shippers with safety standards and regulations. In FY 2023, PHMSA will place emphasis on targeted outreach and engagement to underserved communities and economically disadvantaged areas to ensure a full and equitable opportunity to be involved in hazardous materials transportation safety. This entails being a community resource promoting the safe transport of hazardous materials and emergency preparedness and response.

PHMSA's efforts will include developing and distributing outreach material and resources that enhances general understanding of the hazardous material regulations or function-specific guidelines. Additionally, PHMSA attends various stakeholder events and provides training workshops and webinars throughout the year. These provide opportunities for engagement with the regulated community who offer or transport hazardous materials in commerce. The hazmat transportation workshops and webinars provide a basic overview of the regulatory requirements - what they are, how they apply, and how to comply with them - for shipping and transporting Hazardous Materials.

### **Undeclared Hazmat Shipments Outreach Initiative.**

The request in FY 2023 increases funding for the Check the Box program by \$647,000 to expand efforts to educate the regulated industry and the public on what is considered hazmat, and understand how to ship their everyday items correctly, preventing serious incidents. Specific focus will be on educating small businesses in disadvantaged and minority communities. Annually, around 1,500 undeclared shipments are reported to the Department for all modes of transportation. Unfortunately, the total number of undeclared shipments entering the transportation system is unknown, but with



[Click to view the "Check the Box" Video](#)

the transition to eMarketplaces and both PHMSA and the U.S. Postal Service believe the number of undeclared shipments continues to increase, substantially. The Check the Box campaign aims to increase awareness for shippers on what are considered hazardous materials, the risks present in the transportation system, and provide resources to assist in complying with hazardous materials regulations.

The FY 2023 funding will enable PHMSA to continue to publish outreach material such as videos, public service announcements, news articles, and programmatic display promotions. These efforts will be informed by incident data and other situational conditions like commodity, location, demographics, and time of year. Emphasis in FY 2023 will be on engaging non-traditional partners and under-served communities. PHMSA is also exploring opportunities for increased educational awareness through modal and industry partners, as well as other Federal agencies. Further information and outreach materials can be found at: <https://checkthebox.dot.gov/>

**The Hazardous Materials Registration** program collects annual registration statements and fees from over 26,000 hazardous materials shippers. These fees provide essential funding for grants to first responders.

These programs described above advance PHMSA's mission of the safe transportation of energy and hazardous materials through monitoring Special Permit and Approval applications; the development and dissemination of educational tools for outreach; engagement with industry stakeholders and the emergency response community; and ensuring a data-driven approach to managing hazardous materials risks with its one-stop, multi-modal Hazardous Materials Intelligence Portal. These programs also support PHMSA's ability to verify and analyze incident reports submitted through the Hazardous Materials Information Communication System and the ability to obtain emergency notifications when a hazardous material incident occurs.

### **Research and Development: \$7.57 million**

Hazardous Materials Research and Development finds solutions to complex problems in the packaging and movement of hazardous materials. Research and Development funds multi-modal programs supporting improved packaging and equipment designs that enhance the performance of highway transport, including unmanned autonomous vehicles, rail cars, airplane cargo holds, and vessels used to transport hazardous materials. Hazardous Materials' Research and Development plans to develop a better annual hazardous material commodity flow count, supporting innovation in packaging, and enhancing shipping methods. For example, previously low-volume products that are now routinely transported in large packages will undergo shock and vibration testing. Some important projects include:

- **Safe packaging practices for lithium-ion batteries.** Lithium-ion batteries are regulated as hazardous materials. They pose special risks during transportation since they can overheat and ignite under certain conditions and, once ignited, can be especially difficult to extinguish. Lithium-ion batteries present both chemical (e.g. flammable electrolyte) and electrical hazards. They can short circuit, overheat, and sometimes cause a fire when misused, mishandled, improperly packaged, improperly stored, overcharged or subject to failure due to

latent or evolving internal defect(s). This research will evaluate the current packaging practices for lithium ion cells and batteries in the air transport environment, and make recommendations, as appropriate, for packaging improvements.

- **Working with the U.S. Census Bureau** to develop an annual commodity flow and collect data on the types of packaging used in shipping hazardous materials. This data will help PHMSA quickly and precisely calculate the changing risks associated with transport of hazardous materials. In FY 2023, data collected in FY 2022 and FY 2021 will be tabulated and released to the public as a supplement to the US Census Bureau's flagship Commodity Flow Survey.
- **Finite Element Modeling of Nurse Tanks** to safely move hazardous liquids in rural areas and in farming applications. PHMSA's research will develop a criteria and performance model to assess and define service life for nurse tanks that transport anhydrous ammonia delivered to farms for use as fertilizer. Recently there have been several incidents involving nurse tanks that have raised questions about how PHMSA can ensure their safety as they age.

PHMSA works cooperatively with shippers, carriers, emergency responders, State and local officials, other Federal agencies that oversee transportation systems, and academic institutions in its hazardous materials research. It accomplishes this through shared development of proposals and joint funding of the most promising research.

### **Grant Programs: \$1.00 million**

#### **Community Safety Grants**

PHMSA's request in FY 2023 includes \$1.00 million for Community Safety Grants. The grant, authorized by the Infrastructure Investment and Jobs Act of 2021 (IIJA), is a competitive hazardous materials transportation training grant program that funds nonprofit organizations' development of best practice guidance for outreach regarding hazardous materials transportation issues. Intended audiences for such outreach include the public; State and local emergency responders; and Federal, State, local, and tribal government organizations. The Community Safety grant also provides funding for nonprofit outreach and training programs to train State and local personnel responsible for enforcing the safe transportation of hazardous materials.

Additionally, PHMSA's FY 2023 CSG funding priority is directed towards ensuring that underserved communities are prepared and trained to respond to hazmat transportation emergencies, which is consistent with Executive Order 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (86 FR 7009). This includes HAZMAT emergency response outreach and training for fire, law-enforcement, local officials, and public safety access point personnel.

#### **What benefits will be provided to the American public through this request and why is this program necessary?**

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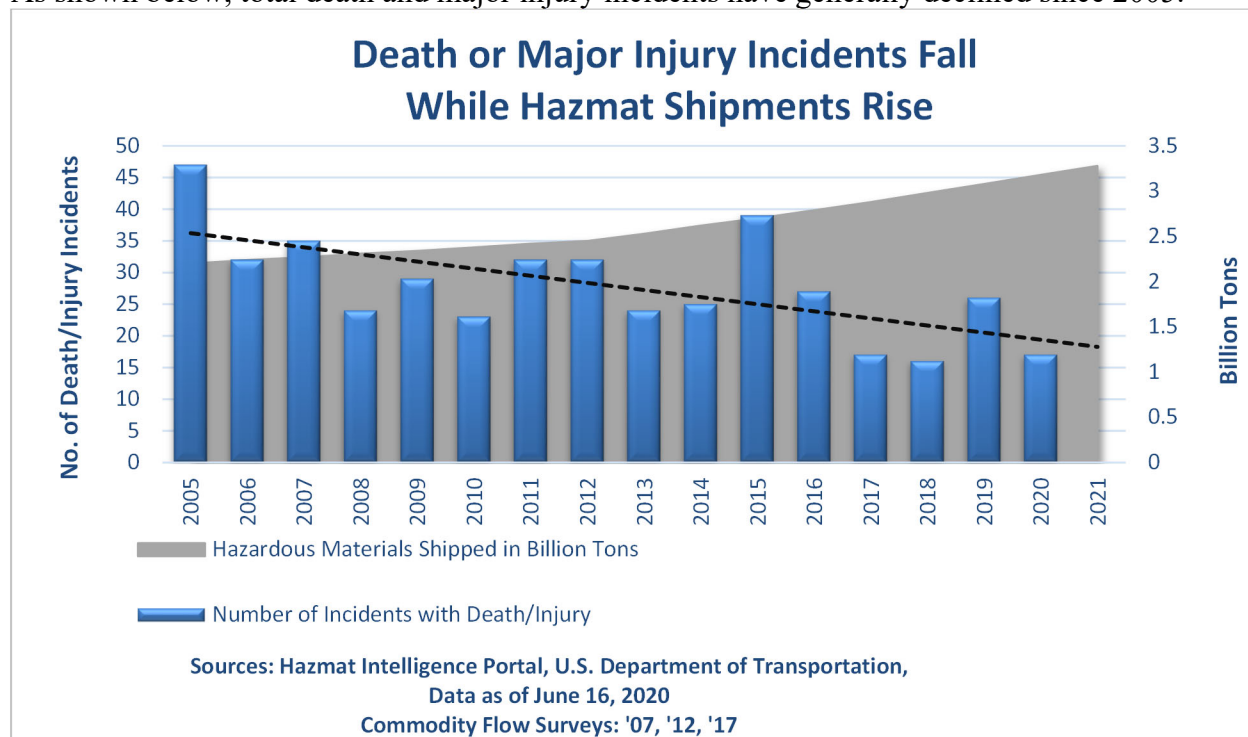
The Office of Hazardous Materials Safety provides benefits to the American public by improving safety in the packaging and shipping of hazardous materials, promoting economic

growth, and helping to protect economically distressed and underserved communities. Our Systems Integrity Safety Program helps companies that have systemic noncompliance; a substantially high percentage of incidents leading to deaths, injuries, and environmental releases; or present a high level of risk to the public. The program enables these companies to develop sustainable solutions by investing in safety that will avoid costly incidents and ongoing compliance challenges. This voluntary action, instead of traditional enforcement actions, has improved compliance, achieved a higher level of safety than possible with standard processes, and leveraged limited inspector resources.

The Office of Hazardous Materials Safety inspectors have also established liaisons with senior company officials at organizations including major hazardous materials distributors and manufacturers of chemicals and packaging to correct widespread systemic problems through innovative, non-punitive methods. PHMSA does this by working with affected companies to make them aware of the problems they are experiencing, propose solutions, and periodically tracks progress. In one instance, a company reported that it recouped investments through operational cost savings and improved safety processes within three years.

PHMSA's Hazardous Materials Safety program also supports the economy through safe transport of products to market while simultaneously making communities, especially economically distressed and underserved ones, safer and more livable. An effective transportation safety program requires continuous evaluation, revitalization, and updating to address modern risks. As commerce grows, PHMSA's investment in safety also has to increase to continue upholding high safety standards. To achieve our goal of zero incidents, additional investment is needed.

As shown below, total death and major injury incidents have generally declined since 2005.



These ongoing successes cannot occur without a continuous commitment to excellence in safety. New inventions/products packaged in cutting edge/advanced packaging solutions/technologies being transported through unfamiliar ports of origin raise the stakes for safety precautions and preventative measures in the transportation of hazardous materials. PHMSA's request facilitates its ability to identify the highest risks in moving energy to domestic and international markets, technology changes, and new shipping methods. PHMSA requests \$74.21 million in funding to manage the evolving challenges of packaging and shipping hazardous materials, with a commitment to R&D to continue gathering information, solving problems and moving the U.S. hazardous materials industry forward, protecting the American people and property, and ensuring the safe advancement of our energy economy.

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# **Emergency Preparedness Grants**

## APPROPRIATIONS LANGUAGE

### [EMERGENCY PREPAREDNESS GRANTS

#### (LIMITATION ON OBLIGATIONS)

#### (EMERGENCY PREPAREDNESS FUND)]

[For expenses necessary to carry out the Emergency Preparedness Grants program, not more than \$29,318,000 shall remain available until September 30, 2024. *In addition to amounts made available by section 5116(h) and subsections (b) and (c) of section 5128 of title 49, United States Code for the Emergency Preparedness Grants program, \$1,000,000, to remain available until September 30, [2023] 2024, shall be made available from the general fund of the Treasury, in addition to amounts otherwise available for such purposes, to develop and deliver hazardous materials emergency response training for emergency responders, including response activities for the transportation of crude oil, ethanol, flammable liquids, and other hazardous commodities by rail, consistent with National Fire Protection Association standards, and to make such training available through an electronic format:)]*

*Provided*, That notwithstanding section 5116(h)(4) of title 49, United States Code, not more than 4 percent of the amounts made available from this account shall be available to pay administrative of carrying out sections 5116, 5107(e), and 5108(g)(2) of such title. [Provided further, That notwithstanding subsections (b) and (c) of section 5128 of title 49, United States Code, and the limitation on obligations provided under this heading, prior year recoveries recognized in the current year shall be available to develop and deliver hazardous materials emergency response training for emergency responders, including response activities for the transportation of crude oil, ethanol, flammable liquids, and other hazardous commodities by rail, consistent with National Fire Protection Association standards, and to make such training available through an electronic format:] [Provided further, That the prior year recoveries made available under this heading shall also be available to carry out sections 5116(a)(1)(C), 5116(h), 5116(i), and 5107(e) of title 49, United States Code.]

#### **Administrative Provision**

Section 5108(g)(2)(A) of title 49, United States Code, is amended by striking \$3,000 and inserting \$15,000.

Section 5116(h)(4) of title 49, United States Code, not more than 4 percent of the amounts made available from this account shall be available to pay administrative costs of carrying out sections 5116, 5107(e), and 5108(g)(2) of such title.



**EXHIBIT III-1**  
**Emergency Preparedness Grants**  
**Summary by Program Activity**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
Operations	\$ 603	\$ 603	\$ 775
Grants	28,715	28,715	46,050
<b>TOTAL</b>	<b>\$ 29,318</b>	<b>\$ 29,318</b>	<b>\$ 46,825</b>
FTEs			
Direct Funded	-	-	-

**Program and Performance Statement**

PHMSA operates a National registration program for shippers and carriers of hazardous materials and collects a fee from each registrant. The fees collected are used for emergency preparedness planning and training grants; publication and distribution of the Emergency Response Guidebook; development of training curriculum guidelines for emergency responders and technical assistance to States, political subdivisions, and federally recognized tribes; and administrative costs for these programs.

**EXHIBIT III-1a**

**Emergency Preparedness Grants**  
**SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023**  
**Appropriations, Obligations, Limitations, and Exempt Obligations**  
**(\$000)**

	<b><u>\$000</u></b>	<b><u>FTE</u></b>
<b>FY 2022 CR</b>	<b>\$ 29,318</b>	<b>-</b>
<b>ADJUSTMENTS TO BASE:</b>		
None	-	-
<b>SUBTOTAL, ADJUSTMENTS TO BASE</b>	<b>-</b>	<b>-</b>
<b>PROGRAM REDUCTIONS</b>		
ALERT Grants	(1,000)	-
Operations	(555)	-
<b>SUBTOTAL, PROGRAM REDUCTIONS</b>	<b>(1,555)</b>	<b>-</b>
<b>PROGRAM INCREASES</b>		
Hazardous Materials Emergency Preparedness Grants	17,062	-
Supplemental Public Sector Training Grants	1,000	-
Hazardous Materials Instructor Training Grants	1,000	-
<b>SUBTOTAL, PROGRAM INCREASES</b>	<b>19,062</b>	<b>-</b>
<b>FY 2023 REQUEST</b>	<b>\$ 46,825</b>	<b>-</b>

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**Detailed Justification for Hazardous Materials Emergency Preparedness Grants**

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**FY 2023 – Hazardous Materials Emergency Preparedness Grants Budget Request  
(\$000)**

<b>Program Activity</b>	<b>FY 2021 Enacted</b>	<b>FY 2022 CR (w/IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
Operations	\$ 603	\$ 603	\$ 775
Grants	28,715	28,715	46,050
<b>Total</b>	<b>\$ 29,318</b>	<b>\$ 29,318</b>	<b>\$ 46,825</b>

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**What is this program and what does this funding level support?**

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Over the past decade, there has been tremendous growth in the shipment of hazardous materials throughout the Nation. Today, more than 3.3 billion tons of hazardous materials valued at more than \$1.9 trillion are transported annually by air, highway, rail, and vessel. On average, more than 1.2 million hazardous materials shipments occur every day. Fueled by domestic demand for lithium-ion battery powered electronics and international demand for American energy products and chemicals, the total volume, number of shipments, and value of hazmat shipments is expected to continue increasing—particularly with an influx of new electric vehicles in the marketplace. Thus, carrier movement of hazardous materials has increased dramatically on roads and waterways, and by rail, within the United States. Communities impacted by hazardous materials shipments need to train and prepare first responders to control and contain accidents and incidents involving hazardous materials. And often these are economically distressed, historically underserved communities.

Congress, through the Infrastructure Investment and Jobs Act of 2021, recognized the need for the support of communities and first responders most affected by this growth. Funding for the program comes from approximately 26,000 hazardous materials shippers' (truckers, rail companies, and airlines) registration fees. The monies collected aid community planning for unique risks of hazardous material accidents/incidents and for first responders training for the increased risk of incidents from hazardous materials freight transported through their communities. The program funds local firefighters' and other first responders' training, across all 50 States and territories, on the response and remediation of difficult hazardous materials fires and incidents. This program will also promote racial justice and equity by better preparing and equipping first responders in economically distressed and underserved communities, which are often hardest hit by hazardous materials incidents.

In FY 2023, PHMSA requests budget authority of \$46.83 million for the Emergency Preparedness Grants program. This allows PHMSA to continue important emergency preparedness training and planning grants, technical assistance to grant recipients, and the publication, printing, and distribution of the *Emergency Response Guidebook*. Additionally, PHMSA's FY 2023 priority is directed towards ensuring that underserved communities are prepared and trained to respond to hazmat transportation emergencies, which is consistent with Executive Order 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (86 FR 7009). This includes community response planning

and training for fire fighters, law enforcement, and community leaders and response organizations nationwide.

### **Operations: \$775 thousand**

Operations includes the costs to publish the Emergency Response Guidebook and for oversight and technical assistance, such as creating training modules for grantees and first responders, and support for the review of State plans for improving local response to hazardous materials shipments, routes, and incidents.

#### **Emergency Response Guidebook, \$625 thousand**

PHMSA develops, publishes, and distributes an updated version of its *Emergency Response Guidebook (ERG)* every four years (both paperback and electronic versions). The *ERG* is developed jointly by the U.S. Department of Transportation, Transport Canada and the Secretariat of Communications and Transportation of Mexico for use by first responders. The guidebook is for initial actions to be taken to protect first responders and the public during hazardous materials incidents (see: <http://www.phmsa.dot.gov/hazmat/library/erg>). It is widely used by the transportation industry and is internationally recognized.

Since 1993, 18 million copies of the *Emergency Response Guidebook* have been published and distributed in addition to 2.25 million downloads of the ERG mobile application for iOS and Android devices. This guide is the primary resource for the Nation's first responders, and is the globally recognized authority in hazardous materials containment, having been translated into more than a dozen languages. *Emergency Response Guidebooks* are present in almost every emergency response vehicle in the United States.

#### **Oversight and Technical Assistance, \$150 thousand**

The Infrastructure Investment and Jobs Act of 2021 (IIJA) requires the Department to provide technical assistance to a State, its political subdivisions, or federally recognized tribes for carrying out emergency response training and planning for incidents involving hazardous materials. PHMSA does this through on-site visits, technical assistance visits and outreach including web-based and media engagements.

In addition, these funds support state, local and tribal hazardous materials training initiatives through the publication of *Guidelines for Response, Planning and Prevention Training for Incidents Involving Hazardous Materials and Weapons of Mass Destruction*.

### **Grants Program: \$46.05 million**

Emergency Preparedness Grants provide Federal financial and technical assistance to states, territories, and federally recognized tribes to develop, improve, and carry out emergency plans.

Grants include the cost of the following programs:

- Hazardous Materials Emergency Preparedness (HMEP) Grants, \$39.05 million,
- Hazardous Materials Instructor Training (HMIT) Grants, \$5.00 million,
- Assistance for Local Emergency Response Training (ALERT), and

- Supplemental Public-Sector Training Grants, \$2.00 million.

### **Hazardous Materials Emergency Preparedness Grants, \$39.05 million**

The training and planning grants are distributed among States through a formula that factors in population density; the frequency and costs associated with serious and non-serious incidents; and mode(s) of transportation involved in previous hazardous materials accidents/incidents. These grants are awarded to States that provide funding to localities and first responders most in need of planning and training. The additional \$17.06 million will provide increased funding allocations for states to focus on underserved and low-income areas to ensure these communities are informed, prepared, and trained to effectively respond to hazardous materials transportation incidents. On an annual basis, HMEP grants fund training for over 150,000 emergency responders, 1,500+ emergency response plans and exercises, and more than 150 commodity flow studies Nationwide.

### **Hazardous Materials Instructor Training (HMIT) Grants, \$5.00 million**

The HMIT grant provides funding to train hazardous materials safety employees to become instructors and develops tools to extend the reach of hazardous materials training. These grants are awarded to nonprofit organizations with expertise in training hazardous materials safety employees. Annually, the HMIT program trains over 2,750 hazardous materials employees and instructors Nationwide.

### **Supplemental Public Sector Training (SPST) Grants, \$2.00 million**

The SPST grant is used to train instructors to conduct hazmat response training programs for individuals with statutory responsibility to respond to hazmat accidents and incidents. These grants are made to National, nonprofit fire service organizations. Annually this grant trains approximately 1,000 firefighters through instructor training or direct delivery. This program ensures that hazmat training is available in the most convenient, cost-effective locations by allowing graduating instructors to train new, local instructors and responders, while also guaranteeing continuity and efficiency.

### **Assistance for Local Emergency Response Training (ALERT) Grants**

The ALERT grant is funded out of recoveries from prior unused awards that are no longer available for obligation and are not otherwise appropriated. These grants fund training public-sector emergency response personnel to respond to incidents involving hazardous materials by all modes of transportation. Nonprofit organizations, representing regional public-private partnerships, provide in person or web-based training to ensure responder can safely and efficiently respond to hazmat incidents. PHMSA also aims to train responders in communities on or near rail lines, which transport a significant volume of high-risk energy commodities or toxic inhalation hazards. These are often economically distressed and underserved communities which are the least able to absorb the negative impact of hazardous materials incidents.

### **What benefits will be provided to the American public through this request and why is this program necessary?**

Studies show that keeping incident impacts low can be attributed to well-trained first responders and their ability to identify hazardous materials spilled, secure a site, and extinguish hazardous material fires.

Hazardous materials employees and emergency responders also benefit from qualified training instructors. These grants help ensure workplace safety and compliance when transporting hazardous materials and provide training to firefighters across the Nation to ensure a safe and efficient response to hazardous material incidents. Every year grantees instruct thousands of trainers and hazardous materials employees on the rules, regulations, and best practices on the containment of hazardous materials accidents/incidents. Emergency preparedness and response training are vital components to the Nation's first responders and the American public's safety. Effective preparation for emergencies helps prevent and/or contain the impact(s) of hazardous materials incidents/accidents, saving lives and reducing environmental damage every year.

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# **Operational Expenses**



## **APPROPRIATIONS LANGUAGE**

### **OPERATIONAL EXPENSES**

For necessary operational expenses of the Pipeline and Hazardous Materials Safety Administration, [\$28,715,000] *\$30,150,000* of which \$4,500,000 shall remain available until September 30, [2024] 2025.

Note.—A full-year 2022 appropriation for this account was not enacted at the time the budget was prepared; therefore, the budget assumes this account is operating under the Continuing Appropriations Act, 2022 (Division A of P.L. 117-43, as amended). The amounts included for Fiscal Year (FY) 2022 reflect the annualized level provided by the continuing resolution.

**EXHIBIT III-1**  
**Operational Expenses**  
**Summary by Program Activity**  
**Appropriations, Obligation Limitations, and Exempt Obligations**  
**(\$000)**

	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
Operations	\$ 24,215	\$ 24,215	\$ 25,650
Grants	\$ 4,500	\$ 4,500	\$ 4,500
<b>TOTAL</b>	<b>\$ 28,715</b>	<b>\$ 28,715</b>	<b>\$ 30,150</b>
FTEs			
Direct Funded	66.0	68.0	69.0

**Program and Performance Statement**

The success of the PHMSA safety programs is dependent on effective support organizations that hire staff, acquire goods and services, develop and sustain information technology, write complex regulations, and support enforcement actions, among others. PHMSA provides support through the Offices of the Administrator and Deputy Administrator; Executive Director/Chief Safety Officer; Planning and Analytics; Chief Counsel; Governmental, International and Public Affairs; Chief Financial Officer, Budget and Finance, Acquisition, and Information Technology Services; Associate Administrator for Administration, Administrative Services, Human Resources; and Civil Rights.

**EXHIBIT III-1a**

**Operational Expenses  
SUMMARY ANALYSIS OF CHANGE FROM FY 2022 TO FY 2023  
Appropriations, Obligations, Limitations, and Exempt Obligations  
(\$000)**

	<b><u>\$000</u></b>	<b><u>FTE</u></b>
<b>FY 2022 CR</b>	<b>\$ 28,715</b>	<b>68.0</b>
<b>ADJUSTMENTS TO BASE:</b>		
Annualization of FY 2022 FTE	-	-
Annualization of Prior Pay Raises (2.7%)	92	-
FY 2023 Pay Raise (4.6%)	474	-
GSA Rent	-	-
Working Capital Fund	124	-
Non-Pay Inflation	179	-
Adjustment for Compensable Days (260 days)	-	-
<b>SUBTOTAL, ADJUSTMENTS TO BASE</b>	<b>869</b>	<b>-</b>
<b>PROGRAM INCREASES</b>		
Civil Rights Staff 2 Positions (1.0 FTE)	215	1.0
Contract Safety Programs	351	-
<b>SUBTOTAL, PROGRAM INCREASES</b>	<b>566</b>	<b>1.0</b>
<b>FY 2023 REQUEST</b>	<b>\$ 30,150</b>	<b>69.0</b>

## Detailed Justification for the Operational Expenses Program

### FY 2023 Operational Expenses Budget Request (\$000)

Program Activity	FY 2021 Enacted	FY 2022 CR (w/IIJA Oblim)/1	FY 2023 PRES. BUDGET
Operations	\$ 19,643	\$ 19,643	\$ 20,726
Contract Safety Programs	4,572	4,572	4,924
Grants	4,500	4,500	4,500
<b>Total</b>	<b>\$ 28,715</b>	<b>\$ 28,715</b>	<b>\$ 30,150</b>
<b>FTEs</b>	<b>66.0</b>	<b>68.0</b>	<b>69.0</b>

/1 During the FY 2021 CR, funding was moved from Staffing to the Working Capital Fund.

#### What is this program and what does this funding level support?

PHMSA ensures the safe transportation of hazardous materials across all modes of transportation and the safe operation of pipelines and pipeline facilities (including underground storage and certain liquified natural gas facilities). The Operational Expenses account provides resources that support a world-class safety organization— regulatory and enforcement support, information technology systems, human resources, financial management, grants administration and acquisition services, among others.

The Protecting Our Infrastructure of Pipelines Enhancing Safety (PIPES) Act of 2020 reauthorized PHMSA’s pipeline safety programs for 3 years and provided important advances in new safety technology and regulatory reform, including a call to complete 36 complex new regulatory actions. The operational expenses account supports the offices that complete this difficult work.

#### **Operations: \$20.73 million**

PHMSA’s FY 2023 operations request of \$20.73 million supports the safety organization by recruiting and hiring safety professionals; funding the Department of Transportation’s shared costs through the Working Capital Fund; acquiring safety equipment and services; administering research and grant awards; assessing and collecting operator fees; providing the public, Congress and the Administration with needed safety leadership and information; and equipping our safety staff with the tools and technology necessary to operate a first- rate safety organization. About 70 percent of these funds specifically cover salaries and benefits, equipment, rent, travel,

training, supplies and other important efforts such as working to implement the Administration's critical goals and priorities.

In FY 2023 PHMSA will continue the following critical agency priorities:

**Continuing an investment in leadership development** by building a cadre of safety leaders for PHMSA with its agency-wide leadership development programs. The agency has already successfully delivered both advanced and intermediate leadership development programs and is launching a new basic leadership program to develop and retain the brightest safety professionals.

**Continuing environmental sustainability** by transitioning the Federal motor vehicle fleet to clean and zero emission vehicles.

**Improved recruitment and retention programs for mission critical position** attracting and retaining the highest-quality safety professionals including:

- Using the Direct Hiring Authority for pipeline safety positions that qualify as science, technology, engineering, and math positions;
- Investing in science, technology, engineering, and math education programs, promoting pipeline safety engineering positions;
- Review PHMSA Mission Critical Occupations and develop targeted recruitment and hiring strategies for each
- Extend our outreach to Universities, Colleges, and Affinity Groups utilizing social media (LinkedIn, Twitter, Handshake, Glassdoor, and others)
- Participating in special hiring events; and
- Developing a student pipeline utilizing the Pathways Program, which offers federal internship and employment opportunities for current students, recent graduates, and those with an advanced degree.

PHMSA is also evaluating key recruitment and retention incentives such as offering mission-critical positions special pay rates, repayment of student loans, tuition assistance, and bonuses, coupled with continued service agreements. These strategies, coupled with what PHMSA is already doing will enable the agency to not only hire the best safety professionals, but also to retain them.

**Expanded and enhanced Civil Rights function.** PHMSA requests an additional two positions (1.0 FTE) in FY 2023 to promote the Department's strategic goal of equity, and fully support the Administration's Executive Orders.

The PHMSA Office of Civil Rights ensures PHMSA's safety management organization and programs protect and promote equity, diversity, inclusion, accessibility, and fairness.

PHMSA operates a growing and complex Equal Employment Opportunity (EEO) Program across a network of regional offices throughout the United States. The program focuses on diversity, inclusion, and accessibility in all aspects of employment from hiring through

retirement. Analysis of workforce demographics and trends in the EEO Discrimination Complaint Program provides the agency information to improve the representation of those groups under-represented in PHMSA's workforce while addressing issues arising as complaints.

PHMSA's Civility, Diversity, and Inclusion Process Improvement Initiative focuses on identifying issues affecting the employees throughout the agency and identifying recommendations for the Executives to consider improving civility, diversity and inclusion across the agency. Suggestions for improvement include training on the importance of civility, diversity, and inclusion for employees and management; a safe space to discuss issues of racial justice, equity, and civility; and opportunities for employees to assist OCR in their mission. Improving these areas will help PHMSA in operating a Model EEO Program.

In addition, PHMSA manages an expanded external Title VI program and the new executive orders on equity and inclusion. PHMSA will continue to conduct data-driven equity programs with a climate survey and training sessions on equity and inclusion, increasing awareness of equity in all aspects of PHMSA's operations. PHMSA is also focused on improving oversight of the financial assistance programs to ensure they operate in a fair, nondiscriminatory manner consistent with Title VI and other antidiscrimination statutes. PHMSA's Office of Civil Rights is working on revising our External Civil Rights Program Guidelines for Grant Recipients to comply with new executive orders on equity and Title VI. Requirements for recipients include signing and posting Nondiscrimination Statements, developing and publishing Title VI complaints procedures, institutionalizing community participation plans, and ensuring information on programs and procedures are published in other languages for the use of those that are limited English proficient. Ensuring compliance by all recipients of federal financial assistance is key to ensuring the money is spent in an equitable manner especially for underserved communities.

#### **Contract Safety Programs: \$4.92 million**

PHMSA's request for contract safety programs include \$4.92 million in Information Technology (IT) investments. The information technology includes modernizing safety management and operations, improved cybersecurity in all mission systems, and upgraded remote work systems and connections to adapt to the changing work environment under maximum telework, and a future hybrid structure. This includes data systems that quantify incidents and accidents, associate causality, and predict future trends and events-- in other words, the backbone of PHMSA's safety oversight. The systems ensure the timely processing of hazardous materials special permits and approvals. The funding also supports all IT used at headquarters and some of the regional support.

#### **Grants: \$4.50 million**

PHMSA's request for Grants programs is \$4.50 million to continue funding the Emergency Response and Information Grants to Communities programs.

### **Emergency Response Grants - \$2.50 million**

Each year PHMSA will award grants to State, county, and local governments in high consequence areas, as defined by the Secretary, for pipeline emergency response management, training, and technical assistance. Local emergency responders are the first to show up when it comes to protecting people, property and the environment from the harmful effects of hazardous pipeline accidents or incidents. Underserved communities are most often impacted by pipelines running close to homes and businesses. First responders need help to manage highly volatile and dangerous incidents when they occur and to identify and prevent dangerous conditions that cause incidents. Grants to train emergency responders will ensure the safety of people in these communities.

### **Information to Grants to Communities - \$2.00 million**

The funding supports Pipeline Safety Information Grants to Communities for technical assistance related to communities impacted by pipeline projects and facilities. The awards have funded a broad range of activities, including:

- Improvement of local pipeline emergency response capabilities;
- Improvement of safe digging programs;
- Development of pipeline safety information resources;
- Implementation of local land use practices that enhance pipeline safety;
- Community and pipeline awareness campaigns, such as “811 Call Before You Dig”; and
- Enhancements in public participation in official proceedings pertaining to pipelines.

These funds are vital to the safety of the communities near or on top of pipeline imbedded land. However, the funding may *not* be used for lobbying, in direct support of litigation, or for activities associated with regulatory compliance or typical operations and maintenance of pipeline facilities.

### **What benefits will be provided to the American public through this request and why is this program necessary?**

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The request will allow PHMSA to carry out an effective staffing plan, support innovative modern information technology, improve internal management processes for the safety organization, develop the next generation of agency leaders, and enhance responsiveness to Congressional and regulatory requirements.

PHMSA’s request supports the safe movement of hazardous materials through all modes of transportation and pipelines. Through this primary safety goal, PHMSA advocates for a clean environment with enhanced safety standards, improvements, and commitment to innovation.

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## **IV: Research, Development and Technology**

**Department of Transportation**  
**FY 2023 Budget**  
**Pipeline and Hazardous Materials Safety Administration**  
**Research, Development, & Technology Budget Narrative**  
(Budget Authority in Thousands)

Budget Account	FY 2021 Enacted	FY 2022 CR (w/IIJA Oblim)	FY 2023 PRES. BUDGET	Applied	Tech Transfer	Facilities	Experimental Development	Major Equipment, R&D Equipment
<b>Pipeline Safety</b>	<b>\$12,000</b>	<b>\$12,000</b>	<b>\$15,000</b>	<b>\$15,000</b>				
<i>Safety</i>								
Liquefied Natural Gas (LNG)	2,226	500	2,500	2,500				
Underground Natural Gas Storage (UGS)								
Safety Research	2,500	1,000	3,000	3,000				
Pipeline Anomaly Detection /Characterization	1,374	1,000	1,500	1,500				
Pipeline Leak Detection	750	1,000	2,500	2,500				
Pipeline Threat Prevention	1,850	1,500	1,500	1,500				
Repair/Rehabilitation	1,300	1,000	1,500	1,500				
Competitive Academic Agreement Program*	2,000	4,000	-	-				
Climate Change Solutions/Hydrogen	-	2,000	2,500	2,500				
<i>Infrastructure</i>								
Pipeline Transportation Technology Center (TTC) Research	-	-	-	-				
<b>Hazardous Materials Safety</b>	<b>\$5,070</b>	<b>\$5,070</b>	<b>\$7,570</b>	<b>\$7,570</b>				
<i>Safety</i>								
Risk Management	493	493	1,500	1,500				
Technical Analysis	2,446	2,446	1,000	1,000				
Package Integrity	1,039	1,039	2,500	2,500				
<i>Innovation</i>								
Emerging Technologies	1,092	1,092	2,570	2,570				
<b>Administrative Expenses</b>	<b>\$1,909</b>	<b>\$1,909</b>	<b>\$2,209</b>					
Pipeline Safety	1,363	1,363	1,363					
Hazardous Materials Safety	546	546	846					
<b>Total</b>	<b>\$18,979</b>	<b>\$18,979</b>	<b>\$24,779</b>					

\*The Competitive Academic Agreement Program (CAAP) is a sub-program that funds research through Universities in the safety areas listed in the table. We have modified the presentation accordingly for the FY 2023 Budget request. The 2020 Protecting our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act requires a 20% cost share from non-federal sources for University research projects. Historically, PHMSA has awarded \$2.0 million of CAAP projects annually but may choose to award in excess of \$2.0 million in future years.

**Exhibit IV-2 FY 2023 Budget Request – RD&T Program Funding by Strategic Goal**  
**Department of Transportation – FY 2023 Budget**  
**Pipeline and Hazardous Materials Safety Administration**  
**Research, Development, & Technology Budget**  
(Budget Authority in Thousands)

DOT STRATEGIC GOALS						
ACCOUNT/PROGRAM	FY 2023 President's Budget	SAFETY	ECONOMIC GROWTH	EQUITY	CLIMATE SOLUTIONS	TRANSFORMATION
<b>Pipeline Safety</b>	<b>\$15,000</b>	<b>\$15,000</b>				
<i>Safety</i>						
Liquefied Natural Gas	2,500	2,500				
Underground Natural Gas (UGS)						
Safety Research	3,000	3,000				
Pipeline Anomaly Detection/Characterization	1,500	1,500				
Pipeline Leak Detection	2,500	2,500				
Pipeline Threat Prevention	1,500	1,500				
Repair/Rehabilitation	1,500	1,500				
Climate Change Solutions/Hydrogen	2,500	2,500				
<i>Infrastructure</i>						
Pipeline Transportation Technology Center (TTC) Research	-	-				
<b>Hazardous Materials Safety</b>	<b>\$7,570</b>	<b>\$7,570</b>				
<i>Safety</i>						
Risk Management	1,500	1,500				
Technical Analysis	1,000	1,000				
Package Integrity	2,500	2,500				
<i>Innovation</i>						
Emerging Technologies	2,570	2,570				
<b>Administrative Expenses</b>						
Pipeline Safety	1,363	1,363				
Hazardous Materials Safety	846	846				
<b>Total</b>	<b>\$24,779</b>	<b>\$24,779</b>				

# Pipeline and Hazardous Materials Safety Administration (PHMSA)

## Research Summary

The Pipeline and Hazardous Materials Safety Administration's (PHMSA) mission is to protect people, property, and the environment by advancing the safe transportation of energy products and the safe packaging and shipment of hazardous materials that are essential to our daily lives. A transition to new energy sources requires new research, development, and technology (RD&T) to ensure safe and effective regulation of transport of new energy products— particularly as volumes scale up. PHMSA's proposed R&D budget aims to address ongoing safety and environmental risks and challenges with transporting new energy products.

America's pipeline infrastructure spans more than 2.8 million miles and is used to transport nearly all the natural gas and about two-thirds of the liquid petroleum energy products consumed domestically. PHMSA also confronts safety challenges posed by the increased transportation of hazardous materials across all modes-- more than 3.3 billion tons annually and more than 1.2 million shipments per day. The routes taken by these shipments must be chosen in an equitable and environmentally sustainable manner. The Agency must prepare for any emerging issues such as with COVID-19. Research provides critical solutions to ongoing and unexpected challenges.

Due to the significant contribution of energy and hazardous materials to our economy and standard of living as well as their associated environmental impacts, research projects promoting safety, resilience and performance of our transportation system are essential. PHMSA will fund research that improves safety to reduce potential human and environmental impacts. This kind of research will enhance the security of our infrastructure, our people, and our environment.

In Fiscal Year (FY) 2023 PHMSA will pursue RD&T goals through projects carried out by its Office of Pipeline Safety and the Office of Hazardous Materials Safety.

### Collaboration Efforts

PHMSA's R&D program collaborates with research organizations, academia, and other stakeholders. Office of Pipeline Safety collaboration efforts include joint research projects, in which Office of Pipeline Safety and outside partners cost-share to conduct research, and fund research service contracts with federal partners. Office of Hazardous Materials Safety collaboration is more consultative in nature; while PHMSA welcomes the input stakeholders in industry, academia, and the public, it contracts for research services rather than forming joint partnerships. Both offices have Research and Development (R&D) Forums to identify safety gaps and research opportunities.

Office of Pipeline Safety R&D collaboration efforts include both federal and non-federal partners. Historically, Office of Pipeline Safety has reached interagency agreements with the Departments of Energy, Interior, and Commerce to conduct materials research. Office of Pipeline Safety partners with academic institutions through its Cooperative Academic Agreement Program (CAAP). Under CAAP, PHMSA funds 80 percent of basic R&D costs, leaving 20 percent to be funded by university partners. PHMSA may fund up to 100 percent of R&D costs related to regulatory analysis or other purely governmental purposes. These levels are specified

in and mandated by Section 22 of the *Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2020* (PIPES Act).

As mentioned, the Office of Hazardous Materials Safety’s collaborative work is primarily in the form of consultants and contractors. The Office of Hazardous Materials Safety funds work conducted in academia and the private sector, with a strong emphasis on small businesses, but does not currently engage in cooperative research. Instead, Office of Hazardous Materials Safety engages in interagency agreements with other federal and non-federal government agencies including the Army Research Laboratory and the Naval Research Laboratory, among others.

#### External Partners

PHMSA’s research program partners with a wide range of external partners who share the same objectives in developing technology or generating and promoting new knowledge among decision makers to advance pipeline and hazardous materials safety. Collaborative forums with academia, departmental, and federal partners help identify pertinent technology and knowledge gaps.

In March 2019, PHMSA’s Office of Pipeline Safety released a Special Notice for “Identifying Pipeline Safety Research Ideas” in the beta.SAM.gov portal. The ongoing Special Notice invites any interested stakeholder to submit ideas for future research. This notice is open year-round and is revised as needed to reflect initiatives coming from PHMSA or the Administration. PHMSA launched this measure to widen the participation in formulating its future research strategy. A web-based portal was created to support and manage this action.<sup>1</sup>

Partnerships with government organizations (GO) and non-government organizations (NGO) provide clear opportunities to leverage ongoing successes, cost share on mutual safety challenges and remove duplication. Throughout the year, PHMSA briefs trade associations and the pipeline industry on the research programs and consults with them on individual projects that are within their sphere of expertise. Research collaboration partners—both GOs and NGOs—who cost-share research with PHMSA include federal agencies, associations, regulatory entities, and industry.

#### Anticipated Outcomes

PHMSA’s pipeline-related research is dedicated to stimulating innovation in pipeline safety and performance. Anticipated Office of Pipeline Safety outcomes will include prevention of excavation damage to pipelines, reductions of pipeline facility accidents/incidents, reduction of greenhouse gas emissions, improvements in safety systems for pipelines, underground gas storage, liquefied natural gas facilities, and technology commercialization.

Safety improvements result in reduced human and environmental risk and promote goals of economic recovery and equity. PHMSA anticipates that Office of Pipeline Safety research will improve safety by contributing to agency knowledge that can be applied to safety regulations and practices.

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<sup>1</sup> <https://primis.phmsa.dot.gov/rd/gapsuggestions.htm>

In FY 2023, pipeline safety research will focus on seven program areas, in addition to conducting a cost-benefit analysis of the development and use of an independent pipeline safety testing facility as directed by the Protecting Our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act of 2020. In 2023, the Pipeline Safety Research Program (PSRP) will address important new research in alternative fuels to address climate change solutions, liquefied natural gas and underground natural gas storage facility safety.

Research to improve safety systems for underground gas storage and for liquefied natural gas facilities will be a focal point for PSRP. This research will improve safety in the full life cycle of underground gas storage (UGS) facilities including worker safety. LNG research will address various safety challenges, including alternative designs for storage and piping systems.

The PSRP will also include ongoing research in pipeline damage/threat prevention, pipeline leak detection system improvements, and anomaly detection and characterization. Research under this element strongly supports efforts to abate methane releases and are in line with the goals of Sections 113 and 114 of the PIPES Act of 2020. This research will include examining tools to alert operators of possible intrusions to pipelines (e.g., excavation damage), helping operators map existing pipelines, making new plastic pipes locatable without the need for a separate tracer wire, or making existing unlocatable plastic pipes locatable in advance of planned excavations. This research will include new or improved tools and technology solutions for locating, quantifying, and reducing the volume of pipeline leaks and ruptures into the environment and finding and removing critical defects in the pipeline system.

Collaborative projects with the private sector can result in U.S. patents. In addition, as CAAP projects transition to additional phases, PHMSA will be promoting the professional development of qualified experts through both student internships and career employment. Specific research areas for FY 2023 will include liquefied natural gas (LNG) facility safety, underground natural gas storage safety, leak detection, damage prevention, pipeline anomaly detection, and climate change solutions and renewable energy.

PHMSA held the Pipeline Transportation: Hydrogen and Emerging Fuels R&D Public Meeting and Forum, on November 30 through December 2, 2021. The public meeting and forum served as an opportunity for pipeline stakeholders to discuss six research gap topics and identify challenges in pipeline safety and emerging fuels, including hydrogen transportation. The public meeting and forum served as a venue for PHMSA, public interest groups, industry, academia, inter-governmental partners, and the public to collaborate on PHMSA's future R&D agenda through panel discussions.

The following six research topic areas were discussed at the forum:

- 1) Rehabilitation of Aging Cast Iron Pipelines;
- 2) Integrity of Underground Natural Gas/Hydrogen Storage;
- 3) Utilization of Inspection tools on Hydrogen Pipelines;
- 4) Hydrogen Network Components;
- 5) Methane Mitigation—Construction and Operations; and
- 6) Breakout Tanks—Methods to Prevent Corrosion of Tank Bottoms.

Over 300 individuals, including several from Canada and the United Kingdom, attended the forum, and more than 60 presentations were given over 3 days. The Forum helped identify knowledge gaps and will guide PHMSA to better prioritize research for FYs 2022 and 2023, and beyond.

PHMSA's hazmat-related research furthers the goal of transportation safety by reducing the likelihood of personal injury and environmental damage resulting from hazardous materials releases. Office of Hazardous Materials Safety projects fall under four core areas: improved risk management and mitigation, fostering emerging technologies, promoting packaging integrity, and conducting technical analysis to aid in risk assessments.

Anticipated outcomes include:

- Improved hazardous materials commodity flow data;
- Enhanced risk modeling and risk analysis;
- Improved safety standards;
- Improved performance of packages used to transport hazardous materials;
- Improved non-destructive inspection techniques; and
- Improved pipeline safety and reliability through patented and commercialized technologies and equipment<sup>2</sup>.

## **New Research Areas/Projects for FY 2023**

PHMSA recognizes the importance of addressing the President's Executive Orders on Climate Change (Executive Order 14008), Environmental Justice (Executive Order 13895) and the COVID-19 Crisis (Executive Order 13998) in the upcoming program plans. Accordingly, strategic objectives to analyze containment of greenhouse gases (such as methane), transportation of alternative fuels including hydrogen, and improved leak detection are focal points for the Office of Pipeline Safety (Office of Pipeline Safety) program.

PHMSA pipeline research is supported through a combination of federal funding and industry co-funding with a variety of partnering organizations. For PHMSA's pipeline research program, approximately 30 percent of funding for a given project is from non-federal entities—20 percent in the case of CAAP partnerships with universities—although PHMSA may fund up to 100 percent of the cost of R&D for purely governmental purposes. Hazardous Materials research programs are entirely federally funded. R&D appropriations have a three-year period of availability.

### Pipeline Safety Research Project Focus Areas:

- Climate Change Solutions/Renewable Energy
- Liquefied Natural Gas (LNG) Safety
- Underground Natural Gas Storage (UGS) Facilities Safety
- Pipeline Anomaly Detection/Characterization

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<sup>2</sup> [https://primis.phmsa.dot.gov/rd/performance\\_technology.htm](https://primis.phmsa.dot.gov/rd/performance_technology.htm)

- Pipeline Leak Detection
- Pipeline Threat Prevention
- Repair/Rehabilitation

Hazardous Materials Safety Research Project Focus Areas:

- Hazardous Materials Risk Management and Mitigation
- Hazardous Materials Package Integrity
- Hazardous Materials Emerging Technologies
- Hazardous Materials Technical Analysis to Aid Risk Assessments

**Performance Measures:**

PHMSA maintains close relationships with research partners throughout a project to ensure that it remains on track and is achieving its intended results. Tasks are put in place to ensure research results align with agency and Department goals. Program outcomes are tracked for each project based on the following performance metrics:

- New technology demonstrations,
- Patent applications,
- Commercialized technologies,
- Technology transfer (T2) success rate (i.e., the frequency of each completed research project resulting in commercialization), and
- Research reports, journal papers, and website visits.

New technology demonstrations are tracked because these are a good indicator of potentially new U.S. patent applications and ultimately, U.S. patents that are needed to drive the technology to the market. The number of publicly available final reports, along with published conference and journal papers, website visits, and downloaded files are tracked to measure the level of stakeholder interaction and interest in the program. The number of stakeholders reached via public events is also tracked.

An example of PHMSA funded research that resulted in relevant outputs and safety benefits was from five research projects totaling \$4.5 million in the area of anomaly characterization<sup>34567</sup>. These five projects were leveraged to help inform the industry Recommended Practice (RP) 1183 – Assessment and Management of Dents in Pipelines that was published in November 2020. The RP 1183 presents guidance to pipeline operators for developing a dent assessment and management program and provides the information and knowledge necessary to make informed integrity management decisions regarding the management of dents on their systems. The results from the five projects have also provided PHMSA with engineering assessment criteria to be

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<sup>3</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=146>

<sup>4</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=238>

<sup>5</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=358>

<sup>6</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=555>

<sup>7</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=557>



used by operators for dent evaluations on natural gas pipeline special permits, as well as the technical basis on dent assessments for future regulatory actions.

The program is developing performance measurement tracking tools and intends to incorporate them on the PHMSA program website. These tracking tools will also show the relationship of the program to the DOT Strategic Plan, PHMSA Strategic Plan; Annual Performance Plan, or any data call requested of this program.

## **FY 2023 Program Description**

### **Pipeline Safety Research**

**FY 2023 Funding Request: \$16,363,000**

*(includes Administrative Expenses)*

#### **Program Description/Activities**

Research in this area leads to the development of new or improved tools and technology to aid in the prevention and reduction of damage to pipelines. Research also assists with the early identification of leaks (before they lead to catastrophic ruptures), and the identification of alternative fuels to reduce greenhouse gas emissions. These investments will prevent/lessen the releases of hazardous materials into the environment. The PSRP is collaborative by design. Research funding is derived from the operators through user fee assessments and from an Oil Spill Liability Trust Fund contribution.

A comprehensive research strategy is developed systematically through research and development forums, research gap ideas submitted by the public, PHMSA initiatives, and collaborative partnerships with government and non-government organizations. The Office of Pipeline Safety holds its Pipeline R&D Forums biennially, and uses the recommendations from the Forum, as well as internal pipeline data to establish future fiscal year research funding agenda and solicitations. For example, the recently held forum on hydrogen and emerging fuels provided PHMSA with significant feedback and information that will inform and drive the research agenda in FY 2022 and 2023, and beyond.

PHMSA's research partners include universities, industry, and safety organizations that specialize in bringing safety technology to production. One important programmatic component is that it funds cooperative research through the Competitive Academic Agreement Program (CAAP) with colleges and universities to spur innovation by enabling academic research. The CAAP is focused on high-risk, high-reward solutions to a wide range of pipeline safety challenges. The program also exposes students to both the pipeline industry and common pipeline safety challenges to illustrate how their engineering and technical disciplines are highly desired and needed in the pipeline field.

PHMSA will continue to expand its outreach on the CAAP solicitations by ensuring all higher education institutions, including Historical Black Colleges and Universities (HBCUs), Women's Colleges, and Tribal Colleges are notified of research opportunities, and have an equitable chance to compete. Furthermore, PHMSA will continue to fund projects that will enhance pipeline safety in all communities, especially economically disadvantaged and underserved ones. PHMSA's funding opportunities to a wide array of small businesses, academic institutions, and research entities will promote economic growth affecting those communities.

PHMSA will continue to make CAAP more inclusive by expanding outreach communication of funding opportunities and by ensuring all higher education institutions including Minority Serving Institutions (MSI), such as HBCUs, Hispanic-serving Institutions, and Asian-American and Pacific Island-Serving Institutions are notified of

opportunities. Furthermore, in the FY 2022 Notice of Funding Opportunity (NOFO) for the CAAP, PHMSA is highly encouraging universities to partner with MSIs in their grant proposals.

Following is a summary of pipeline safety research in its focus areas:

1. Climate Change Solutions/Hydrogen (\$2.5 million) - The 2019 U.S. Environmental Protection Agency (EPA) Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks data report that natural gas transmission and distribution pipelines accounted for 24% and 9% of total methane emissions, respectively. To address climate change solutions, PHMSA will work towards methane emission reductions from its regulated infrastructure, by coordinating with its stakeholders and interagency partners to develop strategies to fund research projects in this topic area.

PHMSA plans to identify research gaps for hydrogen gas and/or for various hydrogen blends in natural gas pipeline facilities, including gas transmission, gas distribution, compressor stations, and gas storage that reflect current projections for future use of pipeline systems and storage. Furthermore, the PSRP plans to include a recommended prioritization of R&D topic areas based on future usage projections.

Significant research investments at the federal and international level has been conducted on alternative renewable fuels in hydrogen and/or hydrogen blends. In order to minimize any duplication, PHMSA plans to conduct a study/literature search to identify research topic areas that are already well supported by existing research. The study/literature search will also include areas where additional R&D investments would contribute towards improving pipeline safety and climate change solutions. Based on the results of this preliminary study, PHMSA identified focused working groups for its R&D Forum to address technical gaps on hydrogen/energy renewables. This resulted in PHMSA's research forum on hydrogen and emerging fuels in November/December, 2021. As a result of this collaborative, interactive forum with industry, academia, government, and the public, PHMSA has identified six promising topic areas for further consideration:

- 1) Rehabilitation of Aging Cast Iron Pipelines;
  - 2) Integrity of Underground Natural Gas/Hydrogen Storage;
  - 3) Utilization of Inspection tools on Hydrogen Pipelines;
  - 4) Hydrogen Network Components;
  - 5) Methane Mitigation—Construction and Operations; and
  - 6) Breakout Tanks—Methods to Prevent Corrosion of Tank Bottoms.
2. Liquefied Natural Gas (LNG) Safety (\$2.5 million) -The recent growth in the production and export of LNG has required PHMSA to provide clear regulatory guidance within the changing energy landscape and update its regulations for LNG facilities to address the mandates in the Protecting Our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act of 2016 (PIPES Act of 2016) and 2020 (PIPES Act of 2020). LNG research activities will address safety system testing, hazard mitigation models, and emerging technologies.

3. Underground Natural Gas Storage (UGS) Facilities Safety (\$3.0 million) – In October of 2015, a containment failure of stored natural gas from Aliso Canyon’s Gas Storage Field resulted in an atmospheric release of 97,100 metric tons of methane <sup>8</sup>. This event prompted Congress to provide PHMSA with significant new statutory authorities to regulate underground natural gas storage. In 2018, PHMSA began funding research and building a portfolio of solutions to support the development of integrity management programs applicable to the more than 17,000 wells associated with underground natural gas storage facilities in the United States. Additional underground natural storage research gaps will be pursued in FY 2023 to support risk assessments, and investigate well casing integrity, subsurface safety valve testing, and subsurface and facility-level equipment analysis and monitoring. Furthermore, the Office of Pipeline Safety will use lessons learned from facility inspections and audits conducted over the past few years to identify research gaps.
4. Pipeline Anomaly Detection/Characterization (\$1.5 million) - The detection and characterization of anomalies in pipeline systems require solutions that integrate people, processes, and technology into a comprehensive program. Detection capability must progress past simple corrosion to complex anomalies involving a mixture of dents, gouges, and corrosion. Research will develop new or improved tools, technology, and/or assessment processes to identify and locate critical pipeline defects and to improve the capability to characterize the severity of defects. This will drive further research into detection and characterization solutions and develop technology and models that can improve the management of pipeline integrity threats.
5. Pipeline Leak Detection (\$2.5 million) - Leak detection continues to present a challenge. Based on 2019 data from the Environmental Protection Agency (EPA), methane emissions from PHMSA-jurisdictional pipelines account for approximately 33% (2,038 kilotons of methane (CH<sub>4</sub>)) of the total emissions (6,258 kilotons of CH<sub>4</sub>) from the oil and gas industry. Of this amount, 9% (560 kilotons of CH<sub>4</sub>) of methane emissions are from the gas distribution system. The majority of methane emissions from gas distribution systems are from pipeline mains and service lines, followed by residential and commercial meters and from excavation damage.

In May of 2021, PHMSA hosted a public meeting, which focused on leak detection and leak repair. Several technology vendors participated and presented on advanced leak detection technologies. Input received from the public meeting will help drive the specific research strategy funded in FY 2022 and FY 2023. Research under this element strongly supports efforts to abate methane releases and other climate change initiatives. Inputs from industry, other government agencies, public advocacy groups and concerned citizens were gathered and are being consolidated into a set of recommendations for future research in this area.

The Office of Pipeline Safety expects to fund future research focused on operational and maintenance functions that cause the release of greenhouse gases including:

- Development of new or improved tools and/or technology to prevent or reduce damage to pipelines, thereby preventing or mitigating releases into the environment;

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<sup>8</sup><https://www.energy.gov/sites/prod/files/2016/10/f33/Ensuring%20Safe%20and%20Reliable%20Underground%20Natural%20Gas%20Storage%20-%20Final%20Report.pdf>

- Further development and prove-out of continuous leak detection monitoring and identification systems for both gas and hazardous liquid pipelines;
- Development of sensing equipment to better detect, pinpoint and prioritize small leaks (i.e., light detection and ranging (LIDAR) technology that can simultaneously focus on leak detection and pinpointing leak location); and
- Further development of economical leak detection systems for home monitoring of gas leaks to reduce the cost and to prioritize the location of where these should be located in a home.

In FY 2023, PHMSA expects to address remaining gaps in detection, concentration measurement and flow rate estimation from methane leak detection research funded in FY 2022.

6. Pipeline Threat Prevention (\$1.5 million) - Damage to pipe by excavation and outside force continues to be a leading cause of pipeline failures based on 2021 pipeline incident data.<sup>9</sup> Preventing or reducing damage would dramatically improve pipeline safety and reduce methane emission. PHMSA's research will develop new or improved tools and technology to aid in the prevention and reduction of damage to pipelines, thereby enhancing safety and preventing or diminishing releases into the environment.
7. Repair/Rehabilitation (\$1.5 million) - Damaged coatings and corrosion are major problems for pipelines; reliable methods for repairing these issues and bringing pipeline systems back online are of paramount importance. This program will focus on enhanced repair materials, techniques, processes, tools, and/or technology designed to directly support this objective.

### **Congressional Mandates:**

PHMSA has been congressionally mandated to conduct several analyses and corresponding reports by the Protecting Our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act of 2020 and the Consolidated Appropriations Act, 2021. The specific requirements are outlined below.

Section 105 of the Pipes Act of 2020 requires PHMSA to conduct a pipeline safety testing enhancement study analyzing the potential value to safety of an independent testing facility for pipeline safety research and development. This study will determine whether an independent pipeline safety testing facility would be critical to the work of PHMSA.

Section 114(d) of the Pipes Act of 2020 mandates that PHMSA develop a report on best available technologies or practices to prevent or minimize the release of natural gas. The report will address potential new pipeline facility designs that could mitigate the need to intentionally vent natural gas. Furthermore, the report will include a timeline for updating pipeline safety regulations to minimize the release of natural gas. The report will assist PHMSA with developing potential R&D gaps in preventing or minimizing, without compromising, pipeline safety; and the release of natural gas when making planned repairs, replacements, or

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<sup>9</sup> <https://www.phmsa.dot.gov/data-and-statistics/pipeline/national-pipeline-performance-measures>

maintenance, or when the operator intentionally vents or releases natural gas. This would ultimately assist in tackling climate change by reducing methane emissions.

The 2021 PHMSA appropriation requires PHMSA to submit an updated research plan to the House and Senate Committees on Appropriation and receive an approval prior to utilizing any FY 2021 funding at the Transportation Technology Center (TTC). The updated research plan will include a robust assessment of the causes of pipeline failure and pipeline safety risks. PHMSA will define its short-term and long-term research and development objectives that address pipeline safety risks identified in the assessment of incident and accident data. The plan will also describe the roles and responsibilities of PHMSA and its stakeholders in advancing technological solutions that will improve pipeline safety.

The joint explanatory statement submitted to PHMSA by the Senate and House of Representatives mandated a review of current and new corrosion control techniques that may be used to reduce leaks from regulated aboveground storage tanks. PHMSA submitted the report to Congress on January 12, 2022.<sup>10</sup> The report provides a review of current and new corrosion control techniques that may be used to improve leak prevention of regulated aboveground storage tanks, as well as an evaluation of supplementary or alternative techniques to cathodic protection systems and the application of such techniques to aboveground storage tanks. The report also describes how future research projects focused on aboveground storage tank corrosion control could be further investigated to determine their effectiveness on preventing corrosion on tank bottoms.

### **Expected Outputs/Products:**

PHMSA's pipeline-related research activities result in the development of new technology, products, and knowledge aimed at improving pipeline safety and performance. PHMSA anticipates that research in this sector will result in the commercialization and transfer of cutting-edge pipeline safety technologies, the issuance of new U.S. patents, and the solutions to complex research questions that inform safety standards. PHMSA frames research questions around safety standards and measures the success of research on how well it answers the question, informs safety standards, and improves overall safety outcomes.

From FY 2021 until January 2022, PHMSA invested in 5 projects to develop new technology and 14 projects to promote knowledge for decision-makers. The R&D investments in FY 2021 and 2022 included a continued focus on underground natural gas storage facilities, methane detection, and LNG facilities due to changes in the regulatory landscape and energy supply/demand. PHMSA's CAAP continues to engage students from higher education institutions in pipeline safety-related research, providing a potential career pathway into the industry. Such engagement also illustrates that R&D carried out in academia, particularly in science and technology, contributes to American innovation, equity, and economic growth.

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<sup>10</sup> <https://www.phmsa.dot.gov/news/report-congress-aboveground-storage-tanks-review-current-and-new-corrosion-control-techniques>

PHMSA's research results in scholarly publications and commercially viable products to improve pipeline safety. During FY 2021 and 2022 to date, PHMSA's R&D investments resulted in 2 issued patents, 34 published papers, and 1 commercialized technology.

The following technology transfer was registered in FY 2021:

*Pipeline Anomaly Detection/Characterization* –

PHMSA registered a technology transfer for the project entitled “Development, Field Testing and Commercialization of a Crack and Mechanical Damage Sensor for Unpiggable Natural Gas Transmission Pipelines”.<sup>11</sup> To see inside a pipeline, industry uses a device known as a “smart pig”<sup>12</sup>. This canister-looking piece of equipment can detect all kinds of conditions including low pressure, dents, liquid vs. gas pipelines, wrinkles in the pipe's metal, pipe coating and even thickness. Through the pig's sensors and GPS capabilities, these devices remain as one of the most effective diagnostic



*Smart Pig in use inside of a Pipeline*

tools for industry. Without having to shut down a pipeline, a pig can propel itself with the help of sealing disks throughout the pipes without going too fast (up to 3 to 5 m/second). When a pig is inside of a pipeline collecting data, it is usually referred to as “pigging”. The research supported the launch of the Laser Deformation Sensor (LDS) on the Explorer line of robotic inspection tools. The LDS is a laser-based sensor that allows the identification of any mechanical damage or ovality (when a pipe is bent to create a change in direction) issues in a hard to inspect or unpiggable natural gas transmission pipeline. Unlike its traditional caliper-based mechanical damage sensors found on smart pigs, this sensor has no moving parts, requires minimal power to operate; is very light and occupies very little space. These are all important attributes for effectively operating in traditionally unpiggable systems. It identifies mechanical damage or ovality issues at an accuracy level comparable to or better than traditional calipers.

Additionally, the below projects illustrate promising results in pipeline safety that may lead to future technology transfers. The second project supports the National Transportation Safety Board (NTSB) Recommendation (P-19-2).<sup>13</sup>

<sup>11</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=496>

<sup>12</sup> [https://s3.amazonaws.com/ogden\\_images/www.minotdailynews.com/images/2018/04/11183046/Gallery-3-pig-in-bendy-pipe-521x392.jpg](https://s3.amazonaws.com/ogden_images/www.minotdailynews.com/images/2018/04/11183046/Gallery-3-pig-in-bendy-pipe-521x392.jpg)

<sup>13</sup> <https://www.nts.gov/investigations/AccidentReports/Reports/PAR1902.pdf>

*Preventing Pipeline Threats/Damage* – The purpose of this research project entitled “Forced Resonance Imaging for 3-Dimensional Mapping of Buried Gas Pipes” is to develop and demonstrate a prototype system that can detect subsurface natural gas pipes, collect three dimensional (3D) location information with increased accuracy, and provide additional information on pipe diameter and type (plastic or metallic) by 3D mapping.<sup>14</sup>

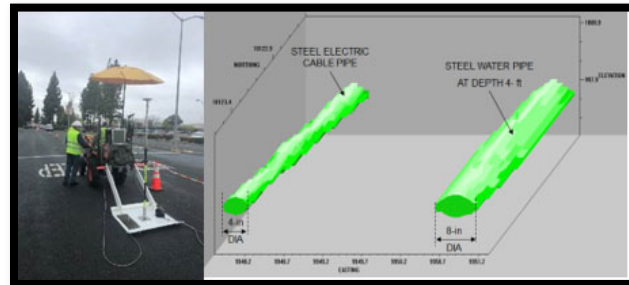


Figure of 3-D subsurface mapping  
Courtesy of Bakhtar Research and Engineering, LLC

This project will provide the ability to more accurately map underground pipelines and may change the paradigm on the threat of excavation damage. The capability may reduce the number of incidents that result from an unintentional strike on a pipeline during routine maintenance or during installation of other underground utilities; and ultimately reduce the risk to the public, as well as to the environment from such incidents.

*Preventing Pipeline Threats/Damage* – The purpose of this research project entitled “Procedures for Retrofitting Indoor Gas Service Regulators” is to provide natural gas local distribution companies (LDCs) with best practices and guidelines for the retrofitting of inside gas service regulators and associated piping to maintain the same level of safety as a regulator installed outside.<sup>15</sup> The project will establish best practices for the inspection, recording, and maintenance of gas regulators and operator-owned indoor piping systems. The project will also aid gas service regulator manufacturers with potential design changes to better accommodate the installation of regulators outside of buildings with limited space.

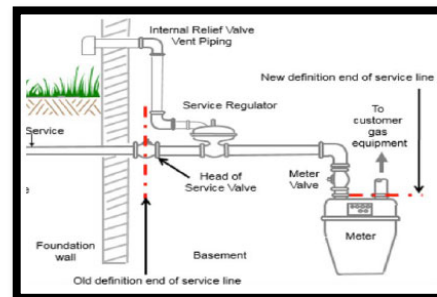


Figure of Indoor Gas Regulator –  
Courtesy of Gas Technology Institute

This research project is expected to potentially provide information regarding the safety impacts of indoor service meters and regulators as compared to those located outdoors. This information could help operators to better manage those differences, and make decisions regarding their replacement, retrofit, or relocation, which may result in enhancing pipeline safety.

<sup>14</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=915>

<sup>15</sup> <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=916>



## **FY 2023 Program Description Hazardous Materials Safety Research**

**FY 2023 Funding Request: \$8,416,000**  
*(includes Administrative Expenses)*

### **Program Description/Activities**

PHMSA conducts hazardous materials safety research to reduce the risks associated with the transportation of hazardous materials and to identify and evaluate new technologies to facilitate the safe, secure, and efficient transportation of hazardous material.

These goals are supported through four core areas of research: Risk Management and Mitigation, Package Integrity, Emerging Technologies, and Technical Analysis to Aid Risk Assessments. Each core area is described in detail below.

1. Risk management and mitigation (\$1.5 million) research considers the probability of hazardous materials transport incidents and associated consequences. Specific projects in this strategic area include the development of risk management methods and tools to improve the understanding of key risks by the hazardous materials packaging and transport industry. The Office of Hazardous Materials Safety is currently working with the U.S. Census Bureau to develop a hazardous materials commodity flow survey which will define the quantity and number of shipments of hazardous materials transported annually. The data, which will be subdivided by hazard class, will improve our transportation risk modeling and analysis capability which in turn will lower the risk of transport.
2. Package integrity (\$2.5 million) research studies help form standards that ensure hazardous materials remain contained within original packaging during the entire transportation cycle, protecting surrounding environments. Package integrity research evaluates and verifies the suitability and effectiveness of packaging standards and practices. Specific research areas include testing and evaluation of existing packaging materials and packaging technologies; analysis, and performance evaluation of emerging packaging materials and methods; and evaluation of component materials of combination packaging. On the emerging materials front, one of the Office of Hazardous Materials Safety' academic partners is currently developing the use of novel materials, primarily aerogels, as a safety enhancement to packaging systems. Aerogels have been shown to be very effective as insulation and non-toxic to humans and their surroundings.
3. Emerging technologies (\$2.6 million) research identifies and analyzes emerging materials, packaging technologies, and transport operations. Research in this sector often looks at enhancing the safety of energy commodities, including various grades of crude oil, liquefied natural gas, and charged energy storage devices (i.e. batteries); analysis of new packaging materials and technologies; analysis of transportation systems and operations; and international collaborative research to support the export of U.S. energy products. Novel rail car shell materials like composite metal foams, novel aerogels (as mentioned above) and our most recent and forward-looking work in sodium ion batteries (NaBs). NaBs are able to be

transported at a zero percent state of charge, unlike lithium ion batteries, rendering them essentially inert in transport. While this work is in its earliest stages, PHMSA has positioned itself at a foundational level in this work.

4. Technical Analysis to Aid Risk Assessments (\$1.0 million) research evaluates activities, events, and incidents. Planned research activities include the analysis of individual incidents and accidents involving hazardous materials to determine root cause; determine patterns or anomalies within packaging or systems; and the development of new inspection and test methods to classify materials and certify packaging. The Office of Hazardous Materials Safety is currently working with the National Academy of Sciences to identify and address transportation risks associated with the rail transport of liquefied natural gas as well as researching the costs associated with rail delays due to accidents involving hazardous materials.

**Expected Outputs/Products:** PHMSA's Hazardous Materials research informs improvements in packaging and transport of dangerous goods. Research outcomes will help to decrease transportation accidents and incidents, and hazardous materials-related consequences by improving packaging integrity and providing the transport community with affordable and sustainable technology solutions that improve transport safety.

PHMSA has produced and will continue to support work in the safety standards in transport of rail and tank cars, autonomous vehicle applications, and the protection of passengers and environments potentially affected by the transport of charged storage devices by air. Areas such as these results in safety guidance like the *Emergency Response Guidebook* for hazardous materials remediation and cleanup. This publication requires research to inform cleanup and remediation of highly combustible and toxic materials often released during unexpected incidents.

By remaining at the forefront of transport safety methodologies and technologies, PHMSA is well positioned to keep up with the growing markets of hazardous materials and their applications. There is a projected increase of over 40% in non-electric vehicle use of charged storage devices over the next several years. Given this increase, there is a need to continue to fund work in the areas that meet the challenges presented by this uptick. Not only for the safety of the commerce that is in transport, but for the safety of the people and the environments the transported materials effect on a daily basis.

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## **V: Information Technology Expenditure**

## FY 2023 IT BUDGET REQUEST

### INFORMATION TECHNOLOGY DEPARTMENT OF TRANSPORTATION PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION BUDGET AUTHORITY

<b>Budget Account</b>	<b>FY 2021 ENACTED</b>	<b>FY 2022 CR (w/ IIJA Oblim)</b>	<b>FY 2023 PRES. BUDGET</b>
<b>Pipeline Safety</b>	<b>\$ 10,008</b>	<b>\$ 11,374</b>	<b>\$ 12,938</b>
Commodity SS and WCF IT	4,092	5,458	6,071
Modal IT	5,916	5,916	6,867
<b>Hazardous Materials Safety</b>	<b>7,534</b>	<b>8,444</b>	<b>9,333</b>
Commodity SS and WCF IT	2,629	3,539	4,092
Modal IT	4,905	4,905	5,241
<b>Operational Expenses</b>	<b>5,489</b>	<b>5,735</b>	<b>6,231</b>
Commodity SS and WCF IT	917	1,163	1,307
Modal IT	4,572	4,572	4,924
<b>Total</b>	<b>\$ 23,031</b>	<b>\$ 25,553</b>	<b>\$ 28,502</b>

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is requesting **\$28.50 million** in FY 2023 for information technologies (IT) that support PHMSA safety programs as well as the Department's initiative to transform and consolidate the management of certain IT solutions centrally by the Office of the Chief Information Officer (OCIO).

The Department will continue providing Commodity IT Shared Services for PHMSA in FY 2023 to achieve economies-of-scale-savings for taxpayers and increase consistency of cybersecurity protections across the Department. Commodity IT Shared Services include functions and activities dedicated to basic support services, including network operations, end-user computing, telecommunications services, and server operations.

#### **PHMSA Working Capital Fund Investments**

- **Investment in Department Shared Services** – PHMSA requests **\$11.47 million** for the purchase of IT services for Department-run systems through the working capital fund (WCF). This is an increase of \$1.0 million and includes the purchase of capital assets for the network switches and file/print servers in field offices, as well as data center and disaster recovery site servers.

#### **PHMSA Pipeline Safety modal IT investments:**

- **Safety Monitoring and Reporting Tool (SMART)** – PHMSA requests **\$2.00 million** for its primary mission system that services and supports the Office of Pipeline Safety (OPS) lines of business for incident and annual reporting, inspection and enforcement,

and Safety Related Conditions.

- **National Pipeline Mapping System (NPMS)** – PHMSA requests **\$1.80 million** for operation and maintenance of this mission-critical pipeline location and mapping system, and anticipates an expansion of the NPMS system going forward. NPMS is used to display the location of the nation’s pipelines overlaid with highly populated areas, environmentally sensitive areas, and drinking water sources. It provides aerial photography, topographic data and road overlays to inform safety inspections and new pipeline construction inspections.
- **Pipeline Risk Management Information System (PRIMIS)** – PHMSA requests **\$1.25 million** for a system that disseminates safety and regulatory information to the public, State partners and industry. In addition, PRIMIS provides simple applications used by PHMSA’s State partners to collect information on specific types of inspections.
- **PHMSA Datamart** – PHMSA requests **\$806 thousand** to collect and report pipeline incidents, associate causality, and attach data elements that allow for use in inspection planning and safety standards design.
- **Cybersecurity** – PHMSA requests **\$592 thousand** for security activities to safeguard PHMSA’s mission systems and data, as well as to support compliance with Cybersecurity Standards (FISMA and NIST).
- **Information technology support** – PHMSA requests **\$419 thousand** for expertise and safety mission support for PHMSA regional offices, operations and maintenance for other safety systems and application technical assistance for the investments above.

#### **PHMSA Hazardous Materials Safety**

- **PHMSA Portal System** – PHMSA requests **\$2.60 million** for the data system that collects information on packagers and shippers, generating a risk rating for each regulated entity, and retains the inspection history for each entity we regulate.
- **Information technology support** – PHMSA requests **\$1.63 million** for expertise and safety mission support for PHMSA regional offices, operations and maintenance for other safety systems and application technical assistance for the investments above.
- **PHMSA Datamart** – PHMSA requests **\$561 thousand** to collect and report some hazardous material incident data, associate causality, and attach data elements that allow for use in inspection planning and safety standards design.
- **Cybersecurity** – PHMSA requests **\$450 thousand** for security activities to safeguard PHMSA’s mission systems and data, as well as to support compliance with Cybersecurity Standards (FISMA and NIST).

## **PHMSA Operational Expenses**

- **Information technology support** – PHMSA requests **\$4.40 million** for expertise and safety mission support for PHMSA regional offices, operations and maintenance for other safety systems and application technical assistance for the investments above.
- **PHMSA Datamart** – PHMSA requests **\$272 thousand** to collect and report pipeline and some hazardous material incident data, associate causality, and attach data elements that allow for use in inspection planning and safety standards design.
- **Cybersecurity** – PHMSA requests **\$249 thousand** for security activities to safeguard PHMSA’s mission systems and data, as well as to support compliance with Cybersecurity Standards (FISMA and NIST).